

SPECIFICATIONS AND OTHER BIDDING AND CONTRACT DOCUMENTS

ALAMEDA COUNTY PROJECT #14030R

SANTA RITA JAIL INTERIOR ACCESSIBILITY UPGRADES

5325 BRODER BLVD., DUBLIN, CALIFORNIA

MANDATORY PRE-BID SITE VISIT AND MEETING

May 22, 2018 at 10:00AM

**Location: Santa Rita County Jail
5325 Broder Blvd. Dublin, CA. 94568**

**COUNTY OF ALAMEDA
GENERAL SERVICES AGENCY
1401 LAKESIDE DRIVE, #800
OAKLAND, CALIFORNIA
CONTACT: TOM MCKIMMY
PHONE: 510-208-3990
E-MAIL: tmckimmy@acgov.org**

**Architect of Record:
DLR Group
DLR Group Project No. 75-17108-20**





DLR Group

Architecture

Engineering

Planning

Interiors

Alameda County General Services Agency Santa Rita Jail Interior Accessibility Upgrades

PROJECT NO. 14030R

DLR Group Project No. 75-17108-20

Project Manual

May 01, 2018

MONITOR REVIEWED FOR
ACCESS COMPLIANCE PER
SETTLEMENT AGREEMENT
DATE: **4/16/2018**

HY HIBSER YAMAUCHI Architects, Inc.

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SEALS PAGE

PART 1

1.1 DESIGN PROFESSIONALS OF RECORD

- A Architect: DLR Group.
- 1 Responsible for Divisions 02-49 Sections except where indicated as prepared by other design professionals of record.
 - 2 Andrew M. Cupples
 - 3 C-25293 Exp. 06-30-2019



- B Plumbing Engineer: DLR Group.
- 1 Responsible for Division 22.
 - 2 Tanase Cocea
 - 3 M-34223 Exp. 12-31-2018



- C HVAC Engineer: DLR Group.
- 1 Responsible for Division 23.
 - 2 Tanase Cocea
 - 3 M-34223 Exp. 12-31-2018

END OF DOCUMENT

MONITOR REVIEWED FOR
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DOCUMENT 00 01 09

SUMMARY BIDDING CALENDAR

NOTICE – THIS SUMMARY IS FOR INFORMATIONAL PURPOSES ONLY. The dates and times listed may not be relied upon or enforced. This summary does not form a part of the contract documents and does not establish contractual obligations.

NOTICE – THIS IS A SUMMARY ONLY AND DOES NOT LIST ALL DATES, TIMES OR TIME PERIODS CONTAINED IN THE BIDDING AND CONTRACT DOCUMENTS. All bidders and contractors must refer to the actual documents for all applicable dates, times and time periods.

<u>Event</u>	<u>Date</u>	<u>Reference</u>
Contract Documents Available	May 7, 2018	00 11 16 Notice to Bidders
Mandatory Pre-Bid Conference & Mandatory Site Visit	May 22, 2018 at 10:00AM Location: 5325 Broder Blvd., Dublin, CA 94568 Main Entrance, Media Conference Room	00 11 16 Notice to Bidders
Non-Mandatory Networking Meeting	May 23, 2018 at 2:00PM Location: 5325 Broder Blvd., Dublin, CA 94568 Meet outside Main Entrance	00 11 16 Notice to Bidders
Addendum #1 Issue Date (Issue List of Attendees at the Mandatory Pre-Bid Conference)	May 25, 2018	00 21 13 Instructions to Bidders
Last Day for GSA to receive any Final Bidder Questions	May 30, 2018 2:00PM	00 21 13 Instructions to Bidders
Addendum #2 Issue Date (Responses to Final Bidders Questions)	June 5, 2018	00 21 13 Instructions to Bidders

Alameda County General Services Agency
Santa Rita Jail Interior Accessibility Upgrades

PROJECT NO. 14030R

Receipt of Bids and Bid Opening	June 20, 2018, 2:00PM	00 11 16 Notice to Bidders
Last Day for two lowest Bidders to submit outstanding Bid Documents and ECOP Documentation	June 22, 2018, 2:00PM (2 business days following the Bid Opening Date)	00 22 19 Supplementary Instructions to Bidders -Construction Outreach Program
Bid Evaluation Period	June 25, 2018 to June 29, 2018	00 21 13 Instructions to Bidders
Notice of Intent to Award	July 3, 2018	00 51 13 Notice of Intent to Award
Last Day to Submit a Bid Protest	July 11, 2018, 2:00PM (5 th Business Day from Date of Notice of Intent to Award)	00 21 13 Instructions to Bidders
Estimated Board Award of Contract	July 24, 2018	00 51 00 Notice of Award
Notice of Award	July 24, 2018	00 51 00 Notice of Award
Last Day to Sign & Submit Contract	July 31, 2018 (7 Calendar days after Notice of Award)	00 11 16 Notice to Bidders 00 51 00 Notice of Award
Last Day to Submit Post-Award Documents	July 31, 2018 (7 Calendar days after Notice of Award)	00 21 13 Instructions to Bidders
Last Day to Submit Escrow Bid Documentation	July 31, 2018 (7 Calendar days after Notice of Award)	00 56 00 Escrow Bid Documentation
Issue Notice to Proceed	August 10, 2018	00 55 00 Notice to Proceed
Contract Duration	405 Calendar Days	00 52 13 Agreement Form – Stipulated Sum (Single Prime Contract)

Alameda County General Services Agency
Santa Rita Jail Interior Accessibility Upgrades

PROJECT NO. 14030R

Contract Duration Begins	July 24, 2018	00 55 00 Notice to Proceed
Contract Duration Ends	September 1, 2019	00 55 00 Notice to Proceed
Last Day to Submit Construction Schedule, and other deliverables per Notice to Proceed	August 24, 2018 (10 th Business Day following Notice to Proceed)	00 55 00 Notice to Proceed
Construction Start Date	August 27, 2018	00 55 00 Notice to Proceed
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END OF DOCUMENT

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NOTICE TO BIDDERS

1. Notice is hereby given that The County of Alameda General Services Agency (“GSA”) Purchasing Department (“County” or “Owner”) will receive sealed bids for the following project:

Project No. 14030R – Santa Rita Jail Interior Accessibility Upgrades

2. Sealed Bids will be received until **2:00 p.m., June 20, 2018**, at 1401 Lakeside Drive, 9th Floor, Oakland, California, at or after which time the bids will be opened and publicly read aloud. Any claim by a bidder of error in its bid must be made in compliance with section 5100 et seq. of the Public Contract Code. Any bid that is submitted after this time shall be non-responsive and returned to the bidder.
3. The Project consists of:
 - A. **Multiple phases of construction of interior accessibility upgrades in various detention units and other areas located in the Santa Rita Jail complex. See Attachment 3 of this Document. See the Construction Documents (Drawings and Specifications).**
 - B. **Contractor shall meet the Alameda County Sheriff’s Office Site Security Clearance Requirements as a condition of this project contract. See Attachment 2 of this Document. See Instructions to Bidders Document 00 21 13.**

The budgetary estimate for the scope of work is **Nine Million Dollars (\$9,000,000)**.
The time to complete this project is **Four hundred five (405) calendar days**.

4. All bids shall be on the Bid Form Document 00 41 13 provided by the County. Each bid must conform to and be responsive to all pertinent Contract Documents, including, but not limited to, the Instructions to Bidders Document 00 21 13 and the Supplementary Instructions to Bidders - Construction Outreach Program Document 00 22 19.
5. Bidders are strongly encouraged to review the Supplementary Instructions to Bidders – Enhanced Construction Outreach Program Document (ECOP) 00 22 19 and to begin their outreach efforts prior to the initial mandatory project job walk. The list of bidders solicited for this project include but are not limited to all those construction contractors listed in the GSA Small, Local & Emerging Program Vendor Query database located at http://www.acgov.org/sleb_query_app/gsa/sleb/query/slebmnu.jsp.
6. To bid on this Project, the Bidder is required to possess one or more of the following State of California Contractor Licenses:

General – B (Building Contractor)

The Bidder's license(s) must remain active and in good standing throughout the term of the Contract.

7. A bid bond by an admitted surety insurer on the form provided by the County, cash, or a cashier's check or a certified check, drawn to the order of the County of Alameda, in the amount of ten percent (10%) of the total bid price, shall accompany the Bid Form, as a guarantee that the Bidder will, within seven (7) calendar days after the date of the Notice of Award, enter into a contract with the County for the performance of the services as stipulated in the bid.
8. The successful Bidder shall be required to furnish a 100 % Performance Bond and a 100% Payment Bond if it is awarded the contract for the Work.
9. The successful Bidder may substitute securities for any monies withheld by the County to ensure performance under the Contract, in accordance with the provisions of section 22300 of the Public Contract Code.
10. The Contractor and all Subcontractors under the Contractor shall pay all workers on all work performed pursuant to this Contract not less than the general prevailing rate of per diem wages and the general prevailing rate for holiday and overtime work as determined by the Director of the Department of Industrial Relations, State of California, for the type of work performed and the locality in which the work is to be performed within the boundaries of the County, pursuant to sections 1770 et seq. of the California Labor Code. Prevailing wage rates are also available from the County or on the Internet at: [<http://www.dir.ca.gov>](http://www.dir.ca.gov).
11. This project is subject to compliance monitoring and enforcement by the Department of Industrial Relations. The following requirements apply to this bid and contract:
 - A. No contractor or subcontractor may be listed on a bid proposal for a public works project (submitted on or after March 1, 2015) unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5 [with limited exceptions from this requirement for bid purposes only under Labor Code section 1771.1(a)].
 - B. No contractor or subcontractor may be awarded a contract for public work on a public works project (awarded on or after April 1, 2015) unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5.
12. The Work performed pursuant to this Contract, with a construction value of one million (\$1,000,000) or more, is subject to the requirements of the "PROJECT

STABILIZATION/COMMUNITY BENEFITS AGREEMENT for the COUNTY OF ALAMEDA” as described in Project Stabilization/ Community Benefit Document 00 73 49. In consideration of the award of a Contract to perform the Work, the Contractor agrees to be party to and bound by the “PROJECT STABILIZATION/COMMUNITY BENEFITS AGREEMENT for the COUNTY OF ALAMEDA”. Contractor agrees to execute the “PROJECT STABILIZATION/COMMUNITY BENEFITS AGREEMENT for the COUNTY OF ALAMEDA” Letter of Assent and shall require all of its subcontractors, of whatever tier, to become similarly bound for all work within the scope of this Contract by signing an identical Letter of Assent.

13. A mandatory pre-bid conference and site visit/job walk will be held on **May 22, 2018, at 10:00 a.m., at the Media Conference Room inside the main entrance of the Santa Rita Jail located at 5325 Broder Blvd., Dublin, California 94568.** All participants are required to sign in at the site. The mandatory pre-bid conference and site visit/job walk is expected to take approximately 1.5 hours. Failure to attend or arrival after the material start of the mandatory pre-bid conference meeting will render bidder/bid ineligible.

A. NOTICE OF REQUIREMENTS FOR ATTENDING THE MANDATORY PRE-BID CONFERENCE AND SITE VISIT/SITE WALK:

In advance of this mandatory pre-bid conference and site visit/job walk, all Contractors (primes and subcontractors) must submit an ALAMEDA COUNTY SHERIFF’S OFFICE SECURITY SITE CLEARANCE form (see Attachment 2 of this Document) for each specific individual who will attend the mandatory pre-bid conference and site visit/job walk. The form(s) shall be submitted as electronic documents via electronic mail (email) to the County Contact, Bernadette Delgado, Email: bernadette.delgado@acgov.org

Groups of ten (10) will be escorted by the Sheriff on the job walk and view the construction locations for the project (no cell phones/photos will be allowed). Each individual who wishes to attend this job walk shall bring and present their driver’s license, state ID or passport. Individuals who do not provide complete forms or whose forms are rejected by the Sheriff WILL NOT be able to proceed on the job walk. Not passing the requirements for the County Sheriff’s Office Security Site Clearance to attend the job walk of the facility will not disqualify a bidder firm (as a prime contractor) who has in-person officially attended this mandatory pre-bid conference by signing the attendee sheet.

14. Contract Documents are available on May 7, 2018, for review at the County offices of the General Services Agency, Medical Facilities Program, 1401 Lakeside Dr. Suite 800, Oakland, CA. In addition, Contract Documents are available for bidders’ review at the locations shown on Attachment 1 to this Document.

Contract Documents are also available for purchase at East Bay Blue Print, 1745 14th Ave., Oakland, CA. This fee is non-refundable.

15. The County has found and determined that the following item(s) shall be used on this Project based on the purpose(s) indicated. (Public Contract Code Section 3400(b)): A particular material, product, thing, or service is designated by specific brand or trade name for the following purpose(s):
 - (1) **See Drawings and Specifications for specific project requirements.**
16. It is County policy to minimize the expenditure of County funds on goods and services produced by any entity which buys, sell, leases or distributes commodities and/or professional services to (1) the government of Burma; or (2) any entity organized under the laws of Burma; or (3) any entity which does business with any private or public entity located in Burma, or conducts operations in Burma. Contractors are urged to comply with the policy in making purchases and subcontracts. (ref. Alameda County, Cal., Adm. Code tit.4, §4.32.050(B),(F))
17. Contractors must comply with County Administrative Code's CONSTRUCTION DEBRIS MANAGEMENT AND GREEN BUILDING PRACTICES. See Drawings and Specifications for specific project requirements.
18. The County reserves the right to reject any and all bids and/or waive any irregularity in any bid received. If the County awards the Contract, the security of unsuccessful bidder(s) shall be returned within sixty (60) days from the time the award is made. Unless otherwise required by law, no bidder may withdraw its bid for ninety (90) days after the date of the bid opening.
14. The County shall award the Contract, if it awards it at all, to the lowest responsive responsible bidder based on:
 - A. The base bid amount; and
 - B. Meets the Alameda County Sheriff's Office Site Security Clearance Requirements.

Determination of the responsible bidder with the lowest responsive bid will also be subject to the terms of the Enhanced Construction Outreach Program Document 00 22 19.

END OF DOCUMENT

PLAN ROOM ADVERTISING LIST

<input checked="" type="checkbox"/> 1 Bay Area Builders Exchange** 3055 Alvarado Street San Leandro, CA 94577 Phone: (510) 483-8880; Fax: (925) 685-3424 Email: planroom@bayareabx.com (This is a merger of Builders Exchange of Alameda County and Contra Costa Builders Exchange 5/18/15.)	<input checked="" type="checkbox"/> 2 San Francisco Builders Exchange 850 South Van Ness Avenue San Francisco, CA 94110 Phone: (415) 282-8220 Fax: (415) 821-0363 Email: djohnsonsf@sbcglobal.net
<input checked="" type="checkbox"/> 3 Dodge Data and Analytics (Dodge Plan Room, formerly McGraw-Hill Construction Dodge) (Online) 3315 Central Avenue Hot Springs Arkansas (AR) 71913 (Contact: Gerry McCarthy) 626-531-6818; Fax: 626-226-1623 Email gerry.mccarthy@construction.com	<input checked="" type="checkbox"/> 4 Small Business Exchange 703 Market Street, Suite 1000 San Francisco, CA 94103 Phone: (415) 778-6250 Fax: (415) 778-6255 Email: sbe@sbeinc.com
<input checked="" type="checkbox"/> 5 Central California Builders Exchange 1244 N. Mariposa St. Fresno, Ca 93703 Phone (559) 237-1831; Fax (559) 264-2532 Email: megan@cencalbx.com	<input checked="" type="checkbox"/> 6 County of Alameda Current Contracting Opportunities Website located at http://www.acgov.org/gsa_app/gsa/purchasing/bid_content/contractopportunities.jsp
<input checked="" type="checkbox"/> 7 The Blue Book Building & Construction Network (www.bb-bid.com Online) Contact: Amanda Limitone, Project Communication Specialist Phone: (855) 805-2560, ext.3145; Email: alimitone@thebluebook.com	
<input checked="" type="checkbox"/> 8 Reed Construction Data** – Online/Electronic Plan Room 30 Technology Parkway South, Suite 100 Norcross, GA 30092-2912 Phone: (770) 209-3396 Jeannie Kwan; Fax (Addenda only): (800) 303-8629; Fax (Notice to Bidders/IFB): (800) 642-2437; Email (addenda only): docprocessing@reedbusiness.com -Send requests to advertise to above address/fax/phone- Local Email: jeannie.kwan@reedbusiness.com (EPR: http://www.reedconstructiondata.com)	
<input checked="" type="checkbox"/> 9 East Bay Blue Print & Supply Co. 1745 Fourteenth Ave Oakland, CA 94606 Phone: (510) 261-2990 - Sandy Petty Email: ebbp@eastbayblueprint.com	
<input checked="" type="checkbox"/> 10 Construction Bidboard, Inc.(Online)** 11622 El Camino Real, Suite 100 San Diego, CA 92130 800-479-5314 phone; 619-688-0585 fax (Contact Dorothy Ellithorpe dellithorpe@ebidboard.com) Alternate: planroom@ebidboard.com * ebidboard@gmail.com	

* Plans/Specs must be sent to individual Plan Rooms to ensure posting at that location.

**Construction trade journals specified for alternate bidding procedures for projects between \$25,000 and \$125,000 minimum advertising requirements. County policy is to post all construction projects over \$25,000 in all listed Plan Rooms, Press/Newspaper Publications and Local Chambers of Commerce/Trade Organizations

Santa Rita Jail Interior Accessibility Upgrades Project 14030R
DOCUMENT 00 11 16 NOTICE TO BIDDERS - ATTACHMENT 2
ALAMEDA COUNTY SHERIFF'S OFFICE *SECURITY SITE CLEARANCE*

PLEASE TYPE OR PRINT

Email Address: _____

LAST NAME: _____ FIRST: _____ MI: _____ DOB: _____
ADDRESS: _____ CITY: _____ APT: _____ ZIP: _____
RESIDENCE PHONE: _____ BUSINESS PHONE: _____ RACE: _____ SEX: _____
AGE: _____ HEIGHT: _____ WEIGHT: _____ EYES: _____ HAIR: _____
DRIVER'S LICENSE #: _____ STATE: _____ SSN: _____
CONTRACTOR EMPLOYER: _____ JOB TITLE: _____ SUPV: _____
REASON FOR VISIT: _____ DATE OF VISIT: _____

START DATE: _____ **PERMANENT POSITION:** _____ **TEMPORARY POSITION:** _____

PERSON TO NOTIFY IN CASE OF _____ PHONE: _____

EMERGENCY:

DO YOU CURRENTLY KNOW **ANYONE** IN CUSTODY IN THE ALAMEDA COUNTY JAIL SYSTEM? YES ☐ NO ☐

(THIS INCLUDES FAMILY, FRIENDS, ASSOCIATES, ETC.)

HAVE YOU EVER BEEN ARRESTED BY ANY LAW ENFORCEMENT AGENCIES? YES ☐ NO ☐

HAVE YOU EVER BEEN CHARGED OR CONVICTED ANY TYPE OF CRIMINAL OFFENSE? YES ☐ NO ☐

HAVE YOU EVER ENGAGED IN ANY TYPE OF SEXUAL ABUSE IN ANY CONFINEMENT SETTING? YES ☐ NO ☐

HAVE YOU EVER BEEN CONVICTED OF ANY SEX CRIME? YES ☐ NO ☐

HAVE YOU EVER BEEN CIVILLY OR ADMINISTRATIVELY ADJUDICATED TO HAVE ENGAGED IN SEXUAL ABUSE IN ANY TYPE OF CONFINEMENT FACILITY? YES ☐ NO ☐

HAVE YOU EVER BEEN ACCUSED OF SEXUAL ABUSE/HARRASSMENT YES ☐ NO ☐

FAILING TO LIST AN ARREST OR CONVICTION WOULD BE BASIS FOR DENIAL.

IF YOU HAVE BEEN ARRESTED OR CHARGED WITH A CRIME EXPLAIN BELOW

DATE	CHARGE	ARRESTING AGENCY	DISPOSITION
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(IF MORE SPACE IS REQUIRED USE AN ADDITIONAL SHEET OF PAPER)

I UNDERSTAND THAT I AM SUBJECT TO AND GIVE MY CONSENT TO BE SEARCHED, INCLUDING MY PERSON, AFFECTS AND VEHICLE AT ALL TIMES THAT I AM ON JAIL PROPERTY.

FURTHERMORE, IF ANYONE I KNOW COMES INTO CUSTODY WITHIN THE ALAMEDA COUNTY JAIL SYSTEM, I WILL NOTIFY THE CLASSIFICATION UNIT SERGEANT IN WRITING WITHIN 24 HOURS.

THIS STATEMENT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND ANY FALSE STATEMENT IS CAUSE FOR MY SITE CLEARANCE TO BE REVOKED.

APPLICANT SIGNATURE: _____ DATE: _____

(APPLICANT: KEEP A COPY OF THIS FORM FOR YOUR REFERENCE)

DMV: _____	REMARKS : _____
JPQN: _____	REMARKS : _____
JPPS: _____	REMARKS : _____
WPS: _____	REMARKS : _____
CII : _____	REMARKS : _____

CLEARANCE DEPUTY: _____ BADGE#: _____ DATE: _____

SUPERVISOR: _____ BADGE#: _____ DATE: _____

APPROVED ☐ DENIED ☐ COMMENTS: _____

GDJ _____ **SRJ** _____ **CRC** _____ **ID BADGE ISSUED AT DATE:** _____

Policy & Procedure 17.02

Attachment 5

Revised 06/17

Notice: Information provided on this form shall be treated as confidential.

DOCUMENT 00 11 16 - ATTACHMENT 3 - PROJECT PHASING PLAN & SCHEDULE

LEGEND NOTES
LEGEND NOTES ARE COMMON TO ALL
SOME NOTES MAY NOT APPLY TO THIS SHEET

CONSTRUCTION
DOCUMENTS

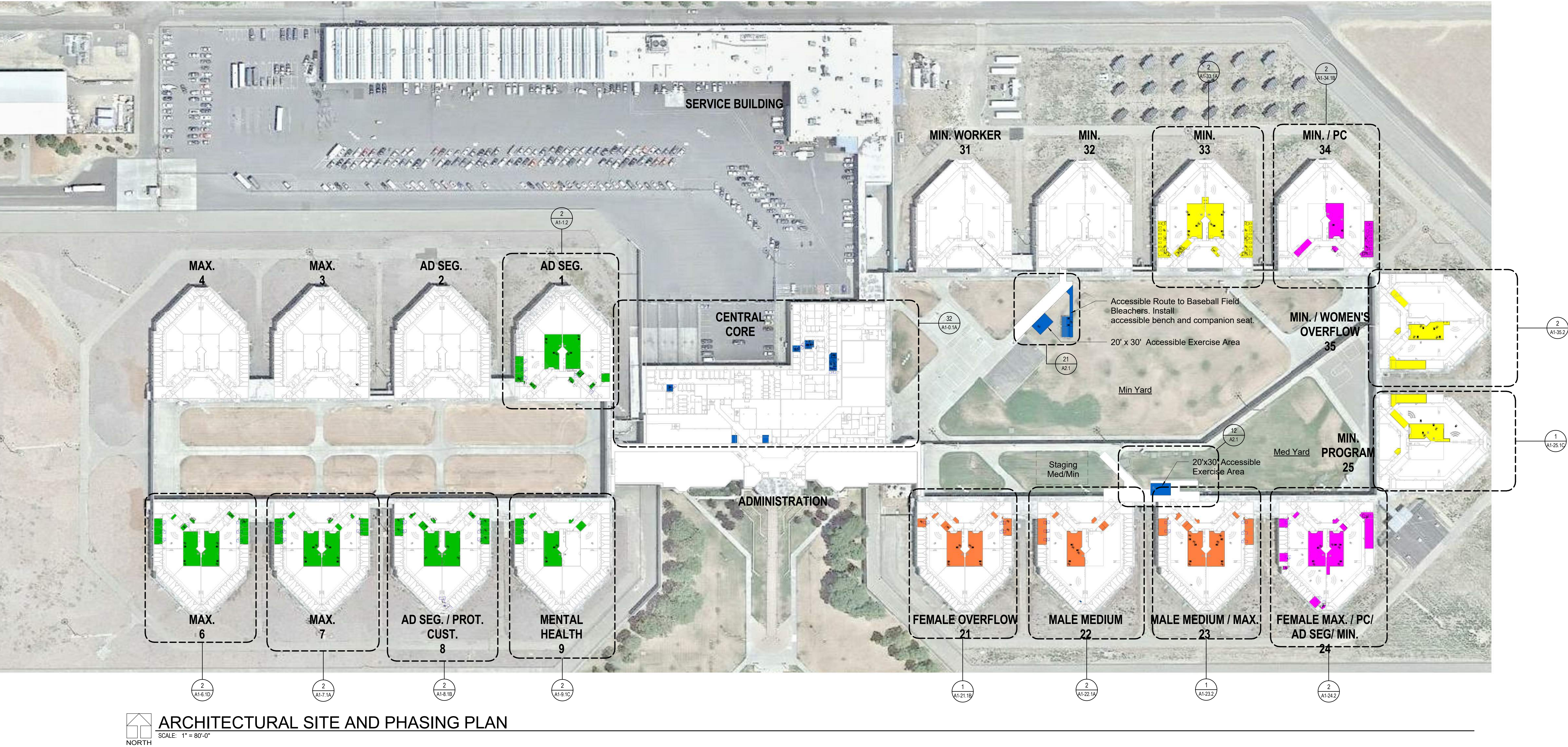
5935 BROOKER BLVD.
DUBLIN, CA 94568

ARCHITECTURAL SITE AND PHASING PLAN
CO. OF ALAMEDA - SANTA RITA JAIL

AS1.1
75-17108-00
05-01-2018
Release



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PHASING LEGEND:

PHASE 1A SETTLEMENT COMPLETED NO LATER THAN 4 MONTHS FROM NOTICE TO PROCEED DATE	PHASE 1C SETTLEMENT COMPLETED NO LATER THAN 10 MONTHS FROM NOTICE TO PROCEED DATE	PHASE 1E SETTLEMENT COMPLETED NO LATER THAN 12 MONTHS FROM NOTICE TO PROCEED DATE
PHASE 1B SETTLEMENT COMPLETED NO LATER THAN 10 MONTHS FROM NOTICE TO PROCEED DATE	PHASE 1D SETTLEMENT COMPLETED NO LATER THAN 12 MONTHS FROM NOTICE TO PROCEED DATE	

KEY PLAN

MONITOR REVIEWED FOR
ACCESS COMPLIANCE PER
SETTLEMENT AGREEMENT
DATE: 4/16/2018
HY HIBSER YAMAUCHI Architects, Inc.

DOCUMENT 00 21 13

INSTRUCTIONS TO BIDDERS

Bidders shall follow the instructions in this document, and shall submit all documents, forms, and information required for consideration of a Bid.

County will evaluate information submitted by the apparent low Bidder and, if incomplete or unsatisfactory to County, Bidder's bid may be rejected at the sole discretion of County.

1. Bids are requested for a general construction contract, or work described in general, for the following project ("Project" or "Contract"):

Project No. 14030R Santa Rita Jail Interior Accessibility Upgrades

2. County will receive sealed Bids from Bidders as stipulated in the Notice to Bidders Document 00 11 16.
3. Bidders must submit Bids on Bid Form 00 41 13 and all other required County forms. Bids not submitted on the County's required forms shall be deemed non-responsive and shall not be considered. Additional sheets required to fully respond to requested information are permissible.
4. Bidders must supply all information required by each Bid Document. Bids must be full and complete. County reserves the right in its sole discretion to reject any Bid as non-responsive as a result of any error or omission in the Bid. Bidders must complete and submit all of the following documents with Bid Form Document 00 41 13:
 - a. Bid Bond on Bid Security Form Document 00 43 13 or other security;
 - b. Designated Subcontractors List Document 00 43 36;
 - c. Site-Visit Certification Document 00 45 01, if a site visit was required;
 - d. Non-Collusion Affidavit Document 00 45 13;
 - e. Debarment Form Document 00 52 13.1;
 - f. Construction Outreach Program Certifications as required by Supplementary Instructions to Bidders – Enhanced Construction Outreach Program Document 00 22 19.
5. Bidders must submit with their Bids cash, a cashier's check or a certified check payable to County, or a Bid Bond of not less than ten percent (10%) of amount of base Bid, plus all additive alternates. Required form of corporate surety, Bid Security Form, is provided by County and must be used and fully completed by Bidders choosing to provide a Bid Bond as security. The Surety on Bidder's Bid Bond must be an insurer admitted in the State of California and authorized to issue surety bonds in the State of California. Bids

submitted without necessary bid security will be deemed non-responsive and will not be considered.

6. If Bidder to whom Contract is awarded shall for **SEVEN (7)** calendar days after the date of the Notice of Award, fail or neglect to enter into Contract and submit required bonds, insurance certificates, and all other required documents, County may deposit Bid Bond, cash, cashier's check, or certified check for collection, and proceeds thereof may be retained by County as liquidated damages for failure of Bidder to enter into Contract, in the sole discretion of County. It is agreed that calculation of damages County may suffer as a result of Bidder's failure to enter into the Contract would be extremely difficult and impractical to determine and that the amount of the Bidder's required bid security shall be the agreed and conclusively presumed amount of damages.
7. Bidders must submit with the Bid the Designated Subcontractors List for those subcontractors who will perform any portion of Work, including labor, rendering of service, or specially fabricating and installing a portion of the Work or improvement according to detailed drawings contained in the plans and specifications, in excess of one-half of one percent (0.5%) of total Bid. Failure to submit this list when required by law shall result in Bid being deemed non-responsive and the Bid will not be considered.
8. If a mandatory pre-bid conference and site visit ("Site Visit") is requested as referenced in the Instructions to Bidders, then Bidders must submit the Site-Visit Certification with their Bid. County will transmit to all prospective Bidders of record such Addenda as County in its discretion considers necessary in response to questions arising at the Site Visit. Oral statements shall not be relied upon and will not be binding or legally effective. Addenda issued by the County as a result of the Site Visit, if any shall constitute the sole and exclusive record and statement of the results of the Site Visit.
9. Bidders shall submit the Non-Collusion Affidavit with their Bids. Bids submitted without the Non-Collusion Affidavit shall be deemed non-responsive and will not be considered.
10. Bids shall be clearly written without erasure or deletions. County reserves the right to reject any Bid containing erasures or deletions.
11. Bidders shall not modify Bid Form 00 41 13 or qualify their Bids. Bidders shall not submit to the County a scanned, re-typed, word-processed, or otherwise recreated version of Bid Form 00 41 13 or other County-provided document.
12. The successful Bidder and all its subcontractors shall pay all workers on all work performed pursuant to this Contract not less than the general prevailing rate of per diem wages and the general prevailing rate for holiday and overtime work as determined by the Director of the Department of Industrial Relations, State of California, for the type of

work performed and the locality in which the work is to be performed within the boundaries of the County, pursuant to sections 1770 et seq. of the California Labor Code.

13. For bids with a construction value of one million (\$1,000,000) or more, Contractor agrees to execute the “PROJECT STABILIZATION/COMMUNITY BENEFITS AGREEMENT for the COUNTY OF ALAMEDA” Letter of Assent and shall require all of its subcontractors, of whatever tier, to become similarly bound for all work within the scope of this Contract by signing an identical Letter of Assent.
14. Submission of Bid signifies careful examination of Contract Documents and complete understanding of the nature, extent, and location of Work to be performed. Bidders must complete the tasks listed below as a condition to bidding, and submission of Bid shall constitute the Bidder's express representation to County that Bidder has fully completed the following:
 - a. Bidder has visited the Site and has examined thoroughly and understood the nature and extent of the Contract Documents, Work, Site, locality, actual conditions, as-built conditions, and all local conditions and federal, state and local laws, and regulations that in any manner may affect cost, progress, performance, or furnishing of Work or that relate to any aspect of the means, methods, techniques, sequences, or procedures of construction to be employed by Bidder and safety precautions and programs incident thereto;
 - b. Bidder has conducted or obtained and has understood all examinations, investigations, explorations, tests, reports, and studies that pertain to the subsurface conditions, as-built conditions, underground facilities, and all other physical conditions at or contiguous to the Site or otherwise that may affect the cost, progress, performance, or furnishing of Work, as Bidder considers necessary for the performance or furnishing of Work at the Contract Sum, within the Contract Time, and in accordance with the other terms and conditions of Contract Documents, including specifically the provisions of the General Conditions; and no additional examinations, investigations, explorations, tests, reports, studies, or similar information or data are or will be required by Bidder for such purposes;
 - c. Bidder has correlated its knowledge and the results of all such observations, examinations, investigations, explorations, tests, reports, and studies with the terms and conditions of the Contract Documents;
 - d. Bidder has given County prompt written notice of all conflicts, errors, ambiguities, or discrepancies that it has discovered in or among the Contract Documents and the actual conditions, and the written resolution thereof by County is acceptable to Bidder;

- e. Bidder has made a complete disclosure in writing to County of all facts bearing upon any possible interest, direct or indirect, that Bidder believes any representative of County or other officer or employee of County presently has or will have in this Contract or in the performance thereof or in any portion of the profits thereof;
- f. Bidder must, prior to bidding, perform the work, investigations, research, and analysis required by this document and that Bidder represents in its Bid Form 00 41 13 and the Agreement that it performed prior to bidding. Bidders are charged with all information and knowledge that a reasonable bidder would ascertain from having performed this required work, investigation, research, and analysis. Bid prices must include entire cost of all work "incidental" to completion of the Work.
- g. Conditions Shown on the Contract Documents: Information as to underground conditions, as-built conditions, or other conditions or obstructions, indicated in the Contract Documents, e.g., on Drawings or in Specifications, has been obtained with reasonable care and has been recorded in good faith. However, County only warrants, and Bidder may only rely, on the accuracy of limited types of information.
 - (1) As to above-ground conditions or as-built conditions shown or indicated in the Contract Documents, there is no warranty, express or implied, or any representation express or implied, that such information is correctly shown or indicated. This information is verifiable by independent investigation, and Bidder is required to make such verification as a condition to bidding. In submitting its Bid, Bidder shall rely on the results of its own independent investigation. In submitting its Bid, Bidder shall not rely on County-supplied information regarding above-ground conditions or as-built conditions.
 - (2) As to any subsurface condition shown or indicated in the Contract Documents, Bidder may rely only upon the general accuracy of actual reported depths, actual reported character of materials, actual reported soil types, actual reported water conditions, or actual obstructions shown or indicated. County is not responsible for the completeness of such information for bidding or construction; nor is County responsible in any way for any conclusions or opinions of Bidder drawn from such information; nor is County responsible for subsurface conditions that are not specifically shown (for example, County is not responsible for soil conditions in areas contiguous to areas where a subsurface condition is shown).

- h. Conditions Shown in Reports and Drawings Supplied for Informational Purposes: Reference is made to the document entitled Geotechnical Data, and the document entitled Existing Conditions Information, for identification of:
 - (1) Subsurface Conditions: Those reports of explorations and tests of subsurface conditions at or contiguous to the Site that have been utilized by Architect in preparing the Contract Documents; and
 - (2) Physical Conditions: Those drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site that has been utilized by Architect in preparing the Contract Documents.
 - (3) These reports and drawings are **not** Contract Documents and, except for any "technical" data regarding subsurface conditions specifically identified in Geotechnical Data and Existing Conditions Information, and underground facilities data, Bidder may not in any manner rely on the information in these reports and drawings. Subject to the foregoing, Bidder must make its own independent investigation of all conditions affecting the Work and must not rely on information provided by County.
- 15. Bidders may examine any available "as-built" drawings of previous work by giving County reasonable advance notice. County will not be responsible for accuracy of "as-built" drawings. The document entitled Existing Conditions Information applies to all supplied "as-built" drawings.
- 16. Copies of the general prevailing rates of per diem wages for each craft, classification, or type of worker needed to execute the Contract, as determined by Director of the State of California Department of Industrial Relations, are on file at the County's principal office. Prevailing wage rates are also available from the County or on the internet at (<http://www.dir.ca.gov>)
- 17. All questions about the meaning or intent of the Contract Documents are to be directed in writing, including by e-mail, to County. Interpretations or clarifications considered necessary by County in response to such questions will be issued in writing by Addenda faxed, mailed, or delivered to all parties recorded by County as having received the Contract Documents. Questions received less than **TEN(10)** business days prior to the date for opening Bids may not be answered. Only questions answered by formal written Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.
- 18. Addenda may also be issued to modify other parts of the Contract Documents as deemed advisable by County.

19. Each Bidder must acknowledge each Addendum in its Bid Form 00 41 13 by number, or its Bid shall be considered non-responsive. Addenda shall be part of the Contract Documents. A complete listing of Addenda may be secured from County.
20. Bids shall be based on products and systems specified in Contract Documents or listed by name in Addenda. County is not responsible and/or liable in any way for a Bidder's damages and/or claims related, in any way, to that Bidder's basing its bid on any requested substitution that County has not approved. Bidders and materials suppliers who submit requests for substitutions prior to the award of the Contract must do so in writing and in compliance with Public Contract Code section 3400. All requests must comply with the following:
 - a. County must receive any request for substitution a minimum of **TEN (10)** business days prior to bid opening.
 - b. Requests for substitutions shall contain sufficient information to assess acceptability of product or system and impact on Project, including, without limitation, the requirements specified in the Special Conditions and the Specifications. Insufficient information shall be grounds for rejection of substitution.
 - c. Approved substitutions shall be listed in Addenda. County reserves the right not to act upon submittals of substitutions until after bid opening.
 - d. Substitutions may be requested after Contract has been awarded only if indicated in and in accordance with requirements specified in the Special Conditions and the Specifications.
21. All Bids must be sealed, and marked with name and address of the Bidder and the Project Number, Bid number, Bid package, and time of bid opening. Bids will be received as indicated in the Notice to Bidders.
 - a. Mark envelopes with the name of the Project.
 - b. Bids must be submitted at the place and by date and time shown in the Instructions to Bidders.
 - c. Bids must contain all documents as required herein.
22. Bids will be opened at or after the time indicated for receipt of bids.
23. This Contract may include alternates. Alternates are defined as alternate products, materials, equipment, systems, methods, or major elements of the construction that may, at the County's option and under terms established in the Contract and pursuant to section

20103.8 of the Public Contract Code, be selected for the Work. County shall award the Contract, if it awards it at all, to the lowest responsive, responsible bidder based on the criteria as indicated in these contract documents.

24. Time for Completion: County may issue a Notice to Proceed within **NINETY (90)** calendar days from the date of the Notice of Award. Once Contractor has received the Notice to Proceed, Contractor shall complete the Work within the period of time indicated in the Contract Documents.
- a. In the event that County desires to postpone issuing the Notice to Proceed beyond the 90-day period above, it is expressly understood that with reasonable notice to the Contractor, County may postpone issuing the Notice to Proceed.
 - b. It is further expressly understood by Bidder that Contractor shall not be entitled to any claim of additional compensation as a result of the postponement of the issuance of the Notice to Proceed beyond the 90-day period. If the Contractor believes that a postponement of issuance of the Notice to Proceed will cause a hardship to the Contractor, the Contractor may terminate the Contract. Contractor's termination due to a postponement beyond this 90-day period shall be by written notice to County within **TEN (10)** calendar days after receipt by Contractor of County's notice of postponement.
 - c. It is further understood by Bidder that in the event that Contractor terminates the Contract as a result of postponement by County, County shall only be obligated to pay Contractor for the Work that Contractor had performed at the time of notification of postponement and which County had in writing authorized Contractor to perform prior to issuing a Notice to Proceed.
 - d. Should the Contractor terminate the Contract as a result of a notice of postponement, County shall have the authority to award the Contract to the next lowest responsive, responsible bidder.
25. The Bidder to whom Contract is awarded shall execute and submit the following documents by 5:00 p.m. of the **SEVENTH (7TH)** calendar day following the date of the Notice of Award. Failure to properly and timely submit these documents entitles County to reject the bid as non-responsive.
- a. Agreement: To be executed by successful Bidder. Submit four (4) copies, each bearing an original signature.
 - b. Escrow of Bid Documentation: This must include all required documentation. See the document Escrow of Bid Documentation for more information.

- c. Performance Bond (100%): On the form provided in the Contract Documents and fully executed as indicated on the form.
 - d. Payment Bond (100%) (Contractor's Labor and Material Bond): On the form provided in the Contract Documents and fully executed as indicated on the form.
 - e. Insurance Certificates and Endorsements as required.
 - f. Workers' Compensation Certification.
 - g. Prevailing Wage and Related Labor Requirements Certification.
 - h. Hazardous Materials Certification.
 - i. Contractor's Safety Plan specifically adapted for the Project.
 - j. Executed "PROJECT STABILIZATION/COMMUNITY BENEFITS AGREEMENT for the COUNTY OF ALAMEDA" Letter of Assent.
26. Any Bid protest by any Bidder regarding any other Bid must be submitted in writing to the County's GSA–Office of Acquisition Policy, ATTN: Contract Compliance Officer, located at 1401 Lakeside Drive, 10th Floor, Oakland, CA 94612, Fax: (510) 208-9720, before 5:00 p.m. of the FIFTH (5th) business day following the date of issuance of the Notice of Intent to Award, not the date received by the Bidder. A Bid protest received after 5:00 p.m. is considered received as of the next business day.
- a. The Bid protest must contain a complete statement of the reasons and facts for the protest.
 - b. The protest must refer to the specific portions of all documents that form the basis for the protest.
 - c. The protest must include the name, address, email address, fax number and telephone number of the person representing the protesting party.
 - d. The County Agency/Department will notify all bidders of the protest as soon as possible.
 - e. Upon receipt of written protest, GSA–Office of Acquisition Policy, or designee, will review and evaluate the protest and issue a written decision. The GSA–Office of Acquisition Policy, may, at its discretion, investigate the protest, obtain additional information, provide an opportunity to settle the protest by mutual agreement, and/or schedule a meeting(s) with the protesting Bidder and others (as

appropriate) to discuss the protest. The decision on the bid protest will be issued at least ten (10) business days prior to the Board hearing or GSA award date.

- f. The decision will be communicated by e-mail, fax, or US Postal Service mail, and will inform the bidder whether or not the recommendation to the Board of Supervisors or GSA in the Notice of Intent to Award is going to change. A copy of the decision will be furnished to all Bidders affected by the decision. As used in this paragraph, a Bidder is affected by the decision on a Bid protest if a decision on the protest could have resulted in the Bidder not being the apparent successful Bidder on the Bid.
- g. The decision of the GSA-Office of Acquisition Policy on the bid protest may be appealed to the Auditor-Controller's Office of Contract Compliance & Reporting (OCCR) located at 1221 Oak St., Room 249, Oakland, CA 94612, Fax: (510) 272-6502 unless the OCCR determines that it has a conflict of interest in which case an alternate will be identified to hear the appeal and all steps to be taken by OCCR will be performed by the alternate. The Bidder whose Bid is the subject of the protest, all Bidders affected by the GSA-Office of Acquisition Policy's decision on the protest and the protestor have the right to appeal if not satisfied with the GSA-Office of Acquisition Policy's decision. All appeals to the Auditor-Controller's OCCR shall be in writing and submitted within five (5) business days following the issuance of the decision by the GSA-Office of Acquisition Policy, not the date received by the Bidder. An appeal received after 5:00 p.m. is considered received as of the next business day. An appeal received after the FIFTH (5th) business day following the date of issuance of the decision by the GSA-Office of Acquisition Policy shall not be considered under any circumstances by the GSA or the Auditor-Controller OCCR.
- h. The appeal shall specify the decision being appealed and all the facts and circumstances relied upon in support of the appeal.
- i. In reviewing protest appeals, the OCCR will not re-judge the proposal(s). The appeal to the OCCR shall be limited to review of the procurement process to determine if the contracting department materially erred in following the Bid or, where appropriate, County contracting policies or other laws and regulations.
- j. The appeal to the OCCR also shall be limited to the grounds raised in the original protest and the decision by the GSA-Office of Acquisition Policy. As such, a Bidder is prohibited from stating new grounds for a Bid protest in its appeal. The Auditor-Controller (OCCR) shall only review the materials and conclusions reached by the GSA-Office of Acquisition Policy or department designee and will determine whether to uphold or overturn the protest decision.

- k. The Auditor's Office may overturn the results of a bid process for ethical violations by Procurement staff, County Selection Committee members, subject matter experts, or any other County staff managing or participating in the competitive bid process, regardless of timing or the contents of a bid protest.
 - l. The decision of the Auditor-Controller's OCCR is the final step of the appeal process. A copy of the decision of the Auditor-Controller's OCCR will be furnished to the protestor, the Bidder whose Bid is the subject of the Bid protest, and all Bidders affected by the decision.
 - m. The County will complete the Bid protest/appeal procedures set forth in this paragraph before a recommendation to award the Contract is considered by the Board of Supervisor or GSA.
 - n. The procedures and time limits set forth in this paragraph are mandatory and are each Bidder's sole and exclusive remedy in the event of Bid Protest. A Bidder's failure to timely complete both the Bid protest and appeal procedures shall be deemed a failure to exhaust administrative remedies. Failure to exhaust administrative remedies, or failure to comply otherwise with these procedures, shall constitute a waiver of any right to further pursue the Bid protest, including filing a Government Code Claim or legal proceedings.
27. A responsive bid is a solicited bid that has been determined to be in conformance with the conditions, completion or delivery requirements, and specifications detailed in the solicitation for bid. Responsive bids are those submitted on time; contain complete information, and required submittals and/or supporting documentation.
28. A responsible bidder is defined by the California Public Contract Code section 1103 as "a bidder who has demonstrated the attribute of trustworthiness, as well as quality, fitness, capacity, and experience to satisfactorily perform this public works contract."
29. County reserves the right to reject any or all bids, including without limitation the right to reject any or all nonconforming, non-responsive, unbalanced, or conditional bids, to re-bid, and to reject the bid of any bidder if County believes that it would not be in the best interest of County to make an award to that bidder, whether because the bid is not responsive or the bidder is unqualified or of doubtful financial ability or fails to meet any other pertinent standard or criteria established by County. County also reserves the right to waive inconsequential deviations not involving price, time, or changes in the Work. For purposes of this paragraph, an "unbalanced bid" is one having nominal prices for some work items and/or enhanced prices for other work items.
30. Discrepancies between written words and figures, or words and numerals, will be resolved in favor of the figures or numerals.

31. Prior to the award of Contract, County reserves the right to consider the responsibility of the Bidder. County may conduct investigations as County deems necessary to assist in the evaluation of any bid and to establish the responsibility, including, without limitation, qualifications and financial ability of Bidders, proposed subcontractors, suppliers, and other persons and organizations to perform and furnish the Work in accordance with the Contract Documents to County's satisfaction within the prescribed time.

END OF DOCUMENT

DOCUMENT 00 22 19

ENHANCED CONSTRUCTION OUTREACH PROGRAM (ECOP)
(Not Required for Construction Projects 125K and under)

GENERAL

1. PURPOSE

1.1 It is the express purpose of the Enhanced Construction Outreach Program (ECOP) to encourage the participation in the County of Alameda, General Services Agency (GSA) capital projects of

- Minority Owned Business Enterprise (MBE),
- Woman Owned Business Enterprise (WBE),
- Local Business Enterprise (LBE) and
- Small Local Business Enterprise (SLBE)

And to ensure that all contracting firms receive an equal opportunity to bid and receive work for this project. The ECOP encourages the inclusion of small businesses in this contract in accordance with Public Contract Code § 2002.

1.2 By submitting a bid, Bidders acknowledge and agree to all Document 00 22 19 provisions contained herein.

1.3 In the event of conflict between the terms of this Section 00 22 19 and the PROJECT STABILIZATION / COMMUNITY BENEFITS AGREEMENT for the COUNTY OF ALAMEDA, the terms of the PROJECT STABILIZATION / COMMUNITY BENEFITS AGREEMENT for the COUNTY OF ALAMEDA shall take priority.

2. APPLICATION

2.1 The provisions outlined in this Section 00 22 19 apply to this contract for the construction of the above-referenced project. This project is funded solely with local dollars, and these provisions shall apply to all work performed under any contract awarded as a result of this competitive process.

2.2 To be considered for a contract award, any bidder who fails to meet all ECOP goals identified herein shall be required to demonstrate to the satisfaction of the County that all good faith efforts (GFEs) were made in accordance with the criteria listed in Section 7.9, GFE 1-9. Failure of the bidder to demonstrate a good faith effort may result in the bid being deemed non-responsive.

3. 3 DEFINITIONS

3.1 LOCAL BUSINESS ENTERPRISE (LBE)

3.1.1 For the purposes of this program, a Local Business Enterprise means a business that is a firm or dealer with fixed offices located in, and having a street address within the County

and holds a valid business license issued by the County or a city within the County for at least 6 months prior to the date upon which a request for sealed bids or proposals is issued.

3.2 MINORITY OR WOMEN BUSINESS ENTERPRISE (MWBE)

3.2.1 For the purposes of this program, an MWBE is a Small Business Enterprise (SBE), as that term is defined by the State of California, that meets both of the following criteria:

3.2.1.1 At least 51 percent of the business is owned by one or more minority persons or women, or in the case of any business whose stock is publicly held, at least 51 percent of the stock is owned by one or more minority persons or women; and

3.2.1.2 Whose management and daily business operations are controlled by one or more minority persons or women.

3.2.2 An MWBE must be certified as such by local agencies identified or recognized by the County as having effective certification programs. When the State of California SBE definition is met, validation of the current certification by one of the following local agencies must be provided with the bid response:

Bay Area Rapid Transit (BART)

The (CPUC) Supplier Clearinghouse

Western Regional Minority Supplier Development Council (WRMSDC)

Women's Business Enterprise National Council (WBENC)

3.3 MINORITY PERSON

3.3.1 Minority person, for purposes of this section, means Black Americans, Hispanic Americans, Native Americans (including American Indians, Eskimos, Aleuts and Native Hawaiians), Asian-Pacific Americans (including persons whose origins are from Japan, China, the Philippines, Vietnam, Korea, Samoa, Guam, the United States Trust Territories of the Pacific, Northern Marianas, Laos, Cambodia and Taiwan).

3.4 SMALL BUSINESS ENTERPRISE (SBE)

3.4.1 For the purposes of this program, an SBE meets the current State of California definition of a small business, which is one that:

3.4.1.1 Must be independently owned and operated;

3.4.1.2 Cannot be dominant in its field of operation;

3.4.1.3 Must have its principal office located in California;

- 3.4.1.4 Must have its owners (or officers in the case of a corporation) domiciled in California; and
- 3.4.1.5 Together with its affiliates, be either:
 - 3.4.1.5.1 A business with 100 or fewer employees, and an average annual gross receipts of \$15 million or less over the previous three tax years, or
 - 3.4.1.5.2 A manufacturer with 100 or fewer employees.
- 3.4.1.6 An SBE must be certified or recognized as such by organizations whose certification is accepted by the California Department of General Services or by local agencies identified by the County of Alameda to have effective certification programs. Validation of the current certification by one of the following local agencies must be provided with the bid response:

Alameda County Transportation Commission (Alameda CTC)
California Department of General Services (DGS)
Port of Oakland
and, when the State SBE definition is met, Alameda County (SLEB certification)

3.5 SMALL LOCAL BUSINESS ENTERPRISE (S/LBE)

- 3.5.1 For the purposes of this program, a Small Local Business Enterprise is defined by the County of Alameda and means a business that meets the SBE definition above, and is a firm or dealer with fixed offices located in, and having a street address within the County, and holds a valid business license issued by the County or a city within the County.

4. ENHANCED CONSTRUCTION OUTREACH PROGRAM (ECOP) GOALS

4.1 MBE PARTICIPATION SUBCONTRACTING – 15% GOAL

- 4.1.1 The MBE element of the ECOP program shall include subcontractors, manufacturers, suppliers and truckers in calculating achievement of the MBE goal. Any contractor who fails to meet the MBE goals described herein must demonstrate to the satisfaction of the County of Alameda that a good faith effort was made to meet these goals in order to be considered for a contract award.
 - 4.1.1.1 The County shall further require that in order to be awarded a contract, a prime contractor must show that a good faith effort was made to provide at least 15% of the total contract amount to MBE subcontractors, manufacturers, suppliers, and truckers.

- 4.1.1.2 The MBE goals must be achieved by the use of MBE subcontractors, manufacturers, suppliers, and/or truckers. If the Contractor plans to perform all the work with the Contractor's own forces, the goal will still apply and must be achieved by the use of suppliers, manufacturers, and/or truckers.
- 4.1.1.3 A certified MBE prime contractor **may not** apply the percentage of the prime contractor's work toward meeting the goals as set forth above. An MBE subcontractor meeting the definition of both an MBE and a WBE **may not** be used to achieve both MBE and WBE required goals. The percentage of MBE firms utilized for the project described herein can only be applied to either MBE or WBE required goals. For purposes of meeting the MBE goals for this project, each participating MBE must be identified as an MBE.
- 4.1.1.4 Prime contractors are strongly encouraged to sub-contract with S/LBE certified MBEs to meet the goals.

4.2 WBE PARTICIPATION SUBCONTRACTING – 5% GOAL

- 4.2.1 The WBE element of the ECOP program shall include subcontractors, manufacturers, suppliers and truckers in calculating achievement of the WBE goal. Any contractor who fails to meet the WBE goals described herein must demonstrate to the satisfaction of the County of Alameda that a good faith effort was made to meet these goals in order to be considered for a contract award.
 - 4.2.1.1 The County shall further require that in order to be awarded a contract; a prime contractor must show that a good faith effort was made to provide at least 5% of the total contract amount to WBE subcontractors, manufacturers, suppliers, and/or truckers.
 - 4.2.1.2 The WBE goals must be achieved by the use of subcontractors, manufacturers, suppliers, and/or truckers. If the Contractor plans to perform all the work with the Contractor's own forces, the goal will still apply and must be achieved by the use of manufacturers, suppliers, and/or truckers.
 - 4.2.1.3 A certified WBE prime contractor **may not** apply the percentage of the prime contractor's work toward meeting the goals as set forth above. A WBE subcontractor meeting the definition of both an MBE and a WBE **may not** be used to achieve both the MBE and WBE required goals. The percentage of WBE firms utilized for the project described herein can only be applied to either MBE or WBE required goals. For purposes of meeting the WBE goals for this project, each participating WBE must be identified as a WBE.
 - 4.2.1.4 Prime contractors are strongly encouraged to sub-contract with S/LBE certified WBEs to meet the goals.

4.3 LBE PARTICIPATION GOALS –60% GOAL

4.3.1 The LBE element of the ECOP program shall include subcontractors, manufacturers, suppliers and/or truckers in calculating achievement of the LBE goal. Any contractor who fails to meet the LBE goals described herein must demonstrate to the satisfaction of the County of Alameda that a good faith effort was made to meet these goals in order to be considered for a contract award.

4.3.1.1 The County shall further require that in order to be awarded a contract, a prime contractor must show that a good faith effort was made to provide at least 60% of the total contract amount to an LBE.

4.3.1.2 The prime contractor may count a portion or all of its work towards meeting the goal and/or the LBE goal may be achieved by the use of subcontractors, manufacturers, suppliers, and/or truckers.

4.4 S/LBE PARTICIPATION - 20% GOAL

4.4.1 The S/LBE element of the ECOP program shall include subcontractors, manufacturers, suppliers and/or truckers in calculating achievement of the S/LBE goal. Any contractor who fails to meet the S/LBE goals described herein must demonstrate to the satisfaction of the County of Alameda that a good faith effort was made to meet these goals in order to be considered for a contract award.

4.4.1.1 The County shall further require that in order to be awarded a contract; a prime contractor must show that a good faith effort was made to provide at least 20% of the total contract amount to an S/LBE.

4.4.1.2 The prime contractor may count a portion or all of its work towards meeting the goal and/or the S/LBE goal may be achieved by the use of subcontractors, manufacturers, suppliers, and/or truckers. For purposes of meeting this goal, the 20% S/LBE participation may also be counted toward achieving the 60% LBE participation goal and/or a part of the prime contractor LBE participation.

5. SMALL BUSINESS ENTERPRISE 5% BID PREFERENCE

5.1 Prime contractors who are certified small local businesses (S/LBE) shall be eligible to receive a 5% bid preference. Prime contractors that subcontract with certified small local businesses (S/LBE) (in accordance with the Public Contract Code 2002) for a minimum 40% of the contract amount will also be eligible to receive this 5% bid preference. This bid preference shall be applied by multiplying the total Base Bid amount by .95 to determine the bid amount for comparison purposes.

6. HIRING OF LOCAL APPRENTICES, YOUTH, UNEMPLOYED AND UNDEREMPLOYED RESIDENTS (FOR PROJECTS OVER \$125K, BUT UNDER \$1M)

PURPOSE

- 6.1 The County of Alameda, General Services Agency (GSA), Technical Services Department (TSD) strongly encourages the hiring of local apprentices, youth, unemployed and under-employed County residents to complete the work required for this project. Those firms that can demonstrate the ability and willingness to provide jobs required to complete this project to local apprentices, youth, unemployed and underemployed County residents should include such evidence in their bid response.

7. GOOD FAITH EFFORTS, ECOP PACKAGE SUBMITTALS, AND EVALUATION PROCEDURES

- 7.1 It is required that bidders exercise a good faith effort to secure the participation, as set forth in the specifications, of M/W/S/LBE subcontractors, manufacturers, suppliers and/or truckers on the project. Achievement of the ECOP goals shall constitute prima facie evidence of a Good Faith Effort (GFE). The failure of any bidder to make a good faith effort to achieve the specified participation of M/W/S/LBE subcontractors, manufacturers, suppliers and/or truckers shall be grounds for determining that the bid is non-responsive.
- 7.2 Upon request from GSA, the two responsible bidders with the lowest responsive bids must submit to the Project Manager documentation to support the ECOP goals met, and the GFEs made. The documentation submitted by each bidder shall be referred to as the ECOP Package.
- 7.3 ECOP bid submittal evaluation will initiate following GSA's determination of the two (2) responsible bidders who submitted the lowest responsive bids and their submission of the ECOP Package, which shall include, but not be limited to, ECOP Form 101A, 101B, 102A, 102B and 102C (provided separately as Excel fillable forms) and supporting documentation verifying ECOP goals met and GFEs made. The ECOP Package is to be submitted by the two (2) responsible bidders who submitted the lowest responsive bids to GSA no later than 2:00 p.m. on the second business day following notification and request by GSA.
- 7.3.1 The individual dollar amounts to be subcontracted to the M/W/S/LBE listed in the bidder's proposal will be listed on the S/LBE Participation Information ECOP Forms 101A and 101B and the M/WBE Subcontractor Participation Information ECOP Forms 102A, 102B
- 7.3.2 ECOP Forms 101A, 101B, 102A 102B, 102C (Excel fillable forms), signature page and supporting documentation shall be delivered to the assigned Project Manager.
- 7.4 After the bids are opened, the M/W/S/LBE subcontractors, manufacturers, suppliers and/or truckers who bid to the two (2) responsible bidders with the apparent lowest responsive bids are required to provide the amounts of their bids to the County for the purposes of verification. This information shall be certified by a principal of the subcontracting firm. To the extent permitted by law, the

information provided by the subcontractors, manufacturers, suppliers and/or truckers will be treated as proprietary, and will be solely for the use of County staff or its agents.

- 7.5 Each ECOP Package will be reviewed and evaluated by GSA or its agents within approximately five (5) business days of receipt unless additional time is needed to verify the submittals. Bidders must meet all the ECOP goals **OR** make all the GFEs (see section 7.9) in order for their bid to be deemed responsive.
- 7.6 The ECOP Package must be complete, submitted on a CD or flash drive, and contain legible supporting documents:
- 7.6.1 ECOP Forms 101A, 101B, 102A, 102B and 102C to be completed electronically and submitted on a CD or flash drive along with the hard copy signature page and supporting documentation.
- 7.6.2 Supporting certification documentation for the prime contractor and each subcontractor, manufacturer, supplier and/or trucker M/W/S/LBEs submitted in the order they are listed on the ECOP forms **must be submitted as hardcopy**
- 7.6.2.1 To be considered towards meeting the ECOP goals bidders must submit:
- 7.6.2.1.1 Acceptable certifying documentation for the prime contractor and its subcontractors, manufacturers, suppliers and/or truckers, as applicable (for example, local business license with proof of issue and expiration date, certification letters with expiration date).
- 7.6.2.1.2 Evidence that manufacturers, suppliers, and/or truckers are providing goods or services to subcontractors (for example, letter of intent, agreement)
- 7.6.3 Documents evidencing those good faith efforts that were made, submitted in the order listed in the table below with the corresponding item number (1-9) noted on each document.
- 7.6.4 Evidence of M/W/S/LBE participation (copies of bids, agreements, etc.) for all listed subcontractors, manufacturers, suppliers, and/or truckers that are *not* directly contracting with them (for example, material suppliers to subcontractors).
- 7.7 GSA reserves the right, as it may deem appropriate and necessary, to contact the two responsible bidders who submitted the apparent two lowest responsive bids during the evaluation process for clarification and/or submission of additional ECOP Goals or GFE documentation.
- 7.8 **ECOP GOALS / GOOD FAITH EFFORTS REQUIRED**

Listed in the table (below) are examples of acceptable documentation to support a determination that ECOP goals have been met

	ECOP GOALS	EXAMPLES OF ACCEPTABLE DOCUMENTATION
1	<p>60% Local Business Enterprise (LBE) LBE participation may consist of the Prime Contractor and Subcontractors and may count towards the LBE, SBE, MBE and/or WBE ECOP goals.</p>	<ul style="list-style-type: none"> • Business license issued by the County of Alameda or a City within the County of Alameda and proof of date issued (which is at least 6 months prior to the date bids were solicited). OR • Certification letter from an acceptable certifying agency* showing a local address and issuance/expiration dates.
2	<p>20% Certified Small Business Enterprise (SBE) Certified SBEs must be Local (S/LBE) to be considered. S/LBE participation may consist of the Prime Contractor and Subcontractors and may count towards the LBE, SBE, MBE and/or WBE ECOP goals.</p> <p>An SBE meets the LBE definition above and the current State definition of a small business that is <100 employees and <\$15 Million annual gross revenues (over the last three years).</p>	<ul style="list-style-type: none"> • Same as LBE <i>PLUS</i> • Current certification document or letter with SBE designation*
3	<p>15% Minority-Owned Business Enterprise (MBE) <u>Subcontractors</u> MBEs are defined per PCC 2000(e)(1), (e)(2) and (f) and are not required to be LBEs. An MWBE may count towards <u>only</u> MBE or WBE participation (not both); however, a local MBE may count towards both LBE and S/LBE ECOP goals.</p> <p>An MBE is a minority-owned business certified by one of the agencies listed below. An MBE can also be an SBE or LBE for purposes of meeting the SBE or LBE subcontracting goals, but an MBE cannot also be considered a WBE.**</p>	<ul style="list-style-type: none"> • Current certification document, letter, etc., with MBE designation**
4	<p>5% Woman-Owned Business Enterprise (WBE) <u>Subcontractors</u> WBEs are defined per PCC 2000(e)(1), (e)(2) and (f) and are not required to be LBEs. An MWBE may count towards <u>only</u> MBE or WBE participation (not both); however, a local WBE may count both towards the LBE and S/LBE ECOP goals.</p> <p>A WBE is a minority-owned business certified by one of the agencies listed below. A WBE can also be an SBE or LBE for purposes of meeting the SBE or LBE subcontracting goals, but a WBE cannot also be considered an MBE.**</p>	<ul style="list-style-type: none"> • Current certification document, letter, etc., with WBE designation**

* SBE certification from the following agencies is accepted: Alameda County Transportation Commission (Alameda CTC), California Department of General Services (DGS, Port of Oakland, *and* when the State SBE definition is met, Alameda County (SLEB certification).

** When the State SBE definition is met MWBE certification from the following agencies is accepted:

Bay Area Rapid Transit (BART), the (CPUC) Supplier Clearinghouse, Western Regional Minority Supplier Development Council (WRMSDC), and Women's Business Enterprise National Council (WBENC).

7.9 The examples of GFE Indicators listed in the table below and suggested samples and are not meant to be mandatory or exclusionary. Other documentation may be acceptable as long as it evidences a GFE. For additional information regarding the ECOP Package submittals contact the GSA Contract Compliance Officer listed in Section IV below.

Required Good Faith Effort Indicators	Examples of Acceptable Documentation
1. The bidder attended mandatory pre-solicitation or pre-bid meetings that were scheduled by the local agency to inform all bidders of the ECOP requirements for the project for which the contract will be awarded.	<ul style="list-style-type: none"> Copy of pre-bid meeting sign-in sheet (which is e-mailed to attendees and available on County Current Contracting Opportunities website listed below). The name of the firm must be listed. http://www.acgov.org/gsa_app/gsa/purchasing/bid_content/contractopportunities.jsp
2. The bidder identified and selected specific items of the project for which the contract will be awarded to be performed by M/W/S/LBEs to provide an opportunity for participation by those enterprises.	<ul style="list-style-type: none"> Copy of advertisements, certified letters, successfully completed faxes and/or other notices to M/W/S/LBEs with selected specific items identified.
3. The bidder advertised, not less than ten (10) calendar days before the date the bids are opened, in one or more local daily or weekly newspapers, trade association publications, minority or trade-oriented publications, or trade journals for M/W/S/LBEs that are interested in participating in the project.	<ul style="list-style-type: none"> Copy of advertisements placed showing publication name and date, and dated receipts. Dated receipt with ad copy.

<p>4. The bidder provided written notice of his or her interest in bidding on the contract to the number of M/W/S/LBEs required to be notified by the project specifications not less than ten (10) calendar days prior to the opening of bids. The bidder may utilize the list of certified local business enterprises in the on-line County Small Local Emerging Business (SLEB) Vendor Query System located at http://www.acgov.org/sleb_query_app/gsa/sleb/query/slebmenu.jsp. The minimum number of M/W/S/LBE firms required to be notified is three (3) for each item of the project selected to be performed by a M/W/S/LBE, where an M/W/S/LBE subcontractor has not been secured for that item.</p>	<ul style="list-style-type: none"> • Copy of dated notice, complete distribution list(s) and evidence of distribution (proof of faxes, e-mails sent etc.) • Undelivered faxes do not count toward the effort to meet the minimum requirement • Trades and specialties, in addition to M/W/S/LBE designation, must be clearly identified to meet the minimum requirement by using certification letter or source documentation
<p>5. The bidder followed up initial solicitations of interest by contacting the enterprises to determine with certainty whether the enterprises were interested in performing specific items of the project.</p>	<ul style="list-style-type: none"> • Successfully completed telephone log containing specific dates, name of caller, person contacted and comments (i.e., why not bidding, information sent to/date)
<p>6. The bidder provided interested M/W/S/LBEs with information about the plans, specifications, and requirements for the selected subcontracting or material supply work.</p>	<ul style="list-style-type: none"> • Copy of published advertisements, letters, successfully completed faxes, etc. with M/W/S/LBE name/contact information including the required information or directions on how to obtain it and the date the information was provided • Agenda, meeting notes, etc. including specific topics discussed, M/W/S/LBE firm names and contact persons in attendance that received information, and the location and date information was provided
<p>7. The bidder requested assistance from local and small business and minority and women community organizations; local and small, minority and women contractor groups, local, state, or federal M/W/S/LBE assistance offices, or other organizations that provide assistance in recruitment and placement of M/W/S/LBEs.</p>	<ul style="list-style-type: none"> • Copy of dated written request and response (letter, successfully completed fax, e-mail, etc.) • Or 2nd written request to follow-up, if needed. Phone log is not acceptable.

<p>8. The bidder negotiated in good faith with the M/W/S/LBEs and did not unjustifiably reject as unsatisfactory bids prepared by any M/W/S/LBEs as determined by GSA</p>	<ul style="list-style-type: none"> • Copies or list of all bids and a spreadsheet listing all bids with firm name, contact person, bid items(s), bid price, M/W/S/LBE classification, and comments re-selection or rejection • M/W/S/LBE bids accepted and included in bid response
<p>9. Where applicable, the bidder advised and made efforts to assist interested M/W/S/LBEs in obtaining bonds, lines of credit, or insurance required by either the GSA or the contractor.</p>	<ul style="list-style-type: none"> • Copy of advertisements or other notices with specifics referencing willingness to assist M/W/S/LBEs • Agenda, meeting notes including presenter's name and title, specific topics discussed, handouts etc., name of M/W/S/LBE firms in attendance, contact persons who received advice, location, and

7.10 The performance by a bidder of the GFE Indicators specified in the table above shall create a rebuttable presumption, affecting the burden of producing evidence, that a bidder has made a good faith effort to comply with the goals and requirements relating to participation by M/W/S/LBEs established pursuant to Section 4 herein.

8. JOINT VENTURES

8.1 Whenever a joint venture occurs involving either a prime or non-prime (for example, subcontractors, manufacturers, suppliers, and truckers) M/W/S/LBE firm at any level of contracting, trucking, manufacturing, or supplying, the prime contractor shall provide the County with a full account of the nature of ownership interests, the basis for creation of the joint venture, and the particular financial participation and administrative responsibilities of the interested parties. In evaluating the prime contractor's effort, the M/W/S/LBE percentage that is to be attributed to a joint venture shall be determined by multiplying the percentage of the total contract amount that is to be performed by the joint venture times the percentage of actual financial participation in the joint venture represented by the M/W/S/LBE business.

9. NONDISCRIMINATION

9.1 Purpose

9.1 The Contractor shall comply with the Americans with Disabilities Act and Title VII of the Civil Rights Act of 1964 and shall not, in regard to any position for which an employee or applicant for employment is qualified, discriminate against any employee or applicant for employment because of race, creed, color, disability, sex, sexual orientation, political affiliation, or by any other non-merit factors be otherwise subjected to discrimination. The Contractor shall apply the ECOP that ensures applicants are employed, and that employees are treated during employment without regard to their race, age, religion, Vietnam Era Veteran's status, political affiliation, or any other non-merit factors. Such action 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 terms of

compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this nondiscrimination clause.

- 9.2 Contractor shall, in all solicitations or advertisements for employees placed on behalf of the County, state that all qualified applicants will receive consideration for employment without regard to race, creed, color, disability, sex, sexual orientation or national origin, age, religion, Vietnam Era Veteran's status, political affiliation, or any other non-merit factors.

SECTION II

CONTRACT COMPLIANCE REQUIREMENTS

1. APPLICATION

- 1.1 The following provisions shall apply to all contracts subject to the provisions of Section I and/or Section IV.

2. ALAMEDA COUNTY CONTRACT COMPLIANCE SYSTEM

- 2.1 Alameda County utilizes the Elation Systems contract compliance application as part of its commitment to assist contractors to comply with certain legal and contractual requirements. The Elation Systems, a secure web-based computer system, was implemented to monitor compliance and to track and report M/W/S/LBE participation in County contracts.
- 2.2 The prime contractor and all participating local and M/W/S/LBE subcontractors awarded contracts as a result of the bid process for this project are required to use the Elation System to submit ECOP information including, but not limited to, weekly certified payrolls, monthly progress payment reports and other information related to M/W/S/LBE participation. Use of the Elation System, support and training is available at no charge to prime and subcontractors participating in County contracts.
- 2.3 Upon contract award:
 - 2.3.1 The County will provide contractors and subcontractors participating in any contract awarded as a result of this bid process, a code that will allow them to register and use the Elation System free of charge.
 - 2.3.2 Contractors should schedule a representative from their office/company, along with each of their subcontractors, to attend Elation Systems training.
 - 2.3.2.1 Free multi-agency Elation Systems one-hour training sessions require reservations and are held monthly in the Pleasanton, California area.
- 2.4 It is the Contractor's responsibility to ensure that they and their subcontractors are registered and trained as required to utilize Elation Systems.

2.4.1 For systems support visit Elation Systems online at <http://www.elationsys.com/> or contact them at (925) 924-0340.

2.4.2 If you have questions regarding the utilization of the Elation Systems, please contact the Project Manager.

3. MEETINGS

3.1 After the award of the contract and prior to beginning work, the General Services Agency may hold a pre-construction conference at which a representative of the Contractor and of each subcontractor must attend. As it becomes necessary during the course of the contract, the General Services Agency may call meetings of the Contractor and pertinent subcontractors.

4. INFORMATION AND RECORDS

4.1 For the purposes of determining compliance with this program, the Contractor shall provide the County with access to all records and documents that relate to M/W/S/LBE participation. To the extent permitted by applicable law, proprietary information will be safeguarded.

4.2 The Contractor must submit the following information to the General Services Agency on Alameda County approved forms. All subcontractor submittals must be through the prime contractor.

4.2.1 S/LBE Participation Information and M/WBE Subcontractor Participation Information, (ECOP Forms 101A, 101B, 102A, and 102B provided separately as Excel fillable forms) submitted no later than 2:00 p.m. on the second business day following notification and request by GSA.

4.2.2 Checklist for Review of Good Faith Efforts (ECOP Form 102C (also provided separately) submitted no later than 2:00 p.m. on the second business day following notification and request by GSA.

5. SUBSTITUTION OF M/W/S/LBE FIRMS

5.1 Substitution of other **firms** (subcontractors at any level, manufacturers, suppliers and/or truckers) for those listed in the proposal on the sheet entitled M/WBE Subcontractor Participation Information or S/LBE Participation Information shall not be made without prior approval of the County, and shall be in accordance with State or Federal law where applicable.

SECTION III

NON-COMPLIANCE WITH ECOP

1. APPLICATION

9.3 The following provisions shall apply to all contracts subject to the provisions of Section I and/or Section IV.

2. DETERMINATION OF NON-COMPLIANCE

- 9.4 During the performance of the contract, if the General Services Agency has reason to believe or finds that the Contractor has not met the ECOP requirements in the contract, the Director of the General Services Agency (or the Director's designee) shall hold a meeting with the Contractor for the purpose of determining whether the Contractor is out of compliance. If after the meeting the Contractor is found to be out of compliance, the Contractor will be notified of a public hearing. The public hearing will be held before the Board of Supervisors with a minimum five calendar-day notice given to the Contractor. If the Board of Supervisors finds that there has been a violation, the County will notify the Contractor in writing of the sanctions to be imposed by the Board.

3. SANCTIONS

- 9.5 A finding at the public hearing that there has been a violation of the ECOP requirements of the contract shall be cause for the Board of Supervisors to impose any or all of the following sanctions:
- 9.5.1 Withhold an additional ten percent (10%) of all further contract progress payments until the Contractor provides evidence satisfactory to the Board of Supervisors that the condition of noncompliance has been corrected.
- 9.5.2 Suspend the contract until such time as the Contractor provides evidence satisfactory to the Board of Supervisors that the condition of noncompliance has been corrected.
- 9.5.3 Terminate the contract and collect appropriate damages from the Contractor.
- 9.5.4 Declare that the Contractor is not a responsible bidder, and is ineligible to make bids on future County contracts for a stated period of time or until the Contractor can demonstrate to the satisfaction of the Board of Supervisors that the violation has been corrected.

SECTION IV

1. OUTREACH

- 1.1 To promote the ECOP goals and assist contractors and subcontractors in their efforts to develop the relationships they may require to meet the ECOP goals for this project, the County will
- 1.1.1 E-mail the Notice to Bidders to vendors in the County Vendor Database and other sources. Advertise the project once a week for at least 2 consecutive weeks in a newspaper of general circulation in the county where the project is located, trade organizations and chambers of commerce, and plan rooms. Notice of this project will also be posted on the County Current Contracting Opportunities and Calendar of Events websites (see website URL addresses below).
- 1.1.2 Incorporate a networking and informational component in the mandatory bid walk/site visit.
- 1.1.3 Provide information about the project, the ECOP, and other current and upcoming projects at the bid conference/networking meeting.

- 1.1.4 E-mail the list of attendees from the mandatory bid walk to each attendee when issuing the first Addendum for the Project and post the attendance and first Addendum on the Current Contracting Opportunities website.

2. CONTRACTOR RESOURCES

The following sources may be contacted for assistance in soliciting M/W/S/LBE participation:

Asian American Contractors Association

Juliana Choy Sommer, President

(415) 642-1818

www.aaca-sf.com

Western Regional Minority Supplier Development Council (WRMSDC) – MBE certifications only

80 Swan Way, Suite 245

Oakland, CA 94621

(510) 686-2555

www.wrmsdc.org

Women's Business Enterprise National Council (WBENC)

WBE certifications only – www.wbenc.org

Visit the following County of Alameda GSA websites for

CERTIFIED SMALL LOCAL VENDORS	http://www.acgov.org/sleb_query_app/gsa/sleb/query/slebresultlist.jsp?smEmInd=C
CURRENT CONTRACT OPPORTUNITIES	http://www.acgov.org/gsa_app/gsa/purchasing/bid_content/contractopportunities.jsp
UPCOMING CONTRACT OPPORTUNITIES	http://www.acgov.org/gsa_app/gsa/purchasing/bid_content/futurecontractopportunities.jsp
CALENDAR OF EVENTS	http://www.acgov.org/calendar_app/DisplayListServlet?site=Internet&ag=GSA&ty=PUR
COUNTY OF ALAMEDA HOME PAGE	http://www.acgov.org/index.htm

BIDDER INFORMATION AND ACCEPTANCE

(Submit hardcopy of this completed page along with all hardcopy ECOP supporting documentation.)

The undersigned has read and agrees to the Supplementary Instructions to Bidders – Enhanced Construction Outreach Program, Document 00 22 19 of the Bid packet and declares that the ECOP Forms 101A, 101B, 102A, 102B and 102C (Excel Fillable Forms provided separately) have been completed accurately by the Prime Firm submitting the bid.

Official Name of Bidder: _____

Street Address Line 1: _____

Street Address Line 2: _____

City: _____ State: _____ Zip Code: _____

Webpage: _____

Type of Entity / Organizational Structure (check one):

☐ Corporation

☐ Joint Venture

☐ Limited Liability Partnership

☐ Partnership

☐ Limited Liability Corporation

☐ Non-Profit / Church

☐ Other: _____

Jurisdiction of Organization Structure: _____

Date of Organization Structure: _____

Federal Tax Identification Number: _____

Primary Contact Information:

Name / Title: _____

Telephone Number: _____ Fax Number: _____

E-mail Address: _____

SIGNATURE: _____

Name and Title of Signer: _____

Dated this _____ day of _____ 20_____

DOCUMENT 00 31 19

EXISTING CONDITIONS INFORMATION

1. Summary

This document describes existing conditions at or near the Project, and use of information available regarding existing conditions. This document is **not** part of the Contract Documents. See General Conditions for definition(s) of terms used herein.

2. Reports and Information on Existing Conditions

- 2.1. Documents providing a general description of the Site and conditions of the Work may have been collected by County its consultants, contractors, and tenants. These documents may include previous contracts, contract specifications, tenant improvement contracts, as-built drawings, utility drawings, and information regarding underground facilities.
- 2.2. Information regarding existing conditions may be inspected at the County offices or the Construction Manager's offices, if any, and copies may be obtained at cost of reproduction and handling upon Bidder's agreement to pay for such copies. These reports, documents, and other information are **not** part of the Contract Documents.
- 2.3. Information regarding existing conditions may also be included in the Project Manual, but shall **not** be considered part of the Contract Documents.
- 2.4. The reports and other data or information regarding existing conditions and underground facilities at or contiguous to the Project are the following:
 - 2.4.1. Original Construction Drawings (incomplete).
 - 2.4.2. Survey of Site as it pertains to Scope of Work.
 - 2.4.3. Hazardous Material Reports.

3. Use of Information

- 3.1. Information regarding existing conditions was obtained only for use of County and its consultants, contractors, and tenants for planning and design and is **not** part of the Contract Documents.
- 3.2. County does not warrant, and makes no representation regarding, the accuracy or thoroughness of any information regarding existing conditions. Bidder represents and agrees that in submitting a bid it is not relying on any information regarding existing conditions supplied by County.

- 3.3. Under no circumstances shall County be deemed to warrant or represent existing above-ground conditions, as-built conditions, or other actual conditions, verifiable by independent investigation. These conditions are verifiable by Contractor by the performance of its own independent investigation, which Contractor must perform as a condition to bidding, and Contractor should not and shall not rely on this information or any other information supplied by County regarding existing conditions.
- 3.4. Any information shown or indicated in the reports and other data supplied herein with respect to existing underground facilities at or contiguous to the Project may be based upon information and data furnished to County by the County's employees and/or consultants or builders of such underground facilities or others. County does not assume responsibility for the completeness of this information, and Bidder is solely responsible for any interpretation or conclusion drawn from this information.
- 3.5. County shall be responsible only for the general accuracy of information regarding underground facilities, and only for those underground facilities that are owned by County, and only where Bidder has conducted the independent investigation required of it pursuant to the Instructions to Bidders, and discrepancies are not apparent.

4. Investigations/Site Examinations

- 4.1. Before submitting a Bid, each Bidder is responsible for conducting or obtaining any additional or supplementary examinations, investigations, explorations, tests, studies, and data concerning conditions (surface, subsurface, and underground facilities) at or contiguous to the Site or otherwise, that may affect cost, progress, performance, or furnishing of Work or that relate to any aspect of the means, methods, techniques, sequences, or procedures of construction to be employed by Bidder and safety precautions and programs incident thereto or that Bidder deems necessary to determine its Bid for performing and furnishing the Work in accordance with the time, price, and other terms and conditions of the Contract Documents.
- 4.2. On request, County will provide each Bidder access to the Site to conduct such examinations, investigations, explorations, tests, and studies, as each Bidder deems necessary for submission of a Bid. Bidders must fill all holes and clean up and restore the Site to its former condition upon completion of its explorations, investigations, tests, and studies. Such investigations and Site examinations may be performed during any and all Site visits indicated in the Notice to Bidders and only under the provisions of the Contract Documents, including, but not limited to, proof of insurance and obligation to indemnify against claims arising from such work, and County's prior approval.

END OF DOCUMENT

DOCUMENT 00 41 13

BID FORM – STIPULATED SUM (SINGLE-PRIME CONTRACT)

To: The County of Alameda

From: _____
(Proper Name of Bidder)

The undersigned declares that the Contract Documents including, without limitation, the Notice to Bidders Document 00 11 16, the Instructions to Bidders Document 00 21 13 and the Supplementary Instructions to Bidders – Construction Outreach Program Document 00 22 19 have been read and agrees and proposes to furnish all necessary labor, materials, and equipment to perform and furnish all work in accordance with the terms and conditions of the Contract Documents, including, without limitation, the Drawings and Specifications for:

Project No. 14030R – Santa Rita Jail Interior Accessibility Upgrades

(“Project” or “Contract”) and will accept in full payment for that Work the following total lump sum amount, all taxes included:

_____ Dollars	\$ _____
<i>TOTAL BASE BID</i>	

Descriptions of alternates are primarily scope definitions and do not necessarily detail the full range of materials and processes needed to complete the construction.

1. **Unit Prices.** The Bidder's Base Bid includes the following unit prices, which the Bidder must provide and County may, at its discretion, utilize in valuing additive and/or deductive change orders;
 - a. (NONE)
2. The undersigned has reviewed the Work outlined in the Contract Documents and fully understands the scope of Work required in this Bid, understands the construction and project management function(s) is described in the Contract Documents, and that each Bidder who is awarded a contract shall be in fact a prime contractor, not a subcontractor, to County, and agrees that its Bid, if accepted by County, will be the basis for the Bidder to enter into a contract with County in accordance with the intent of the Contract Documents.
3. The undersigned has notified County in writing of any discrepancies or omissions or of any doubt, questions, or ambiguities about the meaning of any of the Contract Documents, and has contacted the Construction Manager before bid date to verify the issuance of any clarifying Addenda.
4. The undersigned agrees to commence work under this Contract on the date established in the Contract Documents and to complete all work within the time specified in the Contract Documents.
5. The liquidated damages clause of the General Conditions and Agreement is hereby acknowledged.
6. It is understood that County reserves the right to reject this bid and that the bid shall remain open to acceptance and is irrevocable for a period of ninety (90) days.
7. The following documents are attached hereto:
 - a. Bid Bond on Bid Security Form, Document 00 43 13 or other security;
 - b. Designated Subcontractors List, Document 00 43 36;
 - c. Site-Visit Certification, Document 00 45 01, if a site visit was required;
 - d. Non-Collusion Affidavit, Document 00 45 13;
 - e. Completed Debarment Form, Document 00 52 13.1;
 - f. Construction Outreach Program Certifications as required by Supplementary Instructions to Bidders - Construction Outreach Program, Document 00 22 19.

Receipt and acceptance of the following addenda is hereby acknowledged:

No.____, Dated _____	No.____, Dated _____
No.____, Dated _____	No.____, Dated _____
No.____, Dated _____	No.____, Dated _____
No.____, Dated _____	No.____, Dated _____

8. Bidder acknowledges that the license required for performance of the Work is a **California General B Contractors** license.
9. The undersigned hereby certifies that Bidder is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the Work.
10. The Bidder represents that it is competent, knowledgeable and has special skills with respect to the nature, extent, and inherent conditions of the Work to be performed. Bidder further acknowledges that there are certain peculiar and inherent conditions existent in the construction of the Work that may create, during the Work, unusual or peculiar unsafe conditions hazardous to persons and property.
11. Bidder expressly acknowledges that it is aware of such peculiar risks and that it has the skill and experience to foresee and to adopt protective measures to adequately and safely perform the Work with respect to such hazards.
12. Bidder expressly acknowledges that it is aware that if a false claim is knowingly submitted (as the terms “claim” and “knowingly” are defined in the California False Claims Act, Cal. Gov. Code, §12650 et seq.), County will be entitled to civil remedies set forth in the California False Claim Act. It may also be considered fraud and the Contractor may be subject to criminal prosecution.
13. The undersigned Bidder certifies that it is, at the time of bidding, and shall be throughout the period of the contract, licensed by the State of California to do the type of work required under the terms of the Contract Documents. Bidder further certifies that it is regularly engaged in the general class and type of work called for in the Contract Documents.

14. The undersigned Bidder certifies that it is not, at the time of bidding, on the California Department of General Services (DGS) list of persons determined to be engaged in investment activities in Iran or otherwise in violation of the Iran Contracting Act of 2010 (Public Contract Code Section 2200-2208).

Furthermore, Bidder hereby certifies to County that all representations, certifications, and statements made by Bidder, as set forth in this bid form, are true and correct and are made under penalty of perjury pursuant to the laws of California.

Dated this _____ day of _____ 20 ____

Name of Bidder _____

Type of Organization _____

Signed by _____

Title of Signer _____

Address of Bidder _____

Taxpayer's Identification No. of Bidder _____

Telephone Number _____

Fax Number _____

E-mail _____ Web page _____

Contractor's License No(s): No.: _____ Class: _____ Expiration Date: _____

No.: _____ Class: _____ Expiration Date: _____

No.: _____ Class: _____ Expiration Date: _____

Department of Industrial Relations Registration Number: _____

If Bidder is a corporation, affix corporate seal.

Name of Corporation: _____

President: _____

ALAMEDA COUNTY GSA

Secretary: _____

Treasurer: _____

Manager: _____

END OF DOCUMENT

DOCUMENT 00 43 13

BID SECURITY FORM

(Bid Bond)

(Note: If Bidder is providing a bid bond as its bid security, Bidder must use this form, NOT a surety company form.)

KNOW ALL PERSONS BY THESE PRESENTS:

That the undersigned, as _____ as Principal ("Principal"),

and _____ as Surety ("Surety"),

a corporation organized and existing under and by virtue of the laws of the State of _____ and authorized to do business as a surety in the State of California, are held and firmly bound unto the County of Alameda, State of California as Oblige, in the sum of

_____ (\$ _____)

lawful money of the United States of America, for the payment of which sum well and truly to be made, we, and each of us, bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH that whereas the Principal has submitted a bid to County for all Work specifically described in the accompanying bid;

Now, therefore, if the Principal is awarded the Contract and, within the time and manner required under the Contract Documents, after the prescribed forms are presented to Principal for signature, enters into a written contract, in the prescribed form in accordance with the bid, and files two bonds, one guaranteeing faithful performance and the other guaranteeing payment for labor and materials as required by law, and meets all other conditions to the contract between the Principal and the Oblige becoming effective, or if the Principal shall fully reimburse and save harmless the Oblige from any damage sustained by the Oblige through failure of the Principal to enter into the written contract and to file the required performance and labor and material bonds, and to meet all other conditions to the Contract between the Principal and the Oblige becoming effective, then this obligation shall be null and void; otherwise, it shall be and remain in full force and effect. The full payment of the sum stated above shall be due immediately if Principal fails to execute the Contract within seven (7) days of the date of the County's Notice of Award to Principal.

Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract or the call for bids, or to the work to be performed thereunder, or the specifications accompanying the same, shall in any way affect its

obligation under this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract or the call for bids, or to the work, or to the specifications.

In the event suit is brought upon this bond by the Obligee and judgment is recovered, the Surety shall pay all costs incurred by the Obligee in such suit, including a reasonable attorneys' fee to be fixed by the Court.

If the County awards the bid, the security of unsuccessful bidder(s) shall be returned within sixty (60) days from the time the award is made. Unless otherwise required by law, no bidder may withdraw its bid for ninety (90) days after the date of the bid opening.

IN WITNESS WHEREOF, this instrument has been duly executed by the Principal and Surety above named, on the _____ day of _____, 20____.

(Affix Corporate Seal)

Principal

By

(Affix Corporate Seal)

Surety

By

Name of California Agent of Surety

Address of California Agent of Surety

Telephone Number of California Agent of Surety

Bidder must attach Power of Attorney and Certificate of Authority for Surety and a Notarial Acknowledgment for all Surety's signatures. The California Department of Insurance must authorize the Surety to be an admitted Surety Insurer.

END OF DOCUMENT

DOCUMENT 00 43 36

DESIGNATED SUBCONTRACTORS LIST

Project No. 14030R Santa Rita Jail Interior Accessibility Upgrades

Bidder must list hereinafter the name and location of each subcontractor who will be employed, and the kind of Work that each will perform if the Contract is awarded to the Bidder. Bidder acknowledges and agrees that under Public Contract Code section 4100, et seq., it must clearly set forth below the name and location of each subcontractor who will perform work or labor or render service to the Bidder in or about the construction of the Work in an amount in excess of one-half of one percent (1/2 of 1%) of Bidder's total Bid, and that as to any Work that Bidder fails to list, Bidder agrees to perform that portion itself or be subjected to penalty under applicable law.

In case more than one subcontractor is named for the same kind of Work, state the portion that each will perform. Vendors or suppliers of materials only do not need to be listed.

If further space is required for the list of proposed subcontractors, additional sheets showing the required information, as indicated below, shall be attached hereto and made a part of this document.

Name and City of Subcontractor (1) (4)	Description of Work: Reference to Contract Items (1)	Prices Under Subcontract (2) (3)	Subcontractor's License Numbers.		
			State of California Contractor's License (2)	Dept. of Industrial Relations Registration No. (DIR) (2)	Business License and City/County Issued (2)

(Bidder to attach additional sheet(s) if necessary)

- (1) Submit this information with sealed bid.
- (2) This information shall be required of the two (2) apparent low bidders, no later than two days following the bid opening. **DO NOT SUBMIT WITH BID.**
- (3) Dollar amounts will be treated as proprietary and will solely be for the use of County staff. **DO NOT SUBMIT WITH BID.**
- (4) Submit full address of Subcontractors two days following bid opening.

END OF DOCUMENT

DOCUMENT 00 45 01

SITE-VISIT CERTIFICATION

For Projects Where A Site Visit Was Mandatory

Project No. 14030R Santa Rita Jail Interior Accessibility Upgrades

Check whichever option applies:

_____ I certify that I visited the Site of the proposed Work and became fully acquainted with the conditions relating to construction and labor. I fully understand the facilities, difficulties, and restrictions attending the execution of the Work under contract.

_____ I certify that _____ (Bidder's representative) visited the Site of the proposed Work and became fully acquainted with the conditions relating to construction and labor. The Bidder's representative fully understood the facilities, difficulties, and restrictions attending the execution of the Work under contract.

Bidder fully indemnifies the County of Alameda, its Architect, its Engineer, its Construction Manager, and all of their respective officers, agents, employees, and consultants from any damage, or omissions, related to conditions that could have been identified during my visit and/or the Bidder's representative's visit to the Site.

I certify under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Date: _____

Proper Name of Bidder: _____

Signature: _____

Print Name: _____

Title: _____

END OF DOCUMENT

NON-COLLUSION AFFIDAVIT
Public Contract Code Section 7106

[illegible]

Title:

NON-COLLUSION AFFIDAVIT
DOCUMENT 00 45 13

DOCUMENT 00 45 26

WORKERS' COMPENSATION CERTIFICATION

PROJECT/CONTRACT NO.: **14030R Santa Rita Jail Interior Accessibility Upgrades**

Contract between County of Alameda (the "County" or the "Owner")

and _____ (the "Contractor" or the "Bidder") (the "Contract" or the "Project").

Labor Code section 3700 in relevant part provides:

Every employer except the State shall secure the payment of compensation in one or more of the following ways:

- a. By being insured against liability to pay compensation by one or more insurers duly authorized to write compensation insurance in this state.
- b. By securing from the Director of Industrial Relations a certificate of consent to self-insure, which may be given upon furnishing proof satisfactory to the Director of Industrial Relations of ability to self-insure and to pay any compensation that may become due to his employees.

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.

Date: _____

Proper Name of Contractor: _____

Signature: _____

Print Name: _____

Title: _____

(In accordance with Article 5 - commencing at section 1860, chapter 1, part 7, division 2 of the Labor Code, the above certificate must be signed and filed with the awarding body prior to performing any Work under this Contract.)

END OF DOCUMENT

DOCUMENT 00 45 46.01

**PREVAILING WAGE AND
RELATED LABOR REQUIREMENTS CERTIFICATION**

PROJECT/CONTRACT NO.: **14030R Santa Rita Jail Interior Accessibility Upgrades**
between County of Alameda (the “County” or the “Owner”) and
_____ (the “Contractor” or the “Bidder”) (the “Contract” or the “Project”).

I hereby certify that I will conform to the State of California Public Works Contract requirements regarding prevailing wages, benefits, on-site audits with 48-hours notice, payroll records, and apprentice and trainee employment requirements, for all Work on the above Project.

I hereby acknowledge that County will use the Alameda County Contract Compliance System, including the Elation Systems, Inc. program, to monitor contract labor compliance and Local Hiring Program compliance monitoring. Contractor shall use these Compliance Systems to meet County’s requirements, and shall participate in training as directed by County in order to become and remain competent in the use of the Compliance Systems. Costs associated with the Alameda County Contract Compliance System, including the Elation Systems, Inc. programs shall be borne by Contractor and shall not increase the cost of the Contract.

Date: _____

Proper Name of Contractor: _____

Signature: _____

Print Name: _____

Title: _____

END OF DOCUMENT

DOCUMENT 00 45 46.04

HAZARDOUS MATERIALS CERTIFICATION

PROJECT/CONTRACT NO.: **14030R Santa Rita Jail Interior Accessibility Upgrades**

("Contract" or "Project") between the County of Alameda ("County") and _____
_____("Contractor")

1. Contractor hereby certifies that no Asbestos, or Asbestos-Containing Materials, polychlorinated biphenyl (PCB), or any material listed by the federal or state Environmental Protection Agency or federal or state health agencies as a hazardous material, or any other material defined as being hazardous under federal or state laws, rules, or regulations ("New Hazardous Material"), shall be furnished, installed, or incorporated in any way into the Project or in any tools, devices, clothing, or equipment used to affect any portion of Contractor's work on the Project for County.
2. Contractor further certifies that it has instructed its employees with respect to the above-mentioned standards, hazards, risks, and liabilities.
3. Asbestos and/or asbestos-containing material shall be defined as all items containing detectable amounts of, but not limited to, chrysotile, crocidolite, amosite, anthophyllite, tremolite, and actinolite.
4. Any disputes involving the question of whether or not material is New Hazardous Material shall be settled by electron microscopy or other appropriate and recognized testing procedure, at the County's determination. The costs of any such tests shall be paid by Contractor if the material is found to be New Hazardous Material.
5. All Work or materials found to be New Hazardous Material or Work or material installed with equipment containing "New Hazardous Material" will be immediately rejected and this Work will be removed at Contractor's expense at no additional cost to the County.
6. Contractor has read and understood the document Hazardous Materials Procedures & Requirements, and shall comply with all the provisions outlined therein.

Date: _____

Proper Name of Contractor: _____

Signature: _____

Print Name: _____

Title: _____

END OF DOCUMENT

DOCUMENT 00 45 46.06

IMPORTED MATERIALS CERTIFICATION

PROJECT/CONTRACT NO.: **14030R Santa Rita Jail Interior Accessibility Upgrades**
between County of Alameda ("County" or "Owner") and
_____ ("Contractor") ("Contract" or "Project").

This form shall be executed by the Contractor and by all entities that, in any way, provide or deliver and/or supply any soils, aggregate, or related materials ("Fill") to the Project Site. All Fill shall satisfy all requirements of any environmental review of the Project performed pursuant to the statutes and guidelines of the California Environmental Quality Act, and section 21000 et seq. of the Public Resources Code ("CEQA").

To the furthest extent permitted by California law, Contractor shall defend, indemnify, and hold harmless the County, its agents, representatives, officers, consultants, employees, trustees, and volunteers pursuant to the indemnification provisions in the Contract Documents for, without limitation, any claim(s) connected with providing, delivering, and/or supplying Fill.

Certification of: ☐ Delivery Firm/Transporter ☐ Supplier ☐ Manufacturer
 ☐ Wholesaler ☐ Broker ☐ Retailer
 ☐ Distributor ☐ Other _____

Type of Entity ☐ Corporation ☐ General Partnership
 ☐ Limited Partnership ☐ Limited Liability Company
 ☐ Sole Proprietorship ☐ Other _____

Name of firm ("Firm"): _____

Mailing address: _____

Addresses of branch office used for this Project: _____

If subsidiary, name and address of parent company: _____

By my signature below, I hereby certify that I am aware of section 25260 of the Health and Safety Code and the sections referenced therein regarding the definition of hazardous material. I further certify on behalf of the Firm that all soils, aggregates, or related materials provided,

delivered, and/or supplied or that will be provided, delivered, and/or supplied by this Firm to the Project Site are free of any and all hazardous material as defined in section 25260 of the Health and Safety Code. I further certify that I am authorized to make this certification on behalf of the Firm.

Date: _____

Proper Name of Contractor: _____

Signature: _____

Print Name: _____

Title: _____

DOCUMENT 00 51 00

NOTICE OF AWARD

Dated: _____ 20__

To: _____
(Contractor)

To: _____
(Address)

From: The County of Alameda

PROJECT: _____ (Project Name)

("Project" or "Contract").

Contractor has been awarded the referenced Contract on _____, 20__, by action of the County's Board of Supervisors.

The Contract Price is _____ Dollars (\$_____), and includes alternates _____.

Three (3) copies of each of the Contract Documents (except Drawings) accompany this Notice of Award. Three (3) sets of the Drawings will be delivered separately or otherwise made available. Additional copies are available at cost of reproduction.

The Bidder to whom Contract is awarded shall execute and submit the following documents by 5:00 p.m. of the **SEVENTH (7TH)** Calendar day following the date of the Notice of Award. Failure to properly and timely submit these documents entitles County to reject the bid as non-responsive.

- a. Agreement: To be executed by successful Bidder. Submit four (4) copies, each bearing an original signature.
- b. Escrow of Bid Documentation: This must include all required documentation. See the document Escrow of Bid Documentation for more information.
- c. Performance Bond (100%): On the form provided in the Contract Documents and fully executed as indicated on the form.
- d. Payment Bond (100%) (Contractor's Labor and Material Payment Bond): On the form provided in the Contract Documents and fully executed as indicated on the form.

- e. Insurance Certificates and Endorsements as required.
- f. Workers' Compensation Certification.
- g. Prevailing Wage and Related Labor Requirements Certification.
- h. Hazardous Materials Certification.
- i. Imported Materials Certification.
- j. Completed, signed Document 00 52 13.1 Debarment And Suspension Certification Form

Failure to comply with these conditions within the time specified will entitle County to consider your bid abandoned, to annul this Notice of Award, and to declare your Bid Security forfeited, as well as any other rights the County may have against the Contractor.

After you comply with those conditions, County will return to you one fully signed counterpart of the Agreement.

The County of Alameda

BY: _____

NAME: _____

TITLE: _____

END OF DOCUMENT

DOCUMENT 00 51 13

NOTICE OF INTENT TO AWARD

[DATE]
[NAME]
[COMPANY]
[ADDRESS]
[CITY, STATE ZIP]

SUBJECT: **INTENT TO AWARD A CONTRACT FOR PROJECT NO. 14030R**

Thank you for your participation and interest in the County of Alameda. Based on its evaluation and acceptance of the bids submitted, GSA will be recommending to its Board of Supervisors that the contract for **Project Number 14030R** be awarded to [CONTRACTOR].

GSA's recommendation to accept and award a contract should go before the Board on Tuesday, [DATE]. Upon Board approval a draft contract will be submitted to the awardee for review. A signed contract will be issued along with an Agreement Form and Notice to Proceed. The County is unable to pay for goods and services received without a signed contract.

Below is a summary of all bids/proposals received for this project.

Bidder	Location	Bid Price*

(*) – A 5% bid preference (stipulated in the ECOP) was given to _____; therefore, their bid is evaluated at \$_____ which makes them the lowest responsive bidder.

Please refer to Document 00 21 13 - Instructions to Bidders for submittal requirements. For information on other contracting opportunities please visit our websites at http://www.acgov.org/gsa/purchasing/bid_content/FutureContractOpportunities.jsp for Upcoming Contracting Opportunities and http://www.acgov.org/gsa/purchasing/bid_content/ContractOpportunities.jsp for Current Contracting Opportunities.

The County of Alameda

BY: _____

NAME: _____

TITLE: _____

END OF DOCUMENT

DOCUMENT 00 52 13

AGREEMENT FORM – STIPULATED SUM
(SINGLE-PRIME CONTRACT)

THIS AGREEMENT IS MADE AND ENTERED INTO THIS _____ DAY OF _____, 20____, by and between the County of Alameda (County”) and _____ (“Contractor”) (“Agreement”).

WITNESSETH: That the parties hereto have mutually covenanted and agreed, and by these presents do covenant and agree with each other, as follows:

1. **The Work:** Contractor agrees to furnish all tools, equipment, apparatus, facilities, labor, and material necessary to perform and complete in a good and workmanlike manner, the work of:

Project No. 14030R – Santa Rita Jail Interior Accessibility Upgrades

For which the Drawings and Specifications are identified by the signature of the parties to this Agreement. It is understood and agreed that the Work shall be performed and completed as required in the Contract Documents including, without limitation, the Drawings and Specifications, under the direction and supervision of, and subject to, the approval of County or its authorized representative.

2. **The Contract Documents:** The complete Contract consists of all Contract Documents as defined in the General Conditions and incorporated herein by this reference. Any and all obligations of the County and Contractor are fully set forth and described in the Contract Documents. All Contract Documents are intended to cooperate so that any Work called for in one and not mentioned in the other or vice versa is to be executed the same as if mentioned in all Contract Documents.
3. **Interpretation of Contract Documents:** Should any question arise concerning the intent or meaning of Contract Documents, including the Drawings or Specifications, the question shall be submitted to the County for interpretation. If a conflict exists in the Contract Documents, modifications, beginning with the most recent, shall control over this Agreement, which shall control over the Special Conditions, which shall control over the General Conditions, which shall control over the remaining Division 00 documents, which shall control over Division 01 Documents, which shall control over Division 02 through Division 49 documents, which shall control over figured dimensions, which shall control over large-scale drawings, which shall control over small-scale drawings. In no case shall a document calling for lower quality and/or quantity material or workmanship control. The decision of County in the matter shall be final.

4. **Time for Completion:** It is hereby understood and agreed that the work under this contract shall be completed within **Four hundred five (405) consecutive calendar days** ("Contract Time") from the date specified in the County's Notice to Proceed.
5. **Completion-Extension Of Time:** Should the Contractor fail to complete this Contract, and the Work provided herein, within the time fixed for completion, due allowance being made for the contingencies provided for herein, the Contractor shall become liable to the County for all loss and damage that the County may suffer on account thereof. The Contractor shall coordinate its work with the Work of all other contractors. County shall not be liable for delays resulting from Contractor's failure to coordinate its Work with other contractors in a manner that will allow timely completion of Contractor's Work. Contractor shall be liable for delays to other contractors caused by Contractor's failure to coordinate its Work with the work of other contractors.
6. **Liquidated Damages:** Time is of the essence for all work under this Agreement. It is hereby understood and agreed that it is and will be difficult and/or impossible to ascertain and determine the actual damage that County will sustain in the event of and by reason of Contractor's delay; therefore, Contractor agrees that it shall pay to the County the sum of **Two Thousand Five Hundred dollars (\$2,500.00)** per day as liquidated damages for each and every day's delay beyond the time herein prescribed in finishing the Work. It is hereby understood and agreed that this amount is not a penalty.

In the event any portion of the liquidated damages is not paid to County, County may deduct that amount from any money due or that may become due the Contractor under this Agreement. County's right to assess liquidated damages is as indicated herein and in the General Conditions.

The time during which the Contract is delayed for cause as hereinafter specified may extend the time of completion for a reasonable time as County may grant. This provision does not exclude the recovery of damages for delay by either party under other provisions in the Contract Documents.

7. **Indemnity:** To the fullest extent permitted by law (including, without limitation, California Civil Code Section 2782), Contractor shall defend (with legal counsel reasonably acceptable to the County), indemnify and hold harmless County and its officers, agents, departments, officials, representatives and employees (collectively "Indemnitees") from and against any and all claims, loss, cost, damage, injury (including, without limitation, injury to or death of an employee of Contractor or its Subcontractors), expense and liability of every kind, nature and description (including, without limitation, incidental and consequential damages, court costs, attorneys' fees, litigation expenses and fees of expert consultants or expert witnesses incurred in connection therewith and costs of investigation) which arises out of or is in any way connected to the performance of this agreement (collectively "Liabilities") except where such Liabilities are caused solely by

the negligence or willful misconduct of any indemnitee. The County may participate in the defense of any such claim without relieving Contractor of any obligation hereunder. This indemnification, defense, and hold harmless obligation includes any failure or alleged failure by Contractor to comply with any provision of law or the Contract Documents, including, without limitation, any stop notice actions, or liens by the California Department of Labor Standards Enforcement. This indemnity obligation shall be for the full amount of all damage to County, including defense costs, and shall not be limited by any insurance limits.

- 7.1 Contactor shall defend (with legal counsel reasonably acceptable to the County), indemnify and hold harmless the Indemnitees from all loss, cost, damage, expense, liability or claims, in law or in equity, including attorneys' fees, court costs, litigation expenses and fees of expert consultants or expert witnesses, that may at any time arise for any infringement of the patent rights, copyright, trade secret, trade name, trademark, service mark or any other proprietary right of any person or persons in consequence of the use by County, or any of the other Indemnitees, of articles or Services to be supplied in the performance of this Agreement.
 - 7.2 Contractor shall place in its subcontracting agreements and cause its Subcontractors to agree to indemnities and insurance obligations in favor of County and other Indemnitees in the exact form and substance of those contained in this Agreement. Contractor shall require all subcontractors to comply with all indemnification and insurance requirements of this agreement, including, without limitation, Exhibit C. Contactor shall verify subcontractor's compliance.
8. **Loss Or Damage:** County and its authorized representatives shall not in any way or manner be answerable or suffer loss, damage, expense, or liability for any loss or damage that may happen to the Work, or any part thereof, or in or about the same during its construction and before acceptance, and the Contractor shall assume all liabilities of every kind or nature arising from the Work, either by accident, negligence, theft, vandalism, or any cause whatever; and shall hold County and its authorized representatives harmless from all liability of every kind and nature arising from accident, negligence, or any cause whatever.
9. **Insurance and Bonds:** Contractor shall provide all required certificates of insurance, and payment and performance bonds as evidence thereof.
10. **Prosecution of Work:** If the Contractor should neglect to prosecute the Work properly or fail to perform any provisions of this contract, County, may, pursuant to the General Conditions and without prejudice to any other remedy it may have, make good such deficiencies and may deduct the cost thereof from the payment then or thereafter due the Contractor.

- Dollars** (\$ _____),

in lawful money of the United States, which sum is to be paid according to the schedule provided by the Contractor and accepted by County and subject to additions and deductions as provided in the Contract. This amount supersedes any previously stated and/or agreed to amount(s).

- 17. Severability:** If any term, covenant, condition, or provision in any of the Contract Documents is held by a court of competent jurisdiction to be invalid, void or unenforceable, the remainder of the provisions in the Contract Documents shall remain in full force and effect and shall in no way be affected, impaired, or invalidated thereby.

IN WITNESS WHEREOF, accepted and agreed on the date indicated above:

CONTRACTOR

COUNTY OF ALAMEDA

By: _____

By: _____

Title: _____

Title: _____

NOTE: If the party executing this Contract is a corporation, a certified copy of the by-laws, or of the resolution of the Board of Directors, authorizing the officers of said corporation to execute the Contract and the bonds required thereby must be attached hereto.

Approved as to form: _____
(Deputy) County Counsel

END OF DOCUMENT

DOCUMENT 00 52 13.1

COUNTY OF ALAMEDA
DEBARMENT AND SUSPENSION CERTIFICATION FORM

The bidder, under penalty of perjury, certifies that, except as noted below, bidder, its Principal, and any named and unnamed subcontractor:

- Is not currently under suspension, debarment, voluntary exclusion, or determination of ineligibility by any federal agency;
- Has not been suspended, debarred, voluntarily excluded or determined ineligible by any federal agency within the past three years;
- Does not have a proposed debarment pending; and
- Has not been indicted, convicted, or had a civil judgment rendered against it by a court of competent jurisdiction in any matter involving fraud or official misconduct within the past three years.

If there are any exceptions to this certification, insert the exceptions in the following space.

Exceptions will not necessary result in denial of award, but will be considered in determining bidder responsibility. For any exception noted above, indicate below to whom it applies, initiating agency, and dates of action.

Notes: Providing false information may result in criminal prosecution or administrative sanctions. The above certification is part of the Proposal. Signing this Proposal on the signature portion thereof shall also constitute signature of this Certification.

BIDDER: _____

PRINCIPAL: _____

TITLE: _____

SIGNATURE: _____

DATE: _____

DOCUMENT 00 55 00

NOTICE TO PROCEED

Dated: _____, 20__

TO: _____
(Contractor)

ADDRESS: _____

PROJECT: _____ (Project Name)

PROJECT/CONTRACT NO.: **14030R Santa Rita Jail Interior Accessibility Upgrades**

between County of Alameda and Contractor ("Contract").

You are notified that the Contract Time under the above Contract will commence to run on _____, 20__. By that date, you are to start performing your obligations under the Contract Documents. In accordance with the Agreement executed by Contractor, the date of completion is _____, 20__.

You must submit the following documents by 5:00 p.m. of the **TENTH (10TH)** business day following the date of this Notice to Proceed:

- a. Contractor's preliminary schedule of construction.
- b. Contractor's preliminary schedule of values for all of the Work.
- c. Contractor's preliminary schedule of submittals, including Shop Drawings, Product Data, and Samples submittals
- d. Contractor's Safety Plan specifically adapted for the Project.

- e. A complete subcontractors list, including the name, address, telephone number, facsimile number, California State Contractors License number, classification, and monetary value of all Subcontracts.

Thank you. We look forward to a very successful Project.

COUNTY OF ALAMEDA

BY: _____

NAME: _____

TITLE: _____

END OF DOCUMENT

DOCUMENT 00 56 00

ESCROW OF BID DOCUMENTATION

1. Requirement to Escrow Bid Documentation

- a. Contractor shall submit, within **SEVEN (7)** calendar days after the date of the Notice of Award, one copy of all documentary information received or generated by Contractor in preparation of bid prices for this Contract, as specified herein. This material is referred to herein as "Escrow Bid Documentation." The Escrow Bid Documentation of the Contractor will be held in escrow for the duration of the Contract.
- b. Contractor agrees, as a condition of award of the Contract, that the Escrow Bid Documentation constitutes all written information used in the preparation of its bid, and that no other written bid preparation information shall be considered in resolving disputes or claims. Contractor also agrees that nothing in the Escrow Bid Documentation shall change or modify the terms or conditions of the Contract Documents.
- c. The Escrow Bid Documentation will not be opened by County except as indicated herein. The Escrow Bid Documentation will be used only for the resolution of change orders and claims disputes.
- d. Contractor's submission of the Escrow Bid Documentation, as with the bonds and insurance documents required, is considered an essential part of the Contract award. Should the Contractor fail to make the submission within the allowed time specified above, County may deem the Contractor to have failed to enter into the Contract, and the Contractor shall forfeit the amount of its bid security, accompanying the Contractor's bid, and County may award the Contract to the next lowest responsive responsible bidder.
- e. NO PAYMENTS WILL BE MADE, NOR WILL COUNTY ACCEPT PROPOSED CHANGE ORDERS UNTIL THE ABOVE REQUIRED INFORMATION IS SUBMITTED AND APPROVED.
- f. The Escrow Bid Documentation shall be submitted in person by an authorized representative of the Contractor to County.

2. Ownership of Escrow Bid Documentation

- a. The Escrow Bid Documentation is, and shall always remain, the property of Contractor, subject to review by County, as provided herein.

- b. Escrow Bid Documentation constitute trade secrets, not known outside Contractor's business, known only to a limited extent and only by a limited number of employees of Contractor, safeguarded while in Contractor's possession, extremely valuable to Contractor, and could be extremely valuable to Contractor's competitors by virtue of it reflecting Contractor's contemplated techniques of construction. Subject to the provisions herein, County agrees to safeguard the Escrow Bid Documentation, and all information contained therein, against disclosure to the fullest extent permitted by law.

3. Format and Contents of Escrow Bid Documentation

- a. Contractor may submit Escrow Bid Documentation in its usual cost-estimating format; a standard format is not required. The Escrow Bid Documentation shall be submitted in the English language.
- b. Escrow Bid Documentation must clearly itemize the estimated costs of performing the work of each bid item contained in the bid schedule, separating bid items into sub-items as required to present a detailed cost estimate and allow a detailed cost review. The Escrow Bid Documentation shall include all subcontractor bids or quotes, supplier bids or quotes, quantity takeoffs, crews, equipment, calculations of rates of production and progress, copies of quotes from subcontractors and suppliers, and memoranda, narratives, add/deduct sheets, and all other information used by the Contractor to arrive at the prices contained in the bid proposal. Estimated costs should be broken down into Contractor's usual estimate categories such as direct labor, repair labor, equipment ownership and operation, expendable materials, permanent materials, and subcontract costs as appropriate. Plant and equipment and indirect costs should be detailed in the Contractor's usual format. The Contractor's allocation of indirect costs, contingencies, markup, and other items to each bid item shall be identified.
- c. All costs shall be identified. For bid items amounting to less than \$10,000, estimated unit costs are acceptable without a detailed cost estimate, provided that labor, equipment, materials, and subcontracts, as applicable, are included and provided that indirect costs, contingencies, and markup, as applicable, are allocated.
- d. Bid Documentation provided by County should not be included in the Escrow Bid Documentation unless needed to comply with the following requirements.

4. Submittal of Escrow Bid Documentation

- a. The Escrow Bid Documentation shall be submitted by the Contractor in a sealed container within **SEVEN (7)** calendar days after the date of the Notice of Award. The container shall be clearly marked on the outside with the Contractor's name, date of submittal, project name and the words "Escrow Bid Documentation –

Intended to be opened in the presence of Authorized Representatives of Both County and Contractor".

- b. By submitting Escrow Bid Documentation, Contractor represents that the material in the Escrow Bid Documentation constitutes all the documentary information used in preparation of the bid and that the Contractor has personally examined the contents of the Escrow Bid Documentation container and has found that the documents in the container are complete.
- c. If Contractor's proposal is based upon subcontracting any part of the work, each subcontractor whose total subcontract price exceeds 5 percent of the total contract price proposed by Contractor, shall provide separate Escrow Documents to be included with those of Contractor. Those documents shall be opened and examined in the same manner and at the same time as the examination described above for Contractor.
- d. If Contractor wishes to subcontract any portion of the Work after award, County retains the right to require Contractor to submit Escrow Documents for the Subcontractor before the subcontract is approved.

5. Storage, Examination and Final Disposition of Escrow Bid Documentation

- a. The Escrow Bid Documentation will be placed in escrow, for the life of the Contract, in a mutually agreeable institution. The cost of storage will be paid by Contractor for the duration of the project until final Contract payment. The storage facilities shall be the appropriate size for all the Escrow Bid Documentation and located conveniently to both County's and Contractor's offices.
- b. The Escrow Bid Documentation shall be examined by both County and Contractor, at any time deemed necessary by either County or Contractor, to assist in the negotiation of price adjustments and change orders or the settlement of disputes and claims. In the case of legal proceedings, Escrow Bid Documentation shall be used subject to the terms of an appropriate protective order if requested by Contractor and ordered by a court of competent jurisdiction. Examination of the Escrow Bid Documentation is subject to the following conditions:
 - (1) As trade secrets, the Escrow Bid Documentation is proprietary and confidential to the extent allowed by law.
 - (2) County and Contractor shall each designate, in writing to the other party **SEVEN (7)** calendar days prior to any examination, the names of representatives who are authorized to examine the Escrow Bid Documentation. No other person shall have access to the Escrow Bid Documentation.

- (3) Access to the documents may take place only in the presence of duly designated representatives of the County and Contractor. If Contractor fails to designate a representative or appear for joint examination on **SEVEN (7)** calendar days notice, then the County representative may examine the Escrow Bid Documents alone upon an additional **THREE (3)** calendar days notice if a representative of the Contractor does not appear at the time set.
 - (4) If a subcontractor has submitted sealed information to be included in the Escrow Bid Documents, access to those documents may take place only in the presence of a duly designated representative of the County, Contractor and that subcontractor. If that subcontractor fails to designate a representative or appear for joint examination on **SEVEN (7)** calendar days notice, then the County representative and/or the Contractor may examine the Escrow Bid Documentation without that subcontractor present upon an additional **THREE (3)** calendar days notice if a representative of that subcontractor does not appear at the time set.
- c. The Escrow Bid Documentation will be returned to Contractor at such time as the Contract has been completed and final settlement has been achieved.

END OF DOCUMENT

DOCUMENT 00 57 00

**ESCROW AGREEMENT FOR
SECURITY DEPOSITS IN LIEU OF RETENTION**

Public Contract Code Section 22300

This Escrow Agreement ("Escrow Agreement") is made and entered into this ____ day of _____, 20____, by and between County of Alameda, whose address is _____, _____, California ("County"); and

_____, whose place of business is located at _____, ("Contractor"); and

_____, a state or federally chartered bank in the state of California, whose place of business is located at _____, ("Escrow Agent").

For the consideration hereinafter set forth, County, Contractor, and Escrow Agent agree as follows:

1. Pursuant to section 22300 of Public Contract Code of the State of California, which is hereby incorporated by reference, Contractor has the option to deposit securities with Escrow Agent as a substitute for retention earnings required to be withheld by County pursuant to the Construction Contract No. _____ entered into between County and Contractor for the #14030 Santa Rita Jail Interior Accessibility Upgrades, in the amount of _____ dated, _____, 20____, (the "Contract"). Alternatively, on written request of Contractor, County shall make payments of the retention earnings directly to Escrow Agent. When Contractor deposits the securities as a substitute for Contract earnings, Escrow Agent shall notify County within ten (10) calendar days of the deposit. The market value of the securities at the time of substitution and at all times from substitution until the termination of the Escrow Agreement shall be at least equal to the cash amount then required to be withheld as retention under terms of Contract between County and Contractor.

Securities shall be held in name of County of Alameda, and shall designate Contractor as beneficial owner.

2. County shall make progress payments to Contractor for those funds which otherwise would be withheld from progress payments pursuant to Contract provisions, provided that Escrow Agent holds securities in form and amount specified above.
3. When County makes payment of retention earned directly to Escrow Agent, Escrow Agent shall hold them for the benefit of Contractor until the time that the escrow created under this Escrow Agreement is terminated. Contractor may direct the investment of the

ALAMEDA COUNTY GSA

ESCROW AGREEMENT FOR
SECURITY DEPOSITS IN LIEU OF RETENTION
DOCUMENT 00 57 00

payments into securities. All terms and conditions of this Escrow Agreement and the rights and responsibilities of the Parties shall be equally applicable and binding when County pays Escrow Agent directly.

4. Contractor shall be responsible for paying all fees for the expenses incurred by Escrow Agent in administering the Escrow Account, and all expenses of County. These expenses and payment terms shall be determined by County, Contractor, and Escrow Agent.
5. Interest earned on securities or money market accounts held in escrow and all interest earned on that interest shall be for sole account of Contractor and shall be subject to withdrawal by Contractor at any time and from time to time without notice to County.
6. Contractor shall have the right to withdraw all or any part of the principal in the Escrow Account only by written notice to Escrow Agent accompanied by written authorization from County to Escrow Agent that County consents to withdrawal of amount sought to be withdrawn by Contractor.
7. County shall have the right to draw upon the securities and/or withdraw amounts from the Escrow Account in event of default by Contractor. Upon seven (7) days written notice to Escrow Agent from County of the default, if applicable, Escrow Agent shall immediately convert the securities to cash and shall distribute the cash as instructed by County.
8. Upon receipt of written notification from County certifying that the Contract is final and complete, and that Contractor has complied with all requirements and procedures applicable to the Contract, Escrow Agent shall release to Contractor all securities and interest on deposit less escrow fees and charges of the Escrow Account. The escrow shall be closed immediately upon disbursement of all monies and securities on deposit and payments of fees and charges.
9. Escrow Agent shall rely on written notifications from County and Contractor pursuant to Paragraphs 5 through 8, inclusive, of this Escrow Agreement and County and Contractor shall hold Escrow Agent harmless from Escrow Agent's release and disbursement of securities and interest as set forth above.
10. Names of persons who are authorized to give written notice or to receive written notice on behalf of County and on behalf of Contractor in connection with the foregoing, and exemplars of their respective signatures are as follows:

On behalf of County:

On behalf of Contractor:

Title

Title

Name

Name

Signature

Signature

ALAMEDA COUNTY GSA

ESCROW AGREEMENT FOR
SECURITY DEPOSITS IN LIEU OF RETENTION
DOCUMENT 00 57 00

Address

Address

On behalf of Escrow Agent:

Title

Name

Signature

Address

At the time of Escrow Account is opened, County and Contractor shall deliver to Escrow Agent a fully executed of this Agreement.

IN WITNESS WHEREOF, the parties have executed this Agreement by their proper officers on the date first set forth above.

On behalf of County:

On behalf of Contractor:

Title

Title

Name

Name

Signature

Signature

Address

Address

On behalf of Escrow Agent:

Title

Name

Signature

Address

END OF DOCUMENT

DOCUMENT 00 61 13.13

PERFORMANCE BOND FORM
(100% of Contract Price)

(Note: Bidders must use this form, NOT a surety company form.)

KNOW ALL PERSONS BY THESE PRESENTS:

That WHEREAS, the Board of Supervisors of the County of Alameda ("County") and _____, ("Principal") have entered into a contract for the furnishing of all materials and labor, services and transportation, necessary, convenient, and proper to perform the following project:

Project No. 14030R Santa Rita Jail Interior Accessibility Upgrades

which Contract dated _____, 20____, and all of the Contract Documents attached to or forming a part of the Contract, are hereby referred to and made a part hereof, and

And WHEREAS, said Principal is required under the terms of the Contract to furnish a bond for the faithful performance of the Contract;

NOW, THEREFORE, the Principal and _____ ("Surety") are held and firmly bound unto the Board of County in the penal sum of _____ DOLLARS (\$ _____), lawful money of the United States, for the payment of which sum well and truly to be made we bind ourselves, our heirs, executors, administrators, successors, and assigns jointly and severally, firmly by these presents, to perform all the work required to complete the Project and to pay to County all damages County incurs as a result of the Principal's failure to perform all the Work required to complete the Project.

The condition of the obligation is such that, if the above bounden Principal, his or its heirs, executors, administrators, successors, or assigns, shall in all things stand to and abide by, and well and truly keep and perform the covenants, conditions, and agreements in the Contract and any alteration thereof made as therein provided, on his or their part to be kept and performed at the time and in the intent and meaning, and shall indemnify and save harmless County, its trustees, officers and agents, as therein stipulated, then this obligation shall become null and void, otherwise it shall be and remain in full force and virtue.

And the Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration, or addition to the terms of the contract or to the work to be performed thereunder or the specifications accompanying the same shall in any way affect its obligation on this bond, and it does hereby waive notice of any such change, extension of

time, alteration, or addition to the terms of the Contract or to the work or to the specifications.

IN WITNESS WHEREOF, two (2) identical counterparts of this instrument, each of which shall for all purposes be deemed an original thereof, have been duly executed by the Principal and Surety above named, on the ____ day of _____, 20____.

(Affix Corporate Seal)

Principal

By

Surety

By

Name of California Agent of Surety

Address of California Agent of Surety

Telephone Number of California Agent of
Surety

Bidder must attach a Notarial Acknowledgment for all Surety's signatures and a Power of Attorney and Certificate of Authority for Surety. The California Department of Insurance must authorize the Surety to be an admitted surety insurer.

END OF DOCUMENT

DOCUMENT 00 61 13.16

PAYMENT BOND FORM

**Contractor's Labor & Material Payment Bond
(100% of Contract Price)**

(Note: Bidders must use this form, NOT a surety company form.)

KNOW ALL PERSONS BY THESE PRESENTS:

That WHEREAS, the Board of Supervisors of the County of Alameda ("County") and _____, ("Principal") have entered into a contract for the furnishing of all materials and labor, services and transportation, necessary, convenient, and proper to

Project No. 14030R Santa Rita Jail Interior Accessibility Upgrades

which Contract dated _____, 20____, and all of the Contract Documents attached to or forming a part of the Contract, are hereby referred to and made a part hereof, and

WHEREAS, pursuant to law and the Contract, the Principal is required, before entering upon the performance of the work, to file a good and sufficient bond with the body by which the Contract is awarded in an amount equal to 100 percent (100%) of the Maximum Contract Value, to secure the claims to which reference is made in sections 9000, 9100, 9356 through 9560, and 9564 of the Civil Code of California, and division 2, part 7, of the Labor Code of California.

NOW, THEREFORE, WE, the Principal and _____, ("Surety") are held and firmly bound unto all laborers, material men, and other persons referred to in said statutes in the sum of _____ Dollars (\$ _____), lawful money of the United States, being a sum not less than the total amount payable by the terms of Contract, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors, or assigns, jointly and severally, by these presents.

The condition of this obligation is that if the Principal or any of his or its subcontractors, of the heirs, executors, administrators, successors, or assigns of any, all, or either of them shall fail to pay for any labor, materials, provisions, provender, or other supplies, used in, upon, for or about the performance of the work contracted to be done, or for any work or labor thereon of any kind, or for amounts due under the Unemployment Insurance Act with respect to such work or labor, that the Surety will pay the same in an amount not exceeding the amount herein above set forth, and also in case suit is brought upon this bond, will pay a reasonable attorney's fee to be awarded and fixed by the Court, and to be taxed as costs and to be included in the judgment therein rendered.

It is hereby expressly stipulated and agreed that this bond shall inure to the benefit of any and all persons, companies, and corporations entitled to file claims under sections 9000, 9100, 9356

through 9560, and 9564 of the Civil Code, so as to give a right of action to them or their assigns in any suit brought upon this bond.

Should the condition of this bond be fully performed, then this obligation shall become null and void; otherwise it shall be and remain in full force and affect.

And the Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration, or addition to the terms of Contract or the specifications accompanying the same shall in any manner affect its obligations on this bond, and it does hereby waive notice of any such change, extension, alteration, or addition.

IN WITNESS WHEREOF, two (2) identical counterparts of this instrument, each of which shall for all purposes be deemed an original thereof, have been duly executed by the Principal and Surety above named, on the _____ day of _____, 20____.

(Affix Corporate Seal)

Principal

By

Surety

By

Name of California Agent of Surety

Address of California Agent of Surety

Telephone Number of California Agent of Surety

Bidder must attach a Notarial Acknowledgment for all Surety's signatures and a Power of Attorney and Certificate of Authority for Surety. The California Department of Insurance must authorize the Surety to be an admitted surety insurer.

END OF DOCUMENT

DOCUMENT 00 65 19.26

FINAL SETTLEMENT CERTIFICATE FORM

THIS FINAL SETTLEMENT AGREEMENT AND RELEASE OF CLAIMS
("Agreement and Release") IS MADE AND ENTERED INTO THIS _____ DAY
OF _____, 20____ by and between the County of Alameda ("County") and ____
_____ ("Contractor"), whose place of
business is _____.

RECITALS:

1. County and Contractor entered into PROJECT/CONTRACT NO.:
14030R Santa Rita Jail Interior Accessibility Upgrades ("Contract" or
"Project") in the County of Alameda, California.
2. The Work under the Contract has been completed.

NOW, THEREFORE, it is mutually agreed between County and Contractor as follows:

AGREEMENT

3. Contractor will only be assessed liquidated damages as detailed below:

Original Contract Sum \$ _____

Modified Contract Sum \$ _____

Payment to Date \$ _____

Liquidated Damages \$ _____

Payment Due Contractor \$ _____
4. Subject to the provisions hereof, County shall forthwith pay to Contractor the
undisputed sum of \$ _____ (_____ Dollars and ____
_____ Cents) under the Contract, less any amounts represented by any notice to
withhold funds on file with County as of the date of such payment.
5. Contractor acknowledges and hereby agrees that there are no unresolved or
outstanding claims in dispute against County arising from the performance of
work under the Contract, except for the claims described in Paragraph 6 and
continuing obligations described in Paragraph 8. It is the intention of the parties
in executing this Agreement and Release that this Agreement and Release shall be
effective as a full, final and general release of all claims, demands, actions, causes

of action, obligations, costs, expenses, damages, losses and liabilities of Contractor against County, all its respective agents, employees, inspectors, assignees and transferees except for the Disputed Claim is set forth in Paragraph 6 and continuing obligations described in Paragraph 8 hereof.

6. The following claims are disputed (hereinafter, the "Disputed Claims") and are specifically excluded from the operation of this Agreement and Release:

<u>Claim No.</u>	<u>Description of Claim</u>	<u>Amount of Claim</u>	<u>Date Claim Submitted</u>
------------------	-----------------------------	------------------------	-----------------------------

[Insert information, including attachment if necessary]

7. Consistent with California Public Contract Code section 7100, Contractor hereby agrees that, in consideration of the payment set forth in Paragraph 4 hereof, Contractor hereby releases and forever discharges County, all its agents, employees, inspectors, assignees, and transferees from any and all liability, claims, demands, actions, or causes of action of whatever kind or nature arising out of or in any way concerned with the Work under the Contract.
8. Guarantees and warranties for the Work, and any other continuing obligation of Contractor, shall remain in full force and effect as specified in the Contract Documents.
9. To the furthest extent permitted by California law, Contractor shall defend, indemnify, and hold harmless the County, its agents, representatives, officers, consultants, employees, trustees, and volunteers (the "indemnified parties") from any and all losses, liabilities, claims, suits, and actions of any kind, nature, and description, including, but not limited to, attorneys' fees and costs, directly or indirectly arising out of, connected with, or resulting from the performance of the Contract unless caused wholly by the sole negligence or willful misconduct of the indemnified parties.
10. Contractor hereby waives the provisions of California Civil Code section 1542 which provides as follows:

A GENERAL RELEASE DOES NOT EXTEND TO CLAIMS WHICH THE CREDITOR DOES NOT KNOW OR SUSPECT TO EXIST IN HIS OR HER FAVOR AT THE TIME OF EXECUTING THE RELEASE, WHICH IF KNOWN BY HIM OR HER MUST HAVE MATERIALLY AFFECTED HIS OR HER SETTLEMENT WITH THE DEBTOR.

11. The provisions of this Agreement and Release are contractual in nature and not mere recitals and shall be considered independent and severable. If any such provision or any part thereof shall be at any time held invalid in whole or in part

under any federal, state, county, municipal, or other law, ruling, or regulations, then such provision, or part thereof, shall remain in force and effect to the extent permitted by law, and the remaining provisions of this Agreement and Release shall also remain in full force and effect, and shall be enforceable.

- 12.** All rights of County shall survive completion of the Work or termination of Contract, and execution of this Release.

* * * CAUTION: THIS IS A RELEASE - READ BEFORE EXECUTING * * *

COUNTY OF ALAMEDA

TITLE: _____

NAME: _____

SIGNATURE: _____

CONTRACTOR

TITLE: _____

NAME: _____

SIGNATURE: _____

END OF DOCUMENT

DOCUMENT 00 65 36

WARRANTY FORM

_____("Contractor") hereby agrees that the _____
_____("Work" of Contractor) which Contractor has installed for County of
Alameda ("County") for the following project:

No. 14030R Santa Rita Jail Interior Accessibility Upgrades

has been performed in accordance with the requirements of the Contract Documents and that the
Work as installed will fulfill the requirements of the Contract Documents.

The undersigned agrees to repair or replace any or all of such Work that may prove to be defective in
workmanship or material together with any other adjacent Work that may be displaced in connection
with such replacement within a period of ONE (1) year(s) from the date of completion as
defined in Public Contract Code section 7107, subdivision (c), ordinary wear and tear and unusual
abuse or neglect excepted. The date of completion is _____, 20__.

In the event of the undersigned's failure to comply with the above-mentioned conditions within a
reasonable period of time, as determined by County, but not later than seven (7) days after being
notified in writing by County, the undersigned authorizes the County to proceed to have said defects
repaired and made good at the expense of the undersigned. The undersigned shall pay the costs and
charges therefor upon demand.

Date: _____

Proper Name of Contractor: _____

Signature: _____

Print Name: _____

Title: _____

Representatives to be contacted for service subject to terms of Contract:

NAME: _____

ADDRESS: _____

PHONE NO.: _____

END OF DOCUMENT

SECTION 00 72 13

GENERAL CONDITIONS

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GENERAL CONDITIONS

1. CONTRACT TERMS AND DEFINITIONS

1.1 Definitions

Wherever used in the Contract Documents, the following terms shall have the meanings indicated, which shall be applicable to both the singular and plural thereof:

1.1.1 Adverse Weather: Shall be only weather that satisfies all of the following conditions: (1) unusually severe precipitation, sleet, snow, hail, heat, or cold conditions in excess of the norm for the location and time of year it occurred, (2) unanticipated, and (3) at the Project.

1.1.2 Approval, Approved, and/or Accepted: Refer to written authorization, unless stated otherwise.

1.1.3 Architect: The individual, partnership, corporation, joint venture, or any combination thereof, named as Architect, who will have the rights and authority assigned to the Architect in the Contract Documents. The term Architect means the County's Architect on this Project or the Architect's authorized representative.

1.1.4 Architect's Supplemental Instruction: A document prepared by the Architect to provide supplemental instructions or interpretations or to order minor changes in the work not involving an adjustment in the Contract Amount or Contract Time.

1.1.5 Bidder: A contractor who intends to provide a bid to the County to perform the Work of this Contract.

1.1.6 Change Order: A written order to the Contractor authorizing an addition to, deletion from, or revision in the Work, and/or authorizing an adjustment in the Contract Price or Contract Time.

1.1.7 Construction Change Directive: A written order prepared and issued by the County, the Construction Manager, and/or the Architect and signed by the County and the Architect, directing a change in the Work.

1.1.8 Construction Manager: The individual, partnership, corporation, joint venture, or any combination thereof, or its authorized representative, named as such by the County. If no Construction Manager is used on the Project that is the subject of this contract, then all references to Construction Manager herein shall be read to refer to County.

1.1.9 Construction Schedule: The progress schedule of construction of the Project as provided by Contractor and approved by County.

1.1.10 Contract, Contract Documents: The Contract consists exclusively of the documents evidencing the agreement of the County and Contractor, identified as the Contract Documents. The Contract Documents consist of the following documents:

1.1.10.1 Notice to Bidders

1.1.10.2 Instructions to Bidders

1.1.10.3 Supplementary Instructions to Bidders – Construction Outreach Program

- 1.1.10.4** Bid Form
- 1.1.10.5** Bid Security Form
- 1.1.10.6** Designated Subcontractors List
- 1.1.10.7** Site-Visit Certification, if a site visit was required.
- 1.1.10.8** Non-Collusion Affidavit
- 1.1.10.9** Workers' Compensation Certification
- 1.1.10.10** Prevailing Wage and Related Labor Requirements Certification
- 1.1.10.11** Construction Outreach Program Certifications
- 1.1.10.12** Hazardous Materials Certification
- 1.1.10.13** Imported Materials Certification
- 1.1.10.14** Notice of Award
- 1.1.10.15** Agreement
- 1.1.10.16** Notice to Proceed
- 1.1.10.17** Escrow of Bid Documentation
- 1.1.10.18** Escrow Agreement for Security Deposits in Lieu of Retention
- 1.1.10.19** Performance Bond
- 1.1.10.20** Payment Bond (Contractor's Labor & Material Payment Bond)
- 1.1.10.21** General Conditions
- 1.1.10.22** Special Conditions
- 1.1.10.23** Hazardous Materials Procedures and Requirements
- 1.1.10.24** Divisions 01 through 49
- 1.1.10.25** All Plans, Technical Specifications, and Drawings
- 1.1.10.26** Any and all addenda to any of the above documents
- 1.1.10.27** Any and all change orders or written modifications to the above documents if approved in writing by the County.

1.1.11 Contract Price: The total monies payable to the Contractor under the terms and conditions of the Contract Documents.

1.1.12 Contract Time: The time period stated in the Agreement for the completion of the Work.

1.1.13 Contractor: The person or persons identified in the Agreement as contracting to perform the Work to be done under this Contract, or the legal representative of such a person or persons.

1.1.14 County: County of Alameda, acting through its Board of Supervisors or any of its authorized agents. The County may, at any time:

1.1.14.1 Direct the Contractor to communicate with or provide notice to the Construction Manager or the Architect on matters for which the Contract Documents indicate the Contractor will communicate with or provide notice to the County; and/or

1.1.14.2 Direct the Construction Manager or the Architect to communicate with or direct the Contractor on matters for which the Contract Documents indicate the County will communicate with or direct the Contractor.

1.1.15 Daily Job Report(s): Daily Project reports prepared by the Contractor's employee(s) who are present on Site, which shall include the information required herein.

1.1.16 Day(s): Unless otherwise designated, day(s) means calendar day(s).

1.1.17 Drawings: (or "Plans") The graphic and pictorial portions of the Contract Documents showing the design, location, scope and dimensions of the work, generally including plans, elevations, sections, details, schedules, sequence of operation, and diagrams.

1.1.18 Force Account Directive: A process that may be used when the County and the Contractor cannot agree on a price for a specific portion of work or before the Contractor prepares prices for a specific portion of work and whereby the Contractor performs the work as indicated herein on a time and materials basis.

1.1.19 Premises: The real property owned by the County on which the Site is located.

1.1.20 Product(s): New material, machinery, components, equipment, fixtures, and systems forming the Work, including existing materials or components required and approved by the County for reuse.

1.1.21 Product Data: Illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor to illustrate a material, product, or system for some portion of the Work.

1.1.22 Project: The planned undertaking as provided for in the Contract Documents.

1.1.23 Program Manager: The individual, partnership, corporation, joint venture, or any combination thereof, or its authorized representative, named as such by the County. If no Program Manager is designated for Project that is the subject of this Contract, then all references to Project Manager herein shall be read to refer to County.

1.1.24 Provide: Shall include "provide complete in place," that is, "furnish and install," and "provide complete and functioning as intended in place" unless specifically stated otherwise.

1.1.25 Request for Information: A written request prepared by the Contractor requesting that the Architect provide additional information necessary to clarify or amplify an item in the Contract Documents that the Contractor believes is not clearly shown or called for in the Drawings or Specifications or other portions of the Contract Documents, or to address problems that have arisen under field conditions.

1.1.26 Request for Substitution: A request by Contractor to substitute an equal or superior material, product, thing, or service for a specific material, product, thing, or service that has been designated in the Contract Documents by a specific brand or trade name.

1.1.27 Safety Orders: Written and/or verbal orders for construction issued by the California Division of Industrial Safety ("CalOSHA") or by the United States Occupational Safety and Health Administration ("OSHA").

1.1.28 Safety Plan: Contractor's safety plan specifically adapted for the Project. Contractor's Safety Plan shall comply with all provisions regarding Project safety, including all applicable provisions in these General Conditions.

1.1.29 Samples: Physical examples that illustrate materials, products, equipment, finishes, colors, or workmanship and that, when approved in accordance with the Contract Documents, establish standards by which portions of the Work will be judged.

1.1.30 Shop Drawings: All drawings, prints, diagrams, illustrations, brochures, schedules, and other data that are prepared by the Contractor, a subcontractor, manufacturer, supplier, or distributor, that illustrate how specific portions of the Work shall be fabricated or installed.

1.1.31 Site: The Project site as shown on the Drawings.

1.1.32 Specifications: That portion of the Contract Documents, Division 01 through Division 49, and all technical sections, and addenda to all of these, if any, consisting of written descriptions and requirements of a technical nature of materials, equipment, construction methods and systems, standards, and workmanship.

1.1.33 Subcontractor: A contractor and/or supplier who is under contract with the Contractor or with any other subcontractor, regardless of tier, to perform a portion of the Work of the Project.

1.1.34 Submittal Schedule: The schedule of submittals as provided by Contractor and approved by County.

1.1.35 Surety: The person, firm, or corporation that executes as surety the Contractor's Performance Bond and Payment Bond, and must be a California admitted surety insurer as defined in the Code of Civil Procedure Section 995.120.

1.1.36 Work: All labor, materials, equipment, components, appliances, supervision, coordination, and services required by, or reasonably inferred from, the Contract Documents, that are necessary for the construction and completion of the Project.

1.2 Laws Concerning The Contract

Contract is subject to all provisions of the Constitution and laws of California governing, controlling, or affecting County, or the property, funds, operations, or powers of County, and such provisions are by this reference made a part hereof. Any provision required by law to be included in this Contract shall be deemed to be inserted.

1.3 No Oral Agreements

No oral agreement or conversation with any officer, agent, or employee of County, either before or after execution of Contract, shall affect or modify any of the terms or obligations contained in any of the documents comprising the Contract.

1.4 No Assignment

Contractor shall not assign this Contract or any part thereof including, without limitation, any services or money to become due hereunder without the prior written consent of the County. Assignment without County's prior written consent shall be null and void. Any assignment of money due or to become due under this Contract shall be subject to a prior lien for services rendered or material supplied for performance of work called for under this Contract in favor of all persons, firms, or corporations rendering services or supplying material to the extent that claims are filed pursuant to the Civil Code, Code of Civil Procedure, Government Code, Labor Code, and/or Public Contract Code, and shall also be subject to deductions for liquidated damages or withholding of payments as determined by County in accordance with this Contract. Contractor shall not assign or transfer in any manner to a Subcontractor or supplier the right to prosecute or maintain an action against the County.

1.5 Notice And Service Thereof

1.5.1 Any notice from one party to the other or otherwise under Contract shall be in writing and shall be dated and signed by the party giving notice or by a duly authorized representative of that party. Any notice shall not be effective for any purpose whatsoever unless served in one of the following manners:

- 1.5.1.1** If notice is given by personal delivery thereof, it shall be considered delivered on the day of delivery.
- 1.5.1.2** If notice is given by overnight delivery service, it shall be considered delivered on (1) day after date deposited, as indicated by the delivery service.
- 1.5.1.3** If notice is given by depositing same in United States mail, enclosed in a sealed envelope, it shall be considered delivered three (3) days after date deposited, as indicated by the postmarked date.
- 1.5.1.4** If notice is given by registered or certified mail with postage prepaid, return receipt requested, it shall be considered delivered on the day the notice is signed for.

1.6 No Waiver

The failure of County in any one or more instances to insist upon strict performance of any of the terms of this Contract or to exercise any option herein conferred shall not be construed as a waiver or relinquishment to any extent of the right to assert or rely upon any such terms or option on any future occasion. No action or failure to act by the County, Architect, or Construction Manager shall constitute a waiver of any right or duty afforded the County under the Contract, nor shall any action or failure to act constitute an approval of or acquiescence in any breach thereunder, except as may be specifically agreed in writing.

1.7 Substitutions For Specified Items

See Special Conditions.

1.8 Materials and Work

1.8.1 Except as otherwise specifically stated in this Contract, Contractor shall provide and pay for all materials, labor, tools, equipment, transportation, supervision, temporary constructions of every nature, and all other services, management, and facilities of every nature whatsoever necessary to execute and complete this Contract within the Contract Time.

1.8.2 Unless otherwise specified, all materials shall be new, and the best of their respective kinds and grades as noted or specified and workmanship shall be of good quality.

1.8.3 Materials shall be furnished in ample quantities and at such times as to ensure uninterrupted progress of Work and shall be stored properly and protected as required.

1.8.4 For all materials and equipment specified or indicated in the Drawings, the Contractor shall provide all labor, materials, equipment, and services necessary for complete assemblies and complete working systems, functioning as intended. Incidental items not indicated on Drawings, nor mentioned in the Specifications, that can legitimately and reasonably be inferred to belong to the Work described, or be necessary in good practice to provide a complete assembly or system, shall be furnished as though itemized here in every detail. In all instances, material and equipment shall be installed in strict accordance with each manufacturer's most recent published recommendations and specifications.

1.8.5 Contractor shall, after award of Contract by County and after relevant submittals have been approved, place orders for materials and/or equipment as specified so that delivery of same may be made without delays to the Work. Contractor shall, upon demand from County, present documentary evidence showing that orders have been placed.

1.8.6 County reserves the right but has no obligation, for any neglect in complying with the above instructions, to place orders for such materials and/or equipment as it may deem advisable in order that the Work may be completed at the date specified in the Agreement, and all expenses incidental to the procuring of said materials and/or equipment shall be paid for by Contractor or withheld from payment(s) to Contractor.

1.8.7 Contractor warrants good title to all material, supplies, and equipment installed or incorporated in Work and agrees upon completion of all Work to deliver the Site to County, together with all improvements and appurtenances constructed or placed thereon by it, and free from any claims, liens, or charges. Contractor further agrees that neither it nor any person, firm, or corporation furnishing any materials or labor for any work covered by the Contract shall have any right to lien any portion of the Premises or any improvement or appurtenance thereon, except that Contractor may install metering devices or other equipment of utility companies or of political subdivision, title to which is commonly retained by utility company or political subdivision. In the event of installation of any such metering device or equipment, Contractor shall advise County as to owner thereof.

1.8.8 Nothing contained in this Article, however, shall defeat or impair the rights of persons furnishing materials or labor under any bond given by Contractor for their protection or any rights under any law permitting such protection or any rights under any law permitting such persons to look to funds due Contractor in hands of County (e.g., Stop

Notices), and this provision shall be inserted in all subcontracts and material contracts and notice of its provisions shall be given to all persons furnishing material for work when no formal contract is entered into for such material.

1.8.9 Title to new materials and/or equipment for the Work of this Contract and attendant liability for its protection and safety shall remain with Contractor until incorporated in the Work of this Contract and accepted by County. No part of any materials and/or equipment shall be removed from its place of storage except for immediate installation in the Work of this Contract. Contractor shall keep an accurate inventory of all materials and/or equipment in a manner satisfactory to County or its authorized representative and shall, at the County's request, forward it to the County.

2. COUNTY

2.1 Occupancy

County reserves the right to occupy portions of the Project at any time before completion. Neither the County's Final Acceptance, the making of Final Payment, any provision in Contract Documents, nor the use or occupancy of the Work, in whole or in part, by County shall constitute acceptance of Work not in accordance with the Contract Documents nor relieve the Contractor or the Contractor's Performance Bond Surety from liability with respect to any warranties or responsibility for faulty or defective Work or materials, equipment and workmanship incorporated therein.

3. ARCHITECT

3.1 Role and Authority

The Architect shall represent County during the Project and will observe the progress and quality of the Work on behalf of County. Architect shall have the authority to act on behalf of County to the extent expressly provided in the Contract Documents and to the extent determined by County. Architect shall have authority to reject materials, workmanship, and/or the Work whenever rejection may be necessary, in Architect's reasonable opinion, to ensure the proper execution of the Contract.

3.2 Interpretations

Architect shall, with County and on behalf of County, determine the amount, quality, acceptability, and fitness of all parts of the Work, and interpret the Specifications, Drawings, and shall, with County, interpret all other Contract Documents.

3.3 Laws

Architect shall have all authority and responsibility established by law, including Title 24 of the California Code of Regulations.

3.4 Communications

Contractor shall provide County and the Construction Manager with a copy of all written communication between Contractor and Architect at the same time as that communication is made to Architect, including, without limitation, all RFIs, correspondence, submittals, claims, and proposed change orders.

4. CONSTRUCTION MANAGER

4.1 Role and Authority

If a construction manager is used on this Project ("Construction Manager" or "CM"), the Construction Manager will provide administration of the Contract on the County's behalf. After execution of the Contract and Notice to Proceed, all correspondence, and/or instructions from Contractor and/or County shall be forwarded through the Construction Manager. The Construction Manager will not be responsible for and will not have control or charge of construction means, methods, techniques, sequences, or procedures or for safety precautions in connection with the Work, which shall all remain the Contractor's responsibility.

4.2 Authority to Reject

The Construction Manager, however, will have authority to reject materials and/or workmanship not conforming to the Contract Documents, as determined by the County and/or the Architect. The Construction Manager shall also have the authority to require special inspection or testing of any portion of the Work, whether it has been fabricated, installed or fully completed. Any decision made by the Construction Manager, in good faith, shall not give rise to any duty or responsibility of the Construction Manager to the Contractor, any Subcontractor, their agents, employees, or other persons performing any of the Work. The Construction Manager shall have free access to any or all parts of the Work at any time.

4.3 If No Construction Manager

If the County does not use a Construction Manager on this Project, all references to Construction Manager or CM shall be read as County.

5. INSPECTIONS AND TESTS

5.1 Tests and Inspections

5.1.1 The County will select an independent testing laboratory to conduct tests. Selection of the materials required to be tested shall be by the laboratory or the County's representative and not by the Contractor. The Contractor shall notify the County's representative a sufficient time in advance of its readiness for required observation or inspection.

5.1.2 The Contractor shall notify the County's representative a sufficient time in advance of the manufacture of material to be supplied under the Contract Documents that must by terms of the Contract Documents be tested, in order that the County may arrange for the testing of same at the source of supply. This notice shall be, at a minimum, seventy-two (72) hours prior to the manufacture of the material that needs to be tested.

5.1.3 Any material shipped by the Contractor from the source of supply prior to having satisfactorily passed such testing and inspection or prior to the receipt of notice from said representative that such testing and inspection will not be required, shall not be incorporated into and/or onto the Project.

5.1.4 The County will select and pay testing laboratory costs for all tests and inspections. Costs of tests of any materials found to be not in compliance with the Contract Documents shall be paid for by the County and reimbursed by the Contractor or deducted from the Contract Price.

5.2 Costs for After Hours and/or Off Site Inspections

If the Contractor performs Work outside the County's regular working hours or requests the County to perform inspections off Site, costs of any inspections required outside regular working hours or off Site shall be borne by the Contractor and may be invoiced to the Contractor by the County or the County may deduct those expenses from the next Progress Payment.

6. CONTRACTOR

Contractor shall construct the Work for the Contract price including any adjustment(s) to the Contract Price pursuant to provisions herein regarding changes to the Contract Price. Except as otherwise noted, Contractor shall provide and pay for all labor, materials, equipment, permits, fees, licenses, facilities, transportation, taxes, and services necessary for the proper execution and completion of the Work, except as indicated herein.

6.1 Status of Contractor

6.1.1 Contractor is and shall at all times be deemed to be an independent contractor and shall be wholly responsible for the manner in which it and its Subcontractors perform the services required of it by the Contract Documents. Nothing herein contained shall be construed as creating the relationship of employer and employee, or principal and agent, between the County, or any of the County's employees or agents, and Contractor or any of Contractor's Subcontractors, agents or employees. Contractor assumes exclusively the responsibility for the acts of its employees as they relate to the services to be provided during the course and scope of their employment. Contractor, its agents, its employees and its Subcontractors shall not be entitled to any rights or privileges of County employees. County shall be permitted to monitor the Contractor's activities to determine compliance with the terms of this Contract.

6.1.2 As required by law, Contractor and all Subcontractors shall be properly licensed and regulated by the Contractor's State License Board, 3132 Bradshaw Road, Post Office Box 2600, Sacramento, California 98826, <http://www.cslb.ca.gov>.

6.2 Contractor's Supervision

6.2.1 At all times during progress of the Work, while any work is being performed, Contractor shall keep on the Premises, and at all other locations where any Work related to the Contract is being performed, a competent project manager and construction superintendent who are employees of the Contractor, to whom the County does not object and at least one of whom shall be fluent in English, written and verbal.

6.2.2 The project manager and construction superintendent shall both speak fluently the predominant language of the Contractor's employees fluently. All workers shall be sufficiently competent in English to respond to inquiries and instructions and give directions concerning matters of safety and concerning the identification and location of site foremen, the Contractor's construction superintendent, and the Contractor's project manager.

6.2.3 Before commencing the Work herein, Contractor shall give written notice to County of the name and relevant credentials of its project manager and construction superintendent. Neither the Contractor's project manager nor construction superintendent shall be changed except with prior written notice to County and County's approval, unless the Contractor's project manager and/or construction superintendent proves to be unsatisfactory to Contractor, County, any of the County's employees, agents,

the Construction Manager, or the Architect, in which case, Contractor shall notify County in writing. The Contractor's project manager and construction superintendent shall each represent Contractor, and all directions given to Contractor's project manager and/or construction superintendent shall be as binding as if given to Contractor.

6.2.4 Contractor shall give efficient supervision to Work, using its best skill and attention. Contractor shall carefully study and compare all Contract Documents, Drawings, Specifications, and other instructions and shall at once report to County, Construction Manager, and Architect any error, inconsistency, or omission that Contractor or its employees and Subcontractors may discover, in writing. The Contractor shall have responsibility for discovery of errors, inconsistencies, or omissions.

6.3 Duty to Provide Fit Workers

6.3.1 Contractor and Subcontractor(s) shall at all times enforce strict discipline and good order among their employees and shall not employ or work any unfit person or anyone not skilled in work assigned to that person. It shall be the responsibility of Contractor to ensure compliance with this requirement. County may require Contractor to permanently remove unfit persons from Project Site.

6.3.2 Any person in the employ of Contractor or Subcontractor(s) whom County may deem incompetent or unfit shall be excluded from working on the Project and shall not again be employed on the Project except with the prior written consent of County.

6.3.3 The Contractor shall furnish labor that can work in harmony with all other elements of labor employed or to be employed in the Work.

6.3.4 If Contractor intends to make any change in the name or legal nature of the Contractor's entity, Contractor must first notify the County. The County shall determine if Contractor's intended change is permissible while performing this Contract.

6.4 Purchase of Materials and Equipment

The Contractor is required to order, obtain, and store materials and equipment sufficiently in advance of its Work at no additional cost or advance payment from County to assure that there will be no delays.

6.5 Documents On Work Site

6.5.1 Contractor shall at all times keep on the Work Site, or such other location as County may authorize in writing one legible copy of all Contract Documents, including Addenda and Change Orders, and titles 19 and 24 of the California Code of Regulations, the specified edition(s) of the Uniform Building Code, all approved Drawings, Plans, Schedules, and Specifications, and all codes and documents referred to in the Specifications, and made part thereof. These documents shall be kept in good order and available to County, Construction Manager, Architect, Architect's representatives, and all authorities having jurisdiction. Contractor shall be acquainted with and comply with the provisions of these titles as they relate to this Project. Contractor shall also be acquainted with and comply with all California Code of Regulations provisions relating to conditions on this Project. Contractor shall coordinate with Architect and Construction Manager.

6.5.2 Daily Job Reports. Contractor shall maintain, at a minimum, at least one (1) set of Daily Job Reports on the Project. These must be prepared by the Contractor's

employee(s) who are present on Site and must include, at a minimum, the following information:

- 6.5.2.1** A brief description of all Work performed on that day. This shall include a listing of what was done, which contractors were on site that day, and where on the site the work was performed.
- 6.5.2.2** A summary of all other pertinent events and/or occurrences on that day.
- 6.5.2.3** The weather conditions on that day.
- 6.5.2.4** A list of all Subcontractor(s) working on that day,
- 6.5.2.5** A list of each Contractor employee working on that day and the total hours worked for each employee.
- 6.5.2.6** A complete list of all equipment on Site that day, whether in use or not.
- 6.5.2.7** All complete list of all materials, supplies, and equipment delivered on that day.
- 6.5.2.8** A complete list of all inspections and tests performed on that day.
- 6.5.2.9** Each day Contractor shall provide a copy of the previous day's Daily Job Report to the County or the County's Construction Manager.

6.6 Preservation of Records

The County shall have the right to examine and audit all Daily Job Reports or other Project records of Contractor's project manager(s), project superintendent(s), and/or project foreperson(s), all certified payroll records and/or related documents including, without limitation, payroll, payment, timekeeping and tracking documents; all books, estimates, records, contracts, documents, bid documents, bid cost data, subcontract job cost reports, and other data of the Contractor, any Subcontractor, and/or supplier, including computations and projections related to bidding, negotiating, pricing, or performing the Work or Contract modification, in order to evaluate the accuracy, completeness, and currency of the cost, manpower, coordination, supervision, or pricing data at no additional cost to the County. These documents may be duplicative and/or be in addition to any Bid Documents held in escrow by the County. The Contractor shall make available at its office at all reasonable times the materials described in this paragraph for the examination, audit or reproduction until three (3) years after final payment under this Contract. Notwithstanding the provisions above, Contractor shall provide any records requested by any governmental agency if available, after the time set forth above.

6.7 Integration of Work

6.7.1 Contractor shall do all cutting, fitting, patching, and preparation of Work as required to make its several parts come together properly, to fit it to receive or be received by work of other contractors, and to coordinate tolerances to various pieces of work, showing upon, or reasonably implied by, the Drawings and Specifications for the completed structure, and shall conform them as County and/or Architect may direct.

6.7.2 All cost caused by defective or ill-timed Work shall be borne by Contractor, inclusive of repair work.

6.7.3 Contractor shall not endanger any work performed by it or anyone else by cutting, excavating, or otherwise altering work and shall not cut or alter work of any other contractor except with the consent of County.

6.8 Obtaining of Permits and Licenses

Contractor shall secure and pay for all permits, licenses, and certificates necessary for prosecution of Work before the date of the commencement of the Work or before the permits, licenses, and certificates are legally required to continue the Work without interruption. The Contractor shall obtain and pay, only when legally required, for all licenses, permits, inspections, and inspection certificates required to be obtained from or issued by any authority having jurisdiction over any part of the Work included in the Contract. All final permits, licenses, and certificates shall be delivered to County before demand is made for final payment.

6.9 Work to Comply With Applicable Laws and Regulations

6.9.1 Contractor shall give all notices and comply with the following specific laws, ordinances, rules, and regulations and all other applicable laws, ordinances, rules, and regulations bearing on conduct of Work as indicated and specified, including but not limited to the appropriate statutes and administrative code sections. If Contractor observes that Drawings and Specifications are at variance therewith, or should Contractor become aware of the development of conditions not covered by Contract Documents that will result in finished Work being at variance therewith, Contractor shall promptly notify County in writing, including by e-mail, and any changes deemed necessary by County shall be made as provided in Contract for changes in Work.

- 6.9.1.1** National Electrical Safety Code, U. S. Department of Commerce
- 6.9.1.2** National Board of Fire Underwriters' Regulations
- 6.9.1.3** Uniform Building Code, latest addition, and the California Code of Regulations, title 24, including amendments
- 6.9.1.4** Manual of Accident Prevention in Construction, latest edition, published by A.G.C. of America
- 6.9.1.5** Industrial Accident Commission's Safety Orders, State of California
- 6.9.1.6** Regulations of the State Fire Marshall (title 19, California Code of Regulations) and Pertinent Local Fire Safety Codes
- 6.9.1.7** Americans with Disabilities Act
- 6.9.1.8** Government Code of the State of California
- 6.9.1.9** Labor Code of the State of California, Division 2, part 7, Public Works and Public Agencies
- 6.9.1.10** Public Contract Code of the State of California
- 6.9.1.11** California Art Preservation Act
- 6.9.1.12** U. S. Copyright Act
- 6.9.1.13** U. S. Visual Artists Rights Act

6.9.2 Contractor shall comply with all applicable mitigation measures, if any, adopted by any public agency with respect to this Project pursuant to the California Environmental Quality Act (Public Resources Code Section 21000 et. Seq.)

6.9.3 If Contractor performs any Work that it knew, or through exercise of reasonable care should have known, to be contrary to any applicable laws, ordinance, rules, or regulations, Contractor shall bear all costs arising therefrom.

6.9.4 Where Specifications or Drawings state that materials, processes, or procedures must be approved by the State Fire Marshall, or other body or agency, Contractor shall be responsible for satisfying requirements of such bodies or agencies.

6.10 Safety/Protection of Persons and Property

6.10.1 The Contractor will be solely and completely responsible for conditions of the Work Site, including safety of all persons and property during performance of the Work. This requirement will apply continuously and not be limited to normal working hours.

6.10.2 The wearing of hard hats will be mandatory at all times for all personnel on Site. Contractor shall supply sufficient hard hats to properly equip all employees and visitors.

6.10.3 Any construction review of the Contractor's performance is not intended to include a review of the adequacy of the Contractor's safety measures in, on, or near the Work Site.

6.10.4 Implementation and maintenance of safety programs shall be the sole responsibility of the Contractor.

6.10.5 The Contractor shall furnish to the County a copy of the Contractor's safety plan within the time frame indicated in the Contract Documents and specifically adapted for the Project.

6.10.6 Contractor shall be responsible for all damages to persons or property that occur as a result of its fault or negligence in connection with the prosecution of this Contract and shall take all necessary measures and be responsible for the proper care and completion and final acceptance by County. All Work shall be solely at Contractor's risk with the exception of damage to the Work caused by "acts of God" as defined in Public Contract Code Section 7105.

6.10.7 Contractor shall take, and require Subcontractors to take, all necessary precautions for safety of workers on the Project and shall comply with all applicable federal, state, local, and other safety laws, standards, orders, rules, regulations, and building codes to prevent accidents or injury to persons on, about, or adjacent to premises where Work is being performed and to provide a safe and healthful place of employment. Contractor shall furnish, erect, and properly maintain at all times, all necessary safety devices, safeguards, construction canopies, signs, nets, barriers, lights, and watchmen for protection of workers and the public and shall post danger signs warning against hazards created by such features in the course of construction.

6.10.8 Hazards Control – Contractor shall store volatile wastes in covered metal containers and remove them from the Site daily. Contractor shall prevent

the accumulation of wastes that create hazardous conditions. Contractor shall provide adequate ventilation during use of volatile or noxious substances.

6.10.9 Contractor shall designate a responsible member of its organization on the Project, whose duty shall be to post information regarding protection and obligations of workers and other notices required under occupational safety and health laws, to comply with reporting and other occupational safety requirements, and to protect the life, safety, and health of workers. Name and position of person so designated shall be reported to County by Contractor.

6.10.10 Contractor shall correct any violations of safety laws, rules, orders, standards, or regulations. Upon the issuance of a citation or notice of violation by the Division of Occupational Safety and Health, Contractor shall correct such violation promptly.

6.10.11 Contractor shall comply with any County stormwater requirements that are approved by the County and applicable to the Project, at no additional cost to the County.

6.10.12 In an emergency affecting safety of life or of work or of adjoining property, Contractor, without special instruction or authorization, shall act, at its discretion, to prevent such threatened loss or injury. Any compensation claimed by Contractor on account of emergency work shall be determined by agreement.

6.10.13 All connections to public utilities and/or existing on-site services shall be made and maintained in such a manner as to not interfere with the continuing use of same by the County during the entire progress of the Work.

6.10.14 Contractor shall provide such heat, covering, and enclosures as are necessary to protect all Work, materials, equipment, appliances, and tools against damage by weather conditions, such as extreme heat, cold, rain, snow, dry winds, flooding, or dampness.

6.10.15 The Contractor shall protect and preserve the Work from all damage or accident, providing any temporary roofs, window and door coverings, boxing, or other construction. The Contractor shall be responsible for existing structures, walks, roads, trees, landscaping, and/or improvements in working areas; and shall provide adequate protection therefor. If temporary removal is necessary of any of the above items, or damage occurs due to the Work, the Contractor shall replace same at his expense with same kind, quality, and size of Work or item damaged. This shall include any adjoining property of the County and others.

6.10.16 Contractor shall take adequate precautions to protect existing roads, sidewalks, curbs, pavements, utilities, adjoining property, and structures (including, without limitation, protection from settlement or loss of lateral support), and to avoid damage thereto, and repair any damage thereto caused by construction operations.

6.10.17 Contractor shall confine apparatus, the storage of materials, and the operations of workers to limits indicated by law, ordinances, permits, or directions of Architect, and shall not interfere with the Work or unreasonably encumber Premises or overload any structure with materials. Contractor shall enforce all instructions of County and Architect regarding signs, advertising, fires, and smoking, and require that all workers comply with all regulations while on Project Site.

6.10.18 Contractor, Contractor's employees, Subcontractors, Subcontractors' employees, or any person associated with the Work shall conduct themselves in a manner appropriate for a public site. No verbal or physical contact with the public, neighbors, or tenants, or profanity, or inappropriate attire or behavior will be permitted. County may require Contractor to permanently remove non-complying persons from Project Site.

6.10.19 Contractor shall take care to prevent disturbing or covering any survey markers, monuments, or other devices marking property boundaries or corners. If such markers are disturbed, Contractor shall have a civil engineer, registered as a professional engineer in California, replace them at no cost to County.

6.10.20 In the event that the Contractor enters into any agreement with owners of any adjacent property to enter upon the adjacent property for the purpose of performing the Work, Contractor shall fully indemnify, defend, and hold harmless each person, entity, firm, or agency that owns or has any interest in adjacent property. The form and content of the agreement of indemnification shall be approved by the County prior to the commencement of any Work on or about the adjacent property. The Contractor shall also indemnify the County as provided in the indemnification provision herein. These provisions shall be in addition to any other requirements of the owners of the adjacent property.

6.11 Working Evenings and Weekends

Contractor may be required to work evenings and/or weekends at no additional cost to the County. Contractor shall give the County seventy-two (72) hours notice prior to performing any evening and/or weekend work. Contractor shall perform all evening and/or weekend work only upon County's approval and in compliance with all applicable rules, regulations, laws, and local ordinances including, without limitation, all noise and light limitations. Contractor shall reimburse the County for any expenses necessitated by the Contractor's evening and/or weekend work.

6.12 Badge Policy For Contractors

All Contractors doing work for Alameda County will provide their workers with identification badges. These badges will be worn by all members of the Contractor's staff who are working in a County facility.

6.12.1 Badges must be filled out in full and contain the following information:

- 6.12.1.1** Name of Contractor and Contractor's Company logo, if any
- 6.12.1.2** Name and front facial photograph of Employee
- 6.12.1.3** Contractor's address and phone number
- 6.12.1.4** Name and phone number of Project Manager (County)

6.12.2 Badges are to be worn when the Contractor or his/her employees are on site and must be visible at all times. Contractors must inform their employees that they are required to allow County employees to review the information on the badges upon request

6.12.3 Failure to display identification badges as required by this policy may result in the assessment of fines against the Contractor.

6.13 County Drug Policy - Drug-Free Work Place

6.13.1 Contractor, Contractor's employees, and Contractor's Subcontractors and their employees shall comply with the County's policy of maintaining a drug-free workplace. Neither Contractor/Subcontractor nor Contractor's/Subcontractor's employees shall unlawfully manufacture, distribute, dispense, possess or use controlled substances, as defined in 21 U.S. Code Section 812, including marijuana, heroin, cocaine, and amphetamines, at any County facility or work site. If Contractor or any employee of contractor is convicted or pleads nolo contendere to a criminal drug statute violation occurring at a County facility or work site, the Contractor within five (5) calendar days thereafter shall notify the head of the County department/agency for which the contract services are performed. Violation of this provision shall constitute a material breach of this contract.

6.14 Cleaning Up

6.14.1 The Contractor shall provide all services, labor, materials, and equipment necessary for protecting the Work, all Project occupants, furnishings, equipment, and building structure from damage until its completion and final acceptance by County. Dust barriers shall be provided to isolate dust and dirt from construction operations. At completion of the Work and portions thereof, Contractor shall clean to the original state any areas beyond the Work area that become dust laden as a result of the Work. The Contractor must erect the necessary warning signs and barricades to ensure the safety of all Project occupants. The Contractor at all times must maintain good housekeeping practices to reduce the risk of fire damage and must make a fire extinguisher, fire blanket, and/or fire watch, as applicable, available at each location where cutting, braising, soldering, and/or welding is being performed and locations where there is an increased risk of fire.

6.14.2 Contractor at all times shall keep Premises free from debris such as waste, rubbish, and excess materials and equipment caused by the Work. Contractor shall not leave debris under, in, or about the Premises, but shall promptly remove same from the Premises on a daily basis. If Contractor fails to clean up, County may do so, and the cost thereof shall be charged to Contractor. If Contract is for work on an existing facility, Contractor shall also perform specific clean-up on or about the Premises upon request by the County as it deems necessary for the continuing use of the facility. Contractor shall comply with all related provisions of the Specifications.

6.14.3 If the Construction Manager, Architect, or County observes the accumulation of trash and debris, the County will give the Contractor a 24-hour written notice to mitigate the condition.

6.14.4 Should the Contractor fail to perform the required clean-up, or should the clean-up be deemed unsatisfactory by the County, the County will then perform the clean-up. All cost associated with the clean-up work (including all travel, payroll burden, and costs for supervision) will be deducted from the Contract Price, or County may withhold those amounts from payment(s) to Contractor.

7. SUBCONTRACTORS

7.1 Contractor Shall Provide Subcontractor Information

Contractor shall provide the County with information for all Subcontracts as indicated in the Contractor's Submittals and Schedules Section herein.

7.2 No Contractual Relationship Between County and Subcontractors

No contractual relationship exists between the County and any Subcontractor, Supplier, or sub-subcontractor supplier, or sub-subcontractor by reason of this Contract.

7.3 Contractor Binds Every Subcontractor by Terms of Contract

Contractor agrees to bind every Subcontractor by terms of Contract as far as those terms are applicable to Subcontractor's work. If Contractor shall subcontract any part of this Contract, Contractor shall be as fully responsible to County for acts and omissions of any Subcontractor and of persons either directly or indirectly employed by any Subcontractor, as it is for acts and omissions of persons directly employed by Contractor. The divisions or sections of the Specifications are not intended to control the Contractor in dividing the Work among Subcontractors or limit the work performed by any trade.

7.4 No Waiver of Obligations

County's consent to, or approval of, or failure to object to, any Subcontractor under this Contract shall not in any way relieve Contractor of any obligations under this Contract, and no such consent shall be deemed to waive any provisions of this Contract.

7.5 Contractor to Familiarize Itself with Laws

Contractor is directed to familiarize itself with sections 4100 through 4114 of the Public Contract Code of the State of California, as regards subletting and subcontracting, and to comply with all applicable requirements therein. In addition, Contractor is directed to familiarize itself with Sections 1720 through 1861 of the Labor Code of the State of California, as regards the payment of prevailing wages and related issues, and to comply with all applicable requirements therein all including, without limitation, Section 1775 and the Contractor's and Subcontractors' obligations and liability for violations of prevailing wage law and other applicable laws.

7.6 Subcontractor Substitutions

No Contractor whose Bid is accepted shall, without consent of the awarding authority and in full compliance with section 4100, et seq, of the Public Contract Code, including, without limitation, sections 4107, 4107.5, and 4109 of the Public Contract Code, either:

7.6.1 Substitute any person as a Subcontractor in place of the Subcontractor designated in the original Bid; or

7.6.2 Permit any Subcontract to be assigned or transferred, or allow any portion of the Work to be performed by anyone other than the original Subcontractor listed in the Bid; or

7.6.3 Sublet or subcontract any portion of the Work in excess of one-half of one percent (1/2 of 1%) of the Contractor's total bid as to which his original bid did not designate a Subcontractor.

7.7 Subcontractor Coordination

The Contractor shall be responsible for the coordination of the trades, Subcontractors, sub-subcontractors, and material or equipment suppliers working on the Project.

7.8 Subcontractor Relations

Contractor is solely responsible for settling any differences between the Contractor and its Subcontractor(s) or between Subcontractors.

7.9 Assignment or Termination

Contractor must include in all of its subcontracts the assignment provisions as indicated in the Termination section of these General Conditions.

8. OTHER CONTRACTS/CONTRACTORS

8.1 County Right to Perform

County reserves the right to let other contracts, and/or to perform work with its own forces, in connection with the Project. Contractor shall afford other County and other contractors' reasonable opportunity for introduction and storage of their materials and execution of their work and shall properly coordinate and connect Contractor's Work with the work of County and other contractors.

8.2 Protection of Work

In addition to Contractor's obligation to protect its own Work, Contractor shall protect the work of County and any other contractor that Contractor encounters while working on the Project.

8.3 Coordination with Other Work

If any part of Contractor's Work depends for proper execution or results upon work of County or any other contractor, the Contractor shall inspect and promptly report to the County in writing, including by e-mail, before proceeding with its Work any defects in County's or any other contractor's work that render Contractor's Work unsuitable for proper execution and results. Contractor shall be held accountable for damages to County for County's or any other contractor's work that Contractor failed to inspect or should have inspected. Contractor's failure to inspect and report shall constitute Contractor's acceptance of all County's or other contractor's work as fit and proper for reception of Contractor's Work, except as to defects that may develop in County's or other contractor's work after execution of Contractor's Work.

8.4 Measurement of Work Performed

To ensure proper execution of its subsequent work, Contractor shall measure and inspect work already in place and shall at once report to the County in writing, including by e-mail, any discrepancy between that executed work and the Contract Documents.

8.5 Knowledge of Other Work

Contractor shall ascertain to its own satisfaction the scope of the Project and nature of any County-performed work or other contracts that have been or may be awarded

by County in prosecution of the Project to the end that Contractor may perform this Contract in light of the other contracts, if any.

8.6 No Exclusive Occupancy of Site

Nothing herein contained shall be interpreted as granting to Contractor exclusive occupancy of the Site, the Premises, or of the Project. Contractor shall not cause any unnecessary hindrance or delay to the use and/or operation(s) of the Premises and/or to County or any other contractor working on the Project. If simultaneous execution of any contract or operation is likely to cause interference with performance of Contractor's Contract, Contractor shall coordinate with those contractor(s), person(s), and/or entity(s) and shall notify the County of the resolution.

9. DRAWINGS AND SPECIFICATIONS

9.1 List of all Drawings

A complete list of all Drawings that form a part of the Contract is to be found as an index on the Drawings themselves, and/or may be provided to the Contractor and/or in the Table of Contents.

9.2 Technical and Trade Words

Materials or Work described in words that so applied have a well-known technical or trade meaning shall be deemed to refer to recognized standards unless noted otherwise.

9.3 Trade Name or Trade Term

It is not the intention of this Contract to go into detailed descriptions of any materials and/or methods commonly known to the trade under "trade name" or "trade term." The mere mention or notation of "trade name" or "trade term" shall be considered a sufficient notice to Contractor that it will be required to complete the work so named, complete, finished, and operable, with all its appurtenances, according to the best practices of the trade.

9.4 The Naming of any Material and/or Equipment Shall Mean Furnishing

The naming of any material and/or equipment shall mean furnishing and installing of same, including all incidental and accessory items thereto and/or labor, therefore, as per best practices of the trade(s) involved, unless specifically noted otherwise.

9.5 Contract Documents are Complementary

Contract Documents are complementary, and what is called for by one shall be binding as if called for by all. As such, Drawings and Specifications are intended to be fully cooperative and to agree. However, if Contractor observes that Drawings and Specifications are in conflict, Contractor shall promptly notify County and Architect in writing, including by e-mail, and any necessary changes shall be made as provided in the Contract Documents.

9.6 Drawings and Specifications are Intended to Comply With All Laws

Drawings and Specifications are intended to comply with all laws ordinances, rules, and regulations of constituted authorities having jurisdiction, and where referred to in the Contract Documents, the laws, ordinances, rules, and regulations shall be considered as

a part of the Contract within the limits specified. Contractor shall bear all expense of correcting work done contrary to said laws, ordinances, rules, and regulations.

9.7 Plans, Drawings, Designs, Specifications are County Property

All copies of Plans, Drawings, Designs, Specifications and copies of other incidental architectural and engineering work, or copies of other Contract Documents furnished by County, are the property of County. They are not to be used by Contractor in other work and, with the exception of signed sets of Contract Documents, are to be returned to County on request at completion of Work, or may be used by County as it may require without any additional costs to County. Neither the Contractor nor any Subcontractor, or material or equipment supplier shall own or claim copyright in the Drawings, Specifications, and other documents prepared by the Architect. County hereby grants the Contractor, Subcontractors, sub-subcontractors, and material or equipment suppliers a limited license to use applicable portions of the Drawings prepared for the Project in the execution of their Work under the Contract Documents.

9.8 Order of Precedence

In the case of discrepancy or ambiguity in the Contract Documents, the order of precedence in the Agreement shall prevail.

9.9 Resolution of Discrepancy or Ambiguity

However, in the case of discrepancy or ambiguity solely between and among the Drawings and Specifications, the discrepancy or ambiguity shall be resolved in favor of the interpretation that will provide County with the functionally complete and operable Project described in the Drawings and Specifications.

9.10 County Clarification

In case of ambiguity, conflict, or lack of information, County will furnish clarifications with reasonable promptness. Should any clarification, in the opinion of Contractor, cause an increase in the Contract Price, Contractor may request a change in the Contract Price and/or Contract. Within seven (7) days after receipt of the interpretation or request, Contractor to submit to the Construction Manager a detailed description of the contract requirements that were exceeded and the resulting change in cost.

10. CONTRACTOR'S SUBMITTALS AND SCHEDULES

Refer to Section 01 33 00 "Submittal Requirements." Contractor's submittals shall comply with the provisions and requirements of the Specifications.

10.1 Schedule of Work, Schedule of Submittals, and Schedule of Values

Within TEN (10) calendar days after the date of the Notice to Proceed (unless otherwise specified in the Specifications), the Contractor shall prepare and submit to the County for review, in a form supported by sufficient data to substantiate its accuracy as the County may require:

10.1.1 Preliminary Schedule

A preliminary schedule of construction indicating the starting and completion dates of the various stages of the Work, including any information and following any form as may be specified in the Specifications. Once approved by County, this shall become the

Construction Schedule. This schedule shall include and identify all tasks that are on the Project's critical path with a specific determination of the start and completion of each critical path task as well as all contract milestones and each milestone's completion date(s) as may be required by the County.

10.1.2 Preliminary Schedule of Values

A preliminary schedule of values for all of the Work, which must include quantities and prices of items aggregating the Contract Price and must subdivide the Work into component parts in sufficient detail to serve as the basis for progress payments during construction. This preliminary schedule of values shall include, at a minimum, the following information, and the following structure:

10.1.2.1 Divided into at least the following categories:

- 10.1.2.1.1** Overhead and profit;
- 10.1.2.1.2** Supervision;
- 10.1.2.1.3** General conditions;
- 10.1.2.1.4** Layout;
- 10.1.2.1.5** Mobilization;
- 10.1.2.1.6** Submittals;
- 10.1.2.1.7** Bonds and insurance;
- 10.1.2.1.8** Close-out documentation;
- 10.1.2.1.9** Demolition;
- 10.1.2.1.10** Installation;
- 10.1.2.1.11** Rough-in;
- 10.1.2.1.12** Finishes;
- 10.1.2.1.13** Testing;
- 10.1.2.1.14** Punch list and acceptance.

10.1.2.2 Divided by each of the following areas:

- 10.1.2.2.1** Site work;
- 10.1.2.2.2** By each building;
- 10.1.2.2.3** By each floor.

10.1.3 The preliminary schedule of values shall not provide for values any greater than the following percentages of the Contract value:

- 10.1.3.1** Mobilization and layout combined to equal not more than 1%;
- 10.1.3.2** Submittals, samples and shop drawings combined to equal not more than 3%, bonds and insurance combined to equal not more than 2%.
- 10.1.3.3** Closeout documentation shall have a value in the preliminary schedule of not less than 5%.

10.1.4 Notwithstanding any provision of the Contract Documents to the contrary, payment of the Contractor's overhead, supervision, general conditions costs, and profit, as reflected in the Cost Breakdown, shall be paid by the County in equal installments, based on percentage complete, with the disbursement of Progress Payments and the Final Payment.

10.1.5 Contractor shall certify that the preliminary schedule of values, as submitted to the County, is accurate and reflects the costs as developed in preparing Contractor's bid. The preliminary schedule of values shall be subject to the County's review and approval of the form and content thereof. In the event that the County objects to any portion of the preliminary schedule of values, the County shall notify the Contractor, in writing, including by e-mail, of the County's objection(s) to the preliminary schedule of values. Within five (5) calendar days of the date of the County's written objection(s), Contractor shall submit a revised preliminary schedule of values to the County for review and approval. The foregoing procedure for the preparation, review, and approval of the preliminary schedule of values shall continue until the County has approved the entirety of the preliminary schedule of values.

10.1.6 Once the preliminary schedule of values is approved by the County, this shall become the Schedule of Values. The Schedule of Values shall not be thereafter modified or amended by the Contractor without the prior consent and approval of the County, which may be granted or withheld in the sole discretion of the County.

10.1.7 Preliminary Schedule of Submittals

A preliminary schedule of submittals, including Shop Drawings, Product Data, and Samples submittals. Once approved by County, this shall become the Submittal Schedule. All submittals shall be forwarded to the County by the date indicated on the approved Submittal Schedule unless an earlier date is necessary to maintain the Construction Schedule, in which case those submittals shall be forwarded to the County so as not to delay the Construction Schedule.

10.1.8 Safety Plan

Contractor's Safety Plan specifically adapted for the Project. Contractor's Safety Plan shall comply with the following requirements:

- 10.1.8.1** All applicable requirements of California Division of Industrial Safety ("CalOSHA") and/or of the United States Occupational Safety and Health Administration ("OSHA").
- 10.1.8.2** All provisions regarding Project safety, including all applicable provisions of these General Conditions.
- 10.1.8.3** Contractor's Safety Plan shall be in English and in the language(s) of the Contractor's and its Subcontractors' employees.

10.1.9 Complete Subcontractor List

The name, address, telephone number, facsimile number, California State Contractors License number, classification, and monetary value of all Subcontracts for parties furnishing labor, material, or equipment for completion of the Project.

10.1.10 General Requirements

- 10.1.10.1** Contractor must provide all schedules both in hard copy and electronically, in a format (e.g., Microsoft Project or Primavera) approved in advance by the County.
- 10.1.10.2** The County will review the schedules submitted, and the Contractor shall make changes and corrections in the schedules as requested by the County and resubmit the schedules until approved by the County.
- 10.1.10.3** The County shall have the right at any time to revise the schedule of values if, in the County's sole opinion, the schedule of values does not accurately reflect the value of the Work performed.
- 10.1.10.4** All submittals and schedules must be approved by the County before Contractor can rely on them as a basis for payment.

10.2 Monthly Progress Schedule(s)

10.2.1 Upon request by the County, Contractor shall provide Monthly Progress Schedule(s) to the County. A Monthly Progress Schedule shall update the approved Construction Schedule or the last Monthly Progress Schedule, showing all work completed and to be completed. The monthly Progress Schedule shall be sent within the timeframe requested by the County and shall be in a format acceptable to the County and contain a written narrative of the progress of work that month and any changes, delays, or events that may affect the work. The process for County approval of the Monthly Progress Schedule shall be the same as the process for approval of the Construction Schedule.

10.2.2 Contractor shall also submit Monthly Progress Schedule(s) with all payment applications.

10.3 Material Safety Data Sheets (MSDS)

Contractor is required to ensure Material Safety Data Sheets are available in a readily accessible place at the Work Site for any material requiring a Material Safety Data Sheet per the Federal "Hazard Communication" standard, or employees right to know law. The Contractor is also required to ensure proper labeling on substance brought onto the job site and that any person working with the material or within the general area of the material is informed of the hazards of the substance and follows proper handling and protection procedures. Two additional copies of the Material Safety Data Sheets shall also be submitted directly to the County.

11. SITE ACCESS, CONDITIONS, AND REQUIREMENTS

11.1 Site Investigation

Before bidding on this Work, Contractor shall make a careful investigation of the Site and thoroughly familiarize itself with the requirements of the Contract. By the act of submitting a bid for the Work included in this Contract, Contractor shall be deemed to have made a complete study and investigation, and to be familiar with and accepted the existing conditions of the Site.

11.2 Soils Investigation Report

11.2.1 When a soils investigation report obtained from test holes at Site is available, that report shall be available to the Contractor but shall not be a part of this Contract. Any information obtained from that report or any information given on

Drawings as to subsurface soil condition or to elevations of existing grades or elevations of underlying rock is approximate only, is not guaranteed, does not form a part of this Contract, and Contractor may not rely thereon. By submitting its bid, Contractor acknowledges that it has made a visual examination of Site and has made whatever tests Contractor deems appropriate to determine underground condition of the soil.

11.2.2 Contractor agrees that no claim against County will be made by Contractor for damages and hereby waives any rights to damages if, during progress of Work, Contractor encounters subsurface or latent conditions at Site materially differing from those shown on Drawings or indicated in Specifications, or for unknown conditions of an unusual nature that differ materially from those ordinarily encountered in the work of the character provided for in Plans and Specifications, except as indicated in the provisions of these General Conditions regarding trenches, trenching, and/or existing utility lines.

11.3 Access to Work

County and its representatives shall at all times have access to Work wherever it is in preparation or progress, including storage and fabrication. Contractor shall provide safe and proper facilities for such access so that County's representatives may perform their functions.

11.4 Layout and Field Engineering

11.4.1 All field engineering required for layout of this Work and establishing grades for earthwork operations shall be furnished by Contractor at its expense. This Work shall be done by a qualified, California-registered civil engineer approved in writing by County and Architect. Any required "Record" drawings of Site development shall be prepared by the approved civil engineer.

11.4.2 The Contractor shall be responsible for having ascertained pertinent local conditions such as location, accessibility, and general character of the Site and for having satisfied itself as to the conditions under which the Work is to be performed. County shall not be liable for any claim for allowances because of Contractor's error or negligence in acquainting itself with the conditions at the Site.

11.4.3 Contractor shall protect and preserve established benchmarks and monuments and shall make no changes in locations without the prior written approval of County. Contractor shall replace any benchmarks or monuments that are lost or destroyed subsequent to proper notification of County and with County's approval.

11.5 Utilities

Utilities shall be provided as indicated in the Specifications.

11.6 Sanitary Facilities

Sanitary facilities shall be provided as indicated in the Specifications.

11.7 Surveys

Contractor shall provide surveys done by a California-licensed civil engineer surveyor to determine locations of construction, grading, and site work as required to perform the Work.

11.8 Regional Notification Center

The Contractor, except in an emergency, shall contact the appropriate regional notification center at least two (2) days prior to commencing any excavation if the excavation will be conducted in an area or in a private easement that is known, or reasonably should be known, to contain subsurface installations other than the underground facilities owned or operated by the County, and obtain an inquiry identification number from that notification center. No excavation shall be commenced and/or carried out by the Contractor unless an inquiry identification number has been assigned to the Contractor or any Subcontractor, and the Contractor has given the County the identification number. Any damages arising from Contractor's failure to make appropriate notification shall be at the sole risk and expense of the Contractor. Any delays caused by failure to make appropriate notification shall be at the sole risk of the Contractor and shall not be considered for an extension of the Contract time.

11.9 Existing Utility Lines

11.9.1 Pursuant to Government Code Section 4215, County assumes the responsibility for removal, relocation, and protection of main or trunk utility lines and facilities located on the Construction Site at the time of commencement of construction under this Contract with respect to any such utility facilities that are not identified in the Plans and Specifications. Contractor shall not be assessed for liquidated damages for delay in completion of the Project caused by failure of County or the owner of a utility to provide for removal or relocation of such utility facilities.

11.9.2 Locations of existing utilities provided by County shall not be considered exact, but approximate within reasonable margin and shall not relieve Contractor of responsibilities to exercise reasonable care nor costs of repair due to Contractor's failure to do so. County shall compensate Contractor for the costs of locating, repairing damage, not due to the failure of Contractor to exercise reasonable care, and removing or relocating such utility facilities not indicated in the Plans and Specifications with reasonable accuracy, and for equipment necessarily idle during such work.

11.9.3 No provision herein shall be construed to preclude assessment against Contractor for any other delays in completion of the Work. Nothing in this Article shall be deemed to require County to indicate the presence of existing service laterals, appurtenances, or other utility lines, with the exception of main or trunk utility lines. Whenever the presence of these utilities on the Site of the construction Project can be inferred from the presence of other visible facilities, such as buildings, meter junction boxes, on or adjacent to the Site of the construction.

11.9.4 If Contractor, while performing Work under this Contract, discovers utility facilities not identified by County in Contract Plans and Specifications, Contractor shall immediately notify the County and the utility in writing. The cost of repair for damage to above-mentioned visible facilities without prior written notification to the County shall be borne by the Contractor.

11.10 Notification

Contractor understands, acknowledges and agrees that the purpose for prompt notification to the County pursuant to these provisions is to allow the County to investigate the condition(s) so that the County shall have the opportunity to decide how the County desires to proceed as a result of the condition(s). Accordingly, failure of Contractor to promptly notify the County in writing, including by e-mail, pursuant to these provisions,

shall constitute Contractor's waiver of any claim for damages or delay incurred as a result of the condition(s).

11.11 Hazardous Materials

Contractor shall comply with all provisions and requirements of the Contract Documents related to hazardous materials including, without limitation, Hazardous Materials Procedures, and Requirements.

11.12 No Signs

Neither the Contractor nor any other person or entity shall display any signs not required by law or the Contract Documents at the Site, fences trailers, offices, or elsewhere on the Site without specific prior written approval of the County.

12. TRENCHES

12.1 Trenches Greater Than Five Feet

Pursuant to Labor Code Section 6705, if the Contract Price exceeds \$25,000 and involves the excavation of any trench or trenches five (5) feet or more in depth, the Contractor shall, in advance of excavation, promptly submit to the County and/or a registered civil or structural engineer employed by the County or Architect, a detailed plan showing the design of shoring for protection from the hazard of caving ground during the excavation of such trench or trenches.

12.2 Excavation Safety

If such plan varies from the Shoring System Standards established by the Construction Safety Orders, the plan shall be prepared by a registered civil or structural engineer, but in no case shall such plan be less effective than that required by the Construction Safety Orders. No excavation of such trench or trenches shall be commenced until said plan has been accepted by the County or by the person to whom authority to accept has been delegated by the County.

12.3 No Tort Liability of County

Pursuant to Labor Code section 6705, nothing in this Article shall impose tort liability upon the County or any of its employees.

12.4 No Excavation Without Permits

The Contractor shall not commence any excavation Work until it has secured all necessary permits including the required CalOSHA excavation/shoring permit. Any permits shall be prominently displayed on the Site prior to the commencement of any excavation.

12.5 Discovery of Hazardous Waste and/or Unusual Conditions

12.5.1 Pursuant to Public Contract Code Section 7104, if the Work involves digging trenches or other excavations that extend deeper than four feet below the Surface, the Contractor shall promptly, and before the following conditions are disturbed, notify the County, in writing, including by e-mail, of any:

12.5.1.1 Material that the Contractor believes may be material that is hazardous waste, as defined in Section 25117 of the Health and Safety

Code that is required to be removed to a Class I, Class II, or Class III disposal site in accordance with provisions of existing law.

12.5.1.2 Subsurface or latent physical conditions at the Site differing from those indicated.

12.5.1.3 Unknown physical conditions at the Site of any unusual nature, different materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract.

12.5.2 The County shall promptly investigate the conditions, and if it finds that the conditions do materially so differ, or do involve hazardous waste, and cause a decrease or increase in the Contractor's cost of, or the time required for, performance of any part of the Work, shall issue a Change Order under the procedures described herein.

12.5.3 In the event that a dispute arises between County and the Contractor whether the conditions materially differ, or involve hazardous waste, or cause a decrease or increase in the Contractor's cost of, or time required for, performance of any part of the Work, the Contractor shall not be excused from any scheduled completion date provided for in the Contract, but shall proceed with all work to be performed under the Contract. The Contractor shall retain any and all rights provided either by Contract or by law that pertains to the resolution of disputes and protests.

13. INSURANCE AND BONDS

13.1 Insurance

All insurance required of Contractor and/or its Subcontractor(s) shall be in amounts set forth in the Special Conditions and include the provisions as set forth herein.

13.1.1 Commercial General Liability and Automobile Liability Insurance

13.1.1.1 Contractor shall procure and maintain, during the life of this Contract, Commercial General Liability Insurance and Automobile Liability Insurance that shall protect Contractor, County, Construction Manager(s), and Architect(s) from all claims for bodily injury, property damage, personal injury, death, advertising injury, and medical payments arising from operations under this Contract. Contractor shall ensure that Products Liability and Completed Operations coverage and Fire Damage Liability is included within the above policies and within the required limits, or Contractor shall procure and maintain these coverages separately.

13.1.1.2 Subcontractor: Contractor shall require its Subcontractors if any, to procure and maintain similar Commercial General Liability Insurance and Automobile Liability Insurance with minimum limits equal to the amount required of the Contractor. Contractor shall verify Subcontractor's compliance.

13.1.2 Excess Liability Insurance

13.1.2.1 Contractor shall procure and maintain, during the life of this Contract, Excess Liability Insurance that shall protect Contractor, County, Construction Manager(s), and Architect(s) in amounts and including

the provisions as set forth in the Special Conditions, and that complies with all requirements for Commercial General Liability and Automobile Liability and Employers' Liability Insurance.

- 13.1.2.2** Subcontractor: Contractor shall require its Subcontractor(s) if any, to procure and maintain similar Excess Liability Insurance with minimum limits equal to the amount required of the Contractor. Contractor shall verify Subcontractor's compliance.

13.1.3 Workers' Compensation and Employers' Liability Insurance

- 13.1.3.1** In accordance with provisions of Section 3700 of the California Labor Code, the Contractor and every Subcontractor shall be required to secure the payment of compensation to its employees.

- 13.1.3.2** Contractor shall procure and maintain, during the life of this Contract, Workers' Compensation Insurance and Employers' Liability Insurance for all of its employees engaged in work under this Contract, on/or at the Site of the Project. This coverage shall cover, at a minimum, medical and surgical treatment, disability benefits, rehabilitation therapy, and survivors' death benefits. Contractor shall require its Subcontractor(s) if any, to procure and maintain Workers' Compensation Insurance and Employers' Liability Insurance for all employees of Subcontractor(s). Any class of employee or employees not covered by a Subcontractor's insurance shall be covered by Contractor's insurance. If any class of employee or employees engaged in Work under this Contract, on or at the Site of the Project, is not protected under the Workers' Compensation Statute, Contractor shall provide, or shall cause a Subcontractor to provide, adequate insurance coverage for the protection of any employee(s) not otherwise protected before any of those employee(s) commence work.

13.1.4 Builder's Risk Insurance: Builder's Risk "All-Risk" Insurance.

Contractor shall procure and maintain, during the life of this Contract, Builder's Risk (Course of Construction), or similar first party property coverage acceptable to the County, issued on a replacement cost value basis. The cost shall be consistent with the total replacement cost of all insurable Work of the Project included within the Contract Documents. Coverage is to insure against all risks of accidental physical loss and shall include without limitation the perils of vandalism and/or malicious mischief (both without any limitation regarding vacancy or occupancy), sprinkler leakage, civil authority, sonic disturbance, earthquake, flood, collapse, wind, fire, war, terrorism, lightning, smoke, and rioting. Coverage shall include debris removal, demolition, increased costs due to enforcement of all applicable ordinances and/or laws in the repair and replacement of damaged and undamaged portions of the property, and reasonable costs for the Architect's and engineering services and expenses required as a result of any insured loss upon the Work and Project, including completed Work and Work in Progress, to the full insurable value thereof.

13.1.5 Proof of Carriage of Insurance and Other Requirements: Endorsements and Certificates.

- 13.1.5.1** Contractor shall not commence Work nor shall it allow any Subcontractor to commence Work under this Contract, until Contractor and its Subcontractor(s) have procured all required insurance and Contractor has delivered in duplicate to the County complete endorsements (or entire insurance policies) and certificates indicating the required coverages have been obtained, and the County has approved these documents.
- 13.1.5.2** Endorsements, certificates, and insurance policies shall include the following:
- 13.1.5.2.1** A clause stating:
- “This policy shall not be amended, canceled or modified and the coverage amounts shall not be reduced until notice has been mailed to County, Architect, and Construction Manager stating date of amendment, modification, cancellation or reduction. Date of amendment, modification, cancellation or reduction may not be less than thirty (30) days after date of mailing notice.”
- 13.1.5.2.2** Language stating, in particular, those insured, extent of insurance, location and operation to which insurance applies, expiration date, to whom cancellation and reduction notice will be sent, and length of notice period.
- 13.1.5.3** All endorsements, certificates and insurance policies shall state that County, its Supervisors, employees, and agents, Construction Manager(s), and Architect(s) are named additional insureds under all policies except Workers’ Compensation Insurance and Employers’ Liability Insurance. Contractor’s and Subcontractors’ insurance policy(s) shall be primary and non-contribution to any insurance or self-insurance maintained by County, its Supervisors, employees and/or agents, Construction Manager(s), and/or Architect(s). All endorsements shall waive any right to subrogation against any of the named additional insureds.
- 13.1.5.4** All policies shall be written on an occurrence form.

13.2 Contract Security - Bonds

13.2.1 Contractor shall furnish two surety bonds issued by a California admitted surety insurer as follows:

- 13.2.1.1** Performance Bond: A bond in an amount at least equal to one hundred percent (100%) of Contract Price as security for faithful performance of this Contract.
- 13.2.1.2** Payment Bond: A bond in an amount at least equal to one hundred percent (100%) of the Contract Price as security for payment of persons performing labor and/or furnishing materials in connection with this Contract.

13.2.2 Cost of bonds shall be included in the Bid and Contract Price.

13.2.3 All bonds related to this Project shall be in the forms set forth in these Contract Documents and shall comply with all requirements of the Contract Documents, including, without limitation, the bond forms.

14. WARRANTY/GUARANTEE/INDEMNITY

14.1 Warranty/Guarantee

14.1.1 The Contractor shall obtain and preserve for the benefit of the County, manufacturer's warranties on materials, fixtures, and equipment incorporated into the Work.

14.1.2 In addition to guarantees required elsewhere, Contractor shall, and hereby does guarantee and warrant all Work furnished on the job against all defects for a period of TWO (2) years after the later of the following dates:

14.1.2.1 The date of completion as defined in Public Contract Code Section 7107, subdivision (c),

14.1.2.2 The commissioning date for the Project, if any.

14.1.3 At the County's sole option, Contractor shall repair or replace any and all of that Work, together with any other Work that may be displaced in so doing, that may prove defective in workmanship and/or materials within the warranty period specified in Section 00 65 36 Warranty Form, from date of completion as defined above without expense whatsoever to County. In the event of failure of Contractor and/or Surety to commence and pursue with diligence said replacements or repairs within ten (10) days after being notified in writing, including by e-mail, Contractor and Surety hereby acknowledge and agree that County is authorized to proceed to have defects repaired and made good at expense of Contractor and/or Surety who hereby agree to pay costs and charges therefore immediately on demand. Said notice period shall be forty-eight (48) hours for components essential to operation of the facility, including without limitation fire alarms, water, heat, security systems, and electrical systems.

14.1.4 If, in the opinion of County, defective work creates a dangerous condition or requires immediate correction or attention to prevent further loss to County or to prevent interruption of operations of County, County will attempt to give the notice required above. If Contractor or Surety cannot be contacted or does not comply with County's request for correction within a reasonable time as determined by County, County may, notwithstanding the above provision, proceed to make any and all corrections and/or provide attentions the County believes are necessary. The costs of correction or attention shall be charged against Contractor and Surety of the guarantees provided in this Article or elsewhere in this Contract.

14.1.5 The above provisions do not in any way limit the guarantees on any items for which a longer guarantee is specified or on any items for which a manufacturer gives a guarantee for a longer period. Contractor shall furnish to County all appropriate guarantee or warranty certificates as indicated in the Specifications or upon request by County.

14.1.6 Nothing herein shall limit any other rights or remedies available to County.

14.2 Indemnity

14.2.1 To the fullest extent permitted by California law, the Contractor shall indemnify, defend with legal counsel reasonably acceptable to the County, keep and hold harmless the County and its consultants, the Architect and its consultants, the Construction Manager and its consultants, separate contractors, and their respective board members, officers, representatives, contractors, agents, and employees, in both individual and official capacities ("Indemnitees"), against all suits, claims, liabilities, damages, losses, and expenses caused by, arising out of, resulting from, or incidental to, the performance of the Work under this Contract by the Contractor or its Subcontractors to the full extent allowed by the laws of the State of California, and not to any extent that would render these provisions void or unenforceable, including, without limitation, any such suit, claim, damage, loss, or expense attributable to, without limitation, bodily injury, sickness, disease, death, alleged patent violation or copyright infringement, or to injury to or destruction of tangible property (including damage to the Work itself) including the loss of use resulting therefrom, except to the extent caused solely by the negligence, or willful misconduct of the Indemnitees. The County may participate in the defense of any such claim without relieving Contractor of any obligation hereunder. This agreement and obligation of the Contractor shall not be construed to negate, abridge, or otherwise reduce any right or obligation of indemnity that would otherwise exist as to any party or person described herein. This indemnification, defense, and hold harmless obligation includes any failure or alleged failure by Contractor to comply with any provision of law or the Contract Documents, including, without limitation, any stop notice actions, or liens by the California Department of Labor Standards Enforcement. This indemnity obligation shall be for the full amount of all damage to County, including defense costs, and shall not be limited by any insurance limits.

14.2.2 The Contractor shall give prompt notice to the County in the event of any injury (including death), loss or damage included herein. Without limitation of the provisions herein, if the Contractor's agreement to indemnify, defend, and hold harmless the Indemnitees as provided herein against liability for damage arising out of bodily injury to persons or damage to property caused by or resulting from the negligence of any of the Indemnitees shall to any extent be or be determined to be void or unenforceable, it is the intention of the parties that these circumstances shall not otherwise affect the validity or enforceability of the Contractor's agreement to indemnify, defend, and hold harmless the rest of the Indemnitees, as provided herein, and in the case of any such suits, claims, damages, losses, or expenses caused in part by the default, negligence, or act or omission of the Contractor, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, and in part by any of the Indemnitees, the Contractor shall be and remain fully liable on its agreements and obligations herein to the full extent permitted by law.

14.2.3 In any and all claims against any of the Indemnitees by any employee of the Contractor, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the Contractor's indemnification obligation herein shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for the Contractor or any Subcontractor under workers' compensation acts, disability benefit acts, or other employee benefit acts.

14.2.4 Contractor shall place in its Subcontractor agreements and cause its Subcontractors to agree to indemnities and insurance obligations in favor of County and

other Indemnities in the exact form and substance of those contained in these General Conditions (00 72 13). Contractor shall require all Subcontractors to comply with all indemnification and insurance requirements of this agreement. Contractor shall verify Subcontractor's compliance.

15. TIME

15.1 Notice to Proceed

15.1.1 County may issue a Notice to Proceed within three (3) months from the date of the Notice of Award. Once Contractor has received the Notice to Proceed, Contractor shall complete the Work within the period of time indicated in the Contract Documents.

15.1.2 In the event that the County desires to postpone issuing the Notice to Proceed beyond this 3-month period, it is expressly understood that with reasonable notice to the Contractor, the County may postpone issuing the Notice to Proceed. It is further expressly understood by Contractor that Contractor shall not be entitled to any claim of additional compensation as a result of the postponement of the issuance of the Notice to Proceed.

15.1.3 If the Contractor believes that a postponement of issuance of the Notice to Proceed will cause a hardship to Contractor, Contractor may terminate the Contract. Contractor's termination due to a postponement shall be by written notice to County within ten (10) days after receipt by Contractor of County's notice of postponement. It is further understood by Contractor that in the event that Contractor terminates the Contract as a result of postponement by the County, the County shall only be obligated to pay Contractor for the Work that Contractor had performed at the time of notification of postponement. Should Contractor terminate the Contract as a result of a notice of postponement, County shall have the authority to award the Contract to the next lowest responsive, responsible bidder.

15.2 Computation of Time / Adverse Weather

15.2.1 The Contractor will only be allowed a time extension for Adverse Weather conditions if requested by Contractor and only if all of the following conditions are met:

- 15.2.1.1** The weather conditions constitute Adverse Weather, as defined herein and further specified in the Special Conditions;
- 15.2.1.2** Contractor can verify that the Adverse Weather caused delays in excess of seventy-five percent (75%) for at least five hours, of the normal labor and equipment force toward completion of the day's current controlling item(s) on the latest accepted schedule;
- 15.2.1.3** The Contractor's crew is dismissed as a result of the Adverse Weather; and
- 15.2.1.4** The number of days of delay for the month exceeds those indicated in the Special Conditions.

15.2.2 A day-for-day extension will only be allowed for those days in excess of those indicated in the Special Conditions. Weather delay time extensions to the contract period will be non-compensable.

15.2.3 The Contractor shall work seven (7) days per week, if necessary, irrespective of inclement weather, to maintain access and the Construction Schedule, and to protect the Work under construction from the effects of Adverse Weather, all at no further cost to the County.

15.2.4 The Contract Time has been determined with consideration given to the average climate weather conditions prevailing in the County in which the Project is located.

15.3 Hours of Work

15.3.1 Sufficient Forces

Contractor and Subcontractors shall continuously furnish sufficient forces to ensure the prosecution of the Work in accordance with the Construction Schedule.

15.3.2 Performance During Working Hours

Work shall be performed during regular working hours as permitted by the appropriate governmental agency except that in the event of an emergency, or when required to complete the Work in accordance with job progress, Work may be performed outside of regular working hours with the advance written consent of the County and approval of any required governmental agencies.

15.4 Progress and Completion

15.4.1 Time of the Essence

Time limits stated in the Contract Documents are of the essence to the Contract. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

15.4.2 No Commencement Without Insurance

The Contractor shall not commence operations on the Project or elsewhere prior to the effective date of insurance and bonds. The date of commencement of the Work shall not be changed by the effective date of such insurance. If Contractor commences Work without insurance and bonds, all Work is performed at Contractor's peril and shall not be compensable until and unless Contractor secures bonds and insurance pursuant to the terms of the Contract Documents and subject to County claim for damages.

15.5 Expeditious Completion

The Contractor shall proceed expeditiously with adequate forces and shall achieve Completion within the Contract Time.

16. EXTENSIONS OF TIME – LIQUIDATED DAMAGES

16.1 Liquidated Damages

Contractor and County hereby agree that the exact amount of damages for failure to complete the Work within the time specified is extremely difficult or impossible to determine. If the Work is not completed within the time specified in the Contract Documents, it is understood that the County will suffer damage. It being impractical and unfeasible to determine the amount of actual damage, it is agreed the Contractor shall pay to County as fixed and liquidated damages, and not as a penalty, the amount set forth in the

Agreement for each calendar day of delay in completion. Contractor and its Surety shall be liable for the amount thereof pursuant to Government Code Section 53069.85.

16.2 Excusable Delay

16.2.1 Contractor shall not be charged for liquidated damages because of any delays in completion of Work which are not the fault of Contractor or its Subcontractors, including acts of God as defined in Public Contract Code Section 7105, acts of enemy, epidemics, and quarantine restrictions. Contractor shall, within five (5) calendar days of beginning of any delay, notify County in writing of causes of delay including documentation and facts explaining the delay. County shall review the facts and extent of any delay and shall grant extension(s) of time for completing Work when, in its judgment, the findings of fact justify an extension. Extension(s) of time shall apply only to that portion of Work affected by delay, and shall not apply to other portions of Work not so affected. An extension of time may only be granted if Contractor has timely submitted the Construction Schedule as required herein.

16.2.2 Contractor shall notify the County pursuant to the claims provisions in these General Conditions of any anticipated delay and its cause. Following submission of a claim, the County may determine whether the delay is to be considered avoidable or unavoidable, how long it continues, and to what extent the prosecution and completion of the Work might be delayed thereby.

16.2.3 In the event the Contractor requests an extension of Contract Time for unavoidable delay, such request shall be submitted in accordance with the provisions in the Contract Documents governing changes in Work. When requesting time, requests must be submitted with full justification and documentation. If the Contractor fails to submit justification, it waives its right to a time extension at a later date. Such justification must be based on the official Construction Schedule as updated at the time of occurrence of the delay or execution of Work related to any changes to the Scope of Work. Any claim for delay must include the following information as support, without limitation:

16.2.3.1 The duration of the activity relating to the changes in the Work and the resources (manpower, equipment, material, etc.) required to perform the activities within the stated duration.

16.2.3.2 Specific logical ties to the Contract Schedule for the proposed changes and/or delay showing the activity/activities in the Construction Schedule that are affected by the change and/or delay.

16.2.3.3 A recovery schedule must be submitted.

16.3 No Additional Compensation for Delays Within Contractor's Control

16.3.1 Contractor is aware that governmental agencies, including, without limitation, the Department of General Services, gas companies, electrical utility companies, water companies, and other agencies may have to approve Contractor-prepared drawings or approve a proposed installation. Accordingly, Contractor shall include in its bid, time for possible review of its drawings and for reasonable delays and damages that may be caused by such agencies. Thus, Contractor is not entitled to make a claim for damages or delays arising from the review of Contractor's drawings.

16.3.2 Contractor shall only be entitled to compensation for delay when all of the following conditions are met:

- 16.3.2.1 The County is responsible for the delay;
- 16.3.2.2 The delay is unreasonable under the circumstances involved;
- 16.3.2.3 The delay was not within the contemplation of County and Contractor; and
- 16.3.2.4 Contractor complies with the claims procedure of the Contract Documents.

16.4 Float or Slack in the Schedule

Float or slack is the amount of time between the early start date and the late start date, or the early finish date and the late finish date, of any of the activities in the schedule. Float or slack is not for the exclusive use of or benefit of either the County or the Contractor, but its use shall be determined solely by the County.

17. CHANGES IN THE WORK

17.1 No Changes Without Authorization

17.1.1 There shall be no change whatsoever in the Drawings, Specifications, or in the Work without an executed Change Order or a written Construction Change Directive authorized by the County as herein provided. County shall not be liable for the cost of any extra work or any substitutions, changes, additions, omissions, or deviations from the Drawings and Specifications unless the County's governing board has authorized the same and the cost thereof has been approved in writing by Change Order or Construction Change Directive. No extension of time for performance of the Work shall be allowed hereunder unless claim for such extension is made at the time changes in the Work are ordered, and such time duly adjusted in writing in the Change Order or Construction Change Directive. The provisions of the Contract Documents shall apply to all such changes, additions, and omissions with the same effect as if originally embodied in the Drawings and Specifications.

17.1.2 Contractor shall perform immediately all work that has been authorized by a fully executed Change Order or Construction Change Directive. Contractor shall be fully responsible for any and all delays and/or expenses caused by Contractor's failure to expeditiously perform this Work.

17.1.3 Should any Change Order result in an increase in the Contract Price, the cost of that Change Order shall be agreed to, in writing, in advance by Contractor and County and be subject to the monetary limitations set forth in Public Contract Code Section 20137. In the event that Contractor proceeds with any change in Work without a Change Order executed by the County or Construction Change Directive, Contractor waives any claim for additional compensation or time for that additional work.

17.1.4 Contractor understands, acknowledges, and agrees that the reason for County authorization is so that County may have an opportunity to analyze the Work and decide whether the County shall proceed with the Change Order or alter the Project so that a change in Work becomes unnecessary.

17.2 Architect Authority to Order Minor Changes

The Architect will have authority to order minor changes in the Work not involving any adjustment in the Contract Price, or an extension of the Contract Time, or a

change that is inconsistent with the intent of the Contract Documents. These changes shall be effected by written Change Order, Construction Change Directive, or by Architect's response(s) to RFI(s).

17.3 Change Orders

17.3.1 A Change Order is a written instrument prepared and issued by the County and/or the Architect and signed by the County (as authorized by the County's Board of Supervisors), the Contractor, and the Architect, stating their agreement regarding all of the following:

17.3.1.1 A description of a change in the Work;

17.3.1.2 The amount of the adjustment in the Contract Price, if any; and

17.3.1.3 The extent of the adjustment in the Contract Time, if any.

17.4 Construction Change Directives

17.4.1 A Construction Change Directive is a written order prepared and issued by the County, the Construction Manager, and/or the Architect and signed by the County and the Architect, directing a change in the Work. The County may as provided by law, by Construction Change Directive and without invalidating the Contract, order changes in the Work consisting of additions, deletions, or other revisions. Any dispute as to the sum of the Construction Change Directive or timing of payment shall be resolved pursuant to the Payment and Claims and Disputes provisions herein.

17.4.2 The County may issue a Construction Change Directive in the absence of agreement on the terms of a Change Order.

17.5 Force Account Directives

17.5.1 When work, for which a definite price has not been agreed upon in advance, is to be paid for on a force account basis, all direct costs necessarily incurred and paid by the Contractor for labor, material, and equipment used in the performance of that Work, shall be subject to the approval of the County and compensation will be determined as set forth herein.

17.5.2 The County will issue a Force Account Directive to proceed with the Work on a force account basis, and a not-to-exceed budget will be established by the County.

17.5.3 All requirements regarding direct cost for labor, labor burden, material, equipment, and markups on direct costs for overhead and profit described in this section shall apply to Force Account Directives. However, the County will only pay for actual costs verified in the field by the County or its authorized representative(s) on a daily basis.

17.5.4 The Contractor shall be responsible for all cost related to the administration of Force Account Directive. The markup for overhead and profit for Contractor modifications shall be full compensation to the Contractor to administer Force Account Directive.

17.5.5 The Contractor shall notify the County or its authorized representative(s) at least twenty-four (24) hours prior to proceeding with any of the force account work. Furthermore, the Contractor shall notify the County when it has consumed

eighty percent (80%) of the budget and shall not exceed the budget unless specifically authorized in writing by the County. The Contractor will not be compensated for force account work in the event that the Contractor fails to timely notify the County regarding the commencement of force account work, or exceeding the force account budget.

17.5.6 The Contractor shall diligently proceed with the work, and on a daily basis, submit a daily force account report on a form supplied by the County no later than 5:00 p.m. each day. The report shall contain a detailed itemization of the daily labor, material, and equipment used on the force account work only. The names of the individuals performing the force account work shall be included in the daily force account reports. The type and model of equipment shall be identified and listed. The County will review the information contained in the reports, and sign the reports no later than the next work day, and return a copy of the report to the Contractor for their records. The County will not sign, nor will the Contractor receive compensation for work the County cannot verify. The Contractor will provide a weekly force account summary indicating the status of each Force Account Directive in terms of percent complete of the not-to-exceed budget and the estimated percent complete of the work.

17.5.7 In the event the Contractor and the County reach a written agreement on a set cost for the work while the work is proceeding based on a Force Account Directive, the Contractor's signed daily force account reports shall be discontinued, and all previously signed reports shall be invalid.

17.6 Price Request

17.6.1 Definition of Price Request

A Price Request ("PR") is a written request prepared by the Architect requesting the Contractor to submit to the County and the Architect an estimate of the effect of a proposed change in the Work on the Contract Price and the Contract Time.

17.6.2 Scope of Price Request

A Price Request shall contain adequate information, including any necessary Drawings and Specifications, to enable Contractor to provide the cost breakdowns required herein. The Contractor shall not be entitled to any additional compensation for preparing a response to a Price Request, whether ultimately accepted or not.

17.7 Proposed Change Order

17.7.1 Definition of Proposed Change Order

A Proposed Change Order ("PCO") is a written request prepared by the Contractor requesting that the County and the Architect issue a Change Order based upon a proposed change to the Work.

17.7.2 Changes in Contract Price

A PCO shall include breakdowns pursuant to the revisions herein to validate any change in Contract Price.

17.7.3 Changes in Time

A PCO shall also include any changes in time required to complete the Project. Any additional time requested shall not be the number of days to make the proposed change, but must be based upon the impact to the Construction Schedule as defined in the

Contract Documents. If Contractor fails to request a time extension in a PCO, then the Contractor is thereafter precluded from requesting time and/or claiming a delay.

17.7.4 Unknown and/or Unforeseen Conditions

If Contractor submits a PCO requesting an increase in Contract Price and/or Contract Time that is based at least partially on Contractor's assertion that Contractor has encountered unknown and/or unforeseen condition(s) on the Project, then Contractor shall base the PCO on provable information that, beyond a reasonable doubt and to the County's satisfaction, demonstrates that the unknown and/or unforeseen condition(s) were actually unknown and/or unforeseen and that the condition(s) were reasonably unknown and/or unforeseen. If not, the County shall deny the PCO and the Contractor shall complete the Project without any increase in Contract Price and/or Contract Time based on that PCO.

17.8 Format for Proposed Change

17.8.1 The following format shall be used as applicable by the County and the Contractor (e.g. Change Orders, PCO's) to communicate proposed additions and deductions to the Contract, supported by attached documentation. In no case shall the Contractor's total mark-up exceed 26.5%.

	<u>SUBCONTRACTOR PERFORMED WORK</u>	<u>ADD</u>	<u>DEDUCT</u>
a)	<u>Material</u> (attach itemized quantity and unit cost plus sales tax)		
b)	<u>Add Labor</u> (attach itemized hours and rates, fully encumbered)		
c)	<u>Add Equipment</u> (attach suppliers' invoice)		
d)	<u>Subtotal</u>		
e)	<u>Add Subcontractor's overhead and profit</u> , not to exceed ten percent (10%) of item (d)		
f)	<u>Subtotal</u>		
g)	<u>Add Contractor's overhead and profit</u> , not to exceed ten percent (10%) of Item (f)		
h)	<u>Subtotal</u>		
i)	<u>Add Bond and Insurance</u> , not to exceed one percent (1%) of Item (h)		
j)	<u>TOTAL</u>		
k)	<u>Time</u>	<u>Days</u>	
	<u>CONTRACTOR PERFORMED WORK</u>	<u>ADD</u>	<u>DEDUCT</u>
a)	<u>Material</u> (attach itemized quantity and unit cost plus sales tax)		

b)	<u>Add Labor</u> (attach itemized hours and rates, fully encumbered)		
c)	<u>Add Equipment</u> (attach suppliers' invoice)		
d)	<u>Subtotal</u>		
e)	<u>Add Contractor's overhead and profit</u> , not to exceed ten percent (10%) of item (d)		
f)	<u>Subtotal</u>		
g)	<u>Add Bond and Insurance</u> , not to exceed one percent (1%) of Item (f)		
h)	<u>TOTAL</u>		
i)	<u>Time</u>	<u>Days</u>	

17.9 Change Order Certification

17.9.1 All Change Orders and PCOs must include the following certification by the Contractor:

17.9.1.1 The undersigned Contractor approves the foregoing as to the changes, if any, and the Contract Price specified for each item and as to the extension of time allowed, if any, for completion of the entire Work as stated herein, and agrees to furnish all labor, materials, and service, and perform all work necessary to complete any additional work specified for the consideration stated herein. Submission of sums which have no basis in fact or which Contractor knows are false are at the sole risk of Contractor and may be a violation of the False Claims Act set forth under Government Code section 12650 et seq. It is understood that the changes herein to the Contract shall only be effective when approved by the Board of Supervisors.

17.9.1.2 It is expressly understood that the value of the extra Work or changes expressly includes any and all of the Contractor's costs and expenses, both direct and indirect, resulting from additional time required on the Project or resulting from delay to the Project. Any costs, expenses, damages, or time extensions not included are deemed waived.

17.10 Determination of Change Order Cost

The amount of the increase or decrease in the Contract Price from a Change Order, if any, shall be determined by one or more of the following ways as applicable to a specific situation and at the County's discretion:

17.10.1 County acceptance of a PCO;

17.10.2 By unit prices contained in Contractor's original bid;

17.10.3 By agreement between County and Contractor.

17.11 Allowable Costs

Allowable costs for any change order shall be limited to the following:

17.11.1 Costs of labor, including social security, Medicare, and unemployment insurance, fringe benefits required workers' compensation insurance.

17.11.2 Costs of first line supervision labor, including labor burden as described in paragraph 1. "First-Line Supervision" shall mean a working foreman or lead craft worker other than the project superintendent;

17.11.3 Actual costs of the project superintendent associated with any period of compensable delay caused by issuance of the change order. In the absence of a compensable delay, all of the project superintendent's time is considered to have been paid for as part of the overhead;

17.11.4 Actual costs of materials, including sales tax and delivery;

17.11.5 Rental costs of machinery and equipment, exclusive of small tools, whether rented from the Contractor or others. For Contractor and Subcontractor-owned equipment, payment will be made at rental rates listed for equipment in California Department of Transportation official equipment rental rate schedule. For rental equipment, payment will be made based on actual rental invoices. Rental rates paid shall be deemed to cover cost of fuel, oil, lubrication, supplies, small tools, necessary attachments, repairs and maintenance of any kind, depreciation, storage, insurance and all incidentals;

17.11.6 Overhead and Profit as specified below. "Overhead" shall include the following:

17.11.6.1 Preparation of all paperwork related to changes in the Work, including field review, estimating and cost breakdown; coordination and supervision, both office and field, including the project superintendent; vehicles including has and maintenance; small tools, incidentals and consumables; engineering, detailing, and revisions to shop drawings and as-built drawings; general office expense; extended and unabsorbed home office overhead; warranty, all taxes; and all other expenses not specifically described in items 17.11.1 through 17.11.5.

17.11.6.2 The actual costs of insurance premiums required by this contract and associated with the change order work will be reimbursed by the County

17.11.7 Upon receipt of a PCO/Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Construction Manager within seven (7) calendar days of the Contractor's agreement or disagreement with the method, if any, provided in the PCO/Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

17.11.8 Failure to respond to and return a PCO/Change Directive to the County within (7) days indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

17.12 Deductive Change Orders

All deductive Change Order(s) must be prepared pursuant to the provisions herein. If Contractor offers a proposed amount for a Deductive Change Order(s), Contractor shall include a minimum of five percent (5%) total profit and overhead to be deducted with the amount of the work of the Change Order(s). If Subcontractor work is involved, Subcontractors shall also include a minimum of five percent (5%) profit and overhead to be deducted with the amount of its deducted work. Any deviation from this provision shall not be allowed.

17.13 Discounts, Rebates, and Refunds

For purposes of determining the cost, if any, of any change, addition, or omission to the Work hereunder, all trade discounts, rebates, refunds, and all returns from the sale of surplus materials and equipment shall accrue and be credited to the Contractor, and the Contractor shall make provisions so that such discounts, rebates, refunds, and returns may be secured, and the amount thereof shall be allowed as a reduction in the Contractor's cost in determining the actual cost of construction for purposes of any change, addition, or omission in the Work as provided herein.

17.14 Accounting Records

With respect to portions of the Work performed by Change Orders and Construction Change Directives, the Contractor shall keep and maintain cost-accounting records satisfactory to the County, which shall be available to the County on the same terms as any other books and records the Contractor is required to maintain under the Contract Documents.

17.15 Notice Required

If the Contractor desires to make a claim for an increase in the Contract Price or any extension of the Contract Time for completion, it shall notify the County pursuant to the provisions herein. No claim shall be considered unless made in accordance with this subparagraph. Contractor shall proceed to execute the Work, even though, the adjustment may not have been agreed upon. Any change in the Contract Price or extension of the Contract Time resulting from such claim shall be authorized by a Change Order.

17.16 Applicability to Subcontractors

Any requirements under this Article shall be equally applicable to Change Orders, or Construction Change Directives issued to Subcontractors by the Contractor to the extent as required by the Contract Documents.

17.17 Alteration to Change Order Language

Contractor shall not alter Change Orders or reserve time in Change Orders. Contractor shall execute finalized Change Orders and proceed under the provisions herein with proper notice.

17.18 Failure of Contractor to Execute Change Order

Contractor shall be in default of the Contract if Contractor fails to execute a Change Order when the Contractor agrees with the addition and/or deletion of the Work in that Change Order.

18. REQUEST FOR INFORMATION

18.1 The Contractor shall coordinate the Work so that dimensions are verified, and clarifications that may affect the work are identified to allow for resolution without delaying the Work. The Contractor is responsible to submit a Request for Information as soon as the issue requiring clarification is identified. The Contractor shall be responsible for any delay in the construction progress due to any untimely submission of a Request for Information for A/E's review. Non-receipt of a Request for Information, or proceeding with Work pertaining to the Request for Information shall be construed as relieving the County of any Claim for added cost or extension of time.

18.2 Reference Contract Documents

Any Request for Information shall reference all applicable Contract Document(s), including Specification section(s), detail(s), page number(s), drawing number(s), and sheet number(s), etc. The Contractor shall make suggestions and interpretations of the issue raised by each Request for Information. A Request for Information cannot modify the Contract Price, Contract Time, or the Contract Documents.

18.3 Contractor Responsible For Costs

Contractor shall be responsible for any costs incurred for professional services which County may deduct from any amounts owing to the Contractor if a Request for Information requests an interpretation or decision of a matter where the information sought is equally available to the party making the request. County, at its sole discretion, shall deduct from and/or invoice Contractor for all the professional services arising herein.

19. PAYMENTS

19.1 Contract Price

The Contract Price is stated in the Agreement and, including authorized adjustments, is the total amount payable by the County to the Contractor for performance of the Work under the Contract Documents.

19.2 Applications for Progress Payments

19.2.1 Procedures for Applications for Progress Payments

19.2.1.1 Not before the fifth (5th) day of each calendar month during the progress of the Work, Contractor shall submit to the County and the Architect an itemized Application for Payment for operations completed in accordance with the Schedule of Values. Such application shall be notarized, if required and supported by the following or each portion thereof unless waived by the County in writing:

19.2.1.1.1 The amount paid to the date of the Application to the Contractor, to all its Subcontractors, and all others furnishing labor, material, or equipment for its Contract;

19.2.1.1.2 The amount being requested under the Application for Payment by the Contractor on its own behalf and separately stating the amount requested on behalf of each of the Subcontractors and all others furnishing labor, material, and equipment under the Contract;

19.2.1.1.3 The balance that will be due to each of such entities after said payment is made;

19.2.1.1.4 A certification that the Record Drawings and annotated Specifications are current;

19.2.1.1.5 Itemized breakdown of work done for the purpose of requesting partial payment;

19.2.1.1.6 An updated and acceptable construction schedule in conformance with Section 10.1 above;

19.2.1.1.7 The additions to and subtractions from the Contract Price and Contract Time;

19.2.1.1.8 A total of the retentions held;

19.2.1.1.9 Material invoices, evidence of equipment purchases, rentals, and other support and details of cost as the County may require from time to time;

19.2.1.1.10 The percentage of completion of the Contractor's Work by line item;

19.2.1.1.11 Schedule of Values updated from the preceding Application for Payment;

19.2.1.1.12 A duly completed and executed conditional waiver and release upon progress payment compliant with Civil Code Section 3262 from the Contractor and each subcontractor of any tier and supplier to be paid from the current progress payment;

19.2.1.1.13 A duly completed and executed unconditional waiver and release upon progress payment compliant with Civil Code Section 3262 from the Contractor and each subcontractor of any tier and supplier that was paid from the previous progress payment; and

19.2.1.1.14 A certification by the Contractor of the following:

The Contractor warrants title to all Work performed as of the date of this payment application. The Contractor further warrants that all Work performed as of the date of this payment application is free and clear of liens, claims, security interests, or encumbrances in favor of the Contractor, Subcontractors, material and equipment suppliers, workers, or other persons or entities making a claim by reason of having provided labor, materials, and equipment relating to the Work, except those of which the County has been informed.

19.2.2 The Contractor shall be subject to the False Claims Act set forth under Government Code Section 12650 et seq., for information provided with any Application for Progress Payment.

19.2.3 Prerequisites for Progress Payments

- 19.2.3.1** First Payment Request: The following items, if applicable, must be completed before the County will accept and/or process the Contractor's first payment request:
- 19.2.3.1.1** Installation of the Project sign;
 - 19.2.3.1.2** Installation of field office;
 - 19.2.3.1.3** Installation of temporary facilities and fencing;
 - 19.2.3.1.4** Schedule of Values;
 - 19.2.3.1.5** Contractor's Construction Schedule in conformance with Section 10.1.1.1 above;
 - 19.2.3.1.6** Schedule of unit prices, if applicable;
 - 19.2.3.1.7** Submittal Schedule;
 - 19.2.3.1.8** Receipt by Architect of all submittals due as of the date of the payment application;
 - 19.2.3.1.9** Copies of necessary permits;
 - 19.2.3.1.10** Copies of authorizations and licenses from governing authorities;
 - 19.2.3.1.11** Initial progress report;
 - 19.2.3.1.12** Surveyor qualifications;
 - 19.2.3.1.13** Written acceptance of County's survey of rough grading, if applicable;
 - 19.2.3.1.14** List of all Subcontractors, with names, license numbers, telephone numbers, and Scope of Work;
 - 19.2.3.1.15** All bonds and insurance endorsements;
 - 19.2.3.1.16** Resumes of Contractor's project manager, and if applicable, job site secretary, record documents recorder, and job site superintendent; and
 - 19.2.3.1.17** Safety plan.
- 19.2.3.2** Second Payment Request. The County will not process the second payment request until and unless all submittals and Shop Drawings have been accepted for review by the Architect, and Contractor's Schedule has been accepted as in compliance with Section 10.1.1.1 above.
- 19.2.3.3** No Waiver of Criteria. Any payments made to Contractor where criteria set forth herein have not been met shall not constitute a waiver of said criteria by County. Instead, such payment shall be construed as a good faith effort by County to resolve differences so Contractor may pay its Subcontractors and suppliers. Contractor agrees that failure to submit such items may constitute a breach of contract by Contractor and may subject Contractor to termination.

19.3 Progress Payments

19.3.1 County's Approval of Application for Payment

19.3.1.1 Upon receipt of an Application for Payment, the County shall act in accordance with both of the following:

19.3.1.1.1 Each Application for Payment shall be reviewed by the County as soon as practicable after receipt for the purpose of determining that the Application for Payment is a proper Application for Payment.

19.3.1.1.2 Any Application for Payment determined not to be a proper Application for Payment suitable for payment shall be returned to the Contractor as soon as practicable, but not later than seven (7) calendar days, after receipt. An Application for Payment returned pursuant to this paragraph shall be accompanied by a document setting forth in writing, including by e-mail, the reasons why the Application for Payment is not proper. The number of days available to the County to make a payment without incurring interest pursuant to this section shall be reduced by the number of days by which the County exceeds this seven-day return requirement.

19.3.1.1.3 An Application for Payment shall be considered properly executed if funds are available for payment of the Application for Payment, and payment is not delayed due to an audit inquiry by the financial officer of the County.

19.3.1.2 The County's review of the Contractor's Application for Payment will be based on the County's and the Architect's observations at the Site and the data comprising the Application for Payment that the Work has progressed to the point indicated and that, to the best of the County's and the Architect's knowledge, information, and belief, the quality of the Work is in accordance with the Contract Documents. The foregoing representations are subject to:

19.3.1.2.1 Observation of the Work for general conformance with the Contract Documents,

19.3.1.2.2 Results of subsequent tests and inspections,

19.3.1.2.3 Minor deviations from the Contract Documents correctable prior to completion, and

19.3.1.2.4 Specific qualifications expressed by the Architect.

19.3.1.3 County's approval of the certified Application for Payment shall be based on Contractor complying with all requirements for a fully complete and valid certified Application for Payment.

19.3.2 Payments to Contractor

19.3.2.1 Within thirty (30) days after approval of the Application for Payment, Contractor shall be paid a sum equal to ninety percent (90%) of the value of the Work performed (as verified by Architect and certified

by Contractor) up to the last day of the previous month, less the aggregate of previous payments and amount to be withheld. The value of the Work completed shall be Contractor's best estimate. No inaccuracy or error in said estimate shall operate to release the Contractor, or any Surety upon any bond, from damages arising from such Work, or from the County's right to enforce each and every provision of this Contract, and the County shall have the right subsequently to correct any error made in any estimate for payment.

19.3.2.2 The Contractor shall not be entitled to have any payment requests processed, or be entitled to have any payment made for Work performed, so long as any lawful or proper direction given by the County concerning the Work or any portion thereof remains incomplete.

19.3.2.3 If the County fails to make any progress payment within thirty (30) days after receipt of an undisputed and properly submitted Application for Payment by the Contractor, the County shall pay interest to the Contractor equivalent to the legal rate set forth in subdivision (a) of Section 685.010 of the Code of Civil Procedure.

19.3.3 No Waiver

No payment by County hereunder shall be interpreted so as to imply that County has inspected, approved, or accepted any part of the Work. Notwithstanding any payment, the County may enforce each and every provision of this Contract. The County may correct or require correction of any error subsequent to any payment.

19.3.4 Removal of Liens

19.3.4.1 If a lien or a claim based on a stop notice of any nature should at any time be filed against the Work or any County property, by any entity that has supplied material or services at the request of the Contractor, Contractor and Contractor's Surety shall promptly, on demand by County and at Contractor's and Surety's own expense, take any and all action necessary to cause any such lien or a claim based on a stop notice to be released or discharged immediately therefrom.

19.3.4.2 If the Contractor fails to furnish to the County within ten (10) calendar days after demand by the County, satisfactory evidence that a lien or a claim based on a stop notice has been so released, discharged, or secured, the County may discharge such indebtedness and deduct the amount required therefor, together with any and all losses, costs, damages, and attorney's fees and expense incurred or suffered by County from any sum payable to Contractor under the Contract.

19.4 Decisions to Withhold Payment

19.4.1 Reasons to Withhold Payment

The County may withhold payment in whole, or in part, to the extent reasonably necessary to protect the County if, in the County's opinion, the representations to the County required herein cannot be made. The County may withhold payment, in

whole, or in part, to such extent as may be necessary to protect the County from loss because of, but not limited to:

- 19.4.1.1 Defective Work not remedied within the time frames noted in Section 14 hereof of written notice to Contractor;
- 19.4.1.2 Stop Notices, or other liens served upon the County as a result of the Contract;
- 19.4.1.3 Liquidated damages assessed against the Contractor;
- 19.4.1.4 The cost of completion of the Contract, if there exists reasonable doubt that the Work can be completed for the unpaid balance of the Contract Price or by the completion date;
- 19.4.1.5 Damage to the County or other contractor(s);
- 19.4.1.6 Unsatisfactory prosecution of the Work by the Contractor;
- 19.4.1.7 Failure to store and properly secure materials;
- 19.4.1.8 Failure of the Contractor to submit, on a timely basis, proper, sufficient, and acceptable documentation required by the Contract Documents, including, without limitation, a Construction Schedule, Schedule of Submittals, Schedule of Values, Monthly Progress Schedules, Shop Drawings, Product Data and Samples, Proposed product lists, executed Change Orders, and/or properly completed Elation updates;
- 19.4.1.9 Failure of the Contractor to maintain Record Drawings;
- 19.4.1.10 Erroneous estimates by the Contractor of the value of the Work performed, or other false statements in an Application for Payment;
- 19.4.1.11 Unauthorized deviations from the Contract Documents;
- 19.4.1.12 Failure of the Contractor to prosecute the Work in a timely manner in compliance with the Construction Schedule established progress schedules, and/or completion dates;
- 19.4.1.13 Failure to properly pay prevailing wages as defined in Labor Code section 1720 et seq., and/or failure to comply with any other Labor Code requirements,
- 19.4.1.14 Failure to properly maintain or clean up the Site;
- 19.4.1.15 Payments to indemnify, defend, or hold harmless the County;
- 19.4.1.16 Any payments due to the County, including but not limited to payments for failed tests, utility changes or permits;
- 19.4.1.17 Failure to pay Subcontractor(s) or supplier(s) as required by law and by the Contract Documents;
- 19.4.1.18 Contractor is otherwise in breach, default, or in substantial violation of any provision of this Contract.

19.4.2 Reallocation of Withheld Amounts

19.4.2.1 County may, at its discretion, apply any withheld amount to pay outstanding claims or obligations as defined herein. In so doing, County shall make such payments on behalf of Contractor. If any payment is so made by County, then that amount shall be considered a payment made under Contract by County to Contractor and County shall not be liable to Contractor for any payment made in good faith. These payments may be made without prior judicial determination of claim or obligation. County will render Contractor an accounting of funds disbursed on behalf of Contractor.

19.4.2.2 If Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents or fails to perform any provision thereof, County may, after FORTY-EIGHT (48) hours written notice to the Contractor and, without prejudice to any other remedy, make good such deficiencies. The County shall adjust the total Contract Price by reducing the amount thereof by the cost of making good such deficiencies. If County deems it inexpedient to correct Work that is damaged, defective, or not done in accordance with Contract provisions, an equitable reduction in the Contract Price (of at least one hundred twenty-five percent (125%) of the estimated reasonable value of the nonconforming Work) shall be made therefor.

19.4.3 Payment After Cure

When Contractor removes the grounds for declining approval, payment shall be made for amounts withheld because of them. No interest shall be paid on any retainage or amounts withheld due to the failure of the Contractor to perform in accordance with the terms and conditions of the Contract Documents.

19.5 Subcontractor Payments

19.5.1 Payments to Subcontractors

No later than seven (7) days after receipt, or pursuant to Business and Professions Code Section 7108.5 and Public Contract Code Section 7107, the Contractor shall pay to each Subcontractor, out of the amount paid to the Contractor on account of such Subcontractor's portion of the Work, the amount to which said Subcontractor is entitled. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to its Sub-subcontractors in a similar manner.

19.5.2 No Obligation of County for Subcontractor Payment

The County shall have no obligation to pay or to see to the payment of, money to a Subcontractor except as may otherwise be required by law.

19.5.3 Joint Checks

County shall have the right in its sole discretion if necessary for the protection of the County, to issue joint checks made payable to the Contractor and Subcontractors and material or equipment suppliers. The joint check payees shall be responsible for the allocation and disbursement of funds included as part of any such joint payment. In no event shall any joint check payment be construed to create any contract between the County and a Subcontractor of any tier, any obligation from the County to such Subcontractor, or rights in such Subcontractor against the County.

20. COMPLETION OF THE WORK

20.1 Completion

20.1.1 County will accept completion of the Contract and have the Notice of Completion recorded when the entire Work shall have been completed to the satisfaction of County.

20.1.2 The Work may only be accepted as complete by action of the County Board of Supervisors.

20.1.3 County, at its sole option, may accept completion of Contract and have the Notice of Completion recorded when the entire Work shall have been completed to the satisfaction of County, except for minor corrective items, as distinguished from incomplete items. If Contractor fails to complete all minor corrective items within thirty (30) days after the date of the County's acceptance of completion, County shall withhold from the final payment one hundred fifty percent (150%) of an estimate of the amount sufficient to complete the corrective items, as determined by County, until the item(s) are completed.

20.1.4 At the end of the thirty-five (35) day period, if there are any items remaining to be corrected, County may elect to proceed as provided herein related to adjustments to Contract Price, and/or County's right to perform the Work of the Contractor.

20.2 Close-Out Procedures

20.2.1 Punch List

The Contractor shall notify the Architect when Contractor considers the Work complete. Upon notification, Architect will prepare a list of minor items to be completed or corrected ("Punch List"). The Contractor and/or its Subcontractors shall proceed promptly to complete and correct items on the Punch List. Failure to include an item on Punch List does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

20.2.2 Close-Out Requirements

20.2.2.1 Utility Connections

Buildings shall be connected to water, gas, sewer, and electric services, complete and ready for use. Service connections shall be made, and existing services reconnected.

20.2.2.2 Record Drawings

20.2.2.2.1 Contractor shall provide exact "as-built" Record Drawings of the Work upon completion of the Project as indicated in the Specifications.

20.2.2.2.2 Contractor is liable and responsible for any and all inaccuracies in as-built Record Drawings, even if inaccuracies become evident at a future date.

20.2.2.2.3 Upon completion of the Work and as a condition precedent to approval of final payment, Contractor shall

obtain the Architect's approval of the corrected prints and employ a competent draftsman to transfer the "as-built" information to the most current version of Autocad that is, at that time, currently utilized for plan check submission by either the County, the Construction Manager and/or the Architect, and submit electronic files. When completed, Contractor shall deliver corrected electronic files acceptable to County with Autocad file to the County.

- 20.2.2.2.4** Maintenance Manuals: Contractor shall prepare all operation and maintenance manuals and date as indicated in the Specifications.

20.3 Final Inspection

20.3.1 Contractor shall comply with Punch List procedures as provided herein, and maintain the presence of a Project Superintendent and Project Manager until the Punch List is complete to ensure proper and timely completion of the Punch List. Under no circumstances shall Contractor demobilize its forces prior to completion of the Punch List. Upon receipt of Contractor's written notice that all of the Punch List items have been fully completed, and the Work is ready for final inspection and acceptance, Architect and Construction Manager will inspect the Work and shall submit to Contractor and County a final inspection report noting the Work, if any, required in order to complete in accordance with the Contract Documents. Absent unusual circumstances, this report shall consist of the Punch List items not yet satisfactorily completed.

20.3.2 Upon Contractor's completion of all items on the Punch List and any other uncompleted portions of the Work, the Contractor shall notify the County and Architect, who shall again inspect such Work. If the Architect finds the Work complete and acceptable under the Contract Documents, the Architect will notify Contractor, who shall then jointly submit to the Architect and the County its final Application for Payment.

20.3.3 Final Inspection Requirements

Before calling for final inspection, Contractor shall determine that the following have been performed:

- 20.3.3.1** The Work has been completed.
- 20.3.3.2** All life-safety items are completed and in working order.
- 20.3.3.3** Mechanical and Electrical Work are complete and tested, fixtures are in place, connected, and ready for tryout.
- 20.3.3.4** Electrical circuits scheduled in panels and disconnect switches labeled.
- 20.3.3.5** Painting and special finishes complete.
- 20.3.3.6** Doors complete with hardware, cleaned of protective film, relieved of sticking or binding, and in working order.
- 20.3.3.7** Tops and bottoms of doors sealed.
- 20.3.3.8** Floors waxed and polished as specified.

- 20.3.3.9** Broken glass replaced and glass cleaned.
- 20.3.3.10** Grounds cleared of Contractor's equipment, raked clean of debris, and trash removed from Site.
- 20.3.3.11** Work cleaned, free of stains, scratches, and other foreign matter, of damaged and broken material, replaced.
- 20.3.3.12** Finished and decorative work shall have marks, dirt, and superfluous labels removed.
- 20.3.3.13** Final cleanup, as provided herein.

20.4 Costs of Multiple Inspections

More than two (2) requests of the County to make a final inspection shall be considered an additional service of County, Architect, and/or Construction Manager, and all subsequent costs will be invoiced to Contractor and if funds are available, withheld from remaining payments.

20.5 Partial Occupancy or Use Prior to Completion

20.5.1 County's Rights

The County may occupy or use any completed or partially completed portion of the Work at any stage. The County and the Contractor shall agree in writing to the responsibilities assigned to each of them for payments, security, maintenance, heat, utilities, damage to the Work, insurance, the period for correction of the Work, and the commencement of warranties required by the Contract Documents. Any dispute as to responsibilities shall be resolved pursuant to the Claims and Disputes provisions herein, with the added provision that during the dispute process, the County shall have the right to occupy or use any portion of the Work that it needs or desires to use.

20.5.2 Inspection Prior to Occupancy or Use

Immediately prior to partial occupancy or use, the County, the Contractor, and the Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

20.5.3 No Waiver

Unless otherwise agreed upon, partial or entire occupancy or use of a portion or portions of the Work shall not constitute beneficial occupancy or acceptance of the Work not complying with the requirements of the Contract Documents.

21. FINAL PAYMENT AND RETENTION

21.1 Final Payment

Upon receipt and approval of a valid and final Application for Payment, the Architect will issue a final Certificate of Payment. The County shall thereupon jointly inspect the Work and either accept the Work as complete or notify the Architect and the Contractor in writing of reasons why the Work is not complete. Upon acceptance of the Work of the Contractor as fully complete (that, absent unusual circumstances, will occur when the Punch List items have been satisfactorily completed), the County shall record a

Notice of Completion with the County Recorder, and the Contractor shall, upon receipt of final payment from the County, pay the amount, due Subcontractors.

21.2 Prerequisites for Final Payment

The following conditions must be fulfilled prior to Final Payment:

21.2.1 A full and final waiver or release of all Stop Notices in connection with the Work shall be submitted by Contractor, including a release of Stop Notice in recordable form, together with (to the extent permitted by law) a copy of the full and final release of all Stop Notice rights.

21.2.1.1 A duly completed and executed conditional waiver and release upon final payment compliant with Civil Code section 3262 from the Contractor and each subcontractor of any tier and supplier to be paid from the current progress payment;

21.2.1.2 A duly completed and executed unconditional waiver and release upon progress payment compliant with Civil Code section 3262 from the Contractor and each subcontractor of any tier and supplier that was paid from the previous progress payment; and

21.2.1.3 The Contractor shall have made all corrections to the Work that are required to remedy any defects therein, to obtain compliance with the Contract Documents or any requirements of applicable codes and ordinances, or to fulfill any of the orders or directions of County required under the Contract Documents.

21.2.2 Each Subcontractor shall have delivered to the Contractor all written guarantees, warranties, applications, and bonds required by the Contract Documents for its portion of the Work.

21.2.3 Contractor must have completed all requirements set forth under "Close-Out Procedures," Including, without limitation, an approved set of complete "as-built" Record Drawings.

21.2.4 Architect shall have issued its written approval that final payment can be made.

21.2.5 The Contractor shall have delivered to the County all manuals and materials required by the Contract Documents.

21.2.6 The Contractor shall have completed final clean up as provided herein.

21.3 Retention

21.3.1 The retention, less any amounts disputed by the County or that the County has the right to withhold pursuant to provisions herein, shall be paid:

21.3.1.1 After approval of the County by the Architect's Certificate of Payment,

21.3.1.2 After the satisfaction of the conditions set forth herein, and

21.3.1.3 After thirty-five (35) days after the recording of the Notice of Completion by County.

21.3.2 No interest shall be paid on any retention, or on any amounts withheld due to a failure of the Contractor to perform, in accordance with the terms and conditions of the Contract Documents, except as provided to the contrary in any Escrow Agreement between the County and the Contractor pursuant to Public Contract Code section 22300.

21.4 Substitution of Securities

The County will permit the substitution of securities in accordance with the provisions of Public Contract Code section 22300.

22. UNCOVERING OF WORK

If a portion of the Work is covered without Architect approval or not in compliance with the Contract Documents, it must, if required in writing, including by email, by the County or the Architect, be uncovered for the Architect's observation and be replaced at the Contractor's expense without change in the Contract Price or Contract Time.

If a portion of the Work has been covered, which the Project Inspector or the Architect has not specifically requested to observe prior to its being covered, the County, Project Inspector, or the Architect may request to see that Work, and it shall be uncovered by the Contractor. If that Work is in accordance with the Contract Documents, costs of uncover and replacement shall, by appropriate Change Order, be charged to the County. If that Work is not in accordance with Contract Documents, the Contractor shall pay these costs unless the condition was caused by the County or a separate contractor, in which event the County shall be responsible for payment of such costs to the Contractor.

23. NONCONFORMING WORK, CORRECTION OF WORK AND COUNTY'S RIGHT TO PERFORM WORK

23.1 Nonconforming Work

23.1.1 Contractor shall promptly remove from Premises all Work identified by County as failing to conform to the Contract Documents whether incorporated or not. Contractor shall promptly replace and re-execute its own Work to comply with the Contract Documents without additional expense to the County and shall bear the expense of making good all work of other contractors destroyed or damaged by any removal or replacement pursuant hereto and/or any delays to the County or other Contractors caused thereby.

23.1.2 If Contractor does not remove Work that County has identified as failing to conform to the Contract Documents within a reasonable time, not to exceed FORTY-EIGHT (48) hours, County may remove it and may store any material at Contractor's expense. If Contractor does not pay expense(s) of that removal within ten (10) days' time thereafter, County may, upon ten (10) days' written notice, sell any material at auction or at private sale and shall deduct all costs and expenses incurred by the County and/or County may withhold those amounts from payment(s) to Contractor.

23.2 Correction of Work

23.2.1 Correction of Rejected Work

Pursuant to the notice provisions herein, the Contractor shall promptly correct the Work rejected by the County or the Architect as failing to conform to the requirements

of the Contract Documents, whether observed before or after Completion and whether or not fabricated, installed, or completed. The Contractor shall bear costs of correcting the rejected Work, including additional testing, inspections, and compensation for the Architect's services and expenses made necessary thereby.

23.2.2 Warranty Corrections

If, within the warranty period specified in 00 65 36 Warranty Form, after the date of Completion of the Work or a designated portion thereof, or after the date of commencement of warranties established hereunder, or by the terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the County to do so. This period of two (2) years shall be extended with respect to portions of the Work first performed after Completion by the period of time between Completion and the actual performance of the Work. This obligation hereunder shall survive acceptance of the Work under the Contract and termination of the Contract. The County shall give such notice promptly after discovery of the condition.

23.3 County's Right to Perform Work

23.3.1 If the Contractor should neglect to prosecute the Work properly or fail to perform any provisions of this contract, the County, after FORTY-EIGHT (48) hours written notice to the Contractor, may, without prejudice to any other remedy it may have, make good such deficiencies and may deduct the cost thereof from the payment then or thereafter due the Contractor.

23.3.2 If it is found at any time, before or after completion of the Work, that Contractor has varied from the Drawings and/or Specifications, including, but not limited to, variation in material, quality, form, or finish, or in the amount or value of the materials and labor used, County may require at its option:

- 23.3.2.1** That all such improper Work be removed, remade or replaced, and all work disturbed by these changes be made good by Contractor at no additional cost to the County;
- 23.3.2.2** That the County deduct from any amount due Contractor the sum of money equivalent to the difference in value between the work performed and that called for by the Drawings and Specifications; or
- 23.3.2.3** That the County exercise any other remedy it may have at law or under the Contract Documents, including but not limited to the County hiring its own forces or another contractor to replace the Contractor's nonconforming Work, in which case the County shall either issue a Deductive Change Order, a Construction Change Directive or invoice the Contractor for the cost of that work. Contractor shall pay any invoices within thirty (30) days of receipt of same or County may withhold those amounts from payment(s) to Contractor.

24. TERMINATION AND SUSPENSION

24.1 County's Right to Terminate Contractor for Cause

24.1.1 Grounds for Termination.

The County, in its sole discretion, may terminate the Contract and/or terminate the Contractor's right to perform the work of the Contract based upon the following:

- 24.1.1.1** Contractor refuses or fails to execute the Work or any separable part thereof with sufficient diligence as will ensure its completion within the time specified or any extension thereof, or
- 24.1.1.2** Contractor fails to complete said Work within the time specified or any extension thereof, or
- 24.1.1.3** Contractor persistently fails or refused to perform Work or provide material of sufficient quality as to be in compliance with Contract Documents; or
- 24.1.1.4** Contractor files a petition for relief as a debtor, or a petition is filed against the Contractor without its consent, and the petition not dismissed within sixty (60) days; or
- 24.1.1.5** Contractor makes a general assignment for the benefit of its creditors, or a receiver is appointed on account of its insolvency; or
- 24.1.1.6** Contractor persistently or repeatedly refuses or fails, except in cases for which extension of time is provided, to supply enough properly skilled workers or proper materials to complete the Work in the time specified; or
- 24.1.1.7** Contractor fails to make prompt payment to Subcontractors, or for material, or for labor; or
- 24.1.1.8** Contractor persistently disregards laws or ordinances, or instructions of County; or
- 24.1.1.9** Contractor fails to supply labor, including that of Subcontractors, that can work in harmony with all other elements of labor employed or to be employed on the Work; or
- 24.1.1.10** Contractor or its Subcontractor(s) is/are otherwise in breach, default, or in substantial violation of any provision of this Contract.

24.1.2 Notification of Termination

- 24.1.2.1** Upon the occurrence of County's sole determination of any of the above conditions, County may, without prejudice to any other right or remedy, serve written notice upon Contractor and its Surety of County's termination of this Contract and/or the Contractor's right to perform the work of the Contract. This notice will contain the reasons for termination. Unless, within three (3) days after the service of the notice, any and all condition(s) shall cease, and any and all violation(s) shall cease, or arrangement satisfactory to County for the correction of the condition(s) and/or violation(s) be made, this Contract shall cease and terminate. Upon Determination, Contractor

shall not be entitled to receive any further payment until the entire Work is finished.

- 24.1.2.2** Upon Termination, County may immediately serve written notice of tender upon Surety whereby Surety shall have the right to take over and perform this Contract only if Surety:

24.1.2.2.1 Within three (3) days after service upon it of the notice of tender, gives County written notice of Surety's intention to take over and perform this Contract; and

24.1.2.2.2 Commences performance of this Contract within (three (3) days from the date of serving of its notice to County.

- 24.1.2.3** If Surety fails to notify County or begin performance as indicated herein, County may take over the Work and execute the Work to completion by any method it may deem advisable at the expense of Contractor and/or its Surety. Contractor and/or its Surety shall be liable to County for any excess cost or other damages the County incurs thereby. Time is of the essence in this Contract. If the County takes over the Work as herein provided, County may, without liability for so doing, take possession of and utilize in completing the Work such materials, appliances, plan, and other property belonging to Contractor as may be on the Site of the Work, in bonded storage, or previously paid for.

24.1.3 Effect of Termination

- 24.1.3.1** Contractor shall, only if ordered to do so by the County, immediately remove from the Site all or any materials and personal property belonging to Contractor that have not been incorporated in the construction of the Work, or which are not in place in the Work. The County retains the right, but not the obligation, to keep and use any materials and personal property belonging to Contractor that have not been incorporated in the construction of the Work, or which are not in place in the Work. The Contractor and its Surety shall be liable upon the performance bond for all damages caused the County by reason of the Contractor's failure to complete the Contract.

- 24.1.3.2** In the event that the County shall perform any portion of, or the whole of the Work, pursuant to the provisions of the General Conditions, the County shall not be liable nor account to the Contractor in any way for the time within which, or the manner in which, the Work is performed by the County or for any changes the County may make in the Work or for the money expended by the County in satisfying claims and/or suits and/or other obligations in connection with the Work.

- 24.1.3.3** In the event, that the Contract is terminated for any reason, no allowances or compensation will be granted for the loss of any anticipated profit by the Contractor.

24.1.3.4 If the expense to the County to finish the Work exceeds the unpaid Contract Price, Contractor and Surety shall pay the difference to County within twenty-one (21) days of County's request.

24.1.3.5 The County shall have the right (but shall have no obligation) to assume and/or assign to a general contractor or construction manager or other third party who is qualified and has sufficient resources to complete the Work, the rights of the Contractor under its subcontracts with any or all Subcontractors. In the event of an assumption or assignment by the County, no Subcontractor shall have any claim against the County or third party for Work performed by Subcontractor or other matters arising prior to termination of the Contract. The County or any third party, as the case may be, shall be liable only for obligations to the Subcontractor arising after assumption or assignment. Should the County so elect, the Contractor shall execute and deliver all documents and take all steps, including the legal assignment of its contractual rights, as the County may require, for the purpose of fully vesting in the County the rights and benefits of it Subcontractor under Subcontracts or other obligations or commitments. All payments due the Contractor hereunder shall be subject to a right of offset by the County for expenses and damages suffered by the County as a result of any default, acts, or omissions of the Contractor. Contractor must include this assignment provision in all of its contracts with its Subcontractors.

24.1.3.6 The foregoing provisions are in addition to and not in limitation of any other rights or remedies available to County.

24.2 Termination of Contractor for Convenience

24.2.1 County in its sole discretion may terminate the Contract upon three (3) days written notice to the Contractor. Under a termination for convenience, the County retains the right to all the options available to the County if there is a termination for cause. In case of a termination for convenience, the Contractor shall have no claims against the County except:

24.2.1.1 The actual cost of labor, materials, and services performed that is unpaid and can be documented through timesheets, invoices, receipts, or otherwise, and

24.2.1.2 Five percent (5%) of the total cost of work performed as of the date of termination, or five percent (5%) of the value of the Work yet to be performed, whichever is less. This five percent (5%) amount shall be full compensation for all Contractor's and its Subcontractor(s)' mobilization and/or demobilization costs and any anticipated loss profits resulting from termination of the Contractor for convenience.

24.3 Emergency Termination of Public Contracts Act of 1949

24.3.1 This Contract is subject to termination as provided by sections 4410 and 4411 of the Government Code of the State of California, being a portion of the Emergency Termination of Public Contracts Act of 1949.

24.3.1.1 Section 4410 of the Government Code states:

In the event a national emergency occurs, and public work, being performed by contract, is stopped, directly or indirectly, because of the freezing or diversion of materials, equipment or labor, as the result of an order or a proclamation of the President of the United States, or of an order of any federal authority, and the circumstances or conditions are such that it is impracticable within a reasonable time to proceed with a substantial portion of the work, then the public agency and the contractor may, by written agreement, terminate said contract.

24.3.1.2 Section 4411 of the Government Code states:

Such an agreement shall include the terms and conditions of the termination of the contract and provision for the payment of compensation or money, if any, which either party shall pay to the other or any other person, under the facts and circumstances in the case.

24.3.1.3 Compensation to the Contractor shall be determined at the sole discretion of County on the basis of the reasonable value of the Work done, including preparatory work. As an exception to the foregoing and at the County's discretion, in the case of any fully completed separate item or portion of the Work for which there is a separate previously submitted unit price or item on the accepted schedule of values, that price shall control. The County, at its sole discretion, may adopt the Contract Price as the reasonable value of the work done or any portion thereof.

25. CLAIMS AND DISPUTES

25.1 Performance During Claim Process

The Contractor shall continue to perform its Work under the Contract and shall not cause a delay in the Work during any dispute, claims definition, negotiation, mediation, or arbitration proceeding, except by written agreement by the County.

25.2 Definition of Claim

25.2.1 For purposes of this section, a "Claim" means a separate demand by the Contractor for:

25.2.1.1 A time extension,

25.2.1.2 Payment of money or damages arising from Work done by or on behalf of the Contractor pursuant to the Contract and payment of which is not otherwise expressly provided for or the claimant is not otherwise entitled to, or

25.2.1.3 Payment of money that the County disputes is owing.

25.3 Claim Presentations

25.3.1 The attention of the Contractor is drawn to Government Code Section 12650, et seq. regarding penalties for false claims.

25.3.2 Contractor shall file with the County any written Claim, including the documents necessary to substantiate it, on or before the day of final payment on the Contract.

25.3.3 The Contractor shall not cause a delay in the Work during any dispute, claims definition, negotiation, mediation, or arbitration proceeding, except by written agreement by the County.

25.3.4 The Contractor shall bind all its Subcontractors, material persons, and suppliers to the provisions of this section on mediation and arbitration and will hold the County harmless against disputes and claims by Subcontractors, material persons, or suppliers.

25.4 Claim Resolution

25.4.1 In the event of a dispute between the parties as to performance of the Work, the interpretation of this Contract, or payment or nonpayment for Work performed or not performed, the parties shall attempt to resolve the dispute by those procedures set forth in Public Contract Code Section 9204, if applicable. Pending resolution of the dispute, if the dispute is not resolved, Contractor agrees it will neither rescind the Contract nor stop the progress of the Work but will allow determination by a court of the State of California having competent jurisdiction of the dispute, after the Project has been completed, and not before.

25.4.2 For all Claims which arise between a Contractor and a local agency, the procedure set forth in Public Contract Code Section 9204 shall apply:

25.4.2.1 The County shall respond in writing within forty-five (45) days of receipt of the Claim identifying what portion of the Claim is disputed and what portion is undisputed.

25.4.2.1.1 Upon receipt of a Claim, County, and Contractor may, by mutual agreement, extend the time period for County to respond.

25.4.2.1.2 Any payment due on an undisputed portion of the Claim shall be processed and made within sixty (60) days after the County issues its written response to the Claim.

25.4.3 If Contractor disputes County's written response, or if County fails to respond to a Claim issued pursuant to this Section 25 within the time prescribed, Contractor may demand in writing an informal conference to meet and confer for settlement of the issues in dispute.

25.4.3.1 Upon receipt of a demand in writing sent by registered mail or certified mail, return receipt requested, County shall schedule a meet and confer conference within thirty (30) days for settlement of the dispute.

25.4.4 Within ten (10) business days following the conclusion of the meet and confer conference, if the Claim or any portion of the Claim remains in dispute, the County shall provide Contractor a written

statement identifying the portion of the Claim that remains in dispute and the portion that is undisputed.

25.4.4.1 Any payment due on an undisputed portion of the Claim shall be processed and made within sixty (60) days after the County issues its written statement.

25.4.5 Any disputed portion of the Claim, as identified by the statement referenced in Section 25.4.4 shall be submitted to nonbinding mediation, with the County and Contractor sharing the associated costs equally.

25.4.5.1 County and Contractor shall mutually agree to a mediator within ten (10) business days after the disputed portion of the claim has been identified in writing.

25.4.5.2 If County and Contractor cannot agree to a mediator, each party shall select a mediator, and those mediators shall select a qualified neutral third party to mediate with regard to the disputed portion of the claim.

25.4.5.3 County and Contractor shall each bear the fees and costs charged by its respective mediator in connection with the selection of the neutral mediator.

25.4.5.4 If mediation is unsuccessful, the parts of the claim remaining in dispute shall be submitted to judicial arbitration pursuant to Chapter 2.5 (commencing with Section 1141.10) of the Title 3 of Part 3 of the Code of Civil Procedure, notwithstanding Section 1141.11 of that code. The Civil Discovery Act of 1986, (Article 3 (commencing with Section 2016) of Chapter 3 of Title 3 of part 4 of the Code of Civil Procedure) shall apply to any proceeding brought under this subdivision consistent with the rules pertaining to judicial arbitration.

25.4.6 The County shall not fail to pay money as to any portion of a claim which is undisputed except as otherwise provided in the Contract Documents. Unpaid claim amounts not paid in a timely manner will accrue interest at seven percent (7%) per annum. In any suit filed pursuant to this section, the County shall pay interest at the legal rate on any arbitration award or judgment. Interest shall begin to accrue on the date the suit is filed in a court of law.

26. LABOR, WAGE & HOUR, APPRENTICE, AND RELATED PROVISIONS

26.1 Wage Rates, Travel, and Subsistence – (For Projects over \$1M see also PROJECT STABILIZATION/ COMMUNITY BENEFITS AGREEMENT of the COUNTY OF ALAMEDA Document 00 73 49).

26.1.1 Pursuant to the provisions of Article 2 (commencing with Section 1770), chapter 1, part 7, division 2, of the Labor Code of California, the general prevailing rate of per diem wages and the general prevailing rate for holiday and overtime work in the locality in which this public work is to be performed for each craft, classification or type of

worker needed to execute this Contract is on file at the County's principal office, and copies will be made available to any interested party on request. Contractor shall obtain and post a copy of these wage rates at the job site.

26.1.2 Holiday and overtime work, when permitted by law, shall be paid for at a rate of at least one and one-half times the above-specified rate of per diem wages unless otherwise specified. The holidays upon which those rates shall be paid need not be specified by the County but shall be all holidays recognized in the applicable collective bargaining agreement. If the prevailing rate is not based on a collectively bargained rate, the holidays upon which the prevailing rate shall be paid shall be as provided in Section 6700 of the Government Code.

26.1.3 Contractor shall pay and shall cause to be paid each worker engaged in Work on the Project not less than the general prevailing rate of per diem wages determined by the Director of the Department of Industrial Relations ("DIR") ("Director"), regardless of any contractual relationship which may be alleged to exist between Contractor or any Subcontractor and such workers.

26.1.4 Contractor shall pay and shall cause to be paid to each worker needed to execute the Work on the Project travel and subsistence payments, as such travel and subsistence payments are defined in the applicable Collective Bargaining Agreements filed with the Department of Industrial Relations in accordance with Labor Code Section 1773 et seq.

26.1.5 If during the period this bid is required to remain open, the Director determines that there has been a change in any prevailing rate of per diem wages in the locality in which the Work under the Contract is to be performed, such change shall not alter the wage rates in the Notice to Bidders or the Contract subsequently awarded.

26.1.6 Pursuant to Labor Code Section 1775, Contractor shall, as a penalty to County, forfeit the statutory amount for each calendar day, or portion thereof, for each worker paid less than the prevailing rates, determined by the County and/or the Director, for the work or craft in which that worker is employed for any public work done under Contract by Contractor or by any Subcontractor under it. The difference between such prevailing wage rates and the amount paid to each worker for each calendar day or portion thereof for which each worker was paid less than the prevailing wage rate, shall be paid to each worker by Contractor.

26.1.7 Any worker employed to perform Work on the Project, which Work is not covered by any classification listed in the general prevailing wage rate of per diem wages determined by the Director, shall be paid not less than the minimum rate of wages specified therein for the classification which most nearly corresponds to Work to be performed by him, and such minimum wage rate shall be retroactive to time of initial employment of such person in such classification.

26.1.8 Pursuant to Labor Code section 1773.1, per diem wages, are deemed to include employer payments for health and welfare, pension, vacation, travel time, subsistence pay, and apprenticeship or other training programs authorized by section 3093, and similar purposes.

26.1.9 Contractor shall post at appropriate conspicuous points on the Site of Project, a schedule showing all determined minimum wage rates and all authorized

deductions if any, from unpaid wages, actually earned. In addition, Contractor shall post a sign-in log for all workers and visitors to the Site, a list of all subcontractors of any tier on the Site, and the required Equal Employment Opportunity poster(s).

26.1.10 Contractor stipulates that it shall comply with all requirements of PROJECT STABILIZATION/COMMUNITY BENEFITS AGREEMENT (**For projects over \$1M**) of the COUNTY OF ALAMEDA, and shall pay to persons performing labor in and about the Work provided for in the Contract an amount equal to or more than the following:

26.1.10.1 Wage rate and fringe benefit payments and classification for that person's corresponding labor classification as required by the Department of Industrial Relations;

26.1.10.2 Wage rate and fringe benefit payments and classification for that person's corresponding labor classification as required under the PROJECT STABILIZATION/COMMUNITY BENEFITS AGREEMENT of the COUNTY OF ALAMEDA (**For projects over \$1M**) and California Labor Code.

26.1.11 If there are conflicts between the Wage rate and fringe benefit payments and classification between the Department of Industrial Relations and the PROJECT STABILIZATION/COMMUNITY BENEFITS AGREEMENT of the COUNTY OF ALAMEDA (**For projects over \$1M**), Contractor shall pay the higher wage rate and fringe benefits.

26.2 Hours of Work

26.2.1 As provided in Article 3 (commencing with Section 1810), chapter 1, part 7, division 2, of the Labor Code, eight (8) hours of labor shall constitute a legal days work. The time of service of any worker employed at any time by Contractor or by any Subcontractor on any subcontract under this Contract upon the Work or upon any part of the Work contemplated by this Contract shall be limited and restricted by Contractor to eight (8) hours per day, and forty (40) hours during any one week, except as hereinafter provided. Notwithstanding the provisions hereinabove set forth, Work performed by employees of Contractor in excess of eight (8) hours per day and forty (40) hours during any one week, shall be permitted upon this public work upon compensation for all hours worked in excess of eight (8) hours per day at not less than one and one-half times the basic rate of pay.

26.2.2 Contractor shall keep and shall cause each Subcontractor to keep an accurate record showing the name of and actual hours worked each calendar day and each calendar week by each worker employed by Contractor in connection with the Work or any part of the Work contemplated by this Contract. The record shall be kept open at all reasonable hours to the inspection of County and to the Division of Labor Standards Enforcement of the DIR.

26.2.3 Pursuant to Labor Code Section 1813, Contractor shall as a penalty to the County forfeit the statutory amount for each worker employed in the execution of this Contract by Contractor or by any Subcontractor for each calendar day during which such worker is required or permitted to work more than eight (8) hours in any one calendar

day and forty (40) hours in any one calendar week in violation of the provisions of Article 3 (commencing with Section 1810), chapter 1, part 7, division 2, of the Labor Code.

26.2.4 Any Work necessary to be performed after regular working hours, or on Sundays or other holidays shall be performed without additional expense to the County.

26.3 Payroll Records

26.3.1 County will use the Alameda County Contract Compliance System, including the Elation Systems, Inc. program, to monitor contract and labor compliance. Contractor shall use the Compliance System to meet County's requirements, and shall participate in training as directed by County in order to become and remain competent in the use of the Compliance System.

26.3.2 Pursuant to the provisions of section 1776 of the Labor Code, notice is hereby given that Contractor shall prepare and provide to the County and shall cause each Subcontractor performing any portion of the Work under this Contract to prepare and provide to the County an accurate and certified payroll record ("CPR(s)"), showing the name, address, social security number, work classification, straight time, and overtime hours worked each day and week, and the actual per diem wages paid to each journeyman, apprentice, worker, or other employee employed by the Contractor and/or each Subcontractor in connection with the Work.

26.3.3 The CPRs enumerated hereunder shall be certified and shall be provided to the County on a weekly basis. The CPRs from the Contractor and each Subcontractor for each week shall be provided on or before Wednesday of the week following the week covered by the CPRs. County shall not make any payment to Contractor until:

26.3.3.1 Contractor and/or its Subcontractor(s) provide CPRs acceptable to the County, and

26.3.3.2 The County is given sufficient time to review and/or audit the CPRs to determine their acceptability. Any delay in Contractor and/or its Subcontractor(s) providing CPRs to the County in a timely manner will directly delay the County's review and/or audit of the CPRs and Contractor's payment.

26.3.4 All CPRs shall be available for inspection at all reasonable hours at the principal office of Contractor on the following basis:

26.3.4.1 A certified copy of an employee's CPR shall be made available for inspection or furnished to the employee or his/her authorized representative on request.

26.3.4.2 CPRs shall be made available for inspection or furnished upon request to a representative of County, Division of Labor Standards Enforcement, Division of Apprenticeship Standards, and/or the Department of Industrial Relations.

26.3.4.3 CPRs shall be made available upon request by the public for inspection or copies thereof made; provided, however, that a request by the public shall be made through either the County, Division of

Apprenticeship Standards or the Division of Labor Standards Enforcement. If the requested CPRs have not been provided pursuant to the provisions herein, the requesting party shall, prior to being provided the records reimburse the costs of preparation by Contractor, Subcontractors, and the entity through which the request was made. The public shall not be given access to the records at the principal office of Contractor.

26.3.5 The form of certification for the CPRs shall be as follows:

I, (Name-Print), the undersigned, am the (Position in business) with the authority to act for and on behalf of (Name of business and/or Contractor), certify under penalty of perjury that the records or copies thereof submitted and consisting of (Description, number of pages) are the originals or true, full, and correct copies of the originals which depict the payroll record(s) of actual disbursements by way of cash, check, or whatever form to the individual or individual named, and (b) we have complied with the requirements of sections 1771, 1811, and 1815 for any work performed by our employees on the Project.

Date:

Signature:

(Section 16401 of the California Code of Regulations)

26.3.6 Each Contractor shall file a certified copy of the CPRs with the entity that requested the records within ten (10) days after receipt of a written request.

26.3.7 Any copy of records made available for inspection as copies and furnished upon request to the public or any public agency by County, Division of Apprenticeship Standards, or Division of Labor Standards Enforcement shall be marked or obliterated in such a manner as to prevent disclosure of an individual's name, address, and social security number. The name and address of Contractor awarded Contract or performing Contract shall not be marked or obliterated.

26.3.8 Contractor shall inform County of the location of the records enumerated hereunder, including the street address, city, and county, and shall, within five (5) working days, provide a notice of change of location and address.

26.3.9 In the event of noncompliance with the requirements of this section, Contractor shall have ten (10) days in which to comply subsequent to receipt of written notice specifying in what respects Contractor must comply with this section. Should noncompliance still be evident after the ten (10) day period, Contractor shall, as a penalty to County, forfeit twenty-five dollars (\$25) for each calendar day, or portion thereof, for each worker, until strict compliance is effectuated. Upon the request of Division of Apprenticeship Standards or Division of Labor Standards Enforcement, these penalties shall be withheld from progress payments then due.

26.3.10 It shall be the responsibility of Contractor to ensure compliance with the provisions of Labor Code section 1776.

26.4 Apprentices

26.4.1 Contractor acknowledges and agrees that, if this Contract involves a dollar amount greater than or a number of working days greater than that specified in Labor

Code section 1777.5, then this Contract is governed by the provisions of Labor Code Section 1777.5. It shall be the responsibility of Contractor to ensure compliance with this Article and with Labor Code section 1777.5 for all apprenticeship occupations.

26.4.2 Apprentices of any crafts or trades may be employed and, when required by Labor Code section 1777.5, shall be employed provided they are properly registered in full compliance with the provisions of the Labor Code.

26.4.3 Every such apprentice shall be paid the standard wage paid to apprentices under the regulations of the craft or trade at which he/she is employed, and shall be employed only in the work of the craft or trade to which she/he is registered.

26.4.4 Only apprentices, as defined in section 3077 of the Labor Code, who are in training under apprenticeship standards and written apprentice agreements under Chapter 4 (commencing at Section 3070), Division 3, of the Labor Code, are eligible to be employed. The employment and training of each apprentice shall be in accordance with the provisions of the apprenticeship standards and apprentice agreements under which he/she is training.

26.4.5 Pursuant to Labor Code section 1777.5, if that section applies to this Contract as indicated above, Contractor and any Subcontractors employing workers in any apprentice able craft or trade in performing any Work under this Contract shall apply to the applicable joint apprenticeship committee for a certificate approving the Contractor or Subcontractor under the applicable apprenticeship standards and fixing the ratio of apprentices to journeymen employed in performing the Work.

26.4.6 Pursuant to Labor Code section 1777.5, if that section applies to this Contract as indicated above, Contractor and any Subcontractor may be required to make contributions to the apprenticeship program.

26.4.7 If Contractor or Subcontractor willfully fails to comply with Labor Code section 1777.5, then, upon a determination of noncompliance by the Administrator of Apprenticeship, it shall:

26.4.7.1 Be denied the right to bid on any subsequent project for one (1) year from the date of such determination;

26.4.7.2 Forfeit as a penalty to County the full amount as stated in Labor Code section 1777.7. Interpretation and enforcement of these provisions shall be in accordance with the rules and procedures of the California Apprenticeship Council and under the authority of the Chief of the Division of Apprenticeship Standards.

26.4.8 Contractor and all Subcontractors shall comply with Labor Code section 1777.6, which section forbids certain discriminatory practices in the employment of apprentices.

26.4.9 Contractor shall become fully acquainted with the law regarding apprentices prior to commencement of the Work. Special attention is directed to Sections 1777.5, 1777.6, and 1777.7 of the Labor Code, and title 8, California Code of Regulations, section 200 et seq. Questions may be directed to the State Division of Apprenticeship Standards, 455 Golden Gate Avenue, San Francisco, California 94102.

26.5 Non-Discrimination

26.5.1 Contractor herein agrees not to discriminate in its recruiting, hiring, promotion, demotion, or termination practices on the basis of race, religious creed, national origin, ancestry, sex, age, or physical handicap in the performance of this Contract and to comply with the provisions of the California Fair Employment and Housing Act as set forth in part 2.8 of Division 3 of the California Government Code, commencing at section 12900; the Federal Civil Rights Act of 1964, as set forth in Public Law 88-352, and all amendments thereto; Executive Order 11246, and all administrative rules and regulations found to be applicable to Contractor and Subcontractor.

26.5.2 Special requirements for Federally Assisted Construction Contracts: During the performance of this Contract, Contractor agrees to incorporate in all subcontracts the provisions set forth in Chapter 60-1.4(b) of Title 41 published in Volume 33 No. 104 of the Federal Register dated May 28, 1968.

26.6 Labor First Aid

Contractor shall maintain emergency first aid treatment for Contractor's workers on the Project which complies with the Federal Occupational Safety and Health Act of 1970 (29 U.S.C. § 651 et seq.) and the California Occupational Safety and Health Act of 1973 (8 Cal. Code of Regs., §1 et seq.).

27. MISCELLANEOUS

27.1 Assignment of Antitrust Actions

27.1.1 Section 7103.5(b) of the Public Contract Code states:

In entering into a public works contract or subcontract to supply goods, services, or materials pursuant to a public works contract, the Contractor or subcontractor offers and agrees to assign to the awarding body all rights, title, and interest in and to all causes of action it may have under Section 4 of the Clayton Act (15 U.S.C. Sec. 15) or under the Cartwright Act (Chapter 2 (commencing with Section 16700) of Part 2 of Division 7 of the Business and Professions Code), arising from purchases of goods, made and become effective at the time the awarding body tenders final payment to the Contractor, without further acknowledgment by the parties.

27.1.2 Section 4552 of the Government Code states:

In submitting a bid to a public purchasing body, the bidder offers and agrees that if the bid is accepted, it will assign to the purchasing body all rights, title, and interest in and to all causes of action it may have under Section 4 of the Clayton Act (15 U.S.C. Sec. 15) or under the Cartwright Act (Chapter 2 (commencing with Section 16700) of Part 2 of Division 7 of the Business and Professions Code), arising from purchases of goods, materials, or services by the bidder for sale to the purchasing body pursuant to the bid. Such assignment shall be made and become effective at the time the purchasing body tenders final payment to the bidder.

27.1.3 Section 4553 of the Government Code states:

If an awarding body or public purchasing body receives, either through judgment or settlement, a monetary recovery for a cause of action assigned under this chapter, the assignor shall be entitled to receive reimbursement for actual legal costs incurred and may, upon demand, recover from the public body any portion of the recovery, including treble damages, attributable to overcharges that were paid by the assignor but

were not paid by the public body as part of the bid price, less the expenses incurred in obtaining that portion of the recovery.

27.1.4 Section 4554 of the Government Code states:

Upon demand in writing by the assignor, the assignee shall, within one year from such demand, reassign the cause of action assigned under this part if the assignor has been or may have been injured by the violation of law for which the cause of action arose and (a) the assignee has not been injured thereby, or (b) the assignee declines to file a court action for the cause of action.

27.1.5 Under this Article, “public purchasing body” is County and “bidder is Contractor.

27.2 Excise Taxes

If, under Federal Excise Tax Law, any transaction hereunder constitutes a sale on which a Federal Excise Tax is imposed, and the sale is exempt from such Federal Excise Tax because it is a sale to a State or Local Government for its exclusive use, County, upon request, will execute documents necessary to show (1) that County is a political subdivision of the State for the purposes of such exemption, and (2) that the sale is for the exclusive use of County. No Federal Excise Tax for such materials shall be included in any Contract Price.

27.3 Taxes

Contract Price is to include any and all applicable sales taxes or other taxes that may be due in accordance with section 7051 of the Revenue and Taxation Code; Regulation 1521 of the State Board of Equalization or any other tax code that may be applicable.

27.4 Shipments

All shipments must be F.O.B. destination to Site or sites, as indicated in the Contract Documents. There must be no charge for containers, packing, unpacking, drayage or insurance. The total Contract Price shall be all inclusive (including sales tax), and no additional costs of any type will be considered.

END OF DOCUMENT

DOCUMENT 00 73 13

SPECIAL CONDITIONS

1. Mitigation Measures

Contractor shall comply with all applicable mitigation measures, if any, adopted by any public agency with respect to this Project pursuant to the California Environmental Quality Act. (Public Resources Code section 21000 et. seq.)

2. Substitution for Specified Items

- 2.2.** Requests for substitutions prior to award of the Contract shall be done within the time period indicated in the Instructions to Bidders.

AND

Requests for substitutions after award of the Contract shall be within **Ten (10)** days of the date of the Notice of Award.

- 2.3.** Whenever in the Specifications any materials, process, or article is indicated or specified by grade, patent, or proprietary name, or by name of manufacturer, that Specification shall be deemed to be followed by the words "or equal." Contractor may, unless otherwise stated, offer any material, process, or article that shall be substantially equal or better in every respect to that so indicated or specified.

2.3.1. If the material, process, or article offered by Contractor is not, in the opinion of the County, substantially equal or better in every respect to that specified, then Contractor shall furnish the material, process, or article specified in the Specifications without any additional compensation or change order.

2.3.2. This provision shall not be applicable with respect to any material, product, thing or service for which County made findings and gave notice in accordance with Public Contract Code section 3400(b); therefore, Contractor shall not be entitled to request a substitution with respect to those materials, products or services.

- 2.4.** A request for a substitution shall be in writing and shall include:

2.4.1. All variations of the proposed substitute from the material specified including, but not limited to, principles of operation, materials, or construction finish, thickness or gauge of materials, dimensions, weight, and tolerances;

- 2.4.2. Available maintenance, repair or replacement services;
 - 2.4.3. Increases or decreases in operating, maintenance, repair, replacement, and spare parts costs;
 - 2.4.4. Whether or not acceptance of the substitute will require other changes in the Work (or in work performed by the County or others under Contract with the County); and
 - 2.4.5. The time impact on any part of the Work resulting directly or indirectly from acceptance of the proposed substitute.
- 2.5.** No substitutions shall be made until approved, in writing, by the County. The burden of proof as to equality of any material, process, or article shall rest with Contractor. The Contractor warrants that if substitutes are approved:
- 2.5.1. The proposed substitute is equal or superior in all respects to that specified, and that such proposed substitute is suitable and fit for the intended purpose and will perform adequately the function and achieve the results called for by the general design and the Contract Documents;
 - 2.5.2. The Contractor provides the same warranties and guarantees for the substitute that would be provided for that specified;
 - 2.5.3. The Contractor shall be fully responsible for the installation of the substitute and any changes in the Work required, either directly or indirectly, because of the acceptance of such substitute, with no increase in Contract Price or Contract Time. Incidental changes or extra component parts required to accommodate the substitute will be made by the Contractor without a change in the Contract Price or Contract Time;
 - 2.5.4. The Contractor shall be responsible for any re-design costs occasioned by County's acceptance and/or approval of any substitute; and
 - 2.5.5. The Contractor shall, in the event that a substitute is less costly than that specified, credit the County with one hundred percent (100%) of the net difference between the substitute and the originally specified material. In this event, the Contractor agrees to execute a deductive Change Order to reflect that credit.
- 2.6.** In the event Contractor furnishes a material, process, or article more expensive than that specified, the difference in the cost of that material, process, or article so furnished shall be borne by Contractor.

- 2.7. In no event shall the County be liable for any increase in Contract Price or Contract Time due to any claimed delay in the evaluation of any proposed substitute or in the acceptance or rejection of any proposed substitute.

3. **Weather Days**

- 3.1 Delays due to adverse weather conditions will only be permitted in compliance with the provisions in the General Conditions and only if the number of days of adverse weather exceeds the following parameters and only if Contractor can verify that adverse weather caused delays exceeded the following number of days:

January	<u>0</u>	July	<u>0</u>
February	<u>0</u>	August	<u>0</u>
March	<u>0</u>	September	<u>0</u>
April	<u>0</u>	October	<u>0</u>
May	<u>0</u>	November	<u>0</u>
June	<u>0</u>	December	<u>0</u>

4. **Insurance Policy Limits.** All of Contractor's insurance shall be with insurance companies with an A.M. Best rating of no less than A: XI. The limits of insurance shall not be less than:

Type of Insurance Coverages		Minimum Limits
Commercial General Liability	Premises Liability; Products and Completed Operations; Contractual Liability; Personal Injury and Advertising Liability	\$1,000,000 per occurrence (CSL), Bodily Injury and Property Damage
Commercial or Business Automobile Liability – Any Auto	All owned vehicles, hired or leased vehicles, non-owned, borrowed and permissive uses.	\$1,000,000 per occurrence (CSL), Any Auto, Bodily Injury and Property Damage
Workers Compensation	(Intentionally Blank)	Statutory Limits
Employers Liability	(Intentionally Blank)	\$1,000,000 per accident for bodily injury or disease
Endorsements and Conditions	Additional Insured: All insurance required above with the exception of Commercial or Business Automobile Liability, Workers' Compensation and Employer Liability, shall be endorsed to name as	

	additional insured: County of Alameda, its Board of Supervisors, the individual members thereof, and all County officers, agents, employees, volunteers, and representatives. The Additional Insured endorsement shall be at least as broad as ISO Form Number CG 20 38 04 13.
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5. Permits, Certificates, Licenses, Fees, Approval

5.1 **Payment for Permits, Certificates, Licenses, and Fees.** As required in the General Conditions, the Contractor shall secure and pay for all permits, licenses and certificates necessary for the prosecution of the Work with the exception of the following:

- 2.7.1. Water connection fees
- 2.7.2. Sewer connection fees
- 2.7.3. Utility connection fees
- 2.7.4. County building department fees

With respect to the above listed items, Contractor shall be responsible for securing such items, however, County will be responsible for payment of these charges or fees. Contractor shall notify the County of the amount due with respect to such items and to whom the amount is payable. Contractor shall provide the County with an invoice and receipt with respect to such charges or fees.

6. Work Restrictions

- 6.1 Hours of Work: Varies, see Document 01 10 00 Summary of Work.
- 6.2 Access to Site: Per ASCO Sheriff's clearance for all personnel without exception.
- 6.3 Phasing of Work: see these Construction Documents.

END OF DOCUMENT

DOCUMENT 00 73 49

PROJECT STABILIZATION/COMMUNITY BENEFIT AGREEMENT
of the
COUNTY OF ALAMEDA
and
California Prevailing Wage
Requirements

1. Summary

1.1. In addition to Labor, Wage & Hour, Apprentice, and related provisions described in Document 00 72 13 Paragraph 26; the Work performed pursuant to this Contract is subject to the requirements of the "PROJECT STABILIZATION/COMMUNITY BENEFITS AGREEMENT for the COUNTY OF ALAMEDA" ("PSCBA"). The Contractor agrees to be party to and bound by the "PROJECT STABILIZATION/COMMUNITY BENEFITS AGREEMENT for the COUNTY OF ALAMEDA". Contractor agrees to execute the "PROJECT STABILIZATION/COMMUNITY BENEFITS AGREEMENT for the COUNTY OF ALAMEDA Letter of Assent" and shall require all of its subcontractors, of whatever tier, to become similarly bound for all work within the scope of this Contract by signing an identical Letter of Assent.

2. PROJECT STABILIZATION/COMMUNITY BENEFIT AGREEMENT Of the COUNTY OF ALAMEDA

2.1. The PROJECT STABILIZATION/COMMUNITY BENEFITS AGREEMENT for the COUNTY OF ALAMEDA (PSCBA) is included for reference only in PROJECT STABILIZATION/COMMUNITY BENEFITS AGREEMENT for the COUNTY OF ALAMEDA Document 00 73 49B.

2.1.1. ROLES AND RESPONSIBILITIES SUBCONTRACTS

2.1.1.1. Each Contractor, which includes all subcontractors of any tier, including trucking entities performing Covered Work of this Contract, agrees that neither it nor any of its subcontractors will subcontract any Work of this Contract except to a person, firm, or corporation who is or becomes party to the PSCBA by signing the Letter of Assent attached to the PSCBA as Exhibit "A". All Contractors performing Covered Work of this Contract shall, as a condition to performing Work of this Contract, become Signatory to and perform all work under the terms of the PSCBA.

2.1.1.2. Each Contractor, which includes all subcontractors of any tier performing Work of this Contract, shall give written notice to the Union(s) of any subcontract involving the performance of work covered by the PSCBA

within either five (5) business days of executing a contract with such subcontract or before the subcontractor commences work on the Project, whichever occurs first. Such notice shall specify the name and address of the subcontractor, the California State License Board license number of the Contractor and scope of work to be performed. Written notice at a Pre-Job Conference shall be deemed written notice under this provision only for those subcontractors listed at the Pre-Job Conference

- 2.1.1.3. The Contractor shall be responsible for PSCBA compliance by all subcontractor and lower tier subcontractor.

2.1.2. WORK ASSIGNMENTS AND JURISDICTIONAL DISPUTES

- 2.1.2.1. The assignment of the Work to subcontractors is solely the responsibility of the Contractor.
- 2.1.2.2. Each Contractor shall conduct a Pre-Job Conference with the Building and Construction Trades Council of Alameda County (Council) prior to commencing Work as specified in Paragraph 2.1.3 of this Document 00 73 49. The Contractor will notify the County in advance of all such conferences.
- 2.1.2.3. Any jurisdictional disputes regarding the assignment of the Work of this Contract will be resolved per the requirements of the PSCBA.

2.1.3. PRE-JOB CONFERENCE

- 2.1.3.1. A mandatory Pre-Job Conference and/or Mark-Up Meeting will be held prior to the commencement of work to establish the scope of work in each Contractor and Subcontractor contract. All meeting shall be held at the offices of the Alameda County Building and Construction Trades Council.
- 2.1.3.2. The Contractor performing the work shall have the responsibility for making work assignments in accordance with the PSCBA, and will be required to bring relevant plans, specifications, and blueprints to the meeting, as requested by the Union
- 2.1.3.3. Contractor must submit written workforce projections at the Pre-Job Conference. The workforce projections shall include projected man-hours on a craft-by-craft basis, consistent with the Contractor's bid proposal.
- 2.1.3.4. The County will schedule and attend all Pre-Job and Mark-Up Meetings and participate in discussions as they pertain to the terms and conditions of the PSCBA.

2.1.4. JOINT ADMINISTRATIVE COMMITTEE MEETINGS

2.1.4.1. The Joint Administrative Committee (JAC) has been established to monitor compliance with the PSCBA. The JAC meets monthly and reviews monthly reporting by the Contractor.

2.1.4.2. The Contractors shall provide progress report as described in Paragraph 2.1.8 of this Document.

2.1.5. COORDINATOR

2.1.5.1. The County will designate a Coordinator, who will be responsible for the administration and application of the PSCBA.

2.1.6. LOCAL HIRING PROGRAM

2.1.6.1. The Contractor agrees to achieve the inclusion of Residents as defined in the PSCBA in the employment and apprenticeship opportunities created by the Work of this Contract, which will be known as the Local Hiring Program (LHP) as described in the PSCBA.

2.1.6.2. The Contractor agrees to a goal that Residents of the County will perform forty percent (40%) of all hours worked on the Work of this Contract, on a craft-by-craft basis, if such workers are available, capable and willing to work on the projects, together with the apprentice goals described in Paragraph 2.1.7 of this Document.

2.1.6.3. The Contractors and subcontractors shall make good faith efforts to reach these goals, as described in the PSCBA including but not limited to the following:

2.1.6.3.1. Within one week of the issuance of the Notice to Proceed, the Contractors shall meet with the County to review and approve its compliance plan for reaching the Local Hiring Goals, using the required compliance plan form provided by the County.

2.1.6.3.2. Submit copies of hiring hall dispatch requests and responses to the County within ten (10) days of County's request at any point during the execution of the Work of this Contract.

2.1.6.3.3. Immediately contact the County if a union hiring hall dispatcher will not or cannot, upon request of the Contractor, dispatch local residents.

- 2.1.6.3.4. Use the “Name Call,” “Rehire” or other available hiring hall procedures to reach goals and shall provide documentation of such requests to the County upon request.
- 2.1.6.3.5. Use community based organizations as a resource for local labor resources, if a union will not or cannot provide local Residents as requested
- 2.1.6.3.6. Sponsor local Residents for apprenticeship, when possible.
- 2.1.6.3.7. Maintain records for each Resident of Alameda County who was referred but not hired along with an explanation why the worker was not hired.
- 2.1.6.3.8. Document participation in any local employment training programs and submit documentation of such to the County within ten (10) days if requested by County.
- 2.1.6.3.9. To the extent possible, the parties agree to implement the Local Hiring Program while complying with the County’s Local Vendor Preference and Enhanced Construction Outreach (ECOP) programs for the work of this Contract. To the extent that the County determines, in its sole discretion, that there is a conflict between the Local Hiring Program established in the PSCBA and the County’s SLEB, ECOP, and/or Local Vendor Preference Programs, the conflict shall be resolved in favor of the Local Hiring Program of the PSCBA.
- 2.1.6.3.10. For the purpose of reaching the goal established in Paragraph 2.1.6.2 of this Document, a Contractor may qualify for full credit toward the goal by employing Alameda County Residents for other work the Contractor is performing in any of the nine Bay Area counties of: Alameda, Contra Costa, San Francisco, San Mateo, Santa Clara, Marin, Solano, Napa and Sonoma as outlined in the PSCBA.

2.1.7. APPRENTICES

- 2.1.7.1. Although the PSCBA states that the County shall make available to the Unions a database of apprentices qualifying under the local hiring provision of the PSCBA, the County has not developed this database. Contractor is to contact the Unions for available apprentices.
 - 2.1.7.1.1. For each Covered Project, the Contractors will be responsible to ensure that it and/or its subcontractors hire at least one (1) new apprentice for the first \$1 million of construction value and for each succeeding \$5

million of construction contract value, the Contractors and/or their subcontractors will be required to hire at least one (1) additional new apprentice. All such apprentices may be graduates of pre apprenticeship programs with known and successful track record of apprentice placement into jobs. All the pre apprenticeship program graduates must be Residents of Alameda County and members of a Disadvantaged Population, as described in the PSCBA.

2.1.7.2. Contractors shall exercise their best efforts to recruit apprenticeship program applicants from Residents and who are members of a Disadvantaged Population as described in the PSCBA

2.1.7.3. The Contractor shall request dispatch of apprentices in writing from the local Unions and/or Joint Apprenticeship Training Committee in which the Contractor participates. Copies of the written requests shall be provided to the County within ten (10) days of request by the Coordinator.

2.1.7.4. For the purposes of meeting the goal established in Paragraph 2.1.6.1 of this Document, a Contractor may qualify for full credit toward the goal by employing Alameda County Residents as apprentices for other work the Contractor is performing in any of the nine Bay Area counties of: Alameda, Contra Costa, San Francisco, San Mateo, Santa Clara, Marin, Solano, Napa and Sonoma as described in the PSCBA

2.1.8. DATA COLLECTION AND REPORTING

2.1.8.1. This Paragraph describes Contractor and data collection, reporting guidelines and responsibilities for the PSCBA.

2.1.8.2. On a monthly basis, Contractors must submit reports to the County on the status and progress of local hiring on a craft-by-craft basis, including utilization of apprentices as described in Document 00 73 49A "PSCBA Forms".

2.1.9. HELMETS TO HARDHATS: VETERAN EMPLOYMENT

2.1.9.1. The Contractor agrees to utilize the series of the Center for Military Recruitment, Assessment and Veterans Employment (hereinafter "Center") and Center's "Helmets to Hardhats" program to serve as a resources for preliminary orientations, assessment of construction aptitude, referral to apprenticeship programs or hiring halls, counseling and mentoring, support network, employment opportunities and other needs as described in the PSCBA.

- 2.1.9.2. The Contractors may also utilize the services of the “Swords to Ploughshares” program.

3. California Labor Code: In addition to complying with the PSCBA, Contractor shall also comply with the California Labor Code prevailing wage requirements.

- 3.1. Pursuant to Labor Code Section 1770, *et seq.*, the Contractor shall pay to persons performing labor in and about the Work provided for in the Contract an amount equal to or more than the general prevailing rate of per diem wages for work of a similar character in the locality in which the Work is performed, and not less than the general prevailing rate of per diem wages for legal holiday and overtime work in said locality, which per diem wages shall be equal to or more than the stipulated rates contained in a schedule thereof which has been ascertained and determined by the Director of the State Department of Industrial Relations to be the general prevailing rate of per diem wages for each craft or type of workman or mechanic needed to execute this contract. The Contractor shall also cause a copy of this determination of the prevailing rate of per diem wages to be posted at each Site.
- 3.2. The Contractor shall forfeit, as a penalty to the County, fifty dollars (\$50.00) for each laborer, workman, or mechanic employed in performing labor in and about the work provided in the Contract Documents for each day, or portion thereof, on which such laborer, workman or mechanic is paid less than the said stipulated rates for any work done under these Contract Documents by him or her or by any Subcontractor or designer under him or her, in violation of Articles 1 and 2 of Chapter 1 of Part 7 of Division II of the Labor Code. The sums and amounts which shall be forfeited pursuant to this paragraph 3.2 and the terms of the Labor Code shall be withheld and retained from payments due or to become due to the Contractor under this Contract and the terms of the Labor Code, but no sum shall be so withheld, retained or forfeited except from the final payment without a full investigation by either the State Department of Industrial Relations or by the County. The final amount of forfeiture shall be determined by the Labor Commissioner pursuant to Labor Code § 1775.
- 3.3. The Contractor shall insert in every subcontract or other arrangement which Contractor may make for performance of work or labor on the Work provided for in the Contract Documents, a provision that the Subcontractor shall pay persons performing labor or rendering service under subcontract or other arrangement not less than the general prevailing rate of per diem wages for work of a similar character in the locality in which the Work is performed, and not less than the general prevailing rate of per diem wages for holiday and overtime work fixed as provided in the Labor Code.
- 3.4. The Contractor stipulates that it shall comply with all applicable wage and hour laws, including without limitation Labor Code § 1813.

4. Project Stabilization/Community Benefits Agreement/ Labor Compliance Program Monitoring.

- 4.1. The County has elected to retain the services of a third party to monitor compliance with the PSCBA and California Labor Code Requirement.
- 4.2. The PSCBA/Labor Compliance Program (“PSCBA/LCP”) will enforce PSCBA, prevailing wage, apprentice employment and local hiring requirements consistent with California Labor Code and the PSCBA. PSCBA/LCP services do not limit the scope of Work and do not relieve the Contractor of any responsibility for coordination of the Work with California Labor Code or the PSCBA.
- 4.3. The Contractor shall be responsible for any costs that the County incurs as the result of any actions taken by DIR, or by the County when exercising its enforcement duties, to address Contractor and/or Subcontractor violations related to California Labor Code or the PSCBA. If the Contractor or any of its Subcontractor are notified that they should take certain actions to be in compliance with the PSCBA or applicable state law and those actions are not taken or not taken in a timely manner, then the County shall have the right to recover the cost of all work performed by or for the County or its contractors from the date of such notice and the County shall have the right to back charge the Contractor for any and all costs associated with such work.
- 4.4. Certified payroll reports for the duration of the Project shall be maintained by the Contractor and submitted electronically, and are subject to all of the following conditions:
 - 4.4.1. Certified Payroll Reports (CPR) shall be submitted to the County electronically on the web-based software system, described in Document 00 45 46.01 “Prevailing Wage and Related Labor Requirements Certification”, to be utilized for collection and verification of payroll reports for the Project.
 - 4.4.2. CPR must contain all of information required by California Labor Code section 1776 and must be organized in a manner that is similar or identical to the format in which the information is reported on the DIR “Public Works Payroll Reporting Form” (Form A-1-131);
 - 4.4.3. Statement of Compliance. CPR shall be accompanied by a signed “Statement of Compliance” certifying that the payroll reports are correct and complete and that each laborer or mechanic has been paid not less than the proper prevailing wage rate for the work performed. The wording of the certification shall comply with California Labor Code section 1776 and 29 C.F.R. § 5.5(a)(3)(ii)(B)-(D).
 - 4.4.4. Electronic CPR submitted to the County, the DIR Division of Labor Standards Enforcement (DLSE), or other entity within the DIR, must be in the form of a non-modifiable image or record that bears an electronic signature or includes a copy of any original certification made on paper. Printed reports submitted on paper with an original signature will be accepted as supplemental information to

electronic reports, and will not relieve the Contractor or its Subcontractor from their obligation to submit electronic reports.

- 4.4.5. Apprenticeship Program. Reference is made to General Conditions Document 00 72 13, Paragraph 26 and the PSCBA for the Contractor and its Subcontractors obligation to comply, and be responsible for ensuring compliance, with the requirements of the California Labor Code provisions concerning the employment of apprentices, including Labor Code sections 1776, 1777.5, and 1777.6.

END OF DOCUMENT

DOCUMENT 00 73 49A

PROJECT STABILIZATION/COMMUNITY BENEFIT AGREEMENT
of the
COUNTY OF ALAMEDA
FORMS

1. Summary

- 1.1. The Contractor and each subcontractor at all tiers must complete and submit all forms required by the Labor Compliance Program Guidebook included in this DOCUMENT 00 73 49A "PSCBA FORMS".

END OF DOCUMENT



Labor Management Consultants
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Labor Compliance Program Guidebook

Please provide this packet to all subcontractors with instruction that they provide it to all lower tier subcontractors. The Design-Build contractor is ultimately responsible for labor compliance on the entire project.

Labor Compliance

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The information in this Guidebook is for general guidance on the matters of Labor Compliance monitoring. Davillier-Sloan, Inc. makes every attempt to ensure the information contained in the Guidebook is free from errors and obtained from accurate and current sources. Davillier-Sloan, Inc. reserves the right, at its discretion, to change or modify all or any part of this packet. Periodically revised updated copies may be obtained by emailing a request to: info@davillier-sloan.com

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DAVILLIER-SLOAN, INC.
LABOR MANAGEMENT CONSULTANTS

Section 1: Introduction

- A. Overview
- B. Prevailing Wage Determinations
- C. Site Visits
- D. Required Forms
- E. Project/Program Closeout
- F. Apprenticeship Utilization

Overview

Davillier-Sloan, Inc. (DSI) is a third party Labor Compliance Program (LCP) administrator. This LCP Guidebook has been developed for your reference and highlights the requirements, submittals and timelines necessary to be compliant with the program.

Certified Payrolls for this project will be submitted electronically into the Elation web based program. Related forms will be available online and should be accessed and downloaded according to the instructions provided by Elation Systems once you have registered on the site.

The law requires that all workers including employees, independent contractors, owner-operators etc. on a public works project must be paid the prevailing wage of the area in which the project is located. Detailed information pertaining to labor compliance may be found in the contract specifications.

Prevailing Wage Determinations

The California prevailing wage determinations are based on the first bid advertisement/publication date. For design build projects, the construction contract signing/construction contract award date shall be considered the bid advertisement date.

The California prevailing wage determinations and rates are published twice each year, in February and August. All determinations are effective ten (10) days after issuance. Some trades are issued regionally (Northern and Southern California) and other sub trades are by the county in which the project is located. There are separate determinations for apprentices on public works.

The prevailing wage determination by craft can be found on the Department of Industrial Relations (DIR) web site: www.dir.ca.gov (Labor Law/Public Works). Prevailing wage determinations and any rate changes must be posted at the job site available for workers to view.

Asterisk (*) clarifications:

- i Prevailing wage determinations with a single asterisk (*) after the expiration date, which are in effect on the date of advertisement of bids, remain in effect for the life of the project.
- i Interested parties should contact the DIR at (415) 703-4774 for the new rates after ten (10) days from the expiration date (if no subsequent determination is required).
- i Prevailing wage determinations with double asterisks (**) after the expiration date indicate that the basic hourly rate, overtime, holiday pay and employers' payments for work performed after this date have been predetermined. If work is to extend past this date, the new rates must be paid and should be incorporated into contracts entered now.

Site Visits

Site visits will be conducted weekly pursuant to Labor Code 16432(d). Information on certified payrolls will be verified by visual inspection and random in-person worker interviews.

Required Forms

The required forms are available for download in the Elations system. Copies of completed, signed forms should be forwarded to the appropriate agency and uploaded into Elation for verification.

Prior to Construction Forms

1. Checklist of Labor Law Requirements

The Design-Build contractor and each subcontractor at all tiers must complete and submit this form acknowledging the California Labor Codes Regulations governing public works projects.

2. Division of Apprenticeship Standards Form DAS 140

Public Works Contract Award Information

- The Design-Build contractor and each subcontractor at all tiers must complete and submit this form to the local Apprenticeship Committee to inform them of the award of your contract.
- Submit the DAS 140 to the Joint Apprenticeship Training Committee (JATC) for each apprentice able craft or trade within the area of the project site. The Design-Build contractor and each subcontractor at all tiers must submit this form within ten (10) days of the date of the execution of the contract but no later than the first day the contractor has workers employed on-site.

3. Division of Apprenticeship Standards Form DAS 142

Request for Dispatch of an Apprentice

- The Design-Build contractor and each subcontractor at all tiers must complete and submit a Request for Dispatch of an Apprentice in writing at least 72 business hours prior to the date apprentices are needed.
- Submit the DAS 142 to each of the JATCs in the area of the project for each apprenticeable craft, until the required number of apprentices has been provided. If the required number of apprentices is not provided and a request has been submitted to all of the Committee's in the area of the project, then the contractor shall be considered in compliance.

During Construction Forms

1. Statement of Employer Payments

- i Must be submitted with the first certified payroll, when prevailing wage rates are updated, and when there is a change in fringe benefits.
- i Additional annuity payments can be indicated in the notes section of the CPR and a union dispatch slip should be uploaded into the Elation System.

2. California Apprentice Council Training Fund Contribution (CAC –2)

The training fund contributions to the CAC are due on the 15th of each month for work performed during the preceding month. Refer to the DIR applicable prevailing wage

determinations for the amount owed for each hour of work performed for journeymen and apprentices.

3. Statement of Non-Performance (when applicable)

- i This form is submitted when the contractor is not working on the job site for a period of more than one week but has not completed their work. Does not need to be submitted until after the first certified payroll report is received.
- i One form may be submitted for consecutive non-performing weeks.

4. Certified Payroll Reporting Form

- i Any person employed upon the project that is working with tools must be listed on the certified payroll including but not limited to owners, operators, surveyors, and foremen.
- i The certified payroll records shall be submitted and maintained electronically subject to the following conditions:
 - i. The certified payroll reports contain all of the information required by California Labor Code Section 1776. The information must include name, address, social security number, craft, classification, wages, and hours worked.
 - ii. The reports shall be in a format and/or use software that is readily accessible to Contractors, Awarding Bodies, LCPs, the DIR, and the DOL.
- i Certified Payroll submitted to DSI, the DLSE, or another entity within the DIR must be in the form of a non-modifiable image or record that bears an electronic signature or includes a copy of any original certification made on paper.
- i The requirements for redacting information shall be followed when certified payroll records are disclosed to the public pursuant to California Labor Code Section 1776(e). This requirement will apply whether the records are provided electronically or as hard copies.
- i No Design-Build contractor or subcontractor shall be mandated to submit or receive electronic reports when it otherwise lacks the resources or capacity to do so, nor shall any Design-Build contractor or subcontractor be required to purchase or use proprietary software that is not generally available to the public.

5. Statement of Compliance Certificate

A Statement of Compliance shall accompany each certified payroll record.

6. Verification of Apprenticeship Status (DAS)

Verification is available on the DIR website at

<http://www.dir.ca.gov/DAS/appcertpw/AppCertSearch.asp>.

Project/Program Closeout

Contractor Affidavit

Verifies the contractor's information, work classifications used, type of work completed, first payroll report date to final payroll report date, and how the apprenticeship utilization requirement was reached.

Apprenticeship Utilization

California Labor Codes require Contractors to hire apprentices unless the total construction contract for the project is less than \$30,000 or it is not an apprenticeable craft.

Contractors, including Design-Build, General or Specialty subcontractors shall employ registered apprentices during the performance of public works in accordance with the required one (1) hour of work performed by an apprentice for every five (5) hours of work performed by a journeyman. Unless an exemption has been granted, the contractor shall employ apprentices for the number computed above, before the end of the contract or provide good faith effort documentation.



Section 2: Prior to Construction Forms

- A. Checklist of Labor Law Requirements
- B. Public Works Contract Award Information (DAS 140 Form)
- C. Request for Dispatch of an Apprentice (DAS 142 Form)

Checklist of Labor Law Requirements

(CCR Title 8, Section 16421)

Ultimately the prime contractor is liable for their sub and specialty contractors. This checklist is a useful tool for the prime contractor to ensure that their sub and specialty contractors know their responsibilities on public works projects. Contractors who understand and comply with the law are more likely to deliver the job on time, on budget and done right the first time. We suggest the prime contractor encourage completion of this checklist by their sub and specialty contractors.

NAME (PRINT) _____ DATE _____

COMPANY _____ PHONE _____

ADDRESS _____ FAX _____

CITY _____ STATE _____ ZIP CODE _____

PROJECT MANAGER _____ SUPERINTENDENT/FOREMAN _____

CERTIFIED PAYROLL _____ PHONE/EXT. _____

CONTRACTOR LICENSE NO. _____ EXP. DATE _____ SPECIALTY LICENSE NO. _____

SELF-INSURED CERTIFICATE NO. _____ WORKERS COMP. POLICY NO. _____

PROJECT NAME _____ PROJECT #/BID PACKAGE# _____

AWARDING BODY _____ ADVERTISEMENT DATE _____

IF SUB-CONTRACTING, LIST YOUR PRIME/GENERAL CONTRACTOR _____

CONTRACT AWARD AMOUNT _____

THE FEDERAL AND STATE LABOR LAW REQUIREMENTS APPLICABLE TO THE CONTRACT ARE COMPOSED OF, BUT NOT LIMITED TO, THE FOLLOWING:

☐ **Payment of Prevailing Wage Rates**

The contractor to whom the contract is awarded and its subcontractors hired for the public works project are required to pay not less than the specified general prevailing wage rates to all workers employed in the execution of the contract. *Labor Code Section 1770 et seq.*

The contractor is responsible for ascertaining and complying with all current general prevailing wage rates for crafts and any rate changes that occur during the life of the contract. Information on all prevailing wage rates and all rate changes are to be posted at the job site for all workers to view. Additionally, current wage rate information can be found at the DLSR web site, www.dir.ca.gov/dlsr/statistics_research.html.

☐ **Apprentices**

It is the duty of the contractor and subcontractors to employ registered apprentices on the public works project and to comply with all aspects of *Labor Code Section 1777.5*, relating to Apprentices on Public Works. (1) Notify approved apprenticeship programs of contract award; (2) employ apprentices; (3) pay training fund contributions.

☐ **Penalties**

There are penalties required for contractor's/subcontractor's failure to pay prevailing wages and for failure to employ apprentices, including forfeitures and debarment under *Labor Code Sections 1775; 1776; 1777.1; 1777.7 and 1813*.

☐ **Certified Payroll Reports**

Under *Labor Code Section 1776*, contractors and subcontractors are required to keep accurate payroll records showing the name, address, social security number and work classification of each employee and owner performing work; also the straight time and overtime hours worked each day for each week, the fringe benefits, and, the actual per diem wage paid to each owner, journey person, apprentice worker or other employee hired in connection with the public works project.

This requirement includes and applies to all subcontractors performing work on Awarding Body projects even if their portion of the work is less than one half of one percent (0.05%) of the total amount of the contract.

The certified payroll records shall contain the same data fields listed on the *Public Works Payroll Reporting Form (A-1-131)* and contain or is accompanied by a declaration made under penalty of perjury. (*California Code of Regulations, Section 16401*).

Prime Contractors are responsible for submittal of their payrolls and those of their respective subcontractors as the package. Any payroll not submitted in the proper form will be rejected. In the event that there has been no work performed during a

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DOCUMENT 00.73-49A

Checklist of Labor Law Requirements, continued

given week, the Certified Payroll Report shall be annotated: "No work" for that week or a Non-Performance Statement must be submitted.

Employee payroll records shall be certified and shall be made available for inspection at all reasonable hours at the principal office of the contractor/subcontractor, or shall be furnished to any employee, or his/her authorized representative on request, pursuant to *Labor Code Section 1776*.

Under *Labor Code Section 1776(g)* there are penalties required for contractor's/subcontractor's failure to maintain and submit copies of certified payroll records on request.

☐ **Nondiscrimination in Employment**

There exist prohibitions against employment discrimination under *Labor Code Sections 1735 and 1777.6*, the *Government Code*, the *Public Contracts Code*, and *Title VII of the Civil Rights Act of 1964*.

☐ **Kickbacks Prohibited**

Contractors and subcontractors are prohibited from recapturing wages illegally by accepting or extracting "kickbacks" from employee wages under *Labor Code Section 1778*.

☐ **Acceptance of Fees Prohibited**

There exists a prohibition against contractor/subcontractor acceptance of fees for registering any person for public work under *Labor Code Section 1779*; or for filling work orders on public works contracts pursuant to *Labor Code Section 1780*.

☐ **Listing of Subcontractors**

All prime contractors are required to list properly all subcontractors hired to perform work on the public works projects covering more than one-half of one percent, pursuant to *Government Code Section 4104*.

☐ **Proper Licensing**

Contractors are required to be licensed properly and to require that all subcontractors be properly licensed. Penalties are required for employing workers while unlicensed under *Labor Code Section 1021* and under the California Contractor License Law found at *Business and Professions Code Section 7000 et seq.*

☐ **Unfair Competition Prohibited**

Contractors and sub-contractors are prohibited from engaging in unfair competition as specified under *Business and Professions Code Sections 17200 to 17208*.

☐ **Workers Compensation Insurance**

Labor Code Section 1861 requires that contractors and subcontractors be insured properly for Workers Compensation.

☐ **OSHA**

Contractors and subcontractors are required to abide by the Occupational, Safety and Health laws and regulations that apply to the particular construction project.

☐ **Proof of Eligibility/Citizenship**

The federal prohibition against hiring undocumented workers, and the requirement to secure proof of eligibility/citizenship from all workers, is required.

☐ **Itemized Wage Statement**

Labor Code Section 226 requires that employees be provided with itemized wage statements.

CERTIFICATION

I acknowledge that I have been informed and am aware of the foregoing requirements and that I am authorized to make this certification on behalf of _____
(COMPANY NAME)

I fully understand that failure to comply with any of the above requirements may subject me, or my company, to penalties as provided above.

Contractor _____
(SIGNATURE) (DATE)

Awarding Agency /Labor Compliance Program _____
(SIGNATURE) PSCBA FORMS - FOR INFORMATION ONLY
DOCUMENT 00-73-49A
(DATE)

PUBLIC WORKS CONTRACT AWARD INFORMATION

Contract award information must be sent to your Apprenticeship Committee if you are approved to train. If you are not approved to train, you must send the information (which may be this form) to ALL applicable Apprenticeship Committees in your craft or trade in the area of the site of the public work. Go to: <http://www.dir.ca.gov/das/PublicWorksForms.htm> for information about programs in your area and trade. You may also consult your local Division of Apprenticeship Standards (DAS) office whose telephone number may be found in your local directory under California, State of, Industrial Relations, Division of Apprenticeship Standards.

Do not send this form to the Division of Apprenticeship Standards.

NAME OF YOUR COMPANY	CONTRACTOR'S STATE LICENSE NO
MAILING ADDRESS- NUMBER & STREET, CITY, ZIP CODE	AREA CODE & TELEPHONE NO.
NAME & ADDRESS OF PUBLIC WORKS PROJECT	DATE YOUR CONTRACT EXECUTED
	DATE OF EXPECTED OR ACTUAL START OF PROJECT
NAME & ADDRESS OF PUBLIC AGENCY AWARDED CONTRACT	ESTIMATED NUMBER OF JOURNEYMEN HOURS
	OCCUPATION OF APPRENTICE
THIS FORM IS BEING SENT TO: (NAME & ADDRESS OF APPRENTICESHIP PROGRAM(S))	ESTIMATED NUMBER OF APPRENTICE HOURS
	APPROXIMATE DATES TO BE EMPLOYED

This is not a request for dispatch of apprentices.

Contractors must make a separate request for actual dispatch, in accordance with Section 230.1(a) California Code of Regulations

Check One Of The Boxes Below

1. ☐ We are already approved to train apprentices by the _____
Apprenticeship Committee. We will employ and train under their Standards. Enter name of the Committee
2. ☐ We will comply with the standards of _____
Apprenticeship Committee for the duration of this job only. Enter name of the Committee
3. ☐ We will employ and train apprentices in accordance with the California Apprenticeship Council regulations, including § 230.1 (c) which requires that apprentices employed on public projects can only be assigned to perform work of the craft or trade to which the apprentice is registered and that the apprentices must at all times work with or under the direct supervision of journeyman/men.

Signature

Date

Typed Name

Title

**State of California - Department of Industrial Relations DIVISION
OF APPRENTICESHIP STANDARDS**



REQUEST FOR DISPATCH OF AN APPRENTICE – DAS 142 FORM

DO NOT SEND THIS FORM TO DAS

You may use this form to request dispatch of an apprentice from the Apprenticeship Committee in the craft or trade in the area of the public work. Go to: <http://www.dir.ca.gov/databases/das/pwaddrstart.asp> for information about programs in your area and trade. You may also consult your local Division Apprenticeship Standards (DAS) office whose telephone number may be found in your local directory under California, State of, Industrial Relations, Division of Apprenticeship Standards. **Except for projects with less than 40 hours of journeyman work, you must request and employ apprentices in no less than 8 hour increments.**

Date: _____	Contractor Requesting Dispatch:
To Applicable Apprenticeship Committee:	Name: _____
Name: _____	Address: _____
Address: _____	_____
_____	License No. _____
Tel. No. _____ Fax No. _____	Tel. No. _____ Fax No. _____

Project Information:

Contract No. _____

Name of the Project: _____

Address: _____

Dispatch Request Information:

Number of Apprentice(s) Needed: _____ **Craft or Trade:** _____

Date Apprentice(s) to Report: _____ (72 hrs. notice required) **Time to Report:** _____

Name of Person to Report to: _____

Address to Report to: _____

*You may use this form to make your written request for the dispatch of an apprentice. Requests for dispatch must be in writing and submitted at least 72 hours in advance (excluding weekends and holidays) via first class mail, fax or email. **Proof of submission may be required.** Please take note of California Code of Regulations, Title 8, § 230.1 (a) for all applicable requirements regarding apprenticeship requests and/or visit*

<http://www.dir.ca.gov/DAS/DASApprenticesOnPublicWorksSummaryOfRequirements.htm>

DAS 142 (Revised 04/14)

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Section 3: During Construction Submittals

- A. Statement of Employer Payments
- B. CAC Training Fund Contributions (CAC-2 Form)
- C. Statement of Non-Performance
- D. Public Works Payroll Reporting Form (A-1-131 Form)
- E. Verification of Apprenticeship Status

Statement of Employer Payments



Date:		In Reply, Refer to Case No:	
Prime:			
Subcontractor:			
PROJECT NAME:			
PROJECT CONTRACT NO.:		County/location:	

HEALTH AND WELFARE

NAME OF PLAN	Address, City and Zip		
ADMINISTRATOR	Address, City and Zip		
CLASSIFICATION(S) USED	CONTRIBUTION PER CLASSIFICATION PER HOUR		
CONTRIBUTIONS:	WEEKLY	MONTHLY	QUARTERLY
			ANNUALLY

PENSION

NAME OF PLAN	Address, City and Zip		
ADMINISTRATOR	Address, City and Zip		
CLASSIFICATION(S) USED	CONTRIBUTION PER CLASSIFICATION PER HOUR		
CONTRIBUTIONS:	WEEKLY	MONTHLY	QUARTERLY
			ANNUALLY

VACATION/HOLIDAY

NAME OF PLAN	Address, City and Zip		
ADMINISTRATOR	Address, City and Zip		
CLASSIFICATION(S) USED	CONTRIBUTION PER CLASSIFICATION PER HOUR		
CONTRIBUTIONS:	WEEKLY	MONTHLY	QUARTERLY
			ANNUALLY

TRAINING

NAME OF PLAN	Address, City and Zip		
ADMINISTRATOR	Address, City and Zip		
CLASSIFICATION(S) USED	CONTRIBUTION PER CLASSIFICATION PER HOUR		
CONTRIBUTIONS:	WEEKLY	MONTHLY	QUARTERLY
			ANNUALLY

IF YOU USE OTHER PLANS NOT LISTED ABOVE, YOU MAY USE THE BACK OF THIS FORM TO PROVIDE THIS ADDITIONAL INFORMATION


[CA.gov](#) | [Contact DIR](#) | [Press Room](#)
[Go to Search](#)
[Home](#) [Labor Law](#) [Cal/OSHA - Safety & Health](#) [Workers' Comp](#) [Self Insurance](#) [Apprenticeship](#) [Director's Office](#) [Boards](#)

Division of Apprenticeship Standards (DAS)

CAC - Training Fund Contributions

You must enter all requested information in order to ensure successful submission and processing of your payment.
Training Fund Contributions are due on the 15th of each month.

All fields with * are required.

You must use the **BUTTON** on the bottom of the page to submit for an invoice coupon.

TO NAVIGATE BETWEEN FIELDS, DO NOT HIT RETURN OR ENTER KEY AFTER EACH ENTRY. USE THE TAB KEY INSTEAD.

You need to have a working printer currently connected to your computer in order to print the complete paper form in the end of this session so that you can mail it with your payment.

Training Fund Contributions Form CAC2

Date: 9/25/2014

Contractor/Sub Contractor making contributions	Contractor	Period covered by contribution (from – to)	Jobsite Location (including County)
* Name: <input type="text"/>	* License Number: <input type="text"/>	* Period Start: <input type="text"/>	If applicable, give name of school, hospital, building, etc. <input type="text"/>
* Address: <input type="text"/>	* Contract/Project Number <input type="text"/>	* Period End: <input type="text"/> (MM/DD/YYYY)	Comments: <input type="text"/>
* City: <input type="text"/>			
* State: <input type="text"/>			
* ZIP: <input type="text"/>			

* Name of the submitting party:	* Submitter's Title:	* Submitter's Email:	* Submitter's Phone: e.g., (999) 999-9999
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Instructions: You may want to use the keyboard TAB key to navigate the fields and the Up ^ | Down V ARROW keys to select a list item.

	* County of Work	* Classification ¹	* Hours (min.: 0.5; max: 9 999.99)	* Rate (min.: 0.01; max: \$9.99)	Amount
*1)	Select a county <input type="text"/>	Select an occupation <input type="text"/>	** <input type="text"/>	\$ ** <input type="text"/>	\$ 0.00
2)	Select a county <input type="text"/>	Select an occupation <input type="text"/>	<input type="text"/>	\$ <input type="text"/>	\$ 0.00
3)	Select a county <input type="text"/>	Select an occupation <input type="text"/>	<input type="text"/>	\$ <input type="text"/>	\$ 0.00
4)	Select a county <input type="text"/>	Select an occupation <input type="text"/>	<input type="text"/>	\$ <input type="text"/>	\$ 0.00
5)	Select a county <input type="text"/>	Select an occupation <input type="text"/>	<input type="text"/>	\$ <input type="text"/>	\$ 0.00
6)	Select a county <input type="text"/>	Select an occupation <input type="text"/>	<input type="text"/>	\$ <input type="text"/>	\$ 0.00
7)	Select a county <input type="text"/>	Select an occupation <input type="text"/>	<input type="text"/>	\$ <input type="text"/>	\$ 0.00
8)	Select a county <input type="text"/>	Select an occupation <input type="text"/>	<input type="text"/>	\$ <input type="text"/>	\$ 0.00

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DOCUMENT 00 73 49A

9)	Select a county 	Select an occupation 	<input type="text"/>	\$ <input type="text"/>	\$ 0.00
10)	Select a county 	Select an occupation 	<input type="text"/>	\$ <input type="text"/>	\$ 0.00
11)	Select a county 	Select an occupation 	<input type="text"/>	\$ <input type="text"/>	\$ 0.00
12)	Select a county 	Select an occupation 	<input type="text"/>	\$ <input type="text"/>	\$ 0.00
13)	Select a county 	Select an occupation 	<input type="text"/>	\$ <input type="text"/>	\$ 0.00
14)	Select a county 	Select an occupation 	<input type="text"/>	\$ <input type="text"/>	\$ 0.00
15)	Select a county 	Select an occupation 	<input type="text"/>	\$ <input type="text"/>	\$ 0.00
16)	Select a county 	Select an occupation 	<input type="text"/>	\$ <input type="text"/>	\$ 0.00
17)	Select a county 	Select an occupation 	<input type="text"/>	\$ <input type="text"/>	\$ 0.00
18)	Select a county 	Select an occupation 	<input type="text"/>	\$ <input type="text"/>	\$ 0.00
19)	Select a county 	Select an occupation 	<input type="text"/>	\$ <input type="text"/>	\$ 0.00
20)	Select a county 	Select an occupation 	<input type="text"/>	\$ <input type="text"/>	\$ 0.00

Footnote 1 – If you are unable to locate the occupation in the pull down menu, please click on this link:
<http://www.dir.ca.gov/databases/das/aigstart.asp> for specific information assistance.

TOTAL AMOUNT: \$ 0.00

When done with some or all the entries above, please carefully review and then enter the green code you see below:

22749

Calculate Total Amount

August 2014

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Who we are
 DIR Divisions, Boards & Commissions
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Work with Us

Licensing, registrations, certifications & permits
 Notification of activities
 Public Records Act

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TO BE TYPED ON COMPANY LETTERHEAD

STATEMENT OF NON-PERFORMANCE

Payroll # _____

Date _____

I do hereby state that no persons employed on the construction of the

_____ Project, for _____
(Project Name) (Awarding Body)

Company, Contract No. _____ during the payroll period commencing on the
_____th day of _____, 2007 and ending on the _____th day of
_____, 2007.

(Company Name)

(Authorized Signer)



PUBLIC WORKS PAYROLL REPORTING FORM

NAME OF CONTRACTOR: OR SUBCONTRACTOR:		CONTRACTOR'S LICENSE NO.:		SPECIALTY LICENSE NO.:		ADDRESS:																
PAYROLL NO.:		FOR WEEK ENDING:		SELF-INSURED CERTIFICATE NO.:		WORKER'S COMPENSATION POLICY NO.:		PROJECT OR CONTRACT NO.:		PROJECT AND LOCATION:												
(1) NAME, ADDRESS AND SOCIAL SECURITY NUMBER OF EMPLOYEE	(2) NO. OF WITH- HOLDING EXEMPTIONS	(3) WORK CLASSIFICATION	(4)	(5) DAY							(6) HOURLY RATE OF PAY	(7) GROSS AMOUNT EARNED	(8) DEDUCTIONS, CONTRIBUTIONS AND PAYMENTS							(9)		
				TOTAL HOURS									DEDUCTIONS, CONTRIBUTIONS AND PAYMENTS							NET WGS PAID FOR WEEK	CHECK NO.	
				M	T	W	TH	F	S	S		THIS PROJECT	ALL PROJECTS	FED. TAX	FICA (SOC. SEC.)	STATE TAX	SDI	VAC/ HOLIDAY	HEALTH & WELF.	PENSION		
			S											TRAING.	FUND ADMIN	DUES	TRAV/ SUBS.	SAVINGS	OTHER*	TOTAL DEDUC- TIONS		
			O																			
			S											FED. TAX	FICA (SOC. SEC.)	STATE TAX	SDI	VAC/ HOLIDAY	HEALTH & WELF.	PENSION		
			O											TRAING.	FUND ADMIN	DUES	TRAV/ SUBS.	SAVINGS	OTHER*	TOTAL DEDUC- TIONS		
			S											FED. TAX	FICA (SOC. SEC.)	STATE TAX	SDI	VAC/ HOLIDAY	HEALTH & WELF.	PENSION		
			O											TRAING.	FUND ADMIN	DUES	TRAV/ SUBS.	SAVINGS	OTHER*	TOTAL DEDUC- TIONS		
			S											FED. TAX	FICA (SOC. SEC.)	STATE TAX	SDI	VAC/ HOLIDAY	HEALTH & WELF.	PENSION		
			O											TRAING.	FUND ADMIN	DUES	TRAV/ SUBS.	SAVINGS	OTHER*	TOTAL DEDUC- TIONS		
			S											FED. TAX	FICA (SOC. SEC.)	STATE TAX	SDI	VAC/ HOLIDAY	HEALTH & WELF.	PENSION		
			O											TRAING.	FUND ADMIN	DUES	TRAV/ SUBS.	SAVINGS	OTHER*	TOTAL DEDUC- TIONS		

CERTIFICATION **MUST** be completed
(See reverse side)

*OTHER - Any other deductions, contributions and/or payments whether or not included or required by prevailing wage determinations must be separately listed. Use extra sheet(s) if necessary

S = STRAIGHT TIME
O = OVERTIME
SDI = STATE DISABILITY INSURANCE

NOTICE TO PUBLIC ENTITY

For Privacy Considerations

Fold back along dotted line prior to copying for release to general public (private persons).

(Paper Size then 8-1/2 x 11 inches)

I, _____, the undersigned, am the
(Name – print)

_____ with the authority to act for and on behalf of
(Position in business)

_____, certify under penalty of perjury
(Name of business and/or contractor)

that the records or copies thereof submitted and consisting of _____
(Description, number of pages)

are the originals or true, full, and correct copies of the originals which depict the payroll record(s)
of the actual disbursements by way of cash, check, or whatever form to the individual or
individuals named.

Date: _____

Signature: _____

A public entity may require a stricter and/or more extensive form of certification.


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[Division of Apprenticeship Standards \(DAS\)](#)

Apprentice certification

Apprenticeship certification for public works

Enter search string (LLLLF9999) here

How to compile the search string:

The search string is a total of nine letters and numbers (no characters ' , - , etc): the first four letters of the last name (use spaces to make four letters if the last name is shorter than four letters), the first letter of the first name and the last four digits of the social security number (LLLLF9999). Letters can be entered as lower or upper case.

Examples:

Uncle Sam ssn 123-45-6789 would be entered as Sam U6789
 Goddess Minerva ssn 123-45-5555 would be entered as MineG5555
 Richard Al-Ham ssn 111-44-1111 would be entered as AlhaR1111
 Robert O'Brian ssn 111-22-3333 would be entered as OBriR3333
 James McHenry ssn 555-66-1234 might be entered as McHeJ1234 or Mc HJ1234

If you cannot find the individual you are looking for, complete the certifications you have and see the notes below.

If a search string that was entered does not match with any apprentices in the Division of Apprenticeship Standards (DAS) database, this could be due to any of the following:

1. Not a registered apprentice.
2. The submitted search string does not match to DAS records (either the database has the wrong search criteria or you have the wrong search criteria).
3. The apprentice agreement has not been submitted to DAS or has not been entered into the database (agreements must be submitted within 30 days of the date that the apprentice signed the agreement).

If you believe that the apprentice should be reported as registered and is not; please contact your local office of the [Division of Apprenticeship Standards](#).

Division of Apprenticeship
Standards(DAS)

Quick Links

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PSCBA FORMS - FOR INFORMATION ONLY
DOCUMENT 00 73 49A



DAVILLIER-SLOAN, INC.
LABOR MANAGEMENT CONSULTANTS

Section 4: Closeout

This form must be submitted to DSI
during project/program closeout

A. Contractor Affidavit

Contractor Affidavit
Contract # _____

1. I am the _____ (owner, officer, partner) of _____ (Company) who performed work on the _____ (Project) in the classification (s) of _____.
- The labor performed by these workers can best be described by _____.

2. During the payroll periods commencing on _____ and ending on _____ all persons employed by my company on this project have been paid the specified prevailing rate of per diem wages for the specified craft or classification pursuant to Labor Code Section 1771¹.

3. The apprenticeship committee (s) either denied or failed to respond to our request for the dispatch of apprentices, and therefore all workers were classified as journeyman

Or

4. Apprentice (s) worked a total of _____ hours and _____ journeyman worked a total of _____ hours establishing an apprentice \ journeyman ratio in hours of _____ to _____.

Or

5. Apprentices were employed in accordance with the DAS exemption that required one apprentice for every five journeyman employed on each day of the contract.

Executed this ____ day of _____ 20____, at _____, California.

Signature

¹ Except for public works project of one thousand dollars (\$1000) or less, not less than the general prevailing rate of per diem wages for work of a similar character in the locality in which the public work is performed, and not less than the general prevailing rate of per diem wages for holiday and overtime work fixed as provided in this chapter, shall be paid to all workers employed on public works.

EXHIBIT A (Letter of Assent)

PROJECT STABILIZATION/COMMUNITY BENEFITS AGREEMENT

for the

**COUNTY OF ALAMEDA
CONTRACTOR AGREEMENT TO BE BOUND**

The undersigned, as a Contractor or Subcontractor (CONTRACTOR) on the County of Alameda, (hereinafter PROJECT), for and in consideration of the award to it of a contract to perform work on said PROJECTS, and in further consideration of the mutual promises made in the "Project Stabilization/Community Benefits Agreement for the County of Alameda Project" (hereinafter AGREEMENT), a copy of which was received and is acknowledged, hereby:

- (1) Accepts and agrees to be bound by the terms and conditions of the AGREEMENT, together with any and all amendments and supplements now existing or which are later made thereto:
- (2) The CONTRACTOR agrees to be bound by the legally established local trust agreements as set forth in Article 14 of this AGREEMENT.
- (3) The CONTRACTOR authorizes the parties to such local trust agreements to appoint trustees and successor trustees to administer the trust funds and hereby ratifies and accepts the trustees so appointed as if made by the CONTRACTOR;
- (4) Certifies that it has no commitments or agreements which would preclude its full and complete compliance with the terms and conditions of said AGREEMENT.
- (5) Agrees to secure from any CONTRACTORS (as defined in said AGREEMENT) which is or becomes a Subcontractor (of any tier) to it, a duly executed Agreement to be Bound in form identical to this document.

Dated: _____

(Name of Contractor)

(Name of Prime Contractor or Higher
Level Subcontractor)

(Authorized Officer & Title)

CA Number _____

(Address)

Contract Or Project # _____

(Phone)

(Fax)

FOR INFORMATION ONLY

PROJECT STABILIZATION/COMMUNITY BENEFITS AGREEMENT

for the

COUNTY OF ALAMEDA

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PREAMBLE

This Agreement is made and entered into on this ____ day of _____ 2013, by and between the County of Alameda ("County") together with Contractors and/or subcontractors, who shall subsequently become signatory to this Agreement by signing the "Contractor Agreement To Be Bound" (Exhibit A), ("Contractors"), the Building and Construction Trades Council of Alameda County, AFL-CIO ("Council") and the Local Unions signatory hereto, all in their behalf and in behalf of the various Local Unions involved, ("Union(s)") for the construction of all Covered Projects ("Covered Projects").

Recitals

WHEREAS, the Projects described in this Agreement have been identified by the County as those in which a Project Stabilization/Community Benefits Agreement would benefit the County; and

WHEREAS, the Contractors will be engaged in construction of the project; and

WHEREAS, a skilled labor pool represented by Building Trades Unions will be required to complete the work involved; and

WHEREAS, the Building Trades Unions agree to cooperate in every way possible with employees of the Contractors; and

WHEREAS, the parties to this Agreement mutually agree that safety, quality, productivity and labor harmony are primary goals; and

WHEREAS, the County desires to provide, enhance and encourage construction training and employment opportunities for Alameda County residents and small business enterprises within the County through apprentice and pre-apprentice programs; and

WHEREAS, the County also desires to use this Agreement as a vehicle for building the capacity of Alameda County residents and businesses and to maximize their potential to successfully participate in other large scale projects; and

WHEREAS, the parties recognize the need for safe, efficient and speedy construction in order to reduce unnecessary delays and result in timely completion of the project; and

WHEREAS, the parties desire to mutually establish and stabilize wages, hours and working conditions for the employees employed on the project by the Contractors, and further to encourage close cooperation to achieve a satisfactory, continuous and harmonious relationship between the parties to this Agreement;

WHEREAS, the County of Alameda's mission is to enrich the lives of all residents through visionary policies and accessible, responsible and effective services and historically the County

has supported contracting outreach programs that recognize the economic and workforce development potential of capital construction projects on government owned facilities; and

WHEREAS, the Parties recognize that disadvantaged individuals, families, and communities within the county experience high unemployment and are also often recipients of County services, and that these disadvantaged populations may economically benefit through participation in local hire, apprenticeship and pre-apprenticeship programs; and

WHEREAS, the Union(s), Contractors, subcontractors, and the County wish to insure labor peace at the Covered Project sites devoid of any disruption that could jeopardize the schedule and timeliness of the construction process, where both Contractors that are signatory to collective bargaining agreements of the Union(s) are supervising employees that are members of the Union(s) and where Contractors that are not Signatory to collective bargaining agreements are supervising employees;

NOW THEREFORE, the parties, in consideration of the mutual promises and covenants herein contained, mutually agree as follows:

ARTICLE 1

DEFINITIONS

1.1 For purposes of this Agreement, the following terms will have the following meanings:

“Acceptance” shall mean action by the County notifying Contractor and other entities of Completion, as required by and in accordance with contract terms and relevant applicable statutes.

“Agreement” shall mean this Project Stabilization/Community Benefit Agreement.

“Alternative Employees” shall mean an employee whose services have been obtained from other than the Union referral facilities as permitted in Section 19.6 of this Agreement.

“Apprentice” shall mean a person enrolled in a State approved apprenticeship training program administered by a Joint Labor-Management Apprenticeship Training Committee (JATC).

“Completion” means that the work of Contractors’ is completed, as follows:

1. The occupation, beneficial use, and enjoyment of a work of improvement, excluding any operation only for testing, startup, or commissioning, by the public agency, or its agent, accompanied by a cessation of labor on the work of improvement.
2. The acceptance by the public agency, or its agent, of the work of improvement.

“Contractors” means all contractors and subcontractors at all tiers, any individual, firm, partnership or corporation, or combination thereof, including joint ventures, which is an

independent business enterprise and has entered into a contract with the County or any of its contractors or subcontractors at any tier, with respect to the construction work covered by this Agreement and necessary for the project or any part thereof, including construction building material delivery (if the material is for direct incorporation) and removal truckers, trucking companies and trucking brokers, including the operating of construction equipment, performance of labor and/or installation of materials.

"Coordinator" shall mean the company or individual designated or retained by the County to administer this Agreement.

"Core Employee" shall mean an individual meeting the criteria listed in Section 19.1.1-19.1.5.

"Council" shall mean the Building and Construction Trades Council of Alameda County.

"County" shall mean the County of Alameda acting by and through its Board of Supervisors, Agency and Department heads and administrative staff.

"Covered Projects" and "Projects" means projects covered by the Agreement.

"Covered Work" means work done on the project and subject to the provisions of this Agreement.

"Disadvantaged Population" shall mean those Residents of Alameda County who meet at least one of the following criteria: household income below 50% of the Alameda County median, non-minor dependent youth (AB-12 youth – emancipated foster youth), homeless, welfare recipients, have a history of involvement with the criminal justice system, are unemployed, or a single parent.

"Emergency Work" shall mean those projects undertaken when an immediate or imminent critical impact to a facility or to the ability to provide essential services is likely within 30 days should no further action be taken, or in circumstances where mandatory environmental, health and/or safety requirements will be violated without said project.

"General Prevailing Wage Determination" shall mean the decisions made by the Director of the California Department of Industrial Relations (DIR) establishing a journeyman craft or classification's prevailing wage determination, holiday, advisory scope of work, or travel and subsistence provision.

"Local Hiring Goals" shall mean the Resident and Apprentice hiring goals set forth in Article 17 and Article 18 of this Agreement.

"Local Hiring Program" shall mean the program set forth in Article 17 and Article 18 of this Agreement intended to achieve the inclusion of County Residents in the employment and apprenticeship opportunities created by the Covered Work.

"Master Labor Agreement" or "MLA" shall mean the collective bargaining agreement of each craft Union that is Signatory to this Agreement.

"New Apprentice" shall mean an Alameda County Resident who on the date that such individual is hired or assigned to perform the applicable work, is newly enrolled (less than one year) in a labor-management apprenticeship program that is currently registered with the State of California's Division of Apprenticeship Standards.

"Owner Operator" shall mean a sole individual that owns and drives/operates a maximum of one unit and who is employed in the movement or transportation of materials or goods of another. The owner operator shall be carried on the payroll of the entity that employs or otherwise uses the Owner/Operator. The Owner/Operator shall direct a maximum of one unit which he or she shall drive themselves. In addition the owner operator must provide documentation of insurance, a business license, and a valid motor carrier permit issued solely in their name.

"Post Disaster Work" shall mean County approved construction projects consistent with Post Disaster response and recovery efforts per the California Government Code Section 20168 where the public interest and necessity demand immediate expenditure of public funds to safeguard life, health, or property following a local, state or federally declared disaster per the Stafford Act.

"Project Manager" shall mean the person or persons designated by the County of Alameda Board of Supervisors to act on behalf of the County in all matters involving or related to individual Covered Projects..

"Resident" shall mean an individual who has lived or resided in Alameda County for a period of not less than thirty (30) calendar days prior to the date of dispatch/referral of that individual by the Union to a Contractor performing work on the project or for a period of not less than thirty (30) calendar days prior to applying for work or inclusion in the Local Hire Program if the individual is an Alternative Employee, a Core Employee, a member of a Disadvantaged Population, or a Local Hire Program applicant.

"Signatory" shall mean those Unions who have through their officers and or agents executed this Agreement.

"Sole Proprietor" shall mean an owner who will self-perform the designated Covered Project Work without hiring field support staff for the Project.

"Trust Agreements" shall mean the agreements between Unions and employers and or employer associations to govern trust funds contributed on behalf of covered workers for benefits for said workers.

"Union" or "Unions" shall mean the Building and Construction Trades Council of Alameda County and its affiliated local unions Signatory to the Agreement, acting on their own behalf or on behalf of their respective affiliates and member organizations.

ARTICLE 2

PURPOSE

- 2.1 The purposes of this Agreement are to promote efficient construction operations on the Projects, to insure an adequate supply of skilled craftspeople and to provide for peaceful, efficient and binding procedures for settling labor disputes. In so doing, the parties to this Agreement establish the foundation to promote the public interest, to provide a safe work place, to assure high quality construction, to ensure uninterrupted construction Projects, and to secure optimum productivity, on-schedule performance and County satisfaction.
- 2.2 It is the intent of the parties to set out uniform and fair working conditions for the efficient completion of the Projects, maintain harmonious labor/management relations and eliminate strikes, lockouts and other delays.
- 2.3 The parties agree that one of the primary purposes of this Agreement is to avoid the tensions that might arise on the Projects if union and nonunion workers of different employers were to work side by side on the Projects thereby leading to labor disputes that could delay completion of the Projects.
- 2.4 This Agreement is entered into pursuant to and consistent with California Public Contract Code ("PCC") Sections 2500 through 2502. PCC Section 2500(a)(3) requires a public entity PLA to include an agreed-upon protocol concerning drug testing for workers employed on the Projects, as set forth in Article 16.3.

ARTICLE 3

SCOPE OF AGREEMENT

- 3.1 The parties agree that this Agreement will cover all projects undertaken by the County of Alameda with a construction value of \$1 million or more. In addition, the Agreement will cover all projects with a construction value of \$1 million or more which are undertaken on behalf of the County or in circumstances where County is executing projects for Special Districts,. The parties further agree that the Board of Supervisors may at their discretion elect to include any project with a value less than \$1 million under the terms of this Agreement.
- 3.2 This Agreement covers all on-site construction, fabrication, demolition, alteration, painting or repair of buildings, structures, landscaping, temporary fencing and other work and related activities that are within the craft jurisdiction of one of the Union(s) and that is part of the work, including site preparation, survey work, and all construction, demolition or improvements required to be performed as a condition of approval by the County.

- 3.3 This Agreement shall apply only to construction/craft employees, performing work on projects represented by the Signatory Unions, and shall not apply to Contractors' supervisors, technical or non-manual employees including, but not limited to, executives, engineers, office and clerical employees, drafters, architects, supervisors, timekeepers, messengers, guards, other employees above the classification of general foreman, inspectors, material testers, and/or x-ray technicians, except to the extent that such inspectors, material testers, and/or x-ray technicians are customarily covered by the MLA and as to which classification a prevailing wage determination has been published.
- 3.4 There shall be no limitation or restriction upon the choice of materials or upon the full use and installation of equipment, machinery, package units, factory pre-cast, prefabricated or preassembled materials, tools or other labor-saving devices. The lawful fabrication provisions of the appropriate national or local agreements shall be applicable. The covered projects include work necessary for the covered projects and/or in temporary yards or areas adjacent to and dedicated to the covered projects, and at any batch plant(s) constructed or used solely to supply materials to the Covered Projects, when those sites or processes are dedicated exclusively to the covered projects.
- 3.5 This Agreement covers all on-site fabrication work over which the County or Contractors possess the right of control (including work done for the covered projects in any temporary yard or area established for the Covered Projects). Additionally, any offsite work, including fabrication, necessary for the Covered Projects defined herein, that is lawfully covered by a current MLA or local addenda to a National Agreement of the applicable Union(s) that is in effect as of the execution of this Agreement shall be considered covered work under this Agreement.
- 3.6 This Agreement shall apply to any start-up, calibration, performance testing, repair, maintenance, operational revisions to systems and/or subsystems performed up to 9 months after Completion by the Contractors. It is understood the County reserves the right to perform any start-up, operation, repair, maintenance or revision of equipment or systems with employees of the County. If required, Contractor's personnel may make a final check and may direct their staff on site to make any necessary repairs to protect the terms of a manufacturer's guarantee or warranty of a piece of equipment.
- 3.7 The on-site installation or application of all items shall be performed by the craft having jurisdiction over such work as set forth under the provisions of this Agreement; provided, however, it is recognized that installation of specialty items which may be furnished by the County or a Contractor shall be performed by construction persons of the vendor or other companies where necessary to protect a manufacturer's warranty. The issue of whether it is necessary to use construction persons of the vendor or other companies to protect the manufacturer's warranty shall be subject to the grievance and arbitration clause of this Agreement.
- 3.8 It is recognized by the parties to this Agreement that the Coordinator designated in Article 9 below, and Contractors are acting only on behalf of said Coordinator and

Contractors, and said Coordinator and Contractors have no authority, either expressed, implied, actual, apparent or ostensible, to speak for or bind the County.

- 3.9 It is expressly agreed and understood that the County retains the right and ability to meet all competitive bidding requirements of public contracting law and to select the lowest responsive and responsible bidder who provides the County with best value within a stipulated sum regardless of union signatory status. Further, the County may, at its sole discretion, end, delay, and/or suspend any or all portions of the work and may combine, consolidate, modify and/or not build any one or more portions of work covered by this Agreement at any time.
- 3.10 It is expressly agreed and understood by the parties hereto that the County shall retain the right at all times to perform and/or subcontract all portions of the construction and related work on project sites not covered by this Agreement.
- 3.11 It is expressly agreed and understood by the parties hereto that the County shall have the right to purchase material and equipment from any source and the craftspersons will handle and install such material and equipment, subject to the requirements of Section 3.6.
- 3.12 Without limiting the foregoing, items specifically excluded from the scope of this Agreement include the following:
 - 3.12.1 The operation of equipment and machinery owned or controlled by the County and its subcontractors and not directly related to construction of covered projects;
 - 3.12.2 All employees of any Contractor or any other consultant of the County not performing construction craft labor within the scope of this Agreement;
 - 3.12.3 Any work performed on or near or leading to or on to the site of work covered by this Agreement and undertaken by state, county, city or other governmental bodies, or their Contractors, or by public utilities or their Contractors, and/or by the County or its Contractors (for work which is not part of the scope of this Agreement).
 - 3.12.4 Off-site maintenance of leased equipment and on-site supervision of such work;
 - 3.12.5 Non-construction support services contracted by the County or any Contractor in connection with covered projects;
 - 3.12.6 All work by employees of the County;
 - 3.12.7 Operations or maintenance work executed by the County;

- 3.12.8. All work on covered projects under any contract entered into prior to the date of this Agreement;
- 3.12.9. All warranty functions, warranty work, corrective work, repair and maintenance work on purchased equipment performed by manufacturers' representatives or vendors after Completion and acceptance of any covered projects by the County; and
- 3.12.10 All Post Disaster and Emergency Work as defined in Article 1.
- 3.13 The Council shall assist the County and its contractors in encouraging and soliciting subcontractors in bidding on all covered projects.

ARTICLE 4

RELATIONSHIP BETWEEN PARTIES

- 4.1 This Agreement shall only be binding on the Signatory parties hereto, and shall not apply to parents, affiliates, subsidiaries, or other divisions of the Coordinator and Signatory Contractors unless signed by such parent, affiliate, subsidiary, or other division of such company.
- 4.2 Each Contractor shall alone be liable and responsible for its own individual acts and conduct and for any breach or alleged breach of this Agreement. Any alleged breach of this Agreement by a Contractor or any dispute between the Signatory Union and the Contractor respecting compliance with the terms of this Agreement, shall not affect the rights, liabilities, obligations and duties between the signatory Union and each other Contractor party to this Agreement.
- 4.3 It is mutually agreed by the parties that any liability by a Signatory Union(s) to this Agreement shall be several and not joint. Any alleged breach of this Agreement by a signatory Union shall not affect the rights, liabilities, obligations and duties between the Signatory Contractors and the other Unions party to this Agreement.

ARTICLE 5

ROLES AND RESPONSIBILITIES

SUBCONTRACTS

- 5.1 Each Contractor, which includes all subcontractors of any tier, including trucking entities performing Covered Work on the Projects, agrees that neither it nor any of its subcontractors will subcontract any work to be done on the Project except to a person, firm, or corporation who is or becomes party to this Agreement by signing the Agreement

to be Bound attached to this Agreement as Exhibit "A". All Contractors performing Covered Work on the Project shall, as a condition to performing work on the Project, become Signatory to and perform all work under the terms of this Agreement.

- 5.2 A Contractor includes any person, firm or corporation who agrees under contract with another Contractor of any tier, to perform on the Project any part or portion of the construction work covered by the prime contract, including the operating of construction equipment, performance of labor and/or installation of materials.
- 5.3 Notwithstanding any other provisions of this Agreement, the Contractor, as appropriate, in conformance with paragraph 3.7 of this Agreement shall have the absolute right to award contracts or subcontracts for this Project notwithstanding the existence or nonexistence of any collective bargaining agreements between the prospective Contractor and any Union party, and provided that such Contractor is willing, ready and able to comply with this Project Stabilization/Community Benefits Agreement and shall execute a Letter of Assent (in the form attached as Exhibit A), should such Contractor be awarded work covered by this Agreement.
- 5.4 The furnishing of supplies, equipment or materials which are stockpiled for later use shall in no case be considered subcontracting and shall be covered to the extent permitted by law. The delivery of ready-mix, asphalt, aggregate, sand or other fill material which are directly incorporated into the construction process as well as the off-hauling of debris and excess fill material and/or mud, shall be covered by the terms and conditions of this Agreement.
- 5.5 Each Contractor with a contract directly with the County has the primary obligation for performance of all conditions of this Agreement, including the performance of all of that Contractor's subcontractors. This obligation cannot be relieved, evaded or diminished by subcontracting. Should a Contractor elect to subcontract, that Contractor shall continue to have such primary obligation.
- 5.6 Each Contractor, which includes all subcontractors of any tier performing work on the Project, shall give written notice to the Union(s) of any subcontract involving the performance of work covered by this Agreement within either five (5) business days of entering such subcontract or before the subcontractor commences work on the Project, whichever occurs first. Such notice shall specify the name and address of the subcontractor, the California State License Board license number of the Contractors and the scope of work to be performed. Written notice at a Pre-Job Conference shall be deemed written notice under this provision only for those subcontractors listed at the Pre-Job Conference.
- 5.7 Signatory Contractors:
 - 5.7.1 With regard to any Contractor that is independently signed to any Master Labor Agreement, this Agreement shall in no way supersede or prevent the enforcement of any subcontracting clause contained in such MLA, except as specifically set

forth in Section 5.7.2 below. Any such subcontracting clause in a MLA shall remain and be fully enforceable between each craft union and its signatory Contractors, and no provision of this Agreement shall be interpreted and/or applied in any manner that would give this Agreement precedence over subcontracting obligations and restrictions that exist between craft unions and their respective signatory Contractors under a MLA, except as specifically set forth in subsection 5.7.2 below.

- 5.7.2 If a craft union ("aggrieved union") believes that an assignment of work for this Project has been made improperly by a Contractor or subcontractor, even if that assignment was as a result of another craft union's successful enforcement of the subcontracting clause in its MLA, as permitted by subsection 5.7.1 above, the aggrieved union may submit a claim under the jurisdictional resolution procedure contained in Article 6 of this Agreement, and the decision rendered as part of that process shall be enforceable to require the Contractor or subcontractor that made the work assignment to assign that work prospectively to the aggrieved union. An award made to a craft union under the subcontracting clause of its MLA, as permitted pursuant to subsection 5.7.1 above, shall be valid and fully enforceable by that craft union unless it conflicts with a jurisdictional award made pursuant to this Agreement. If the award made under the MLA conflicts with the jurisdictional award, the award of damages under the former shall be null and void *ab initio*.

ARTICLE 6

WORK ASSIGNMENTS AND JURISDICTIONAL DISPUTES

- 6.1 The following language is specifically agreed to for the resolution of any Jurisdictional Disputes which may arise during the construction which is specifically covered by this Agreement. This agreement regarding resolution of jurisdictional disputes shall apply only to such disputes arising on Covered Projects.
- 6.2 There will be no strikes, no work stoppages, no picketing, sympathy strikes, slow downs or other interferences with the work because of jurisdictional disputes between signatory Unions. Individuals violating this section shall be subject to immediate discharge.
- 6.3 The assignment of Covered Work will be solely the responsibility of the Contractor performing the work involved; and such work assignments will be in accordance with the Plan for the Settlement of Jurisdictional Disputes in the Construction Industry (the "Plan") or any successor Plan.
- 6.4 All jurisdictional disputes on this Project between or among the Building and Construction Trades Unions and the Contractors, parties to this Agreement, shall be settled and adjusted according to the present Plan established by the Building and Construction Trades Department, or any other plan or method of procedure that may be

adopted in the future by the Building and Construction Trades Department. Decisions rendered shall be final, binding and conclusive on the Contractor and Union parties to this Agreement.

- 6.4.1 For the convenience of the parties, and in recognition of the expense of travel between Northern California and Washington, D.C., at the request of any party to a jurisdictional dispute under this Agreement, an Arbitrator shall be chosen by the procedures specified in Article V, Section 5, of the Plan from a list composed of John Kagel, Thomas Angelo, Robert Hirsch and Thomas Pagan, and the Arbitrator's hearing on the dispute shall be held at the applicable Building and Construction Trades Council. All other procedures shall be as specified in the Plan.
- 6.5 All jurisdictional disputes shall be resolved without the occurrence of any strike, work stoppage, or slow-down of any nature, and the Contractor's assignment shall be adhered to until the dispute is resolved. Individuals violating this section shall be subject to immediate discharge.
- 6.6 Each Contractor shall conduct a Pre-Job Conference with the Council prior to commencing Covered Work. The Prime Contractor, the County and the Coordinator will be advised in advance of all such conferences and may participate if they wish. Pre-job conferences for different Contractors may be held together.

ARTICLE 7

PRE-JOB CONFERENCE

- 7.1 A mandatory Pre-Job Conference with each Contractor will be held prior to the commencement of work to establish the scope of work in each Contractor's contract. When a contract has been let to Contractors covered by this Agreement, a Pre-Job Conference and/or Mark-Up Meeting shall be required and shall be held. The parties may mutually agree to waive the requirement to hold a Pre-Job Conference and/or Mark-Up Meeting for any particular contract or contractor. All meetings shall be held at the offices of the Alameda County Building and Construction Trades Council.
- 7.2 The Contractor performing the work shall have the responsibility for making work assignments in accordance with Section 6.3 of this Agreement, and will be required to bring relevant plans, specifications, and blueprints to the meeting, as requested by Union.
- 7.3 The Coordinator will schedule and attend all Pre-Job and Mark-Up Meetings and participate in discussions as they pertain to the terms and conditions of this Agreement.

ARTICLE 8

JOINT ADMINISTRATIVE COMMITTEE MEETINGS

- 8.1 The parties to this Agreement will form a five person Joint Administrative Committee (JAC). The Committee will be comprised of two (2) representatives selected by the Council, two (2) representatives selected by the County, and one (1) community representative, nominated by the Board of Supervisors and agreeable to the Council. The parties shall appoint an alternate. The JAC meetings will be convened by the Coordinator and chaired jointly by a representative of the Council and the County, and a quorum shall be three members, including at least one (1) from the County and one (1) from the Council. The purpose of these meetings is to promote harmonious labor/management relations, ensure adequate communications and advance the proficiency and efficiency of the employees and the Contractors for the Covered Projects. The Committee shall also monitor compliance with Article 17 and Article 18. These meetings will also include discussion of the scheduling, productivity and safety of work performed for the Covered Projects.
- 8.2 The JAC shall appoint a Joint Administrative Subcommittee, comprised of one (1) representative of the County and, one (1) representative of the Council for the purpose of convening to confer in an attempt to resolve any grievance that has been filed consistent with Article 23. This Subcommittee shall meet as required to resolve grievances by consensus vote. If no resolution can be mutually agreed upon, the grievance shall proceed to the grievance procedure outlined in Article 23, Step 4.
- 8.3 The JAC shall appoint a Joint Administrative Subcommittee, comprised of one (1) representative of the County, one (1) representative of the Council and one (1) representative of a community based organization to resolve any grievance filed consistent with Article 17 or Article 18.
- 8.4 The JAC shall have the initial authority to investigate and resolve by consensus vote any allegation of violations of Articles 19 and 20. If the JAC cannot resolve the allegations, then any signatory party may take the matter directly to final and binding arbitration as described in Article 23.
- 8.5 JAC Meetings
- 8.5.1 The JAC will meet monthly at the call of either chair.
- 8.5.2 The Coordinator will establish agenda topics with input from the Committee and send notices of meetings with the agenda in advance of the meetings.
- 8.5.3 The JAC will receive reports and consider work progress and practices, local hire utilization, Disadvantaged Population utilization, pre-apprentice recruitment, training and referral, and apprentice development and utilization.
- 8.5.4 The Coordinator and the Contractors shall report progress on these issues and provide ongoing workforce projections for their work.

8.6 Joint Administrative Subcommittee Meetings

8.6.1 Both Joint Administrative Subcommittees will meet as required to address grievances/disputes.

8.6.2 The Coordinator will establish agenda topics with input from the Subcommittee and send notices of meetings with the agenda in advance of the meetings.

ARTICLE 9

COORDINATOR

9.1 The County will designate a Coordinator, who will be responsible for the administration and application of this Agreement.

9.2 The Coordinator shall endeavor to facilitate harmonious relations between the Contractors and Unions Signatory hereto and will conduct the Joint Administrative Committee meeting at the request of either joint chair referred to in Article 8 above. The Coordinator shall not be responsible for the acts of the Contractors or Unions Signatory hereto, and will not be a party to any arbitration or litigation arising out of this Agreement.

ARTICLE 10

UNION RECOGNITION AND REPRESENTATION

10.1 The Contractors recognize the Union(s) Signatory hereto as the sole and exclusive collective bargaining representatives for all craft employees on the Project.

10.2 All employees who are employed by the Contractors shall, as a condition of employment, on or before the eighth (8th) day of consecutive or cumulative employment for a construction contract subject to this Agreement, be responsible for the payment of the applicable monthly working dues and any associated fees uniformly required for union membership in the Union(s). However, there is nothing in this Agreement that would prevent non-union employees from joining the Union(s).

10.3 Authorized representatives of the Union(s) shall have access to the Project site at all times when work is being, has been or will be performed. Such representatives shall comply with the reasonable visitor safety and security rules established for the Project. Access for Union(s) representatives will not be unduly restricted.

10.4 The treatment and payment of stewards shall be in accordance with the applicable MLA.

ARTICLE 11

NO STRIKES - NO LOCKOUTS

- 11.1 During the life of this Agreement, the Unions and their members, agents, representatives and employees shall not incite, encourage, condone or participate in any strike, walkout, slowdown, sit-down, stay-in, boycott, wobble, sympathy strike, picketing or other work stoppage or hand-billing on the Covered Projects for any cause whatsoever, or any other type of interference of any kind, coercive or otherwise, and it is expressly agreed that any such action is a violation of this Agreement.
- 11.1.1 Withholding of employees for failure of a Contractor to meet its weekly payroll is not a violation of this Article 11; however, the Union shall submit documentation of the failure to pay to the Coordinator and shall give the affected Contractor and the Coordinator written notice seventy-two (72) hours prior to the withholding of employees.
- 11.1.2 Should a Contractor performing work for this Project be delinquent in the payment of Trust Fund contributions required under this Agreement with respect to employees represented by the Union, the Union may request, that the Contractor issue joint checks payable to the Contractor and the appropriate employee benefit Trust Fund until such delinquencies are satisfied. Any Trust Fund claiming that a Contractor is delinquent in its fringe benefit contributions to the funds will provide written notice of the alleged delinquency to the affected Contractor, with copies to the General Contractor, the Coordinator and the County. The notice will indicate the amount of delinquency asserted and the period that the delinquency covers. It is agreed, however, with respect to Contractors delinquent in trust or benefit contribution payments, that nothing in this Agreement shall affect normal contract remedies available under the local collective bargaining agreements. If the Contractor is delinquent in the payment of Trust Fund contributions for covered work performed for this Project, the Contractor agrees that the affected Trust Fund may place the County on notice of such delinquencies and the Contractor further agrees that the County may issue joint checks to the Contractor and the Trust Fund until the delinquency is satisfied.
- 11.2 Expiration of Local and Other Applicable Agreements. It is specifically agreed that there shall be no strike, sympathy strike, picketing, lockout, slowdown, withholding of work, refusal to work, walk-off, sick-out, sit-down, stand-in, wobble, boycott or other work stoppage of any kind as a result of the expiration of any local, regional or other applicable labor agreement having application on the Project and/or failure of the parties to that agreement to reach a new contract. If a Master Labor Agreement between a Contractor and the Union expires before the Contractor completes the performance of a construction contract and the Union or Contractor gives notice of demands for a new or modified Master Labor Agreement, the Union agrees that it will not strike or withhold labor from the Contractor for said contract for work covered under this Agreement and the Union

and the Contractor agree that the expired collective bargaining agreement shall continue in full force and effect for work covered under this Agreement until a new or modified Master Labor Agreement is reached between the Union and Contractor. If the Union and Contractors agree to an interim agreement that will apply until a new Master Labor Agreement is reached, then, the Contractor may work under the terms of the interim agreement until a new or modified Master Labor Agreement is reached between the Union and Contractor. If the new or modified Master Labor Agreement reached between the Union and Contractor provides that any terms of compensation of the Master Agreement shall be retroactive, the Contractor agrees to comply with any retroactive terms of the new or modified Master Labor Agreement to its effective date which is applicable to employees who performed work for the project during the interim period. Such compliance shall occur within seven (7) days after notification by the Union.

- 11.3 In consideration of the foregoing, the Contractor shall not incite, encourage or participate in any lockout or cause to be locked out any employee covered under the provisions of this Agreement. The term "lockout" does not refer to the discharge, termination or layoff of employees by the Contractor for any reasons in the exercise of its rights as set forth in any provision of this Agreement, nor does "lockout" include the County's or Contractor's decision to terminate or suspend work for the site or any portion thereof for any reason.
- 11.4 Any employee or employees inciting, encouraging or participating in any strike, slowdown, picketing, sympathy strike or other activity in violation of this Agreement may be subject to immediate discharge and the procedure under this Article 11, if invoked.
- 11.5 Upon written or electronic mail notice of a violation to the Local and/or International Union offices, the Union and its officers shall take immediate action and will use its (their) best efforts to prevent, end or avert any such aforementioned activity or the threat thereof by any of its officers, members, representatives or employees, either individually or collectively, including but not limited to, publicly disavowing any such action and ordering all such officers, representatives, employees or members who participate in such unauthorized activity to cease and desist from same immediately and to return to work and comply with its orders. The Contractor shall have the right, in the event of a work stoppage by the Union to replace the employees represented by the Union in violation of this Agreement. Nothing in this Agreement shall be construed to limit or restrict the right of any of the parties to this Agreement to pursue fully any and all remedies available under law in the event of a violation of this Article 11.
- 11.6 Any party to this Agreement may institute the following binding arbitration procedure when such a breach is alleged. In the event a party institutes this procedure, arbitration shall be mandatory.
 - 11.6.1 The party invoking this procedure shall immediately notify Robert Hirsch, who the parties agree shall be the permanent Arbitrator under this procedure. Thomas Angelo shall serve as alternate in the event that the permanent Arbitrator is unavailable at any time. Notice to the Arbitrator shall be by the most expeditious

means available, with written notice by email or similar means to the party alleged to be in violation and the involved Union General President.

- 11.6.2 Upon receipt of said notice the Arbitrator named above or the alternate shall designate a place for, schedule and hold a hearing within twenty-four (24) hours.
- 11.6.3 The Arbitrator shall notify the parties by electronic mail or similar means of the place and time chosen for the session. A failure of any party or parties to attend said hearing shall not delay the hearing of evidence or issuance of an award by the Arbitrator.
- 11.6.4 The sole issue at the hearing shall be whether or not a violation of this Article has in fact occurred, and the Arbitrator shall have no authority to consider any matter in justification, explanation or mitigation of such violation or to award damages, which issue is reserved for court or other arbitration proceedings, if any. The award shall be issued in writing within three (3) hours after the close of the hearing and may be issued without a written opinion. If any party desires a written opinion, one shall be issued within fifteen (15) days, but its issuance shall not delay compliance with, or enforcement of, the award. The Arbitrator shall order cessation of the violation of this Article and other appropriate relief, and such award shall be served on all parties by hand or registered mail upon issuance.
- 11.6.5 Liquidated Damages. A party found to have violated the provisions of the No Strike-No Lockout section in this Article 11 shall cease such violation within eight (8) hours of the award of the Arbitrator. Should the violation continue past eight (8) hours, the party in violation shall pay to the affected party as liquidated damages either the actual damages incurred or the sum of ten thousand dollars (\$10,000.00) per shift, or portion thereof, whichever is greater, until such violation is ceased. The Arbitrator shall retain jurisdiction to resolve any disputes regarding the liquidated damages claimed under this section.
- 11.6.6 The award shall be final, binding and non-reviewable as to the merits. A judgment of any court of competent jurisdiction shall be entered upon the award, which may be enforced by any such court, upon the filing of this Agreement and all other relevant documents referred to hereinabove in the following manner. Electronic mail or similar notice of the filing of such enforcement proceedings shall be given to the other party. In the proceeding to obtain a temporary order enforcing the Arbitrator's award as issued under subsection 11.6.4 of this Article, all parties waive the right to a hearing and agree that such proceedings may be ex parte. Such agreement does not waive any party's right to participate in a hearing for a final order of enforcement. The Court's order or orders enforcing the Arbitrator's award shall be served on all parties by hand or by delivery to their last known address or by registered mail.

- 11.6.7 Any rights created by statute or law governing arbitration or injunction proceedings inconsistent with the above procedure, or which interfere with compliance therewith, are hereby waived by the parties to whom they accrued.
- 11.6.8 The costs of the arbitration, including the fee and expenses of the Arbitrator, shall be borne equally by the affected Union(s) and the affected Contractors.
- 11.6.9 The procedures contained in this Section 11.6 shall be applicable only to alleged violations of this Article. Discharge or discipline of employees for violation of this Article shall be subject to the grievance and arbitration procedures of Article 23.

ARTICLE 12

MANAGEMENT RIGHTS

- 12.1 The Contractor retains full and exclusive authority for the management of their work forces for all work performed under this Agreement. This authority includes, but is not limited to, the right to:
 - 12.1.1 Plan, direct and control the operation of all the work.
 - 12.1.2 Decide the number and types of employees required to perform the work safely and efficiently. The lawful manning provisions of the applicable Master Collective Bargaining Agreement shall be recognized.
 - 12.1.3 Hire, promote and layoff employees as deemed appropriate to meet work requirements and/or skills required.
 - 12.1.4 Require all employees to observe the County's Project Rules, the Contractor's Project Rules, Security and Safety Regulations, consistent with the provisions of this Agreement. The Contractor's and County's Project Rules and Regulations shall be reviewed and mutually agreed upon at the Pre-Job meeting and supplied to all employees and/or posted on the jobsite.
 - 12.1.5 Discharge, suspend or discipline employees under the applicable MLA.
 - 12.1.6 Assign and schedule work at its sole discretion and determine when overtime will be worked consistent with this Agreement and the applicable MLA.
 - 12.1.7 Utilize any work methods, procedures or techniques and select and use any type or kind of materials, apparatus or equipment regardless of source, manufacturer or designator and in accordance with this Agreement, which covers the fabrication provisions and any other conflicts that are addressed in this Agreement.

- 12.2 The foregoing listing of management rights shall not be deemed to exclude other functions not specifically set forth herein. The Contractors, therefore, retain all legal rights not specifically enumerated in this Agreement.

ARTICLE 13

WORK RULES

- 13.1 Work Rules shall be governed by the applicable MLA for each craft.

ARTICLE 14

WAGE SCALES and FRINGE BENEFITS

- 14.1 All employees covered by this Agreement shall be classified and paid in accordance with the classification and wage scales contained in the appropriate MLAs which have been negotiated by the historically recognized bargaining parties and in compliance with the applicable general prevailing wage determination made by the Director of Industrial Relations pursuant to the California Labor Code.
- 14.2 For the duration of its work on this Project, the Contractors agree to recognize and put into effect such increases in wages and recognized fringe benefits as shall be negotiated between the various Union(s) and the historically recognized local bargaining parties on the effective date as set forth in the applicable MLA. The Union(s) shall notify the Contractors in writing of the specific increases in wages and recognized fringe benefits and the date on which they become effective.
- 14.3 The Contractors hereby adopt and agree to be bound by the written terms of the legally established Trust Agreements specifying the detailed basis on which payments are to be made into, and benefits paid out of, such appropriately qualified employee fringe benefit funds established by such appropriate Trust Agreements. The Contractors authorize the parties to such Trust Agreements to appoint Trustees and successor Trustees to administer the trust funds, and hereby ratify and accept the Trustees so appointed as if made by the Contractors.
- 14.4 If a Contractor fails to pay wages or benefits, the County agrees to honor a properly submitted, legally enforceable Stop Payment Notice.

ARTICLE 15

HOURS OF WORK, OVERTIME, SHIFTS and HOLIDAYS

- 15.1 The hours of work, establishment of overtime and the establishment of shifts and shift pay shall be governed by the applicable MLA for each craft and in accordance with the current General Prevailing Wage Determination made by the Director of Industrial Relations pursuant to the California Labor Code. It is understood that the County may, at its discretion, establish a uniform starting time and/or ending time.
- 15.2 Holidays and designated days off will be in compliance with the applicable General Prevailing Wage Determination made by the Director of Industrial Relations pursuant to the California Labor Code, unless otherwise set forth in the MLA.

ARTICLE 16

HEALTH AND SAFETY

- 16.1 The employees covered by the terms of this Agreement shall at all times, while in the employ of the Contractor, be bound by the safety rules and regulations as established by the County and Contractors and in accordance with OSHA/Cal-OSHA. These rules and regulations will be published and posted at conspicuous places throughout the Project site.
- 16.2 In accordance with the requirements of OSHA/Cal-OSHA, it shall be the exclusive responsibility of each Contractors working on the Project to assure safe working conditions for its employees and compliance by them with any safety rules contained herein or established by the Contractors or the County. Nothing in this Agreement shall in any way be construed to make the Union(s), the County, liable for safety violations on the Project.
- 16.3 The parties agree to abide by the substance abuse policies contained in the applicable MLA, subject to the Article 12. Should the County decide that there is a need for an OCIP on a Covered Project, the parties mutually agree to the side letter attached.

ARTICLE 17

LOCAL HIRING PROGRAM

- 17.1 The Parties agree to achieve the inclusion of Residents in the employment and apprenticeship opportunities created by the Covered Work, which will be known as the Local Hiring Program (LHP). With day-to-day support from the Coordinator, the Joint

Administrative Committee (JAC) formed pursuant to the provisions of Article 8 shall monitor the progress of the LHP and will serve as the central forum for representatives of all interested or affected parties to exchange information and ideas and to advise the County staff and the Coordinator concerning the operation and results of the LHP and the ongoing role of this Project Stabilization/Community Benefits Agreement as an integral component of LHP. As part of these responsibilities, the JAC will assess the obstacles to success of achieving inclusion of local Residents in the construction opportunities and shall make recommendations for a program to overcome some of those obstacles.

- 17.2 The parties agree to a goal that Residents of the County will perform up to 40 percent (40%) of all hours worked on all covered projects, on a craft-by-craft basis, if such workers are available, capable and willing to work on the projects, together with the apprentice goals established in Article 18, below.
- 17.3 The Contractors shall make good faith efforts to reach these goals, as described in Article 17.4 below and to reach these goals working through the normal hiring hall procedures listed in the MLA and the procedures identified in Article 18.4 and the County and Unions shall make good faith efforts to assist the Contractor in reaching this goal. In cases of alleged noncompliance, the issue may be referred to the Coordinator and then to the JAC for resolution. If the JAC can make no resolution, the issue may then be referred to Step 4 of Section 23.2.2 of the grievance procedure described in Article 14 for submission to an arbitrator for a final and binding determination. For purposes of resolution of any dispute arising under this Section or Article 18.4, the County shall be considered a party-in-interest with full right of participation in the arbitration proceeding.
- 17.4 The Contractors must take, and require their subcontractors to take, the following good faith steps to demonstrate that they have made every effort to reach the Local Hiring Goals:
- 17.4.1. The Contractors shall attend the scheduled pre-job meetings identified in Article 7. At this meeting, the Contractor must submit written workforce projections and projected man-hours on a craft-by-craft basis, consistent with the Contractor's bid proposal. In the event the pre-job meeting is waived, the Contractor must submit written workforce projections to the Coordinator within five (5) days.
- 17.4.2 Within one week of the issuance of the Notice to Proceed, the Contractors shall meet with the Coordinator to review and approve its compliance plan for reaching the Local Hiring Goals, using the required compliance plan form provided by the County.
- 17.4.3 The Contractors shall submit copies of hiring hall dispatch requests and responses to the Coordinator within ten (10) days of Coordinator's request at any point during the execution of the Project.
- 17.4.4 The Contractors shall immediately contact the Coordinator if a union hiring hall dispatcher will not or cannot, upon request of the Contractor, dispatch local

Residents.

- 17.4.5 The Contractors shall use the "Name Call," "Rehire" or other available hiring hall procedures to reach goals and shall provide documentation of such requests to the Coordinator upon request per subsection 17.4.3.
- 17.4.6 The Contractors shall use community based organizations as a resource for local labor resources, if a union will not or cannot provide local Residents as requested, and in conformity with the collectively bargained union hiring hall agreement.
- 17.4.7 The Contractors shall sponsor local Residents as defined herein for apprenticeship, when possible.
- 17.4.8 The Contractors shall maintain records for each Resident of Alameda County who was referred but not hired along with an explanation why the worker was not hired. Upon request, such records shall be made available for review by the County, Coordinator, and JAC for the duration of the Covered Projects.
- 17.4.9 The Contractors shall document participation in any local employment training programs and submit documentation of such to the Coordinator within ten (10) days if requested by Coordinator.
- 17.5 The Unions will exert their utmost efforts to recruit sufficient numbers of skilled craft persons who are Residents to fulfill the requirements of the Contractors. The parties to this Agreement support the development and placement of increased numbers of skilled construction workers from the Residents within the County to meet the needs of the covered project and the requirements of the industry generally.
- 17.6 To the extent possible, the parties agree to implement the Local Hiring Program while complying with the County's Local Vendor Preference and Enhanced Construction Outreach (ECOP) programs for the covered project. To the extent that the County determines, in its sole discretion, that there is a conflict between the Local Hiring Program established in this Agreement and the County's SLEB, ECOP, and/or Local Vendor Preference Programs, the conflict shall be resolved in favor of the Local Hiring Program on the construction work covered by this Agreement.
- 17.7 For the purposes of reaching the goal established in Article 17.2, a Contractor may qualify for full credit toward the goal by employing Alameda County Residents for other work the Contractor is performing in any of the nine Bay Area counties of: Alameda, Contra Costa, San Francisco, San Mateo, Santa Clara, Marin, Solano, Napa and Sonoma. Credit will only be given for work performed during the life of the Covered Project. In order to receive such credit, the Contractor must submit certified payrolls as documentation to the Coordinator. No credit for off-site work will be allowed until the Contractor has demonstrated a good faith effort to reach the goal on the Covered Projects and has received approval from the JAC.

ARTICLE 18

APPRENTICES

- 18.1 Recognizing the need to maintain continuing support of programs designed to develop adequate numbers of competent apprentice workers in the construction industry, the Contractors will make a good faith effort to employ apprentices in the respective crafts to perform such work as is within their capabilities and which is customarily performed by the craft in which they are indentured.
- 18.2 For the purpose of meeting the goals of this Article 18, the parties recognize State-approved apprenticeship training programs administered by Joint Labor/Management Apprenticeship Training Committees (JATC) as the sole source for an eighteen month trial period. If after the eighteen month trial period, it has been demonstrated that the JATCs are unable to provide sufficient Residents to meet the established goals, the parties to this agreement will meet to negotiate implementation strategies to meet the established goals. If resolution is not reached within six months, then the parties may refer the item to the grievance procedure as outlined in Article 23.
- 18.3 The Signatory parties agree that the County shall make available to the Unions a database of apprentices qualifying under the local hiring provisions of this Agreement. The Signatory Unions agree to report in accordance within any limits set by applicable labor law, the availability and dispatch/placement of qualifying apprentices. The reports will be submitted to the Coordinator on at least a quarterly basis and more often, if requested and possible.
- 18.4 For each Covered Project, the Contractors will be responsible to ensure that it and/or its subcontractors hire at least one (1) new apprentice for the first \$1 million of construction value and for each succeeding \$5 million of construction contract value, the Contractors and/or their subcontractors will be required to hire at least one (1) additional new apprentice. All such apprentices may be graduates of pre apprenticeship programs with a known and successful track record of apprentice placement into jobs. All the pre apprenticeship program graduates must be Residents of Alameda County and members of a Disadvantaged Population, as described in Article 1.
- 18.4.1. Contractors will make a good faith effort to maximize the project work hours for the new hire apprentices, and shall report those hours to the JAC, which will evaluate those good faith efforts.
- 18.4.2 Each Signatory Union will be responsible for dispatching/referring such County Residents to the contractor if they are available, capable and willing to work on the Covered Projects. No one trade can be used to satisfy the goal by the provision of more than two (2) such first stage apprentices, unless required by the nature of the work and or agreed upon by the JAC.

- 18.4.3 The Signatory Unions and Contractors shall exercise, to the extent of their authority, their best efforts to recruit apprenticeship program applicants from Residents and who are members of a Disadvantaged Population, as defined in Article 1. Further, for apprentices hired to comply with Article 18.4, there will be no limitation on where such apprentices will work subsequent to being hired for the Covered Projects. Contractors will be allowed to receive credit for Article 18.4 when utilizing apprentices for non-Project work during the life of the Covered projects, regardless of the location of the work as long as it is in the nine (9) Bay Area counties described in Article 18.4.5.
- 18.4.4 The Contractor shall request dispatch of apprentices in writing from the local Unions and/or Joint Apprenticeship Training Committee in which the Contractor participates. Copies of the written requests shall be provided to the Coordinator within ten (10) days of request by the Coordinator. The Unions shall honor all Contractor dispatch requests for such Apprentices.
- 18.4.5 For the purposes of meeting the goal established in Section 18.4, a Contractor may qualify for full credit toward the goal by employing Alameda County Residents as apprentices for other work the Contractor is performing in any of the nine Bay Area counties of: Alameda, Contra Costa, San Francisco, San Mateo, Santa Clara, Marin, Solano, Napa and Sonoma. Credit will only be given for work performed during the life of the Covered projects. In order to receive such credit, the Contractor must submit certified payrolls as documentation to the Coordinator. No credit for non-Covered Projects work will be allowed until the Contractor has demonstrated a good faith effort to reach the goal on the Covered projects and has received approval from the JAC.
- 18.5 The Unions will cooperate with the County, the Contractors, and the Coordinator in conducting outreach activities to recruit and refer qualified Alameda County Resident applicants to apprenticeship programs. In addition, the Unions will work with designated pre-apprenticeship programs to promote graduates and enhance their entry into the Apprenticeship programs.
- 18.6 To the extent permitted by law and the JATC requirements, the Unions will give credit to bona fide, provable past experience to applicants, including work for non-union Contractors who become signatory to the PS/CBA. The experience and practical knowledge of applicants will be reviewed and tested by the applicable Joint Apprenticeship Training Committee. Applicants will be placed at the appropriate stage of apprenticeship or journey level as the case may be. Final decisions will be the responsibility of the applicable Joint Apprenticeship Training Committee.

ARTICLE 19

REFERRAL PROCESS

- 19.1 The Union(s) shall be the primary source of all craft labor employed on the Project. However, in the event that a Contractor has its own core workforce, the Contractors may request by name, and the Union(s) shall honor, referral of persons who have applied to the local union for Project work and who demonstrate the following qualifications ("Core Employees"):
- 19.1.1 possess any license and/or certifications required by state or federal law for the Project work to be performed;
 - 19.1.2 have worked a total of at least one thousand (1,000) hours in the construction craft during the prior three (3) years;
 - 19.1.3 were on the Contractors' active payroll for at least sixty (60) out of the one hundred forty (140) calendar days prior to the contract award; and
 - 19.1.4 have the ability to perform safely the basic functions of the applicable trade.
 - 19.1.5 be a resident of Alameda County at least six months prior to the hire date.
- 19.2 In the case of a Sole Proprietor/Owner Operator that is self-performing work, this Sole Proprietor/Owner Operator is not required to request a dispatch from the union hall. Sole Proprietors/Operators must be certified as such by some public agency acceptable to the County and the affected signatory unions. If the Sole Proprietor/Owner Operator hires employees subsequent to starting work on Covered Projects, all such employees would need to be requested from the union hall as described in subsection 19.3 below
- 19.3 The Union(s) will first refer to such Contractors one journeyman employee from the hiring hall out-of-work list for the affected trade or craft, and will thereafter refer one of such Contractors' "core" employees as a journeyman and shall repeat the process, one and one, until such Contractors' crew requirements are met or until such Contractors have hired no more than five (5) Core Employees, whichever occurs first. Thereafter, all additional employees shall be hired exclusively from the Union(s)' hiring hall out-of-work list(s). For the duration of the Contractors' work the ratio shall be maintained and when the Contractors' workforce is reduced, Employees shall be laid off in the same ratio of core employees to hiring hall referrals as was applied in the initial hiring. Contractors signatory to a Local, Regional, and/or National collective bargaining agreement(s) with Signatory Union(s) hereto shall be bound to use the hiring hall provisions contained in the relevant MLA of the affected Union(s), and nothing in the referral provisions of this Agreement shall be construed to supersede the local hiring hall provisions of the MLAs as they relate to such Contractors.

- 19.4 For purposes relating to "Owner/Operators" used for the hauling of workers and materials, including water or oil. It is agreed that the Owner/Operator doing such hauling work may be dispatched to the job first (as a core employee) provided that such Owner/Operator has complied with and completed all registration requirements with the Union prior to dispatch.
- 19.5 All Contractors shall be bound by and utilize the registration facilities and referral systems established or authorized by the Signatory Union(s) so long as such procedures are in compliance with applicable federal, state or local law. The Contractor shall have the right to determine the competency of all employees and may reject any referral for any reason, provided that the Contractor complies with Article 22, Non-Discrimination, and in accordance with the applicable MLA.
- 19.6 In accordance with the Master Labor Agreement and in the event that referral facilities maintained by the Union(s) are unable, despite good faith efforts, to fill the request of a Contractor for employees within a forty-eight (48) hour period after such request is made by the Contractor, Saturdays, Sundays and Holidays excluded, the Contractor shall be free to obtain work persons from any source ("Alternative Employees"). Upon hiring Alternative Employees, the Contractor shall immediately notify the appropriate Union(s) of the name and address of the Alternative Employees hired, which Alternative Employees shall be bound by the provisions of this Article and the Union(s)' hiring hall rules.
- 19.7 The Union(s) will exert their utmost efforts to recruit sufficient numbers of skilled craft persons to fulfill the requirements of the Contractors. The parties to this Agreement support the development of increased numbers of skilled construction workers from the Residents of Alameda County to meet the needs of the Project and the requirements of the industry generally. Accordingly, contingent upon request by the Contractor, the Unions agree to encourage the referral and utilization of Residents as journeyman and apprentices on the Project and the entrance of Residents into apprenticeships and training programs, as long such Residents possess the requisite skills and qualifications.

ARTICLE 20

DATA COLLECTION AND REPORTING

- 20.1 This article describes data collection, reporting guidelines and responsibilities for parties signatory to the PSCBA.
- 20.2 The County shall be responsible for collecting and maintaining accurate data on the availability of the Disadvantaged Population Residents available, capable and willing to work on Projects. This data will be made available and accessible to the Union.
- 20.3 On a monthly basis, Contractors must submit reports on the status and progress of local hiring on a craft by craft basis, including utilization of apprentices.

- 20.4 The signatory Unions agree to report in accordance with any limits set by applicable labor law, the availability and dispatch/placement of apprentices. These reports will be submitted to the Coordinator on at least a quarterly basis and more often, if requested and possible.
- 20.4.1 In advance of pre-job meetings, the Union shall assist the Coordinator with developing a current list of Disadvantaged Population first stage apprentices available to work on the project.
- 20.4.2 At pre-job meetings, the Coordinator shall supply contractors with a current list of Disadvantaged Population apprentices and their status of completion of their apprenticeship.
- 20.4.3 On a quarterly basis, the Union shall provide the County and Coordinator a report on the status of Disadvantaged Population apprentices, including but not limited to their placement and advancement
- 20.5 On an annual basis, the Union, County and Coordinator shall provide a report for the Board of Supervisor's review as described and required in Article 27.1. This report shall include but not be limited to the local hiring and apprentice goal performance, as well as challenges and benefits of the PSCBA.

ARTICLE 21

HELMETS TO HARDHATS: VETERAN EMPLOYMENT

- 21.1 The Contractors and the Unions recognize a desire to facilitate the entry into the building and construction trades of veterans who are interested in careers in the building and construction industry. The Contractors and Unions agree to utilize the services of the Center for Military Recruitment, Assessment and Veterans Employment (hereinafter "Center) and Center's "Helmets to Hardhats" program to serve as a resource for preliminary orientation, assessment of construction aptitude, referral to apprenticeship programs or hiring halls, counseling and mentoring, support network, employment opportunities and other needs as identified by the Contractors and the Unions.
- 21.2 The Unions and Contractors agree to coordinate with the Center to create and maintain an integrated database of veterans interested in working on the Project and of apprenticeship and employment opportunities for this Project. To the extent permitted by law, the Unions will give credit to such veterans for bona fide, provable past experience.
- 21.3 The Contractors may also utilize the services of the "Swords to Ploughshares" program.

ARTICLE 22

NON-DISCRIMINATION

- 22.1 The Unions and Contractors shall not discriminate against any employee or applicant for employment because of race, creed, color, sex, actual or perceived sexual orientation, national origin, age, religion, political affiliation, or membership or non-membership in labor organization union activity, military veteran status, and disability as identified in the Americans With Disabilities Act, or any other basis recognized by law.

ARTICLE 23

GRIEVANCE PROCEDURE

- 23.1 All disputes concerning the interpretation and/or application of this Agreement that do not fall within the Article 11 No-Strike/No-Lockout procedure, Article 6 Work Assignments and Jurisdictional Disputes, Article 17 Local Hiring Program, or Article 18 Apprentices, shall be governed by the following grievance and arbitration procedure.
- 23.2 Grievances between one or more Union(s) and one or more Contractor regarding interpretation and/or application of this Agreement shall be pursued according to the following provisions:
- 23.2.1 A grievance shall be considered null and void if not brought to the attention of the Contractors or the Union(s) within ten (10) working days after the grievance is alleged to have occurred but in no event more than thirty (30) days after the charging party became aware of the event giving rise to the dispute.
- 23.2.2 Grievances between one or more Union(s) and one or more Contractors regarding provisions of this Agreement shall be settled or otherwise resolved according to the following Steps and provisions:
- Step 1: The Contractors or the Union(s)' representative and the grievant shall attempt to resolve the grievance with the craft supervisor or Steward.
- Step 2: In the event the matter remains unresolved in Step 1 above, within five (5) working days, the grievance shall be reduced to writing and may then be referred by the Contractors or Union(s) to the grievant for discussion and resolution.
- Step 3: In the event that the representatives are unable to resolve the dispute within the five (5) working days after its referral to Step 2, either involved party may submit it within five (5) working days to the Joint Administrative Subcommittee, established in Section 10.2, which shall meet within five (5)

working days after such referral (or such longer time as is mutually agreed upon by the representatives on the Joint Administrative Subcommittee) to confer in an attempt to resolve the grievance. Regardless of which party has initiated the grievance proceeding, prior to the meeting of the Joint Administrative Subcommittee, the Union shall notify its international union representative(s), which shall advise both parties if it intends on participating in the meeting. The participation by the International Union Representative in this Step 3 meeting shall not delay the time set herein for the meeting, unless otherwise mutually agreed by the parties. Decisions by the Joint Administrative Subcommittee shall be by majority vote with such resolutions to be final and binding on all signatories of the Agreement. If the dispute is not resolved by the Joint Administrative Subcommittee, it may be referred within five (5) working days by either party to Step 4.

Step 4: In the event the matter remains unresolved in Step 3, either Party may request, within five (5) working days, that the dispute be submitted to arbitration. The time limits set out in this procedure may, upon mutual agreement, be extended. Any request for arbitration, request for extension of time limits, and agreement to extend such time limits shall be in writing.

Step 5: Within seven (7) calendar days after referral of dispute in Step 4, the parties shall choose an arbitrator for final and binding arbitration. The parties agree that an arbitrator shall be selected by the alternate striking method from the following list. The party who shall strike the first name shall be selected by the toss of a coin (1) Carol Isen (2) Barbara Kong-Brown (3) Thomas Angelo (4) Robert Hirsch (5) William Ricker. Should a Party to the procedure fail or refuse to participate in the hearing, if the Arbitrator determines that proper notice of the hearing has been given, said hearing shall proceed to a default award. The Arbitrator's award shall be final and binding on all Parties to the arbitration. The costs of the arbitration, including the arbitrator's fee and expenses, shall be borne equally by the Parties. The Arbitrator's decision shall be confined to the question(s) posed by the grievance and the Arbitrator shall not have authority to modify amend, alter, add to, or subtract from, any provisions of this Agreement.

23.3 Grievances raised by County against one or more Union(s) and/or the Building Trades Council, or against the County by one or more Union(s) and/or the Building Trades Council, regarding provisions of this Agreement, shall be settled or otherwise resolved according to the following Steps and provisions:

23.3.1. A grievance shall be considered null and void if not brought to the attention of the County or the Union(s) within ten (10) working days after the grievance is alleged to have occurred but in no event more than ten (10) days after the charging party became aware of the event giving rise to the dispute.

Step 1: The County/Union(s) Joint Administrative Subcommittee shall attempt to resolve the grievance. The County/Union(s) Joint Administrative Subcommittee shall meet within five (5) working days after receipt of the grievance (or such longer time as is mutually agreed upon by the representatives on this Joint Administrative Subcommittee) to confer with regard to the grievance. Decisions by the Joint Administrative Subcommittee shall be by majority vote with such resolutions to be final and binding on all signatories of the Agreement. If the dispute is not resolved by the Joint Administrative Subcommittee, within the five (5) working days after meeting on the grievance, either involved party may proceed to Step 2.

Step 2: In the event the matter remains unresolved pursuant to Step 2, either Party may request that the dispute be submitted to arbitration. The time limits set out in this procedure may, upon mutual agreement, be extended. Any request for arbitration, request for extension of time limits, and agreement to extend such time limits shall be in writing.

Step 3: Within seven (7) calendar days after referral of dispute in Step 2, the parties shall choose an arbitrator for final and binding arbitration. The parties agree that an arbitrator shall be selected by the alternate striking method from the following list. The party who shall strike the first name shall be selected by the toss of a coin (1) Carol Isen (2) Barbara Kong-Brown (3) Thomas Angelo (4) Robert Hirsch (5) William Ricker. Should a Party to the procedure fail or refuse to participate in the hearing, if the Arbitrator determines that proper notice of the hearing has been given, said hearing shall proceed to a default award. The Arbitrator's award shall be final and binding on all Parties to the arbitration. The costs of the arbitration, including the arbitrator's fee and expenses, shall be borne equally by the Parties. The Arbitrator's decision shall be confined to the question(s) posed by the grievance and the Arbitrator shall not have authority to modify amend, alter, add to, or subtract from, any provisions of this Agreement.

23.4 Where an issue is addressed in this Agreement and an MLA, this Agreement shall prevail. Where an issue is addressed in an MLA and not in this Agreement, the MLA shall control.

23.5 Grievances between a Union(s) and a Union(s)' signatory contractor involving interpretation or application of the Master Agreement shall be governed by the grievance procedures contained in the Master Agreement.

ARTICLE 24

MISCELLANEOUS PROVISIONS

- 24.1 Counterparts. This Agreement may be executed in counterparts, such that original signatures may appear on separate pages, and when bound together all necessary signatures shall constitute an original. Facsimile signature pages transmitted to other parties to this Agreement shall be deemed equivalent to original signatures.
- 24.2 Warranty of Authority. Each of the persons signing this Agreement represents and warrants that such person has been duly authorized to sign this Agreement on behalf of the party indicated, and each of the parties by signing this Agreement warrants and represents that such party is legally authorized and entitled to enter into this Agreement.
- 24.3 Ratification by Governing Board. This Agreement shall not be binding on the County until it is ratified by the Board of Supervisors.

ARTICLE 25

ENTIRE AGREEMENT

- 25.1 This Agreement represents the complete understanding of the parties. The provisions of this Agreement, including the MLAs, shall in every instance exclusively apply to and control work performed on the Project. The provisions of this Agreement shall take precedence over provisions of local, area, regional or national labor agreements. Nothing contained in the MLAs, working rules, by-laws, constitution and other similar documents of the Unions, shall in any way affect, modify or add to this Agreement unless otherwise specifically indicated in this Agreement or mutually agreed to in writing and executed by the parties. Practices not part of the terms and conditions of this Agreement shall not be recognized.
- 25.2 The Unions agree that this Agreement covers all matters affecting wages, hours and other terms and conditions of employment, and that during the terms of this Agreement, neither the Contractors, nor the Unions will be required to negotiate on any further matters affecting these or any other subject not specifically set forth in this Agreement except by mutual agreement of the Unions involved and the County.
- 25.3 The parties to this Agreement understand and agree that nothing in this Agreement shall supersede or take precedence over any Board policy or requirement including, but not limited to, the construction contract, contract documents, project manual, and general conditions for the Project.
- 25.4 Provisions negotiated into any new or modified MLA which are less favorable to the Contractor shall not apply to work covered by this Agreement. Any disagreement between the parties regarding the application of the provisions of any new or modified

MLA shall be resolved under the dispute and grievance arbitration procedures set forth in Article 23.

- 25.5 This Agreement may be executed in counterparts, such that the original signatures may appear on separate pages and when bound together all necessary signatures shall constitute an original. Facsimile signature pages transmitted to other parties to this Agreement shall be deemed the equivalent to original signatures.

ARTICLE 26

GENERAL SAVINGS CLAUSE

- 26.1 It is not the intention of the parties to violate any laws governing the subject matter of this Agreement. If any Article or provision of this Agreement shall be declared invalid, inoperative, or unenforceable by any competent authority of the executive, legislative, judicial or administrative branch of the federal, state or local government, the parties shall suspend the operation of each such article or provision during the period of invalidity. Such suspension shall not affect the operation of any provision covered in this Agreement to which the law or regulation is not applicable. Further, parties agree that if and when any or all provisions of this Agreement are finally held or determined to be illegal or void by a Court of competent jurisdiction, the parties will promptly enter into negotiations concerning the substance affected by such decision for the purpose of achieving conformity with the requirements of an applicable law and the intent of the parties hereto.

ARTICLE 27

DURATION OF AGREEMENT

- 27.1 This Agreement shall become effective on the day the County Board of Supervisors ratifies this Agreement and shall continue in full force and effect for 3 years. In the event that either party wishes to amend, modify or otherwise alter this Agreement at the end of three (3) years, written notice shall be delivered between sixty (60) and thirty (30) days prior to expiration. If neither party provides said written notice, this Agreement shall remain in effect for an additional two (2) years. At the end of a total of five (5) years, if parties so desire they may enter negotiations for a new Agreement or an extension to be determined. There shall be an annual report with a presentation to the County Board of Supervisors prepared by the General Services Agency in collaboration with other applicable County Departments.

SIGNATURES

County of Alameda

By: _____
President, Board of Supervisors

Approved as to Form:
Donna R. Ziegler, County Counsel

By: Quarrey Baman
Deputy County Counsel

Building & Construction Trades Council of Alameda County:

By: Andreas Cluver
Andreas Cluver, Secretary-Treasurer

Signatory Unions:

Asbestos Workers, Local 16

By: Phil Berman

Boilermakers, Local 549

By: Michael D. [Signature]

Bricklayers & Allied Craftsmen, Local 3

By: Greg [Signature]

**Northern California Carpenters
Regional Council (on behalf of Carpenters,
Local 713, Carpenters, Local 2236, Lathers,
Local 68L, Millwrights, Local 102,
Pile Drivers, Local 34)**

By: [Signature]

Cement Masons, Local 300

By: 

Electrical Workers, Local 595

By: 

Elevator Constructors, Local 8

By: _____

Hod Carriers, Local 166

By: 

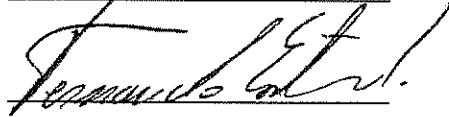
Iron Workers, Local 378

By: 

Laborers, Local 67

By: 

Laborers, Local 304

By: 

Operating Engineers, Local 3

By: _____


Plasterers, Local 66

By: 

Roofers, Local 81

By: 

Sheet Metal Workers, Local 104

By: 

Sign Display, Local 510

By: _____

Sprinkler Fitters, Local 483

By: 

Teamsters, Local 853

By: 

United Association of Journeymen and
Apprentices Fitting Industry, Underground
Utility & Landscape, Local 355

By: 

Cement Masons, Local 300	By: _____
Electrical Workers, Local 595	By: <u>John K. Chen</u>
Elevator Constructors, Local 8	By: _____
Hod Carriers, Local 166	By: <u>Earl Nelson</u>
Iron Workers, Local 378	By: <u>John P. Green</u>
Laborers, Local 67	By: <u>John P. Green</u>
Laborers, Local 304	By: <u>Fernando Estrada</u>
Operating Engineers, Local 3	By: _____
Plasterers, Local 66	By: _____
Roofers, Local 81	By: <u>Douglas Ziegler</u>
Sheet Metal Workers, Local 104	By: <u>Tom Wood</u>
Sign Display, Local 510	By: <u>Joseph B. Toback</u>
Sprinkler Fitters, Local 483	By: _____
Teamsters, Local 853	By: _____
United Association of Journeymen and Apprentices Fitting Industry, Underground Utility & Landscape, Local 355	By: <u>Miguel Duran</u>

United Association of Steamfitters,
Pipefitters, Plumbers, & Gas
Fitters, Local 342

By: Michael Hernandez

District Council No. 16 Northern
California International Union of
Painters & Allied Trades (on behalf of
Auto & Marine Painters, Local 1176,
Carpet & Linoleum Layers, Local 12,
Glaziers, Architectural Metal
& Glassworkers, Local 169,
Painters & Tapers, Local 3

By: _____

EXHIBIT A (Letter of Assent)

PROJECT STABILIZATION/COMMUNITY BENEFITS AGREEMENT

for the

**COUNTY OF ALAMEDA
CONTRACTOR AGREEMENT TO BE BOUND**

The undersigned, as a Contractor or Subcontractor (CONTRACTOR) on the County of Alameda, (hereinafter PROJECTS), for and in consideration of the award to it of a contract to perform work on said PROJECTS, and in further consideration of the mutual promises made in the "Project Stabilization/Community Benefits Agreement for the County of Alameda Project" (hereinafter AGREEMENT), a copy of which was received and is acknowledged, hereby:

- (1) Accepts and agrees to be bound by the terms and conditions of the AGREEMENT, together with any and all amendments and supplements now existing or which are later made thereto;
- (2) The CONTRACTOR agrees to be bound by the legally established local trust agreements as set forth in Article 14 of this AGREEMENT.
- (3) The CONTRACTOR authorizes the parties to such local trust agreements to appoint trustees and successor trustees to administer the trust funds and hereby ratifies and accepts the trustees so appointed as if made by the CONTRACTOR;
- (4) Certifies that it has no commitments or agreements which would preclude its full and complete compliance with the terms and conditions of said AGREEMENT.
- (5) Agrees to secure from any CONTRACTORS (as defined in said AGREEMENT) which is or becomes a Subcontractor (of any tier) to it, a duly executed Agreement to be Bound in form identical to this document.

Dated: _____

(Name of Contractor)

(Name of Prime Contractor or Higher
Level Subcontractor)

(Authorized Officer & Title)

CA Number _____

(Address)

Contract Or Project # _____

(Phone) (Fax)

MEMORANDUM OF UNDERSTANDING

**COUNTY OF ALAMEDA
PROJECT STABILIZATION/COMMUNITY BENEFIT AGREEMENT**

Notwithstanding any provision to the contrary in the County of Alameda Project Stabilization/Community Benefit Agreement ("Project Stabilization Agreement"), this memorandum will confirm that work covered by the Project Stabilization/Community Benefits Agreement within the craft jurisdiction of the Elevator Constructors will be performed under the terms of the National Agreement of the International Union of Elevator Constructors, except that Articles 6,11 and 23 of the Project Stabilization Agreement will apply to such work.

County of Alameda

INTERNATIONAL UNION OF
ELEVATOR CONSTRUCTORS
LOCAL UNION NO. 8

President, Board of Supervisor

Eric W. McCloud

Date _____

Date 5-20-2013

Approved as to Form:

Donna R. Ziegler, County Counsel

By: Quarrey Beaman
Deputy County Counsel

MEMORANDUM OF UNDERSTANDING

**COUNTY OF ALAMEDA
PROJECT STABILIZATION/COMMUNITY BENEFIT AGREEMENT**

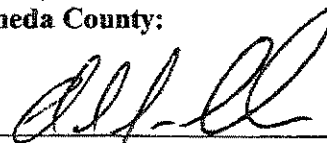
In the event the County decides to cover any given Project with an Owner Controlled Insurance Program (OCIP) during the life of the PS/CBA, the following language will apply:

The County intends to implement an OCIP, or wrap up insurance, on the Project. All Contractors and employees performing work on the Project, and not otherwise excluded from the OCIP; will be bound by the requirement of the OCIP Safety Manual; provided however, discipline imposed for alleged violations of the OCIP Safety Manual is subject to the Grievance procedures in Article 23. Any drug testing protocol established by the Contractor for the Project shall satisfy the requirements of the OCIP Safety Manual and be consistent with the MLAs. In the event that there is a conflict between the MLAs and the OCIP requirements, the OCIP requirements shall prevail.

County of Alameda

**Building & Construction Trades Council of
Alameda County:**

By: _____
President, Board of Supervisor

By: 
Andreas Cluver, Secretary-Treasurer

Date _____

Date 5/21/13

Approved as to Form:
Donna R. Ziegler, County Counsel

By: _____
Deputy County Counsel

MEMORANDUM OF UNDERSTANDING

**COUNTY OF ALAMEDA
PROJECT STABILIZATION/COMMUNITY BENEFIT AGREEMENT**

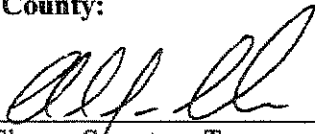
The parties agree that the PLA to which this letter is addended shall not apply to any contracts entered into by the Alameda County Public Works Agency for a period of three years from the effective date of the PLA, except that any and all trucking, as described in Article 5.4 of said PLA, shall be covered by the PLA.

Any disputes concerning the interpretation and or application of this side letter shall be subject to the dispute resolution process set forth in Article 23 of the PLA.

County of Alameda

**Building & Construction Trades Council of
Alameda County:**

By: _____
President, Board of Supervisor

By:  _____
Andreas Cluver, Secretary-Treasurer

Date _____

Date 5/21/13

Approved as to Form:
Donna R. Ziegler, County Counsel

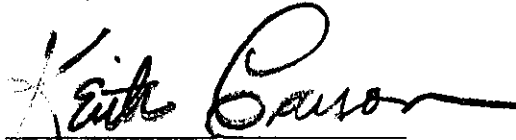
By: _____
Deputy County Counsel

MEMORANDUM OF UNDERSTANDING

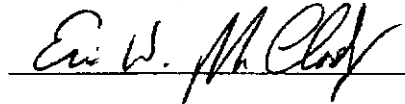
**COUNTY OF ALAMEDA
PROJECT STABILIZATION/COMMUNITY BENEFIT AGREEMENT**

Notwithstanding any provision to the contrary in the County of Alameda Project Stabilization/Community Benefit Agreement ("Project Stabilization Agreement"), this memorandum will confirm that work covered by the Project Stabilization/Community Benefits Agreement within the craft jurisdiction of the Elevator Constructors will be performed under the terms of the National Agreement of the International Union of Elevator Constructors, except that Articles 6,11 and 23 of the Project Stabilization Agreement will apply to such work.

County of Alameda


President, Board of Supervisor

INTERNATIONAL UNION OF
ELEVATOR CONSTRUCTORS
LOCAL UNION NO. 8



Date 1 JUN 11 2013

Date 5-20-2013

Approved as to Form:

Donna R. Ziegler, County Counsel

By: 
Deputy County Counsel

DOCUMENT 00 73 56

HAZARDOUS MATERIALS
PROCEDURES & REQUIREMENTS

1. Summary

This document includes information applicable to hazardous materials and hazard waste abatement.

2. Notice of Hazardous Waste or Materials Conditions

- 2.1. Contractor shall give notice in writing, including by e-mail, to the County, the Construction Manager, and the Architect promptly, before any of the following conditions are disturbed, and in no event later than twenty-four (24) hours after first observance, of any:
 - 2.1.1. Material that Contractor believes may be material that is hazardous waste or hazardous material, as defined in section 25117 or 25260 of the Health and Safety Code, that is required to be removed to a Class I, Class II, or Class III disposal site in accordance with provisions of existing law;
 - 2.1.2. Other material that may present a substantial danger to persons or property exposed thereto in connection with Work at the site.
- 2.2. Contractor's written notice shall indicate whether the hazardous waste or material was shown or indicated in the Contract Documents to be within the scope of Work, and whether the materials were brought to the site by Contractor, its Subcontractors, suppliers, or anyone else for whom Contractor is responsible. As used in this section the term "hazardous materials" shall include, without limitation, asbestos, lead, mercury, Polychlorinated biphenyl (PCB), petroleum and related hydrocarbons, and radioactive material.
- 2.3. In response to Contractor's written notice, the County shall investigate the identified conditions.
- 2.4. If the County determines that conditions do not involve hazardous materials or that no change in terms of Contract is justified, the County shall so notify Contractor in writing, stating reasons. If the County and Contractor cannot agree on whether conditions justify an adjustment in Contract Price or Contract Times, or on the extent of any adjustment, Contractor shall proceed with the Work as directed by the County.
- 2.5. If after receipt of notice from the County, Contractor does not agree to resume Work based on a reasonable belief it is unsafe, or does not agree to resume Work under special

conditions, then County may order such portion of Work that is in connection with such hazardous condition or such affected area to be deleted from the Work, or performed by others, or County may invoke its rights to terminate the Contract in whole or in part. County will determine entitlement to or the amount or extent of an adjustment, if any, in Contract Price or Contract Times as a result of deleting such portion of Work, or performing the Work by others.

- 2.6. If Contractor stops Work in connection with any hazardous condition and in any area affected thereby, Contractor shall immediately redeploy its workers, equipment, and materials, as necessary, to other portions of the Work to minimize delay and disruption.

3. Additional Warranties and Representations

- 3.1. Contractor represents and warrants that it, its employees, and its subcontractors and their employees, shall at all times have the required levels of familiarity with the Site and the Work, training, and ability to comply fully with all applicable law and contract requirements for safe and expeditious performance of the Work, including whatever training is or may be required regarding the activities to be performed (including, but not limited to, all training required to address adequately the actual or potential dangers of Contract performance).
- 3.2. Contractor represents and warrants that it, its employees, and its subcontractors and their employees, shall at all times have and maintain in good standing any and all certifications and licenses required by applicable federal, state, and other governmental and quasi-governmental requirements applicable to the Work.
- 3.3. Contractor represents and warrants that it has studied carefully all requirements of the Specifications regarding procedures for demolition, hazardous waste abatement, or safety practices, specified in the Contract, and prior to submitting its bid, has either (a) verified to its satisfaction that the specified procedures are adequate and sufficient to achieve the results intended by the Contract Documents, or (b) by way of approved "or equal" request or request for clarification and written Addenda, secured changes to the specified procedures sufficient to achieve the results intended by the Contract Documents. Contractor accepts the risk that any specified procedure will result in a completed Project in full compliance with the Contract Documents.

4. Monitoring and Testing

- 4.1. County reserves the right, in its sole discretion, to conduct air monitoring, earth monitoring, Work monitoring, and any other tests (in addition to testing required under the agreement or applicable law), to monitor Contract requirements of safe and statutorily compliant work methods and (where applicable) safe re-entry level air standards under state and federal law upon completion of the job, and compliance of the

work with periodic and final inspection by public and quasi-public entities having jurisdiction.

- 4.2. Contractor acknowledges that County has the right to perform, or cause to be performed, various activities and tests including, but not limited to, pre-abatement, during abatement, and post-abatement air monitoring, that County shall have no obligation to perform said activities and tests, and that a portion of said activities and tests may take place prior to the completion of the Work by Contractor. In the event County elects to perform these activities and tests, Contractor shall afford County ample access to the Site and all areas of the Work as may be necessary for the performance of these activities and tests. Contractor will include the potential impact of these activities or tests by County in the Contract Price and the Scheduled Completion Date.
- 4.3. Notwithstanding County's rights granted by this paragraph, Contractor may retain its own industrial hygiene consultant at Contractor's own expense and may collect samples and may perform tests including, but not limited to, pre-abatement, during abatement, and post-abatement personal air monitoring, and County reserves the right to request documentation of all such activities and tests performed by Contractor relating to the Work and Contractor shall immediately provide that documentation upon request.

5. Compliance with Laws

- 5.1. Contractor shall perform safe, expeditious, and orderly work in accordance with the best practices and the highest standards in the hazardous waste abatement, removal, and disposal industry, the applicable law, and the Contract Documents, including, but not limited to, all responsibilities relating to the preparation and return of waste shipment records, all requirements of the law, delivering of all requisite notices, and obtaining all necessary governmental and quasi-governmental approvals.
- 5.2. Contractor represents that it is familiar with and shall comply with all laws applicable to the Work or completed Work including, but not limited to, all federal, state, and local laws, statutes, standards, rules, regulations, and ordinances applicable to the Work relating to:
 - 5.2.1. The protection of the public health, welfare and environment;
 - 5.2.2. Storage, handling, or use of asbestos, PCB, lead, petroleum based products or other hazardous materials;
 - 5.2.3. The generation, processing, treatment, storage, transport, disposal, destruction, or other management of asbestos, PCB, lead, petroleum, or hazardous waste materials or other waste materials of any kind; and

- 5.2.4. The protection of environmentally sensitive areas such as wetlands and coastal areas.

6. Disposal

- 6.1. Contractor has the sole responsibility for determining current waste storage, handling, transportation, and disposal regulations for the job Site and for each waste disposal facility. Contractor must comply fully at its sole cost and expense with these regulations and any applicable law. County may, but is not obligated to, require submittals with this information for it to review consistent with the Contract Documents.
- 6.2. Contractor shall develop and implement a system acceptable to County to track hazardous waste from the Site to disposal, including appropriate "Hazardous Waste Manifests" on the EPA form, so that County may track the volume of waste it put in each landfill and receive from each landfill a certificate of receipt.
- 6.3. Contractor shall provide County with the name and address of each waste disposal facility prior to any disposal, and County shall have the express right to reject any proposed disposal facility. Contractor shall not use any disposal facility to which County has objected. Contractor shall document actual disposal or destruction of waste at a designated facility by completing a disposal certificate or certificate of destruction forwarding the original to the County.

7. Permits

- 7.1. Before performing any of the Work, and at such other times as may be required by applicable law, Contractor shall deliver all requisite notices and obtain the approval of all governmental and quasi-governmental authorities having jurisdiction over the Work. Contractor shall submit evidence satisfactory to County that it and any disposal facility
- 7.1.1. have obtained all required permits, approvals, and the like in a timely manner both prior to commencement of the Work and thereafter as and when required by applicable law, and
- 7.1.2. are in compliance with all such permits, approvals and the regulations.

For example, before commencing any work in connection with the Work involving asbestos-containing materials, or PCBs, or other hazardous materials subject to regulation, Contractor agrees to provide the required notice of intent to renovate or demolish to the appropriate state or federal agency having jurisdiction, by certified mail, return receipt requested, or by some other method of transmittal for which a return receipt is obtained, and to send a copy of that notice to County. Contractor shall not conduct any Work involving asbestos-containing materials or PCBs unless Contractor has first confirmed that the

appropriate agency having jurisdiction is in receipt of the required notification. All permits, licenses, and bonds that are required by governmental or quasi-governmental authorities, and all fees, deposits, tap fees, offsite easements, and asbestos and PCB disposal facilities expenses necessary for the prosecution of the Work, shall be procured and paid for by Contractor. Contractor shall give all notices and comply with the all applicable laws bearing on the conduct of the Work as drawn and specified. If Contractor observes or reasonably should have observed that Plans and Specifications and other Contract Documents are at variance therewith, it shall be responsible for promptly notifying County in writing, including by e-mail, of such fact. If Contractor performs any Work contrary to applicable laws, it shall bear all costs arising therefrom.

- 7.2. In the case of any permits or notices held in County's name or of necessity to be made in County's name, County shall cooperate with Contractor in securing the permit or giving the notice, but the Contractor shall prepare for County review and execution upon approval, all necessary applications, notices, and other materials.

8. Indemnification

- 8.1. To the extent permitted by law, the indemnities and limitations of liability expressed throughout the Contract Documents apply with equal force and effect to any claims or liabilities imposed or existing by virtue of the removal, abatement, and disposal of hazardous waste. This includes, but is not limited to, liabilities connected to the selection and use of a waste disposal facility, personal injury, property damage, loss of use of property, damage to the environment or natural resources, or "disposal" and "release" of materials associated with the Work (as defined in 42 U.S.C. § 9601 et seq.).

9. Termination

- 9.1. County shall have an absolute right to terminate for default immediately without notice and without an opportunity to cure should Contractor knowingly or recklessly commit a material breach of the terms of the Contract Documents, or any applicable law, on any matter involving the exposure of persons or property to hazardous waste. However, if the breach of contract exposing persons or property to hazardous waste is due solely to an ordinary, unintentional, and non-reckless failure to exercise reasonable care, then the procedures for termination for cause shall apply without modification.

END OF DOCUMENT

DOCUMENT 01 10 00

SUMMARY OF WORK

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents must be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions;
- B. Special Conditions;
- C. Construction Waste Management.

1.02 SUMMARY OF WORK COVERED BY CONTRACT DOCUMENTS

- A. The Work of this Contract may consist of the following:
 - 1. Work and laydown area barricades (6' Chain link w/ Green screen and/or Plywood)
 - 2. Safety Plan
 - 3. Demolition Plan
 - 4. Work Plan
 - 5. ADA CASp Monitor Inspections
 - 6. Demolish, off-haul, and disposal.
 - 7. Construction and installation scope of work described in these Construction Documents (Drawings and Specifications).

1.03 CONTRACTS

- A. Perform the Work under a single, fixed-price Contract.
- B. Any bid item may be deleted in total or in part prior to or after award of Contract without compensation in any form or adjustment of other bid items or prices.

1.04 WORK BY OTHERS

- A. Work on the Project that will be performed and completed prior to the start of the Work of this Contract:
 - (1) NONE.

- B. Work on the Project that will be performed by others concurrent with and in coordination with the Work of this Contract:
 - (1) County's Construction Manager.
 - (2) County's CASp review of plan/submittals and required onsite inspections of construction for accessibility compliance.
 - (3) County's environmental hazardous material testing, other materials testing, inspections of construction by County's inspector of record.

1.05 CODES, REGULATIONS, AND STANDARDS

- A. The codes, regulations, and standards adopted by the state and federal agencies having jurisdiction shall govern minimum requirements for this project. Where codes, regulations, and standards conflict with the Contract Documents, these conflicts shall be brought to the immediate attention of the County and the Architect.
- B. Codes, regulations, and standards shall be as published effective as of date of bid opening, unless otherwise specified or indicated.

1.06 PROJECT RECORD DOCUMENTS:

- A. Contractor shall maintain on Site one set of the following Record Documents; Contractor shall record actual revisions to the Work:
 - (1) Contract Drawings.
 - (2) Project Manual/Specifications.
 - (3) Addenda.
 - (4) Change Orders and other modifications to the Contract.
 - (5) Reviewed shop drawings, product data, and samples.
 - (6) Field test records.
 - (7) Inspection certificates.
 - (8) Manufacturer's certificates.

- B. Contractor shall store Record Documents separate from documents used for construction. Provide files, racks, and secure storage for Record Documents and samples.
- C. Contractor shall record information concurrent with construction progress.
- D. Specifications: Contractor shall legibly mark and record at each product section of the Specifications the description of the actual product(s) installed, including the following:
 - (1) Manufacturer's name and product model and number.
 - (2) Product substitutions or alternates utilized.
 - (3) Changes made by Addenda and Change Orders and written directives.

1.07 EXAMINATION OF EXISTING CONDITIONS

- A. The Contractor shall be held to have examined the Project Site and acquainted itself with the conditions of the Site or of the streets or roads approaching the Site.
- B. Prior to commencement of Work, Contractor shall survey the Site and existing buildings and improvements to observe existing damage and defects such as cracks, sags, broken, missing or damaged glazing, other building elements and Site improvements, and other damage.
- C. Should Contractor observe cracks, sags, and other damage to and defects of the Site and adjacent buildings, paving, and other items not indicated in the Contract Documents, Contractor shall immediately report same to the County and the Architect.

1.08 CONTRACTOR'S USE OF PREMISES

- A. If unoccupied and only with County's prior written approval, Contractor may use the building(s) at the Project Site without limitation for the performance of the Work. If the County chooses to beneficially occupy any building(s), Contractor must obtain the County's written approval for Contractor's use of spaces and types of operations to be performed within the building(s) while so occupied. Contractor's access to the building(s) shall be limited to the areas indicated.
- B. If the space at the Project Site is not sufficient for Contractor's operations, storage, office facilities and/or parking, Contractor shall arrange and pay for any additional facilities needed by Contractor.

- (1) Limited space is available for use in staging materials and equipment. Contractor may not leave materials or equipment in a non-secure location.
- C. Contractor shall not interfere with use of or access to occupied portions of the building(s) or adjacent property.
- D. Contractor shall maintain corridors, stairs, halls, and other exit-ways of building clear and free of debris and obstructions at all times.
- E. No one other than those directly involved in the demolition and construction, or specifically designated by the County shall be permitted in the areas of work during demolition and construction activities.
- F. The Contractor shall install the construction security fence and maintain that it will be locked when not in use. Keys to this fencing will be provided to the County.

1.09 PROTECTION OF EXISTING STRUCTURES AND UTILITIES

- A. The Drawings may show above-grade and below-grade structures, utility lines, and other installations that are known or believed to exist in the area of the Work. Contractor shall locate these existing installations before proceeding with excavation and other operations that could damage same; maintain them in service, where appropriate; and repair damage to them caused by the performance of the Work. Should damage occur to these existing installations, the costs of repair shall be at the Contractor's expense and made to the County's satisfaction.
- B. Contractor shall be alert to the possibility of the existence of additional structures and utilities. If Contractor encounters additional structures and utilities, Contractor will immediately report to the County for disposition of same as indicated in the General Conditions.
- C. Contractor shall employ utility locating services to locate any underground utilities within the limits of work prior to the start of any excavating work. Contractor shall subsequently be responsible for repairs of any located underground utilities damaged by construction activities.

1.10 UTILITY SHUTDOWNS AND INTERRUPTIONS

- A. Contractor shall give the County a minimum of three (3) days written notice in advance of any need to shut off existing utility services or to effect equipment interruptions. The County will set exact time and duration for shutdown, and will assist Contractor with shutdown. Work required to re-establish utility services shall be performed by the Contractor.

- B. Contractor shall obtain County's written approval as indicated in the General Conditions in advance of deliveries of material or equipment or other activities that may conflict with County's use of the building(s) or adjacent facilities.

1.11 STRUCTURAL INTEGRITY

- A. Contractor shall be responsible for and supervise each operation and work that could affect structural integrity of various building elements, both permanent and temporary.
- B. Contractor shall include structural connections and fastenings as indicated or required for complete performance of the Work.

1.12 WORK SEQUENCE

- A. Contractor shall be responsible for compliance with all requirements outlined in the hazardous materials sections of the Contract Documents.
- B. Construct Work in stages and at times to accommodate County operation requirements during the construction period; coordinate construction schedule and operations with the County.
 - (1) Work for all Phases shall be performed by multiple crews with multiple shifts, during off-hours and weekends, in addition to normal business hours (7:00AM to 4:00PM) during weekdays.
- C. Milestone Schedule included in item 1.13 must be adhered to and these dates coordinate with the Phasing Plan. Moving dates are included in the Milestone Schedule to show planned windows for relocation of building occupants. Liquidated damages may be assessed as described in the Contract Documents for failure to achieve milestone dates.
- D. This facility will be occupied during construction. In that case: County will provide contractor with schedule of uses; at the site during the construction period; Contractor is to coordinate work with the County and maintain safe access to all buildings at all times and to not disrupt ongoing uses. Contractor must comply with the following requirements:
 - (1) If Contractor must shut down power to any part of the site, Contractor must provide temporary power for that section of the site.

- (2) Scope of work includes utility and systems upgrade and replacement that may impact the entire site. Work must be coordinated so that site-wide systems remain functional at all times until new systems work is complete and tested.

1.13 MILESTONE SCHEDULE

Schedule subject to change based on actual Notice to Proceed Date.

No.	Milestones	Start	Complete
1	Notice To Proceed	8/10//2018	---
2	Contract Duration	405 Calendar Days	405 Calendar Days
3	Contractor prepares construction schedule and other deliverables; Last Day to submit construction schedule and other deliverables. Contractor mobilizes on site, coordinates with County.	8/13//2018	8/24/2018
4	Pre-Construction Administration Meeting	8/14/2018	8/14/2018
5	Pre-Construction Contractor/Sub Meeting	8/14/2018	8/14/2018
6	County reviews Contractor's construction schedule and deliverables.	8/24/2018	8/24/2018
7	Contractor (and Subs) & County Kick-Off and Construction Meeting No. 1	8/27/2018	8/27/2018
8	Construction Start Date	8/27/2018	---
9	Construction of Phases 1A, 1B, 1C, 1D and 1E	Per Phasing Plan and Contractor's Construction Schedule approved by County.	Per Phasing Plan and Contractor's Construction Schedule approved by County.
10	Punchlists - for each Phase completed. Performed by Contractor with County and its Representatives.	Contractor Punchlist is submitted Last Month of each Phase per Phasing Plan	Punchlist is completed and Work accepted within 10 Days from Last Month of each Phase per Phasing Plan
11	Final Project Punchlist (all Phases reviewed/documented)	August 1, 2019	August 20, 2019
12	Confirm Final Project Punchlist Complete	---	August 31, 2019
13	Construction Complete Date	---	9/1/2019
14	Contract Complete Date	---	9/1/2019
15	Board Approval of Notice of Completion	October 2019	October 2019

- A. The “Start” dates included in the phasing schedule indicate the date that work is to begin on the identified milestone scope of work.
- B. The “Complete” dates included in the phasing schedule indicates that the following must be complete:
 - (1) The entire scope of work for the milestone work must be complete, including any/all utility work up to the building and all final termination and operation of all building systems.
 - (2) All punch list work must be complete.
 - (3) Maintenance and Operations Manuals must be submitted to the County.
 - (4) All required testing by Contractor must be complete.
- C. Record Documents for the scope of work of each Milestone included in the Phasing Schedule must be submitted within ten (10) business days after completion of the Milestone. Electronic files (e.g. AutoCAD, other) to be provided at Final Contract Completion.
- D. Notice to Proceed date is the anticipated date of issuance of the Notice to Proceed. If the Notice to Proceed is issued after a date indicated in the Phasing schedule, the start and completion dates of Milestone No. 1 (Notice to Proceed) and No. 8 (Final Contract Completion) will be adjusted by the number of days that the Notice to Proceed is delayed.

PART 2 – PRODUCTS Not Used.

PART 3 – EXECUTION

3.01 CONSTRUCTION RELATED ACCESSIBILITY COMPLIANCE REQUIREMENTS

- A. Grades/Grading for floor surfaces, transitions, pavement and walkways, including ramps:
 - (1) Neither the 2010 ADA Standards nor the California Building Code (CBC) identify what method will be used to determine compliance, specifically that the grade will be measured in two foot intervals with a tool called a Smart Level.
 - (2) The Architect of Record has developed specifications for Contractor to be aware of these requirements during project bidding.
 - (3) The Architect of Record has included requirements in the drawings and specifications pertaining to maximum slopes that may be less than what is allowed by construction-related accessibility standards, thus providing

project specific construction tolerances that the 2010 ADA Standards and CBC may not provide for in their respective regulations. If the grades specified in the construction documents are not achievable, the specifications require that the Contractor notify the Architect of Record for direction before proceeding with the Work.

- (4) Contractor shall give special attention to the specifications for compliance of grades (slopes) with the requirement of the 2010 ADA Standards and the CBC.
1. Slopes: All walkways as defined by Chapter 2 of the California Building Code shall be graded to a maximum of 4.0% running slope (parallel to travel). The cross-slope (perpendicular to travel) for all walkways and pedestrian paths shall be constructed at 1.5% maximum. The slopes of all ramps and side slopes on curb cuts as defined by Chapter 2 of the California Building Code shall be constructed at less than 8.0% maximum. Ramps as defined in Chapter 2 of the California Building Code shall be constructed to a maximum slope of less than 8.0%. Walkways, pedestrian paths, and ramps that are constructed with slopes and cross-slopes in excess of these grades shall be replaced at Contractor expense.
 2. Digital Level: Contractor shall assume that all walkway and ramp grades shall be verified/checked with a 24-inch long electronic/digital level (also known as a “smart level”). Grades shall be measured twice, once while “loaded” with normal pedestrian traffic and once while unencumbered. Changes in level as defined in Chapter 11B-Division 3 of the California Building Code, which occur over a horizontal distance of less than 30 inches, may be verified/checked by other means.
 3. Level Entrances: A 60-inch minimum deep level landing area measuring the full width of entrance doors, with 1.5% maximum slope in any direction, shall be provided at all entrances to buildings. Puddling of water at the entrances is not allowed.
 4. Requirements: The above requirements shall supersede the grades shown on the plans. If these requirements cannot be met with the grades shown on the plans, Contractor shall immediately notify Architect for direction.

3.02 CASp ACCESSIBILITY REVIEW DURING CONSTRUCTION

- A. Contractor shall be responsible for notifying GSA's Construction Manager to schedule for the Certified Access Specialist (CAsp) to visit the site and review the following elements for compliance during the course of construction.
- (1) Contractor shall implement CAsp recommendations for corrections before proceeding with related Work.
1. Stud Wall Framing: After studs are installed, but before door frames are set and before wall substrates or wall finishes are installed.
 2. Door Submittals: Door hardware; vision lite placement in door leafs; etc.
 3. Accessible Water Closets: First, after plumbing rough-ins are complete, but before fixtures and finishes are installed; second, after fixtures and finishes are installed, but before fixtures are grouted or sealed.
 4. Casework Shop Drawings: Countertop height and depth; accessible knee space; etc.
 5. Signage Submittals and Signage Installation: Tactile and visual characters; Braille; color and contrast; location (mounting height, clearances, etc.); etc.
 6. Stair Shop Drawings: Riser heights; tread depths; landing dimensions; handrail sizing, clearance, height, extensions, and returns; etc.
 7. Shop Drawings: Maximum rise between landings; landing dimensions; handrail sizing, clearance, height, extensions, and returns; etc.
 8. Parking Striping Plan: Van-accessible and standard-accessible parking spaces and loading/access aisles; electric vehicle charging stations; accessible routes; etc.

END OF DOCUMENT

DOCUMENT 01 22 00

UNIT PRICES AND ALTERNATES

PART I – ALTERNATES

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions;
- B. Special Conditions;
- C. Bid Form;
- D. Instruction to Bidders.

1.02 DESCRIPTION

The items of work indicated below propose modifications to, substitutions for, additions to and/or deletions from the various parts of the Work specified in other Sections of the Specifications. The acceptance or rejection of any of the alternates is strictly at the option of the County subject to County's acceptance of Contractor's stated prices contained in this Proposal.

1.03 GENERAL

Where an item is omitted, or scope of Work is decreased, all Work pertaining to the item whether specifically stated or not, shall be omitted and where an item is added or modified or where scope of Work is increased, all Work pertaining to that required to render same ready for use on the Project in accordance with the intention of the Drawings and Specifications shall be included in an agreed upon price amount.

1.04 BASE BID

The Base Bid includes all work required to construct the Project completely and in accordance with the Contract Documents.

1.05 ALTERNATES

- A. (NONE)

PART 2 - UNIT PRICING

2.01 GENERAL

Contractor shall completely state all required figures based on Unit Prices listed below. Where scope of Work is decreased, all Work pertaining to the item, whether specifically stated or not, shall be omitted and where scope of Work is increased, all work pertaining to that item required to render same ready for use on the Project in accordance with intention of Drawings and Specifications shall be included in an agreed upon price amount.

2.02 UNIT PRICES

Furnish unit prices for each of the named items on a square foot, lineal foot, or per each basis, as applies. Unit prices shall include all labor, materials, services, profit, overhead, insurance, bonds, taxes, and all other incidental costs of Contractor, subcontractors, and supplier(s).

A. (NONE)

END OF DOCUMENT

DOCUMENT 01 31 19

PROJECT MEETINGS

PART I – GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions
- B. Special Conditions

1.02 PRECONSTRUCTION CONFERENCE

- A. The Contractor shall attend a conference at the Project Site prior to the start of construction for the purpose of determining Contractor's access to, and use of the site, verifying utilities, review construction administrative procedures, and such other items as may be pertinent to the start of construction.

1.03 PROGRESS MEETINGS

- B. Construction Manager shall schedule and hold regular weekly progress meetings after a minimum of one week's prior written notice of the meeting date and time to all Invitees as indicated below.
- C. Location: Contractor's field office, or other agreed to location.
- D. The Contractor shall notify and invite the following entities ("Invitees"):
 - (1) County Representative(s)
 - (2) Contractor
 - (3) Contractor's Project Manager
 - (4) Contractor's Superintendent
 - (5) Subcontractors/suppliers, as appropriate to the agenda of the meeting
 - (6) Construction Manager
 - (7) Project Manager

- (8) Architect
- (9) Others, as appropriate to the agenda of the meeting.
- E. The County's, the Architect's, and/or an engineer's Consultants will attend at their discretion, in response to the agenda.
- F. The County Representative, the Construction Manager, and/or another County Agent shall take and distribute meeting notes to attendees and other concerned parties. If exceptions are taken to anything in the meeting notes, those exceptions shall be stated in writing to the County within five (5) working days following County's distribution of the meeting notes.

1.04 PRE-INSTALLATION/PERFORMANCE MEETING

- A. Contractor shall schedule a meeting prior to the start of each of the following portions of the Work: cutting and patching of plaster and roofing, and other weather-exposed and moisture-resistant products. Contractor shall invite all Invitees to this meeting, and others whose work may affect or be affected by the quality of the cutting and patching work.
- B. Contractor shall review in detail prior to this meeting, the manufacturer's requirements and specifications, applicable portions of the Contract Documents, Shop Drawings, and other submittals, and other related work. At this meeting, invitees shall review and resolve conflicts, incompatibilities, or inadequacies discovered or anticipated.
- C. Contractor shall review in detail Project conditions, schedule, requirements for performance, application, installation, and quality of completed Work, and protection of adjacent Work and property.
- D. Contractor shall review in detail means of protecting the completed Work during the remainder of the construction period.

1.05 ACCESSIBILITY COMPLIANCE MEETING AT PROJECT START

- A. Mandatory Attendees for this meeting shall include:
 - a. County/GSA Project Manager
 - b. ACSO Sheriff Representative
 - c. County/GSA Construction Manager
 - d. Contractor Project Manager
 - e. Contractor Project Superintendent
 - f. Concrete Subcontractor

- g. Masonry Contractor
- h. Plumbing Contractor (as required)
- i. HVAC Contractor (as required)
- j. Wall System/Framing Subcontractor
- k. Wall Finish Subcontractor(s)
- l. Tiling Contractor
- m. Door Subcontractor
- n. Signage Subcontractor
- o. Other Subcontractors for performance of the Work.

B. Items for Discussion:

- 1. Which construction-related accessibility standards apply to this project:
 - a. 2016 Edition of the California Building Code.
 - b. 2010 ADA Standards for Accessible Design.
 - c. Possibly others, including but not limited to FHA Guidelines, UFAS, ANSI A117.1, etc.
- 2. Code definitions of dimensions:
 - a. Minimums
 - b. Maximums
 - c. Ranges
 - d. Absolutes
- 3. Dangers of “ranged math” dimensions.
- 4. Acceptability of construction tolerances.
- 5. Who has the authority to “approve” or “accept” conditions.

1.06 SPECIAL MEETINGS

Special meetings may be requested by the County. Contractor, subcontractors, material suppliers and any other members of the project team may be required to attend.

END OF DOCUMENT

DOCUMENT 01 33 00

SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Contractor's Submittals and Schedules, Drawings and Specifications;
- B. Special Conditions.

1.02 SECTION INCLUDES:

- A. Definitions:
 - (1) Shop Drawings and Product Data are as indicated in the General Conditions and include, but are not limited to, fabrication, erection, layout and setting drawings, formwork and falsework drawings, manufacturers' standard drawings, descriptive literature, catalogues, brochures, performance and test data, wiring and control diagrams. In addition, there are other drawings and descriptive data pertaining to materials, equipment, piping, duct and conduit systems, and methods of construction as may be required to show that the materials, equipment or systems and all positions conform to the requirement of the Contract Documents, including, without limitation, the Drawings.
 - (2) "Manufactured" applies to standard units usually mass-produced; "fabricated" means specifically assembled or made out of selected materials to meet design requirements. Shop Drawings shall establish the actual detail of manufactured or fabricated items, indicate proper relation to adjoining work and amplify design details of mechanical and electrical equipment in proper relation to physical spaces in the structure.
 - (3) Manufacturer's Instructions: Where any item of Work is required by the Contract Documents to be furnished, installed, or performed, at a minimum, in accordance with a specified product manufacturer's instructions, the Contractor shall procure and distribute copies of these to the County, the Architect, and all other concerned parties and shall furnish, install, or perform the work, at a minimum, in accordance with those instructions.

- B. Samples, Shop Drawings, Product Data, and other items as specified, in accordance with the following requirements:
- (1) Contractor shall submit all Shop Drawings, Product Data, and Samples to the County, the Architect, and the Construction Manager.
 - (2) Contractor shall comply with all time frames herein and in the General Conditions and, in any case, shall submit required information in sufficient time to permit proper consideration and action before ordering any materials or items represented by such Shop Drawings, Product Data, and/or Samples.
 - (3) Contractor shall comply with all time frames herein and in the General Conditions and, in any case, shall allow sufficient time so that no delay occurs due to required lead time in ordering or delivery of any item to the Site. Contractor shall be responsible for any delay in progress of Work due to its failure to observe these requirements.
 - (4) Time for completion of Work shall not be extended on account of Contractor's failure to promptly submit Shop Drawings, Product Data, and/or Samples.
 - (5) Reference numbers on Shop Drawings shall have Architectural and/or Engineering Contract Drawings reference numbers for details, sections, and "cuts" shown on Shop Drawings. These reference numbers shall be in addition to any numbering system that Contractor chooses to use or has adopted as standard.
 - (6) When the magnitude or complexity of submittal material prevents a complete review within the stated time frame, Contractor shall make this submittal in increments to avoid extended delays.
 - (7) Contractor shall certify on submittals for review that submittals conform to Contract requirements. In event of any variance, Contractor shall specifically state in transmittal and on Shop Drawings, portions vary and require approval of a substitute. Also certify that Contractor-furnished equipment can be installed in allocated space.
 - (8) Unless specified otherwise, sampling, preparation of samples, and tests shall be in accordance with the latest standard of the American Society for Testing and Materials.

- (9) Upon demand by Architect or County, Contractor shall submit samples of materials and/or articles for tests or examinations and consideration before Contractor incorporates same in Work. Contractor shall be solely responsible for delays due to sample(s) not being submitted in time to allow for tests. Acceptance or rejection will be expressed in writing. Work shall be equal to approved samples in every respect. Samples that are of value after testing will remain the property of Contractor.

C. Submittal Schedule:

- (1) Contractor shall prepare its proposed submittal schedule that is coordinated with its proposed construction schedule and submit both to the County within ten (10) days after the date of the Notice to Proceed. Contractor's proposed schedules shall become the Project Construction Schedule and the Project Submittal Schedule after each is approved by the County.
- (2) Contractor is responsible for all lost time should the initial submittal be rejected, marked "revised and resubmit", etc.
- (3) All Submittals shall be forwarded to the County by the date indicated on the approved Submittal Schedule, unless an earlier date is necessary to maintain the Construction Schedule, in which case those Submittals shall be forwarded to the County so as not to delay the Construction Schedule.

1.03 SHOP DRAWINGS:

- A. Contractor shall submit one reproducible transparency and six (6) opaque reproductions. The County will review and return the reproducible copy and one (1) opaque reproduction to Contractor.
- B. Before commencing installation of any Work, the Contractor shall submit and receive approval of all drawings, descriptive data, and material list(s) as required to accomplish Work.
- C. Review of Shop Drawings is regarded as a service to assist Contractor and in all cases original Contract Documents shall take precedence as outlined under General Conditions.
- D. No claim for extra time or payment shall be based on work shown on Shop Drawings unless the claim is (1) noted on Contractor's transmittal letter accompanying Shop Drawings and (2) Contractor has complied with all applicable provisions of the General Conditions, including, without limitation, provisions regarding changes and payment, and all required written approvals.

- E. County shall not review Shop Drawings for quantities of materials or number of items supplied.
- F. County's and/or Architect's review of Shop Drawings will be general. County and/or Architect review does not relieve Contractor of responsibility for accuracy, proper fitting, construction of Work, furnishing of materials, or Work required by Contract Documents and not indicated on Shop Drawings. Shop Drawings reviewed by County and/or Architect is not to be construed as approving departures from Contract Documents.
- G. Review of Shop Drawings and Schedules does not relieve Contractor from responsibility for any aspect of those Drawings or Schedules that is a violation of local, County, State, or Federal laws, rules, ordinances, or rules and regulations of commissions, boards, or other authorities or utilities having jurisdiction.
- H. Before submitting Shop Drawings for review, Contractor shall check Shop Drawings of its subcontractors for accuracy, and confirm that all Work contiguous with and having bearing on other work shown on Shop Drawings is accurately drawn and in conformance with Contract Documents.
- I. Submitted drawings and details must bear stamp of approval of Contractor:
 - (1) Stamp and signature shall clearly certify that Contractor has checked Shop Drawings for compliance with Drawings.
 - (2) If Contractor submits a Shop Drawing without an executed stamp of approval, or whenever it is evident (despite stamp) that Drawings have not been checked, the County and/or Architect will not consider them and will return them to the Contractor for revision and resubmission. In that event, it will be deemed that Contractor has not complied with this provision and Contractor shall bear risk of all delays to same extent as if it had not submitted any Shop Drawings or details.
- J. Submission of Shop Drawings (in either original submission or when resubmitted with correction) constitutes evidence that Contractor has checked all information thereon and that it accepts and is willing to perform Work as shown.
- K. Contractor shall pay for cost of any changes in construction due to improper checking and coordination. Contractor shall be responsible for all additional costs, including coordination. Contractor shall be responsible for costs incurred by itself, the County, the Architect, the Construction Manager, any other Subcontractor or contractor, etc., due to improperly checked and/or coordination of submittals.

- L. Shop Drawings must clearly delineate the following information:
- (1) Project name and address.
 - (2) Architect's name and project number.
 - (3) Shop Drawing title, number, date, and scale.
 - (4) Names of Contractor, Subcontractor(s) and fabricator.
 - (5) Working and erection dimensions.
 - (6) Arrangements and sectional views.
 - (7) Necessary details, including complete information for making connections with other Work.
 - (8) Kinds of materials and finishes.
 - (9) Descriptive names of materials and equipment, classified item numbers, and locations at which materials or equipment are to be installed in the Work. Contractor shall use same reference identification(s) as shown on Contract Drawings.
- M. Contractor shall prepare composite drawings and installation layouts when required to solve tight field conditions.
- (1) Shop Drawings shall consist of dimensioned plans and elevations and must give complete information, particularly as to size and location of sleeves, inserts, attachments, openings, conduits, ducts, boxes, structural interferences, etc.
 - (2) Contractor shall coordinate these composite Shop Drawings and installation layouts in the field between itself and its Subcontractor(s) for proper relationship to the Work, the work of other trades, and the field conditions. The Contractor shall check and approve the submittal(s) before submission for final review.

1.04 PRODUCT DATA OR NON-REPRODUCIBLE SUBMITTALS:

- A. Contractor shall submit manufacturer's printed literature in original form. Any fading type of reproduction will not be accepted. Contractor must submit a minimum of three (3) each hard copy and in electronic format, to the County.

County shall return one (1) hardcopy to the Contractor, or if more feasible, return in electronic format, where Contractor shall reproduce whatever additional copies it requires for distribution.

- B. Contractor shall submit three (3) hardcopies and in electronic format a complete list of all major items of mechanical, plumbing, and electrical equipment and materials in accordance with the approved Submittal Schedule, except as required earlier to comply with the approved Construction Schedule. Other items specified are to be submitted prior to commencing Work. Contractor shall submit items of like kind at one time in a neat and orderly manner. Partial lists will not be acceptable.
- C. Submittals shall include manufacturer's specifications, physical dimensions, and ratings of all equipment. Contractor shall furnish performance curves for all pumps and fans. Where printed literature describes items in addition to that item being submitted, submitted item shall be clearly marked on sheet and superfluous information shall be crossed out. If highlighting is used, Contractor shall mark all copies.
- D. Equipment submittals shall be complete and include space requirements, weight, electrical and mechanical requirements, performance data, and supplemental information that may be requested.

1.05 SAMPLES:

- A. Contractor shall submit for approval Samples as required and within the time frame in the Contract Documents. Materials such as concrete, mortar, etc., which require on-site testing will be obtained from Project Site.
- B. Contractor shall submit six (6) samples except where greater or lesser number is specifically required by Contract Documents including, without limitation, the Specifications.
 - (1) Samples must be of sufficient size and quality to clearly illustrate functional characteristics, with integrally related parts and attachment devices.
 - (2) Samples must show full range of texture, color, and pattern.
- C. Contractor shall make all Submittals, unless it has authorized Subcontractor(s) to submit and Contractor has notified the County in writing to this effect.
- D. Samples to be shipped prepaid or hand-delivered to the County.

- E. Contractor shall mark samples to show name of Project, name of Contractor submitting, Contract number and segment of Work where representative Sample will be used, all applicable Specifications Sections and documents, Contract Drawing Number and detail, and ASTM or FS reference, if applicable.
- F. Contractor shall not deliver any material to Site prior to receipt of County's and/or Architect's completed written review and approval. Contractor shall furnish materials equal in every respect to approved Samples and execute Work in conformance therewith.
- G. County's and/or Architect's review, acceptance, and/or approval of Sample(s) will not preclude rejections of any material upon discovery of defects in same prior to final acceptance of completed Work.
- H. After a material has been approved, no change in brand or make will be permitted.
- I. Contractor shall prepare its Submittal Schedule and submit Samples of materials requiring laboratory tests to specified laboratory for testing not less than ninety (90) days before such materials are required to be used in Work.
- J. Samples which are rejected must be resubmitted promptly after notification of rejection and be marked "Resubmitted Sample" in addition to other information required.
- K. Field Samples and Mock-Ups are to be removed by Contractor at County's direction:
 - (1) Size: As Specified.
 - (2) Furnish catalog numbers and similar data, as requested.

1.06 REVIEW AND RESUBMISSION REQUIREMENTS:

- A. The County will arrange for review of Sample(s), Shop Drawing(s), Product Data, and other submittal(s) by appropriate reviewer and return to Contractor as provided below within twenty-one (21) days after receipt or within twenty one (21) days after receipt of all related information necessary for such review, whichever is later.
- B. One (1) copy of product or materials data will be returned to Contractor with the review status.
- C. Samples to be incorporated into the Work will be returned to Contractor, together with a written notice designating the Sample with the appropriate review status

and indicating errors discovered on review, if any. Other Samples will not be returned, but the same notice will be given with respect thereto, and that notice shall be considered a return of the Sample.

- D. Contractor shall revise and resubmit any Sample(s), Shop Drawing(s), Product Data, and other submittal(s) as required by the reviewer. Such resubmittals will be reviewed and returned in the same manner as original Sample(s), Shop Drawing(s), Product Data, and other submittal(s), within fourteen (14) days after receipt thereof or within fourteen (14) days after receipt of all related information necessary for such review.
- E. Contractor may proceed with any of the Work covered by Sample(s), Shop Drawing(s), Product Data, and other submittal(s) upon its return if designated as no exception taken, or revise as noted, provided the Contractor proceeds in accordance with the County's and/or the Architect's notes and comments.
- F. Contractor shall not begin any of the work covered by a Sample(s), Shop Drawing(s), Product Data, and other submittal(s), designated as revise and resubmit or rejected, until a revision or correction thereof has been reviewed and returned to Contractor.
- G. Sample(s), Shop Drawing(s), Product Data, and other submittal(s) designated as revise and resubmit or rejected and requiring resubmittal, shall be revised or corrected and resubmitted to the County no later than fourteen (14) days or a shorter period as required to comply with the approved Construction Schedule, after its return to Contractor.
- H. Neither the review nor the lack of review of any Sample(s), Shop Drawing(s), Product Data, and other submittal(s) shall waive any of the requirements of the Contract Documents, or shall relieve Contractor of any obligation thereunder.
- I. County's and/or Architect's review of Shop Drawings does not relieve the Contractor of responsibility for any errors that may exist. Contractor is responsible for the dimensions and design of adequate connections and details and for satisfactory construction of all the Work.

END OF DOCUMENT

DOCUMENT 01 35 13

SPECIAL PROJECT PROCEDURES FOR DETENTION FACILITIES

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. Limits and scope of work under the Detention Equipment Contractor (DEC) Section shall be defined in these specifications and correspondingly shown on the drawings.
- C. Provide materials, labor, equipment and services necessary to furnish, deliver and install a completely functional integrated system.
- D. All equipment and work shall comply with all applicable codes.

1.2 SUMMARY

- A. This Section includes the responsibilities for a single-source Detention Equipment Contractor (DEC) for detention work.
 - 1. The DEC shall submit an aggregate bid to General Contractor for Work described in the following specification sections. The DEC shall be responsible for performing the coordination required between detention equipment and the security electronic systems, hollow metal wall panels, as well as the Electrical work as it relates to security hardware.
 - a. Detention Equipment Work required by, but not specified in, this Section includes the following:
 - 1) Section 08 34 63 Detention Doors and Frames
 - 2) Section 08 71 63, Detention Door Hardware
 - 3) Section 08 88 53, Security Glazing
 - 4) Section 13 42 60, Modular Metal Detention Wall Panel System
 - 2. Approved DEC firms must base their bid on the equipment and products specified herein. Design changes or substitutions will not be allowed unless approved prior to bidding. Value engineering proposals will not be considered.
 - 3. The DEC shall have in their employ a full-time project manager and superintendent to supervise the work of this section. The superintendent's sole responsibility shall be to supervise and coordinate the scope of work of the DEC. The superintendent shall be at the site at all times when the work is being performed.
 - 4. If any portion of the work listed in paragraph 1.2.A.1.a above is subcontracted, the responsibility for equipment and system coordination remains with the DEC.
 - 5. The DEC shall be fully responsible for review and coordination of detention devices with the existing security electronics. The DEC shall notify the County if any modifications are required prior to hardware or device installation.

1.3 SCOPE AND RESPONSIBILITY:

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- A. The DEC shall be fully responsible for performing the coordination required between the Division 08 Scope of Work and existing security electronics.
- B. The DEC shall be responsible for the coordination, integration and interfacing of the products and systems specified in Division 8, and in accordance with shop drawings and submittals approved by the County.
- C. The DEC shall be responsible for all labor and equipment for receiving, unloading, distributing, setting and installation of all security related items. This includes, but may not be limited to, bars, plates, angles, access frames and doors, security frames and security sidelights, and miscellaneous security frames specified in Division 8.
- D. Under the requirements of this Section, the DEC shall be responsible for furnishing and installing the following, as specified in all locations. The details and specific scope of work related to a portion of the installation of this equipment shall be defined between the DEC and General Contractor at the time of Bid.
 - 1. Detention Hollow Metal Frames.
 - 2. Detention Hollow Metal Doors.
 - 3. Detention Hardware.
 - 4. Security and Non-Security Glass and Glazing for Security Hollow Metal and Security Windows.
- E. Installation of all systems and equipment is subject to clarifications as indicated in the reviewed shop drawings and field coordination drawings.
- F. The DEC shall be fully responsible for acquiring and paying for all licenses and permits required to perform their Work. If licenses are required before bidding, then the DEC shall not bid any portion of the Work until the required licenses are obtained.

1.4 SUBMITTALS

- A. General: Submittals shall be made in accordance with Conditions of Contract and Division 1 Sections. DEC shall review Detention Work submittals and verify construction details and provide answers to manufacturer's questions prior to submission to the General Contractor. Submittals shall be supplied on USB drive and in accordance with Section 01 33 00 "Submittal Procedures.
- B. Product Data: Mark each copy to show applicable choices and options where printed product data includes information on several products, some of which are not required, mark copies to indicate the applicable information.
- C. Shop Drawings: Highlight, encircle, or otherwise indicate deviations from the Contract Documents.
- D. Coordination Drawings: Prepare and submit Project-specific Coordination Drawings, drawn accurately to scale, for installation of detention work. Include the following information, as applicable:
 - 1. Show relationship of components shown on separate Shop Drawings.
 - 2. Show dimensions and clearances of interrelated detention work. The contractor will be held to the requirements as noted in Title 24 from the California Code of Regulations as it relates to the area within the I-3 occupied spaces.
 - 3. Provide templates and patterns.

4. Indicate required operation sequences of interrelated detention work.
 5. Indicate required installation sequences.
 6. Refer to specific Coordination Drawing requirements for electrical installations required for detention work.
- E. The submittal shall reflect the equipment and material as they are defined by the project plans and specifications, contract and signed/documented clarifications, substitutions and changes to the above documents by the Architect.
- F. Qualified installers trained by the manufacturer shall perform the installation of all detention hardware and sliding devices. Submittal of written confirmation from the manufacturer showing individual field technicians as approved installers shall be required.
- G. The submittal documents shall be updated throughout the project construction. These documents shall be included with the operation and maintenance manuals to provide accurate as-built documentation of all installed equipment and material.
- H. Other Informational Submittals: Examination reports documenting inspections of substrates, areas, and conditions.
- I. Submittals not organized as specified shall be considered incomplete and will be rejected.
- J. It is the DEC's responsibility to coordinate detention/security items in this scope of work, and to answer all manufacturer questions or concerns that are not strictly design related. The DEC shall redline the manufacturers' individual shop drawings and/or schedules, and note corrections prior to submittal for Architectural/Consultant review. When multiple items are submitted by the manufacturer on a single cut sheet, the DEC shall note with an arrow, circle or note cloud, to show which product on the sheet is submitted for this scope of work. DEC submittals not reviewed and redlined prior to submittal to Architect/Consultant for final review, will be returned rejected.

1.5 QUALITY ASSURANCE

- A. The following DEC's are pre-approved to perform the work of this Section. Any other contractors interested in bidding shall submit a bid to General Contractor at bidding.
1. CML Security, Erie, CO.: Phone 720-466-3650
 2. Cornerstone Detention Products, Inc., Decatur, AL: Phone 256-355-2396
 3. ISI Detention Contracting, San Antonio, TX: Phone 210-495-5245
 4. Universal Security Products, San Ramon, CA: Phone 510-785-8222
- B. Approval of a firm as a DEC does not relieve that DEC from furnishing all materials from the manufacturers as herein specified.
- C. All materials and labor specified in this Section of the Specifications shall be furnished by a single qualified DEC who shall assume responsibility for the detailing, coordinating, erecting, performance, and warranty of this work, in accordance with this specification.
- D. Qualified installers trained by the manufacturer shall perform the installation of all detention hardware and sliding devices. Submittal of written confirmation from the manufacturer showing individual field technicians as approved installers shall be required.

1.6 COORDINATION

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- A. Coordinate work to ensure efficient and orderly installation of each part of detention work. Coordinate and schedule detention work that depends on other work for proper and timely installation, connection, and operation.
 - 1. Coordinate installation of different detention components to ensure maximum accessibility for required maintenance, service, and repair.
 - 2. Coordinate provisions to accommodate detention work scheduled for later installation.
 - 3. Coordinate detention work with work by the Electronic Security Contractor (ESC).
- B. Coordinate selection of detention products for compatibility.
- C. Assemble and coordinate Shop Drawings for detention work provided by separate entities.
- D. Coordinate sequencing and scheduling of detention work. Secure time commitments for performing critical construction activities from separate entities responsible for detention work.
 - 1. Schedule construction operations in sequence required to obtain best results where installation of one part of detention work depends on installation of other components, before or after its own installation.
 - 2. Coordinate sequence of detention work activities to accommodate tests and inspections.
- E. Coordinate installation of anchorages and embedments for detention work. Obtain and distribute, to parties involved, 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 concrete or masonry. Deliver such items to Project site in time for installation so as not to delay progress of the Work.
 - 1. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing detention work to comply with indicated requirements.
- F. Coordinate temporary facilities and controls required by detention work.
 - 1. Maintain an ongoing inventory of all material.
 - 2. Arrange for a secure, dry, locked storage area or room in the building for storing detention equipment products prior to installation.
 - 3. Receive, unload and distribute products to site storage location and/or installation locations. Minor scratches on painted surfaces shall be cleaned and touched-up with rust-inhibitive primer. Defective disfigured products shall be rejected.
 - 4. Tag all products with markings that show proper installation locations.
- G. Coordinate protection of installed detention work.
- H. Coordinate preparation of Project Record Documents for detention work and integrate information from entities responsible for detention work to form one combined record.
- I. Coordinate preparation of operation and maintenance manuals for detention work and integrate information from entities responsible for detention work to form one combined record.
- J. Defective Products: Items found to be defective, either through manufacturing, damage in transit or by field installation, shall be replaced prior to Final Completion. DEC shall make special manufacturing and shipping arrangements to accomplish this replacement prior to completion.
- K. Coordination Meetings: Conduct coordination meetings specifically for detention work at regular intervals. Coordination meetings are in addition to specific meetings held for other purposes, such as progress meetings and pre-installation conferences.

1.7 WARRANTY

- A. The DEC shall warrant the material and equipment and labor furnished by the DEC under this Section and in accordance with Section 01 78 36 to be free from defects in material and workmanship for a period of one (1) year after Notice of Completion. Should written notice be served on the DEC during the warranty period of any such defect, the DEC shall make good the defect at its own expense. Coordination of warranty problems between divisions shall be the responsibility of the DEC.
- B. The DEC must have full-time employees trained in and devoted to the maintenance and repair of systems and equipment furnished.
- C. The DEC shall provide warranty service throughout the warranty period in a timely manner.
 - 1. Service response requirements shall include the following:
 - a. Twenty-four (24) hour phone number.
 - b. DEC shall respond to warranty call within twenty-four (24) hours of notification.
 - c. Response personnel shall be factory technicians trained by the manufacturers of the equipment, with five year's experience, servicing equipment of the type included in this project.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Ensure quality of field welding of detention work and anchorages.
- B. Verify that detention work is installed and connected according to the Contract Documents.
- C. Verify that wiring installation complies with manufacturer's submittal and written installation requirements.
- D. Observe startup service of detention work.
- E. Observe installation and startup checks of detention work according to manufacturer's written instructions.
- F. Inspect installed detention work to verify compliance with requirements. Prepare inspection reports and indicate compliance with and deviations from the Contract Documents.
 - 1. Perform additional inspections to determine compliance of replaced or additional work.
 - 2. Prepare field quality-control certification that states installed detention work and its installation complies with requirements in the Contract Documents.
- G. Testing: After installing electrified detention work and after electrical circuitry has been installed, energized and is functional, test detention work for compliance with requirements.
 - 1. When testing reveals detention work is not in compliance with requirements, perform additional random testing to determine extent of noncompliance.
 - 2. Where test results indicate that detention work does not comply with specified requirements, retest after repairs or replacements are made.

- H. Perform additional testing and inspecting, at Contractor's expense, to determine compliance of replaced or additional work.

3.2 INSPECTIONS AND TESTING

- A. The General Contractor and DEC shall be responsible for issuing a letter to the Architect confirming that the work is complete and ready for inspection and testing. If the project is completed in phases, a letter will be submitted for each phase to be inspected. As an attachment to the letter confirming the work is "complete" and ready for inspection, the DEC must attach a self-generated "field test" report for each device which confirms in detail that the DEC has performed their own inspection and test prior to the inspection by the County.
- B. The inspection shall include control and monitoring of the hardware, as well as the installation and adjustments of the mechanical functions.
- C. The Superintendent and Project Manager shall be present and assist in the inspection / testing of the Work.
 - 1. If additional inspections are required because the Work is incomplete at the time of the scheduled inspection or if any portion of the system fails to function as designed, the DEC shall be responsible for paying for the time and expenses for the Architect, the County, and County's Consultants to re-schedule and re-inspect the Work. This cost shall include time and expense for all personnel of the Architect, the County, and County's Consultants. The "time" cost shall include an hourly rate of \$190 per hour. This time will include travel time and inspection time. An estimated amount of this time and expense must be paid prior to re-scheduling the inspection.

3.3 SPARE PARTS

- A. The DEC shall deliver all spare parts at the completion of the project. The spare parts shall be clearly marked as to content and packaged for ease of handling by one (1) person without the use of forklifts or other equipment. The DEC shall obtain a signature from the owner's representative receiving the spare parts.
- B. The DEC shall furnish the parts described in each subsection of the specifications provided by the DEC. Mark the specification section on the packaging for each device. Refer to individual specification sections for spare parts to be provided as a requirement for each section.

3.4 TRAINING

- A. The DEC shall provide without additional cost to the Owner, representatives specially trained in the operation of detention hardware and devices provided. The representatives shall train the Owner's personnel in operations, repair, and upkeep of all Detention Work. Coordinate dates for training sessions with the Owner prior to scheduling dates.
- B. The DEC shall be responsible for notifying the Architect two (2) weeks prior to Notice of Completion of the total security system that training is scheduled. The DEC will coordinate the number to be trained with the Owner's representative.
- C. The inspection shall include Systems, Subsystems, Equipment, and Components. Where these terms are used together or separately, they shall be referred to as "the system". The DEC shall be prepared to test every point for each system.

- D. On-Site Training: Provide qualified personnel for instruction and a training period involving the Owner's designated personnel and the DEC as designated by the user. Representatives must be capable of training Owner's personnel in the adjustment, operation and repair of detention work, including pertinent safety requirements. Instruction shall be given during the first week after detention work has been accepted and turned over to the Owner for regular operation, except if adjustment and/or repairs are required for its use. In such case, training sessions are not to occur until such adjustments and/or repairs have been satisfactorily completed.
- E. During the warranty period, if significant changes or modifications take place in the equipment or system, additional instruction shall be provided at no cost to the Owner (unless such changes or modifications are Owner initiated) to acquaint the operating personnel with the changes or modifications.

END OF DOCUMENT

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DOCUMENT 01 35 14

SECURITY PROCEDURES AND WORK RESTRICTIONS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Definitions
 - 2. Application
 - 3. Work hours
 - 4. Personnel
 - 5. Personnel Identification
 - 6. Access to Project Work Site
 - 7. Materials and Equipment
 - 8. Clothing
- B. Related Sections:
 - 1. Refer to requirements of Division 00
 - 2. Section 01 10 00 - Summary of Work
 - 3. Section 01 42 16 – Definitions and Reference Standards

1.2 DEFINITIONS

- A. Construction Personnel: Any individual person, employed directly or indirectly by the Contractor, and its Subcontractors, to perform work or provide services in connection with the Work of this Contract.
- B. Construction Support Facilities Area: An area outside of the Secure Perimeter where the construction trailer(s) for the Contractor and County personnel are located.
- C. Construction Vehicle: A pickup truck, service truck or other commercial vehicle, licensed to operate on public roadways, which is owned by the Contractor or commissioned by the contractor or its Subcontractors, and has exterior markings identifying it with the Contractor or one of its Subcontractors.
- D. County Jail Property: The entire grounds of the jail, including the area within the Secure Perimeter, the buffer area extending outside of the Secure Perimeter, service areas, and the visitor parking lots to the outer line of the County Jail Property. The outer line of the County Jail Property is identified by public notice signs at the street and access boundaries.
- E. Holidays: The holidays currently observed by the County are listed below. Each year's holiday schedule will be available no later than January 1st of that year. Contractor may request a schedule at that time.

New Year's Day, January 1;
Martin Luther King Jr.'s Birthday, third Monday in January;
Lincoln's Birthday, February 12;
Presidents' Day, third Monday in February;
Memorial Day, last Monday in May;
Independence Day, July 4;
Labor Day, first Monday in September;
Veterans' Day, November 11;
Thanksgiving Day, fourth Thursday in November;
The Day following Thanksgiving Day;
Christmas Day, December 25; and
Each day appointed by the Governor of California and formally recognized by the County as a day of mourning, thanksgiving, or special observance.

Holidays falling on Saturday are typically observed on the preceding Friday, and Sunday holidays are typically observed on the following Monday.

- F. Laydown Area: An area designated and approved by the County for specific use by Contractor and other personnel assigned to the Project. The area must be enclosed by secured temporary fencing as approved by the County.
- G. Level I: A classification system based on an inmate trustee's security requirements. Level I trustees require minimum security considerations.
- H. Method of Procedure (MOP): Written document, as a Method of Procedure (MOP) Form, outlining steps to be taken when performing work outside the Contractor's construction fence or work area, outside the normal work hours, or for work that impacts facility operations (e.g. utility shut down). A MOP will be developed by the Contractor and submitted to the County for review and acceptance by the County (see Attachment C).
- I. Normal Work Hours: The hours during which the Contractor may perform work on the Project Work Site without requesting special approval from the County. These hours may be impacted by lockdowns or other special situations.
- J. Personal Vehicle: A vehicle operated by Construction Personnel which is not classified as a Construction Vehicle.
- K. Project Work Site: All areas impacted by this construction contract.
- L. Sallyport: A gated area in the Secure Perimeter, staffed by ACSO Deputies, which all personnel and/or vehicles must use to enter and exit areas within the Secure Perimeter.
- M. Secure Perimeter: The permanent or temporary, security fencing or other security barrier around the perimeter of areas that have been secured for occupancy by inmate trustees. The Secure Perimeter may consist of double chain link fences enclosing a lethal electrified fence, or it may consist of non-electrified double chain link fences

topped with razor wire. The Secure Perimeter may incorporate guard towers, sallyports, and/or electronic surveillance into its configuration.

- N. Security Escort: A uniformed, Alameda County Sheriff's Office (ACSO) Deputy who is assigned to the Project to maintain required security procedures on the Project Work Site. The Sheriff determines the number of ASCO Deputies to be assigned.

1.3 APPLICATION

- A. The Contractor must comply with all security procedures for performing Work on County Jail Property.
- B. This Section identifies requirements for working on County Jail Property.
- C. All Work for this Project will occur inside the secure areas of the County Jail Property.

1.4 WORK HOURS

- A. The Normal Work Hours for this project are the 8-hour period (7:00 a.m. to 4:00 p.m.) Monday through Friday, excluding Holidays. Normal Work Hours include any time to access the Project Work Site. Contractor may propose different Normal Work Hours as agreed to by the County.
- B. Perform Work only during Normal Work Hours, unless otherwise approved by the County.
- C. Submit a MOP to the County, a minimum of 72 hours in advance, for requests to work on the Project Work Site at times other than Normal Work Hours.
- D. All costs for construction work on the Project Work Site outside of the Normal Work Hours, if not approved in advance by the County through the MOP process, must be borne by the Contractor. These costs may include Security Escort overtime, plant operations staff overtime, or other costs incurred by the County. Costs for Security Escorts required outside of the Normal Working Hours will be a minimum of \$120.00 per hour, per deputy, payable to the County or credited to the Contract by Change Order.

1.5 PERSONNEL

- A. Only Construction Personnel approved by the County will be permitted on County Jail Property.
- B. All Construction Personnel working on the Project Work Site must be at least 18 years of age.
- C. Submit a list to the County of all Construction Personnel who will be working on the Project Work Site who have received, in advance, a Security Site Clearance by the ASCO.
 - 1. Include in the list:

- a. Full name, including middle name;
 - b. Name of issuing state and number of driver's license or non-driver's identification card;
 - c. Social Security number;
 - d. Date of birth;
 - e. Dates of Project Site Work for which clearance is requested.
 2. Maintain this list up to date and notify the County of all changes as they occur.
 3. The County will coordinate this list with the ACSO at the security checkpoint for all Construction Personnel requiring access into the Secure Perimeter.
 4. For ASCO Security Site Clearance form, see Document 00 11 16 Attachment 2.
- D. Furnish to the County, a directory of all supervisory Construction Personnel with their emergency contact telephone numbers.

1.6 PERSONNEL IDENTIFICATION

- A. All Construction Personnel requiring access inside the Secure Perimeter must sign the Primary Laws, Rules and Regulations (Attachment A) and complete the Security Site Clearance (Document 00 11 16 Attachment 2). Both forms must be submitted by the Contractor to the County. A signed transmittal from the Contractor acknowledging which individuals they are requesting clearances for is to be provided to the County.
- B. After receipt of the Primary Laws, Rules and Regulations and the Security Site Clearance, with subsequent review and approval by the County, identification cards may be furnished to approved Construction Personnel.
 1. Submit with as much lead time as is possible in advance of date personnel are needed on site.
 2. Allow a minimum of five (5) working days for processing security clearances.
- C. Identification cards may take the form of:
 1. A temporary County identification card, valid for up to two years or the duration of the project, for full-time County consultants including Construction Management personnel, construction inspectors, and the Contractor's full-time management personnel (e.g., Project Manager, Site Superintendent and Foreman).
 2. A Security Site Clearance badge, valid for up to one year, for part-time or intermittent construction personnel.
- D. Construction Personnel entering the Secure Perimeter, or other inmate-occupied areas of the Project Work Site, must have in their possession the identification card issued by the County, and must display on request, a valid driver's license or other pictured identification approved by the County.
- E. In the event that Construction Personnel lose or forget an identification card, the supervisor of that person must immediately notify the County.
- F. Temporary County identification cards and Security Site Clearance badges must be returned to the County at the completion of the Project, termination of employment, upon expiration, or upon request of the County for cause.

1.7 ACCESS TO PROJECT WORK SITE

- A. Contractor must enter onto County Jail Property through the public parking lot and proceed to the designated parking area for the Contractor and its Subcontractors to park their vehicles and/or at the Construction Support Facilities Area. During Normal Work Hours, the public parking lot will be open. If justified for security reasons, ACSO staff may stop a vehicle and request identification and/or conduct a search of the vehicle or personnel as vehicles and personnel are now on County Jail Property. Bringing vehicles on to County Jail property constitutes agreement that the ACSO may search such vehicles at any time for any reason.
- B. All vehicles on County Jail Property must be locked at all times when unattended. Ignition keys must be removed from vehicles not in use.
- C. The Contractor must not bring the following items onto the secure areas of the County Jail Property:
 - 1. Weapons, ammunition
 - 2. Hunting bows, arrows
 - 3. Personal knives with blades longer than 2-1/2 inches
 - 4. Explosives
 - 5. Black Powder
 - 6. Volatile substances, except those to be used in conjunction with operating construction equipment such as air compressors or generators
 - 7. Tear gas
 - 8. Flares
 - 9. Alcohol, drugs, controlled substances or other intoxicants
 - 10. Personal prescription medicines without the County's approval
 - 11. Tobacco or tobacco products must be secured in personal vehicles and are not permitted within Secure Perimeter. The use of tobacco products is strictly prohibited on County property.
 - 12. Personal cell phones and pagers
 - 13. Animals (pets)
 - 14. Camouflage clothing or additional changes of clothing
- D. Work inside the Secure Perimeter:
 - 1. Security Escorts:
 - a. ACSO Deputies will be assigned to the Project as Security Escorts for vehicles and Construction Personnel performing Work within the Secure Perimeter.
 - b. Security Escorts will assist in processing Construction Personnel clearances, assist in coordinating entry to and from the Secure Perimeter and maintain general security requirements for the project.
 - 2. Work conducted within the Secure Perimeter must be coordinated with the County a minimum of 72 hours in advance to allow for the coordination of Security Escorts.
 - 3. Contractor must access areas inside the Secure Perimeter only through the designated security checkpoints. During Normal Work Hours, the County, with ACSO, may identify a primary security checkpoint for vehicles, trucks and

- personnel entering or leaving the Project Work Site at a designated location. During non-working hours, the security checkpoint will be identified in the MOP.
4. Entry and exit through sallyports or other security checkpoints.
 - a. Allow a minimum of 30 minutes for security processing when entering the Secure Perimeter.
 - b. Allow a minimum of 15 minutes for security processing when leaving the Secure Perimeter.
 - c. Depending on the location of the Project Work Site within the Secure Perimeter and the point of access where security staff will process Construction Personnel and vehicles, the time may be increased or decreased.
 - d. Costs for delays caused by security activities and procedures must be borne by the Contractor.
 5. Construction Personnel:
 - a. Contractor must fully cooperate with County staff when entering and exiting the Secure Perimeter.
 - b. Construction Personnel entering or leaving the Secure Perimeter will be checked by a correctional officer for proper identification. Construction Personnel without proper identification will be refused entry and may be detained until proper identification is verified.
 - c. Minimize the movement of Construction Personnel into and out of the Secure Perimeter. Construction Personnel must remain at the Project Work Site, to the extent possible, for the entire duration of their scheduled work hours.
 6. Construction Vehicles:
 - a. Construction vehicles will not be allowed inside the Secure Perimeter without prior MOP approval of the County.
 - b. Up to 72 hours may be required for approval of construction vehicles that have not been previously approved by County.
 - c. Construction vehicles will not be allowed to remain within the Secure Perimeter during non-work hours unless approved by the County.
 - d. Construction vehicles entering into or leaving the Secure Perimeter are subject to search.
 - e. Construction vehicles or any other vehicle operated by Contractor and its Subcontractors will not be permitted within the Secure Perimeter of the jail without a Security Escort.
 - f. Delivery vehicles will be permitted access to the Contractor Trailer Area and other areas outside the Secure Perimeter. Access to the Project Work Site within the Secure Perimeter will be allowed with prior MOP approval.
 7. Personal Vehicles:
 - a. Must not enter the Secure Perimeter.
 - b. Must be parked only in the public parking lot on the County Jail Property.
 - c. Must be driven only on roadways servicing parking areas designated by the County.
- E. Work outside the Secure Perimeter:
1. Security for Work performed outside of the Secure Perimeter will be monitored and enforced by County's Construction Manager. Security Escorts will not be assigned to escort workers.

2. Construction vehicles entering onto or leaving County Jail Property are subject to search.

1.8 MATERIALS AND EQUIPMENT

A. Cell Phones, Cameras and Electronics:

1. Subject to ASCO approval, use of cell phones, radios, smart phones, tablets or computers will be allowed only for designated Construction Personnel to perform and control field work and personnel.
 - a. Designated Construction Personnel approved for use must be performing operations essential to the project. This may include Contractor's Project Manager, Site Superintendent and Foreman, and others subject to ASCO approval.
 - b. Designated County staff, County's Construction Manager and staff; inspectors; and others as approved by the County.
 - c. These devices must be disclosed and logged in with the County's Construction Manager prior to entering or exiting the Secure Perimeter.
 - d. Wi-Fi devices for approved equipment must be deactivated prior to entering County Jail Property.
 - e. Cellular air cards outside the Secure Perimeter may be approved for use on a case-by-case basis.
 - f. Non-County owned and managed devices must not be connected to the County network. A public Wi-Fi system exists on the County Jail Property which can be used.
2. Cameras and video recorders:
 - a. Use of equipment will only be authorized to fulfill requirements of the Contract.
 - b. Prior approval must be obtained from the County before bringing this equipment onto County Jail Property.
 - c. Cameras or video recorders constructed as integral parts of a cell phone, tablet or laptop will only be allowed in accordance with Paragraph 1.8.A.1.
 - d. County must approve photos or video before they are recorded by approved equipment. Photos and video cannot contain pictures or images of any inmate trustees or ASCO staff.
3. The project Security Escort will designate the specific daily security protocols for use of this equipment.

B. Tool Storage and Debris Containers:

1. Provide a lockable metal tool storage or debris container in the Contractor Trailer Area and, if work occurs inside the Secure Perimeter, provide additional tool storage and/or debris container inside the Secure Perimeter.
2. Provide appropriate secure storage for hazardous or toxic materials in accordance with State regulatory requirements.
3. Tool Storage or Debris containers and their locations must be approved in advance by the County.

4. Tool Storage and Debris containers must be secured and locked with an approved, serial numbered, steel or nylon seal and lock to identify if the unit has been opened since the last observation by the designated Security Escort assigned to the project.
 5. Provide contact person and telephone number, with 24-hour availability, for access to containers.
 6. Removal of tool storage and debris containers must be approved and coordinated with the County.
- C. Tool Inventory:
1. Keep the quantity of tools used inside the Secure Perimeter to a minimum and limit the tools to only those required to complete the Work.
 2. All Construction Personnel must maintain an updated inventory for personal tools with them at all times when on County Jail Property.
 3. Provide the tool inventory list to the project Security Escort upon entry to the inside through the Secure Perimeter.
 4. Inventory for tool containers both inside and outside the Secure Perimeter will be inventoried during the construction phase of the project.
 5. Pursuant to B.4 above, morning inventory of tool containers may be eliminated.
 6. A re-inventory of tools may be requested by the County at any time.
 7. Account for all equipment, materials, and tools each time Construction Personnel and Security Escorts depart the Secure Perimeter.
 8. Contractor Personnel will not be released from their work shift until the tool count has been cleared by the project Security Escort.
- D. Lost Contractor Tool(s) or Equipment:
1. Notify the County immediately if a tool is lost or unaccounted for and assist County in locating the tool.
 2. Complete Lost Tool Report (Attachment B).
 3. County is not responsible for lost tools or stolen equipment.
- E. Self-propelled construction equipment:
1. Equipment such as backhoes, forklifts, or other, may be stored outside the Secure Perimeter in the Construction Support Facilities Area or approved Laydown Area.
 2. Equipment may be stored inside the Secure Perimeter in a designated Laydown Area or other area, as approved by the County.
 3. Equipment remaining inside the Secure Perimeter during non-working hours must be disabled in such a manner to prevent unauthorized operations.
 4. Methods used to disable equipment must be approved by the County.

1.9 CLOTHING

- A. Construction Personnel must be dressed in modest attire appropriate for working on County Jail Property.
- B. Construction Personnel must not leave extra clothing unattended on the Project Work Site.

1.10 WORK ON THE SECURE PERIMETER

- A. Abide by all requirements of 1.7.D for work inside the Secure Perimeter.
- B. When Work requires (1) demolition or relocation of the security fencing, wall, or other feature constituting the Secure Perimeter, or (2) going under the Secure Perimeter for utility line work or other, or (3) any other potential breach in the security of the Secure Perimeter, the Contractor must submit an MOP with a written plan in accordance with the provisions of Section 01 33 00 Submittal Procedures. Submittal must be made to the County at least 15 days prior to beginning physical work on the Secure Perimeter. The written plan must designate the sequence of the Work and must describe the process for maintaining security throughout the duration of Work on the Secure Perimeter.
- C. County may require temporary fencing, phased work, or other methods to maintain security during Normal Work Hours or outside of Normal Work Hours.

1.11 METHOD OF PROCEDURE (MOP)

- A. Any work to be performed outside of the Contractor's work area, or outside of the normal work hours, or impacting facility operations, will require coordination with the facility via the Method of Procedure (MOP) process.
- B. The MOP form to be utilized on the Project is provided herein as Attachment C.
- C. The specific work procedure described on the MOP form shall be developed by the Contractor for each and every MOP event; and shall be submitted to the County for review and acceptance by the County and ACSO.
- D. The County and ACSO reserve the right to require revisions to the MOP form, and the information contained therein, from time to time as appropriate to meet the needs of the Project and/or County operational procedures.
- E. MOPs must be submitted at least 72 hours prior to proposed start of work.
- F. Work on the activities described in the MOP shall not commence without prior signatory approval by the County and the ACSO has secured the Project Work Site at least 72 hours prior to proposed start of work.
- G. Appropriate Contractor Personnel shall maintain a presence during implementation of the work described in the MOP, whether the work to be implemented is by Contractor's own forces or by those of its Subcontractor personnel. Contractor Personnel shall accompany workers and remain present from the beginning of the work until its completion.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF DOCUMENT

ATTACHMENT A
PRIMARY LAWS, RULES, AND REGULATIONS REGARDING CONDUCT AND
ASSOCIATION WITH COUNTY JAIL INMATES

Individuals who are not employees of the Alameda County Sheriff's Office (ACSO), but who are working in and around inmates who are incarcerated within ACSO's institutions/facilities or camps, are to be apprised of the laws, rules and regulations governing conduct in associating with jail inmates. The following is a summation of pertinent information when non-departmental employees come in contact with jail inmates.

1. Persons who are not employed by ACSO, but are engaged in work at any ACSO institution/facility or camp, must observe and abide by all laws, rules and regulations governing the conduct of their behavior in associating with jail inmates. Failure to comply with these guidelines will lead to expulsion from ACSO institutions/facilities or camps.
2. ACSO does not recognize hostages for bargaining purposes. ACSO has a "NO HOSTAGE" policy and all jail inmates, visitors, and employees shall be made aware of this.
3. All persons entering onto institution/facility or camp grounds consent to a search of their person, property or vehicle at any time. Refusal by individuals to submit to a search of their person, property or vehicle will be cause for denial of access to the premises.
4. Persons normally permitted to enter an institution/facility or camp may be barred, for cause, by ACSO.
5. It is illegal for an individual who has been previously convicted of a felony offense to enter into ACSO institutions/facilities or camps without the prior approval of ACSO. It is also illegal for an individual to enter onto these premises for unauthorized purposes or to refuse to leave said premises when requested to do so. Failure to comply with this provision could lead to prosecution.
6. Encouraging and/or assisting jail inmates to escape is a crime. It is illegal to bring firearms, deadly weapons, explosives, tear gas, drugs or drug paraphernalia onto ACSO institutions/facilities or camp premises. It is illegal to give jail inmates any items brought from outside the property without express written approval from the ACSO. This includes, but is not limited to: firearms, explosives, alcoholic beverages, narcotics, or any drug or drug paraphernalia, including cocaine or marijuana. Failure to comply with these restrictions may result in prosecution.
7. It is illegal to give or take letters from jail inmates without the authorization of ACSO. It is also illegal to give or receive any type of gift and/or gratuities from jail inmates.
8. In an emergency situation the visiting program and other program activities may be suspended.
9. For security reasons, visitors must not wear clothing that in any way resembles ACSO-issued jail inmate clothing. Visitors may not wear clothing associated with gangs or gang symbols. Final approval of all clothing worn is at the discretion of the ACSO.
10. Interviews with SPECIFIC INMATES are not permitted. Conspiring with an inmate to circumvent policy and/or regulations constitutes a rule violation that may result in appropriate legal action.

I HEREBY CERTIFY AND ACKNOWLEDGE I HAVE READ THE ABOVE AND FULLY UNDERSTAND THE IMPLICATIONS REGARDING MY CONDUCT AND ASSOCIATION WITH JAIL INMATES. I ALSO UNDERSTAND VIOLATION OF ANY OF THE ABOVE COULD RESULT IN EXPULSION FROM AN ACSO INSTITUTION/FACILITY OR CAMP WITH THE POSSIBILITY OF CRIMINAL PROSECUTION.

VISITOR'S NAME AND TITLE (Print)	VISITOR'S SIGNATURE	DATE SIGNED
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ATTACHMENT B

LOST TOOL REPORT

Date: _____

Crew or Project # _____

Description: (Length, size, width, amount, trade name, ID mark, etc.)

Name of Supervisor or Casual who checked out tools: _____

When was the tool last seen? _____ When was stock issued? _____

Where: _____

By Whom: _____

List names of inmates assigned to work crew:

Time of call to Immediate Supervisor: _____

Time of call to Captain: _____

Comments: _____

Signature of Construction Manager or Supervisor

cc: Construction Manager
Captain

ATTACHMENT C

PROJECT METHOD OF PROCEDURE (MOP) FORM

MOP Title: _____

Date of Request: [Click here to enter a date.](#) Project Number: _____

Contractor: _____ Subcontractor: _____

Date of Work: [Click here to enter a date.](#) to [Click here to enter a date.](#)

Start Time: _____ End Time: _____

Critical Path Schedule Item

No ☐

Yes ☐

Start Date per Schedule: _____ Duration _____

Completion of prior MOP's required before proceeding: No ☐ Yes ☐

If Yes, which MOP/MOP's _____ MOP scheduled completion: _____

Facility Support Req: No ☐ Yes ☐

If Yes, staff size/expertise _____ Duration _____

Fall Protection Measures Req.: No ☐ Yes ☐

If yes, type: OH ladder work, lift equipment, scaffolding, other _____

Dust Protection/Filter Protection: No ☐ Yes ☐ Security Req.: No ☐ Yes ☐

Flagperson Req.: No ☐ Yes ☐

Utility Shut Down Req.: No ☐ Yes ☐

If Yes, Facility Systems Affected _____ Length of shut down _____

Utility/Systems contingency/backup plan: If req. attach written plan and sequence of operations.

Fire Watch Req.: No ☐ Yes ☐

Proper Advance Notice Provided. (**72 hours minimum req.**): No ☐ Yes ☐

If No Explain special circumstances _____

Logistics plan for protection barriers/security/safety measures/ access attached:

Access area blocked or inaccessible _____ duration _____

Risk Level to Operating Facility: Low ☐ Medium ☐ High ☐

Deliveries Req.: No ☐ Yes ☐

If yes, size of truck _____ Frequency of deliveries _____

Contract Work: No ☐ Yes ☒

C.O. Work: No ☐ Yes ☐ If Yes, C.O. # _____

Description of Work: Detail work durations for specific steps/scope of work.		
<i>CM/PM will contact the duty engineer prior to the start of work and after completion of work.</i>		
Project Observation (Name/Number):		
Area affected:		
Inspections		
Overtime inspection costs associated with the scope of work outlined above shall be borne by: County/GSA Contractor No Overtime Inspection Required		
Safety Measures		
Hot Work Permit Required: Yes Not Required Special Safety Req. Yes Not Required If YES Explain: _____.		
Submitted By:		
Contractor Manager/Superintendent:	Date:	Cell Phone #
Recommended By:		Approved By:
IOR:	Date:	Cell Phone #
Construction Manager:	Date:	Cell Phone #
Approved By:		
Facility Manager of Engineering:	Date:	Cell Phone #
ACSO Project Manager	Date:	Cell Phone #
County of Alameda, GSA:	Date:	Cell Phone #

*By signing above, signatory warrants and represents that he/she executed this MOP in his/her authorized capacity and that by his/her signature on this MOP, he/she or the entity upon behalf of which he/she acted, executed this MOP.

DOCUMENT 01 41 00

REGULATORY REQUIREMENTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Obtaining of Permits and Licenses and Work To Comply With All Applicable Regulations;
- B. Special Conditions;
- C. Quality Control.

1.02 DESCRIPTION:

- A. This section covers the general requirements for regulatory requirements pertaining to the Work and is supplementary to all other regulatory requirements mentioned or referenced elsewhere in the Contract Documents.

1.03 REQUIREMENTS OF REGULATORY AGENCIES:

- A. All statutes, ordinances, laws, rules, codes, regulations, standards, and the lawful orders of all public authorities having jurisdiction of the Work, are hereby incorporated into these Contract Documents as if repeated in full herein and are intended to be included in any reference to Code or Building Code, unless otherwise specified, including, without limitation, the references in the list below. Contractor shall make available at the Site copies of all the listed documents applicable to the Work as the County and/or Architect may request, including, without limitation, applicable portions of the California Code of Regulations ("CCR").
- B. Items of deferred approval shall be clearly marked on the first sheet of the Architect's and/or Engineer's approved Drawings.
 - (1) See Drawings and Specifications for specific requirements.

END OF DOCUMENT

DOCUMENT 01 42 13

ABBREVIATIONS AND ACRONYMS

PART 1 – GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions including without limitation, Definitions
- B. Special Conditions

1.02 DOCUMENT INCLUDES:

- A. Abbreviations used throughout the Contract Documents.
- B. Reference to a technical society, organization, or body is by abbreviation, as follows:

1.	AA	Aluminum Association
2.	AAMA	Architectural Aluminum Manufacturers Association
3.	AASHTO	American Association of State Highway and Transportation Officials
4.	ABPA	Acoustical and Board Products Association
5.	ACI	American Concrete Institute
6.	AGA	American Gas Association
7.	AGC	Associated General Contractors
8.	AHC	Architectural Hardware Consultant
9.	AI	Asphalt Institute
10.	AIA	American Institute of Architects
11.	AIEE	American Institute of Electrical Engineers
12.	AISC	American Institute of Steel Construction
13.	AISI	American Iron and Steel Institute
14.	AMCA	Air Moving and Conditioning Association
15.	ANSI	American National Standards Institute
16.	APA	American Plywood Association
17.	ARI	Air Conditioning and Refrigeration Institute
18.	ASHRAE	American Society of Heating, Refrigeration and Air Conditioning Engineers
19.	ASME	American Society of Mechanical Engineers

20.	ASSE	American Society of Structural Engineers
21.	ASTM	American Society of Testing and Materials
22.	AWPB	American Wood Preservers Bureau
23.	AWPI	American Wood preservers Institute
24.	AWS	American Welding Society
25.	AWSC	American Welding Society Code
26.	AWI	Architectural Woodwork Institute
27.	AWWA	American Water Works Association
28.	BIA	Brick Institute of America
29.	CCR	California Code of Regulations
30.	CLFMI	Chain Link Fence Manufacturers Institute
31.	CMG	California Masonry Guild
32.	CRA	California Redwood Association
33.	CRSI	Concrete Reinforcing Steel Institute
34.	CS	Commercial Standards
35.	CSI	Construction Specifications Institute
36.	CTI	Cooling Tower Institute
37.	FGMA	Flat Glass Manufacturer's Association
38.	FIA	Factory Insurance Association
39.	FM	Factory Mutual
40.	FS	Federal Specification
41.	FTI	Facing Title Institute
42.	GA	Gypsum Association
43.	ICBO	International Conference of Building Officials
44.	IEEE	Institute of Electrical and Electronic Engineers
45.	IES	Illumination Engineering Society
46.	LIA	Lead Industries Association
47.	MIA	Marble Institute of America
48.	MLMA	Metal Lath Manufacturers Association
49.	MS	Military Specifications
50.	NAAMM	National Association of Architectural Metal Manufacturers
51.	NBHA	National Builders Hardware Association
52.	NBFU	National Board of Fire Underwriters
53.	NBS	National Bureau of Standards
54.	NCMA	National Concrete Masonry Association
55.	NEC	National Electrical Code
56.	NEMA	National Electrical Manufacturers Association
57.	NFPA	National Fire Protection Association/National Forest Products Association
58.	NMWIA	National Mineral Wool Insulation Association
59.	NTMA	National Terrazzo and Mosaic Association
60.	NWMA	National Woodwork Manufacturer's Association
61.	ORS	Office of Regulatory Services (California)

62.	OSHA	Occupational Safety and Health Act
63.	PCI	Precast Concrete Institute
64.	PCA	Portland Cement Association
65.	PDCA	Painting and Decorating Contractors of America
66.	PDI	Plumbing Drainage Institute
67.	PEI	Porcelain Enamel Institute
68.	PG&E	Pacific Gas & Electric Company
69.	PS	Product Standards
70.	SDI	Steel Door Institute; Steel Deck Institute
71.	SJI	Steel Joist Institute
72.	SSPC	Steel Structures Painting Council
73.	TCA	Tile Council of America
74.	TPI	Truss Plate Institute
75.	UBC	Uniform Building Code
76.	UL	Underwriters Laboratories Code
77.	UMC	Uniform Mechanical Code
78.	USDA	United States Department of Agriculture
79.	VI	Vermiculite Institute
80.	WCLA	West Coast Lumberman's Association
81.	WCLB	West Coast Lumber Bureau
82.	WEUSER	Western Electric Utilities Service Engineering Requirements
83.	WIC	Woodwork Institute of California
84.	WPOA	Western Plumbing Officials Association

END OF DOCUMENT

DOCUMENT 01 42 16

DEFINITIONS AND REFERENCE STANDARDS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISION

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions including without limitation, Definitions;
- B. Special Conditions;

1.02 QUALITY ASSURANCE:

- A. For products or workmanship specified by association, trade, or Federal Standards, Contractor shall comply with requirements of the standard, except when more rigid requirements are specified in the Contract Documents, or are required by applicable codes.
- B. Contractor shall conform to current reference standard publication date in effect on the date of bid opening.
- C. Contractor shall obtain copies of standards unless specifically required not to by the Contract Documents.
- D. Contractor shall maintain a copy of all standards at jobsite during submittals, planning, and progress of the specific Work, until final completion, unless specifically required not to by the Contract Documents.
- E. Should specified reference standards conflict with Contract Documents, Contractor shall request clarification from the County and./or the Architect before proceeding.
- F. The contractual relationship of the parties to the Contract shall not be altered from the contractual relationship as indicated in the Contract Documents by mention or inference otherwise in any referenced document.
- G. Governing Codes shall be as shown in the Contract Documents including, without limitation, the Specifications.

1.03 SCHEDULE OF REFERENCES:

The following information is intended only for the general assistance of the Contractor, and the County does not represent that all of the information is current. It is the Contractor's responsibility to verify the correct information for each of the entities listed.

AA	Aluminum Association 900 19 th Street NW, Suite 300 Washington, DC 20006 www.aluminum.org	202/862-5100
AABC	Associated Air Balance Council 1518 K Street, NW, Suite 503 Washington, DC 20005 www.aabchq.com	202/737-0202
AAMA	American Architectural Manufacturers Association 1827 Walden Office Sq., Suite 104 Schaumburg, IL 60173-4268 www.aamanet.org	847/303-5664
AASHTO	American Association of State Highway and Transportation Officials 444 North Capitol Street, Suite 249 Washington, DC 20001 www.aashto.org	202/624-5800
AATCC	American Association of Textile Chemists and Colorists P.O. Box 12215 One Davis Drive Research Triangle Park, NC 27709-2215 www.aatcc.org	919/549-8141
ACI	American Concrete Institute P.O. Box 9094 Farmington Hills, MI 48333-9094 www.aci-int.org	248/848-3700
ACPA	American Concrete Pipe Association 222 West Las Colinas Blvd., Suite 641 Irving, TX 75039-5423 www.concrete-pipe.org	972/506-7216

ADC	Air Diffusion Council 11 South LaSalle St., Suite 1400 Chicago, IL 60603	312/201-0101
AFPA	American Forest and Paper Association 1111 19th St., NW, Suite 800 Washington, DC 20036	202/463-2700
AGA	American Gas Association 1515 Wilson Blvd. Arlington VA 22209 www.aga.com	703/841-8400
AHA	American Hardboard Association 1210 W. Northwest Hwy Palatine, IL 60067-1897	847/934-8800
AI	Asphalt Institute Research Park Drive P.O. Box 14052 Lexington, KY 40512-4052 www.asphaltinstitute.org	606/288-4960
AIA	The American Institute of Architects 1735 New York Avenue, NW Washington, DC 20006-5292 www.aia.org	202/626-7300
AISC	American Institute of Steel Construction One East Wacker Drive, Suite 3100 Chicago, IL 60601-2001	800/644-2400
AITC	American Institute of Timber Construction 7012 S. Revere Pkwy., Suite 140 Englewood, CO 80112 www.aitc-glulam.org	303/792-9559
ALCA	Associated Landscape Contractors of America 12200 Sunrise Valley Drive, Suite 150 Reston, VA 20191 www.alca.org	703/620-6363
ALI	Associated Laboratories, Inc.	214/565-0593

P.O. Box 152837
1323 Wall St.
Dallas, TX 75315

ALSC	American Lumber Standards Committee P.O. Box 210 Germantown, MD 20875	301/972-1700
AMCA	Air Movement and Control Association International, Inc. 30 W. University Drive Arlington Heights, IL 60004-1893 www.amca.org	847/394-0150
ANLA	American Nursery and Landscape Association 1250 Eye Street, NW, Suite 500 Washington, DC 20005	202/789-2900
ANSI	American National Standards Institute 11 West 42nd Street, 13th Floor New York, NY 10036-8002 www.ansi.org	212/642-4900
APA	APA-The Engineered Wood Association P.O. Box 11700 Tacoma, WA 98411-0700 www.apawood.org	206/565-6600
APA	Architectural Precast Association P.O. Box 08669 Fort Myers, FL 33908-0669	941/454-6989
ARI	Air Conditioning and Refrigeration Institute 4301 Fairfax Drive, Suite 425 Arlington, VA 22203 www.ari.org	703/524-8800
ARMA	Asphalt Roofing Manufacturers Association Center Park 4041 Powder Mill Road, Suite 404 Calverton, MD 20705	301/231-9050
ASA	Acoustical Society of America 500 Sunnyside Blvd.	516/576-2360

Woodbury, NY 11797

ASCE	American Society of Civil Engineers- World Headquarters 1801 Alexander Bell Drive Reston, VA 20190-4400 www.asce.org	800/548-2723 703/295-6000
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers 1791 Tullie Circle, NE Atlanta, GA 30329-2305 www.ashrae.org	800/527-4723 404/636-8400
ASLA	American Society of Landscape Architects 4401 Connecticut Ave., NW, 5th Floor Washington, DC 20008-2369 www.asla.org	202/686-2752
ASME	American Society of Mechanical Engineers 345 East 47 th Street New York, NY 10017-2392 www.asme.org	800/434-2763
ASPE	American Society of Plumbing Engineers 3617 Thousand Oaks Blvd., Suite 210 Westlake, CA 91362-3649	805/495-7120
ASQC	American Society for Quality Control 611 E. Wisconsin Avenue Milwaukee, WI 53201-3005 www.asqc.org	800/248-1946 414/272-8575
ASSE	American Society of Sanitary Engineering 28901 Clemens Road Westlake, OH 44145 www.asse-plumbing.org	216/835-3040
ASTM	American Society for Testing and Materials 100 Barr Harbor Drive West Conshohocken, PA 19428-2959 www.astm.org	610/832-9500

AWCI	Association of the Wall and Ceiling Industries--International 307 E. Annandale Road, Suite 200 Falls Church, VA 22042-2433 www.awci.org	703/534-8300
AWPA	American Wood-Preservers' Association 3246 Fall Creek Highway, Suite 1900 Granbury, TX 76049-7979	817/326-6300
AWS	American Welding Society 550 NW LeJeune Road Miami, FL 33126 www.amweld.org	800/443-9373 305/443-9353
AWWA	American Water Works Association 6666 West Quincy Avenue Denver, CO 80235 www.awwa.org	800/926-7337 303/794-7711
BHMA	Builders' Hardware Manufacturers Association 355 Lexington Avenue, 17th Floor New York, NY 10017-6603	212/661-4261
CBM	Certified Ballast Manufacturers Association 1422 Euclid Avenue, Suite 402 Cleveland, OH 44115-2094	216/241-0711
CGA	Compressed Gas Association 1725 Jefferson Davis Hwy, Suite 1004 Arlington, VA 22202-4102 www.cganet.com	703/412-0900
CISCA	Ceilings & Interior Systems Construction Association 1500 Lincoln Hwy, Suite 202 St. Charles, IL 60174 www.cisca.org	630/584-1919
CISPI	Cast Iron Soil Pipe Institute 5959 Shallowford Road, Suite 419 Chattanooga, TN 37421	423/892-0137
CPSC	Consumer Product Safety Commission	800/638-2772

	East West Towers 4330 East-West Hwy. Bethesda, MD 20814	
CPPA	Corrugated Polyethylene Pipe Association 432 N. Superior Street Toledo, OH 43604	800/510-2772 419/241-2221
CRA	California Redwood Association 405 Enfrente Drive, Suite 200 Novato, CA 94949	415/382-0662
CRI	Carpet and Rug Institute 310 S. Holiday Avenue Dalton, GA 30722-2048 www.carpet-rug.com	800/882-8846 706/278-3176
CRSI	Concrete Reinforcing Steel Institute 933 N. Plum Grove Road Schaumburg, IL 60173-4758 www.crsi.org	847/517-1200
CTI	Ceramic Tile Institute of America 12061 W. Jefferson Blvd. Culver City, CA 90230-6219	310/574-7800
DHI	Door and Hardware Institute 14170 Newbrook Drive Chantilly, VA 20151-2223 www.dhi.org	703/222-2010
DIPRA	Ductile Iron Pipe Research Association 245 Riverchase Pkwy East, Suite O Birmingham, AL 35244	205/988-9870
DOC	Department of Commerce 14 th Street and Constitution Avenue, NW Washington, DC 20230	202/482-2000
DOT	Department of Transportation 400 Seventh Street, SW Washington, DC 20590	202/366-4000

EJMA	Expansion Joint Manufacturers Association 25 N. Broadway Tarrytown, NY 10591-3201	914/332-0040
EPA	Environmental Protection Agency 401 M Street, SW Washington, DC 20460	202/260-2090
FCICA	Floor Covering Installation Contractors Association P.O. Box 948 Dalton, GA 30722-0948	706/226-5488
FM	Factory Mutual 1151 Boston-Providence Turnpike P.O. Box 9102 Norwood, MA 02062-9102 www.factorymutual.com	781/255-4300
FS	Federal Specifications Unit (Available from GSA) 470 East L'Enfant Plaza, SW, Suite 8100 Washington, DC 20407	202/619-8925
GA	Gypsum Association 810 First Street NE, Suite 510 Washington, DC 20002 www.usg.com	202/289-5440
GANA	Glass Association of North America 3310 SW Harrison Street Topeka, KS 66611-2279 www.glasswebsite.com/gana	913/266-7013
HMA	Hardwood Manufacturers Association 400 Penn Center Blvd., Suite 530 Pittsburgh, PA 15235-5605 www.hardwood.org	412/828-0770
HPVA	Hardwood Plywood and Veneer Association 1825 Michael Farraday Drive P.O. Box 2789 Reston, VA 22195-0789 www.hpva.org	703/435-2900

IEEE	Institute of Electrical and Electronic Engineers 345 E. 47 th Street New York, NY 10017-2394 www.ieee.org	800/678-4333 212/705-7900
IESNA	Illuminating Engineering Society of North America 120 Wall Street, 17th Floor New York, NY 10005-4001 www.iesna.org	212/248-5000
ITS	Intertek Testing Services P.O. Box 2040607/753-6711 3933 US Route 11 Cortland, NY 13045-7902 www.itsglobal.com	800/345-3851
LMA	Laminating Materials Association 116 Lawrence Street Hillsdale, NJ 07642-2730 www.lma.org	201/664-2700
MCAA	Mechanical Contractors Association of America 1385 Piccard Drive Rockville, MD 20850-4329	301/869-5800
ML/SFA	Metal Lath/Steel Framing Association (A Division of the NAAMM) 8 South Michigan Avenue, Suite 1000 Chicago, IL 60603	312/456-5590
MSS	Manufacturers Standardization Society for the Valve and Fittings Industry 127 Park Street, NE Vienna, VA 22180-4602	703/281-6613
NAA	National Arborist Association P.O. Box 1094603/673-3311 Amherst, NH 03031-1094 www.natlarb.com	800/733-2622
NAAMM	National Association of Architectural Metal Manufacturers 8 South Michigan Avenue, Suite 1000	312/782-5590

Chicago, IL 60603
www.gss.net/naamm

NAIMA	North American Insulation Manufacturers Association 44 Canal Center Plaza, Suite 310 Alexandria, VA 22314 www.naima.org	703/684-0084
NAPA	National Asphalt Pavement Association NAPA Building 5100 Forbes Blvd. Lanham, MD 20706-4413	301/731-4748
NCSPA	National Corrugated Steel Pipe Association 1255 23rd Street, NW, Suite 850 Washington, DC 20037 www.ncspa.org	202/452-1700
NEBB	National Environmental Balancing Bureau 8575 Grovemont Circle Gaithersburg, MD 20877-4121	301/977-3698
NECA	National Electrical Contractors Association 3 Bethesda Metro Center, Suite 1100 Bethesda, MD 20814-5372	301/657-3110
NEI	National Elevator Industry 185 Bridge Plaza North, Suite 310 Fort Lee, NJ 07024	201/944-3211
NEMA	National Electrical Manufacturers' Association 1300 N. 17 th Street, Suite 1847 Rosslyn, VA 22209 www.nema.org	703/841-3200
NFPA	National Fire Protection Association One Batterymarch Park P.O. Box 9101 Quincy, MA 02269-9101 www.nfpa.org	800/344-3555 617/770-3000
NHLA	National Hardwood Lumber Association P.O. Box 34518	901/377-1818

	Memphis, TN 38184-0518 www.natlhardwood.org	
NIA	National Insulation Association 99 Canal Center Plaza, Suite 222 Alexandria, VA 22314 www.insulation.org	703/683-6422
NPA	National Particleboard Association 18928 Premiere Court Gaithersburg, MD 20879-1569 www.pbmdf.com	301/670-0604
NPCA	National Paint and Coatings Association 1500 Rhode Island Avenue, NW Washington, DC 20005-5597 www.paint.org	202/462-6272
NRCA	National Roofing Contractors Association O'Hare International Center 10255 W. Higgins Road, Suite 600 Rosemont, IL 60018-5607 www.roofonline.org	800/323-9545
NRMCA	National Ready Mixed Concrete Association 900 Spring Street Silver Spring, MD 20910 www.nrmca.org	301/587-1400
NSF	NSF International P.O. Box 130140 Ann Arbor, MI 48113-0140 www.nsf.org	313/769-8010
NUSIG	National Uniform Seismic Installation Guidelines 12 Lahoma Court Alamo, CA 94526	510/946-0135
NWWDA	National Wood Window and Door Association 1400 E. Touhy Avenue, G-54 Des Plaines, IL 60018 www.nwwda.org	800/223-2301
SHA	Occupational Safety and Health Administration	202/219-8148

(U.S. Department of Labor)
200 Constitution Ave., NW
Washington, DC 20210

PCA	Portland Cement Association 5420 Old Orchard Road Skokie, IL 60077-1083 www.portcement.org	847/966-6200
PDCA	Painting and Decorating Contractors of America 3913 Old Lee Hwy, Suite 33-B Fairfax, VA 22030 www.pdca.com	800/332-7322 703/359-0826
PDI	Plumbing and Drainage Institute 45 Bristol Drive, Suite 101 South Easton, MA 02375	800/589-8956 508/230-3516
RFCI	Resilient Floor Covering Institute 966 Hungerford Drive, Suite 12-B Rockville, MD 20805-1714	301/340-8580
RIS	Redwood Inspection Service c/o California Redwood Association 405 Enfrente Drive, Suite 200 Novato, CA 94949-7206	415/382-0662
SDI	Steel Deck Institute P.O. Box 25 Fox River Grove, IL 60012 www.sdi.org	847/462-1930
SDI	Steel Door Institute 30200 Detroit Road Cleveland, OH 44145-1967	216/889-0010
SMA	Stucco Manufacturers Association 14006 Ventura Blvd. Sherman Oaks, CA 91403	213/789-8733
SMACNA	Sheet Metal and Airconditioning Contractors National Association, Inc. P.O. Box 221230	703/803-2980

Chantilly, VA 20151-1209
www.smacna.org

SPI	Society of the Plastics Industry, Inc. Spray Polyurethane Division 202/974-5200 1801 K Street, NW, Suite 600K Washington, DC 20006 www.socplas.org	800/951-2001
SSPC	Steel Structures Painting Council 40 24th Street, 6th Floor Pittsburgh, PA 15222-4643	412/281-2331
TCA	Tile Council of America 100 Clemson Research Blvd. Anderson, SC 29625	864/646-8453
TPI	Turfgrass Producers International 1855-A Hicks Road Rolling Meadows, IL 60008	800/405-8873 847/705-9898
UL	Underwriters Laboratories, Inc. 333 Pfingston Road 847/272-8800 Northbrook, IL 60062 www.ul.com	800/704-4050
UNI	Uni-Bell PVC Pipe Association 2655 Villa Creek Drive, Suite 155 Dallas, TX 75234 www.members.aol.com/unibell1	972/243-3902
USDA	U.S. Department of Agriculture 14th St. and Independence Ave., SW Washington, DC 20250	202/720-8732
WA	Wallcoverings Association 401 N. Michigan Avenue Chicago, IL 60611-4267	312/644-6610
WCLIB	West Coast Lumber Inspection Bureau P.O. Box 23145 Portland, OR 97281-3145	503/639-0651
WCMA	Window Covering Manufacturers Association	212/661-4261

355 Lexington Ave., 17th Floor
New York, NY 10017-6603

WIC	Woodwork Institute of California P.O. Box 980247 West Sacramento, CA 95798-0247	916/372-9943
WLPDIA	Western Lath/Plaster/Drywall Industries Association 8635 Navajo Road San Diego, CA 92119	619/466-9070
WMMPA	Wood Moulding & Millwork Producers Association 507 First Street Woodland, CA 95695 www.wmmpa.com	800/550-7889 916/661-9591
WRI	Wire Reinforcement Institute 203 Loudoun Street, SW Leesburg, VA 20175-2718	703/779-2339
WWPA	Western Wood Products Association Yeon Building 522 S.W. 5th Avenue Portland, OR 97204-2122	503/224-3930

END OF DOCUMENT

DOCUMENT 01 43 00

QUALITY ASSURANCE - MATERIALS AND EQUIPMENT

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Purchase of Materials and Equipment;
- B. Special Conditions;
- C. Imported Materials Certification.

1.02 MATERIAL AND EQUIPMENT

- A. Only items approved by the County and/or Architect shall be used.
- B. Contractor shall submit lists of products and other product information in accordance with the Contract Documents, including, without limitation, the provisions regarding the submittals.

1.03 MATERIAL AND EQUIPMENT COLORS

- A. The County and/or Architect will provide a schedule of colors.
- B. No individual color selections will be made until after approval of all pertinent materials and equipment and after receipt of appropriate samples in accordance with the Contract Documents, including, without limitation, the provisions regarding the submittals.
- C. Contractor shall request priority in writing for any item requiring advance ordering to maintain the approved Construction Schedule.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Contractor shall deliver manufactured materials in original packages, containers, or bundles (with seals unbroken), bearing name or identification mark of manufacturer.

- B. Contractor shall deliver fabrications in as large assemblies as practicable; where specified as shop-primed or shop-finished, package or crate as required to preserve such priming or finish intact and free from abrasion.
- C. Contractor shall store materials in such a manner as necessary to properly protect them from damage. Materials or equipment damaged by handling, weather, dirt, or from any other cause will not be accepted.
- D. Materials are not be acceptable that have been warehoused for long periods of time, stored or transported in improper environment, improperly packaged, inadequately labeled, poorly protected, excessively shipped, deviated from normal distribution pattern, or reassembled.
- E. Contractor shall store material so as to cause no obstructions of sidewalks, roadways, and underground services. Contractor shall protect material and equipment furnished under Contract.
- F. Contractor may store materials on Site with prior written approval by the County, all material shall remain under Contractor's control and Contractor shall remain liable for any damage to the materials. Should the Project Site not have storage area available, the Contractor shall provide for off-site storage at no cost to County.
- G. When any room in Project is used as a shop or storeroom, the Contractor shall be responsible for any repairs, patching, or cleaning necessary due to that use. Location of storage space shall be subject to prior written approval by County.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturers listed in various sections of Contract Documents are names of those manufacturers that are believed to be capable of supplying one or more of items specified therein.
- B. The listing of a manufacturer does not imply that every product of that manufacturer is acceptable as meeting the requirements of the Contract Documents.

2.02 FACILITIES AND EQUIPMENT

- A. Contractor shall provide, install, maintain, and operate a complete and adequate facility for handling, the execution, disposal, and distribution of material and equipment as required for proper and timely performance of Work connected with Contract.

2.03 MATERIAL REFERENCE STANDARDS

- A. Where material is specified solely by reference to “standard specifications” and if requested by County, Contractor shall submit for review data on actual material proposed to be incorporated into Work of Contract listing name and address of vendor, manufacturer, or producer, and trade or brand names of those materials, and data substantiating compliance with standard specifications.

PART 3 - EXECUTION

3.01 WORKMANSHIP

- A. Where not more specifically described in any other Contract Documents, workmanship shall conform to methods and operations of best standards and accepted practices of trade or trades involved and shall include items of fabrication, construction, or installation regularly furnished or required for completion (including finish and for successful operation, as intended).
- B. Work shall be executed by tradespersons skilled in their respective lines of Work. When completed, parts shall have been durably and substantially built and present a neat appearance.

3.02 COORDINATION

- A. Contractor shall coordinate installation of Work so as to not interfere with installation of others. Adjustment or rework because of Contractor’s failure to coordinate will be at no additional cost to County.
- B. Contractor shall examine in-place work for readiness, completeness, fitness to be concealed or to receive other work, and in compliance with Contract Documents. Concealing or covering Work constitutes acceptance of additional cost which will result should in-place Work be found unsuitable for receiving other Work or otherwise deviating from the requirements of the Contract Documents.

3.03 COMPLETENESS

- A. Contractor shall provide all portions of the Work, unless clearly stated otherwise, installed complete and operational with all elements, accessories, anchorages,

utility connections, etc., in manner to assure well-balanced performance, in accordance with manufacturer's recommendations and by Contract Documents. For example, electric water coolers require water, electricity, and drain services; roof drains require drain system; sinks fit within countertop, etc. Terms such as "installed complete," "operable condition," "for use intended," "connected to all utilities," "terminate with proper cap," "adequately anchored," "patch and refinish," "to match similar," should be assumed to apply in all cases, except where completeness of functional or operable condition is specifically stated as not required.

3.04 APPROVED INSTALLER OR APPLICATOR

- A. Installation by a manufacturer's approved installer or applicator is an understood part of Specifications and only approved installer or applicator is to provide on-site Work where specified manufacturer has on-going program of approving (i.e. certifying, bonding, re-warranting) installers or applicators. Newly established relationships between a manufacturer and an installer or applicator that does not have other approved applicator work in progress or completed is not approved for this Project.

3.05 MANUFACTURER'S RECOMMENDATIONS

- A. All installations shall be in accordance with manufacturer's published recommendations and specific written directions of manufacturer's representative. Should Contract Documents differ from recommendations of manufacturer or directions of his representative, Contractor shall analyze differences, make recommendations to the County and the Architect in writing, and shall not proceed until interpretation or clarification has been issued by the County and/or the Architect.

END OF DOCUMENT

DOCUMENT 01 45 00

QUALITY CONTROL

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Inspections and Tests, Uncovering of Work and Non-conforming of Work and Correction of Work;
- B. Special Conditions.

1.02 RELATED CODES:

- A. The Work is governed by requirements of Title 24, California Code of Regulations ("CCR"), and the Contractor shall keep a copy of these available at the job Site for ready reference during construction.

1.03 OBSERVATION AND SUPERVISION:

The County and Architect or their appointed representatives will review the Work and the Contractor shall provide facilities and access to the Work at all times as required to facilitate this review. Administration by the Architect and any consulting Structural Engineer will be in accordance with applicable regulations.

1.04 TESTING AGENCIES:

- A. Testing agencies and tests shall be in conformance with the General Documents. .
- B. Testing and inspection of construction materials and workmanship shall be performed by a qualified laboratory, referred to hereinafter as the "Testing Laboratory." The Testing Laboratory shall be under direction of an engineer registered in the State of California, shall conform to requirements of ASTM E329, and shall be employed by or in contract with the County.

1.05 TESTS AND INSPECTIONS:

- A. The Contractor shall be responsible for notifying the Construction Manager of all required tests and inspections. Contractor shall notify the Construction Manager

forty-eight (48) hours in advance of performing any Work requiring testing or inspection.

- B. The Contractor shall provide access to Work to be tested and furnish incidental labor, equipment, and facilities to facilitate all inspections and tests.
- C. The County will pay for first inspections and tests required by the “CCR”, and other inspections or tests that the County and/or the Architect may direct to have made, including the following principal items:
 - (1) Tests and observations for earthwork and paving.
 - (2) Tests for concrete mix designs, including tests of trial batches.
 - (3) Tests and inspections for structural steel work if applicable.
 - (4) Field tests for framing lumber moisture content.
 - (5) Additional tests directed by the County that establish that materials and installation comply with the Contract Documents.
 - (6) Test and observation of welding and expansion anchors.
- D. The County may at its discretion, pay and back charge the Contractor for:
 - (1) Retests or re-inspections, if required, and tests or inspections required due to Contractor error or lack of required identifications of material.
 - (2) Uncovering of work in accordance with Contract Documents.
 - (3) Testing done on weekends, holidays, and overtime will be chargeable to the Contractor for the overtime portion.
 - (4) Testing done off Site.
- E. Testing and inspection reports and certifications:
 - (1) If initially received by Contractor, Contractor shall provide to each of the following a copy of the agency or laboratory report of each test or inspection or certification.
 - a. The County;
 - b. The Construction Manager, if any;

- c. The Architect;
- d. The Consulting Engineer, if any;
- e. Other Engineers on the Project, as appropriate; and
- f. The Contractor.

PART 2 - PRODUCTS

2.01 TYPE OF TEST AND INSPECTIONS (As applies to the Project):

- A. See Drawings and Specifications.

END OF DOCUMENT

DOCUMENT 01 50 00

TEMPORARY FACILITIES AND CONTROLS

PART 1 – GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions
- B. Special Conditions
- C. Site Standards

1.02 TEMPORARY UTILITIES:

- A. Electric Power and Lighting
 - (1) The County will furnish and pay for power during the course of the work to the extent power is available in the building(s) or on the Site. The Contractor shall be responsible for providing temporary facilities required to deliver that power service from its existing location in the building(s) or on the Site to point of intended use.
 - (2) Contractor shall verify characteristics of power available in building(s) or on the Site. Contractor shall take all actions required to make modifications where power of higher voltage or different phases of current are required. Contractor shall be fully responsible for providing that service and shall pay all costs required therefor.
 - (3) The Contractor shall furnish, wire for, install, and maintain temporary electrical lights wherever it is necessary to provide illumination for the proper performance and/or observation of the Work: a minimum of 20 foot-candles for rough work and 50 foot-candles for finish work.
- B. Heat and Ventilation
 - (1) Contractor shall provide temporary heat to maintain environmental conditions to facilitate progress of the Work, to meet specified minimum conditions for the installation and curing of materials, and to protect materials and finishes from damage due to improper temperature and

humidity conditions. Portable heaters shall be standard units complete with controls.

- (2) Contractor shall provide forced ventilation and dehumidification, as required, of enclosed areas for proper installation and curing of materials, to disperse humidity, and to prevent hazardous accumulations of dust, fumes, vapors, and gases.
- (3) Contractor shall pay the costs of installation, maintenance, operation, and removal of temporary heat and ventilation, including costs for fuel consumed, required for the performance of the Work.

C. Water

- (1) The County will furnish and pay for water during the course of the work to the extent water is then available in the building(s) or on the Site. The Contractor shall be responsible for providing temporary facilities required to deliver such utility service from its existing location in the building(s) or on the Site to point of intended use.
- (2) Contractor shall use backflow preventers on water lines at point of connection to County's water supply. Backflow preventers shall comply with requirements of Uniform Plumbing Code.
- (3) Contractor shall make potable water available for human consumption.

D. Sanitary Facilities

- (1) Contractor shall provide sanitary temporary facilities in no fewer numbers than required by law and such additional facilities as may be directed by the County for the use of all workers. The facilities shall be maintained in a sanitary condition at all times and shall be left at the Site until removal is directed by the County or Contractor completes all other work at the Site.
- (2) Use of toilet facilities in the Work under construction shall not be permitted except by consent of the County.

E. Telephone Service

- (1) Contractor shall arrange with local telephone service company for telephone service for the performance of the Work. Contractor shall, at a minimum, provide in its field office one line for telephone and one line for fax machine.

- (2) Contractor shall pay the costs for telephone and fax lines installation, maintenance, service, and removal.

F. Fire Protection:

- (1) Contractor shall provide and maintain fire extinguishers and other equipment for fire protection. Such equipment shall be designated for use for fire protection only and shall comply with all requirements of the California Fire, State Fire Marshall and/or its designee.
- (2) Where on-site welding and burning of steel is unavoidable, Contractor shall provide protection for adjacent surfaces.

G. Trash Removal:

- (1) See Document 01 74 19 Construction Waste Management

1.03 CONSTRUCTION AIDS:

A. Plant and Equipment:

- (1) Contractor shall furnish, operate, and maintain a complete plant for fabricating, handling, conveying, installing, and erecting materials and equipment; and for conveyances for transporting workmen. Include elevators, hoists, debris chutes, and other equipment, tools, and appliances necessary for performance of the Work.
- (2) Contractor shall maintain plant and equipment in safe and efficient operating condition. Damages due to defective plant and equipment, and uses made thereof, shall be repaired by Contractor at no expense to the County.

- B. None of the County's tools and equipment shall be used by Contractor for the performance of the Work

1.04 BARRIERS AND ENCLOSURES:

- A. Contractor shall obtain the County's written permission for locations and types of temporary barriers and enclosures, including fire-rated materials proposed for use, prior to their installation.
- B. Contractor shall provide and maintain temporary enclosures to prevent public entry and to protect persons using other buildings and portions of the Site and/or

Premises, the public, and workers. Contractor shall also protect the Work and existing facilities from the elements, and adjacent construction and improvements, persons, and trees and plants from damage and injury from demolition and construction operations.

- C. Contractor shall provide site access to existing facilities for persons using other buildings and portions of the Site, the public, and for deliveries and other services and activities.
- D. Tree and Plant Protection:
 - (1) Contractor shall preserve and protect existing trees and plants on the Premises that are not designated or required to be removed, and those adjacent to the Premises.
 - (2) Contractor shall provide barriers to a minimum height of 4'-0" around drip line of each tree and plant, around each group of trees and plants, as applicable, in the proximity of demolition and construction operations.
 - (3) Contractor shall not park trucks, store materials, perform Work or cross over landscaped areas. Contractor shall not dispose of paint thinners, water from cleaning, plastering or concrete operations, or other deleterious materials in landscaped areas, storm drain systems, or sewers. Plant materials damaged as a result of the performance of the Work shall, at the option of the County and at Contractor's expense, either be replaced with new plant materials equal in size to those damaged or by payment of an amount representing the value of the damaged materials as determined by the County.
 - (4) Contractor shall remove soil that has been contaminated during the performance of the Work by oil, solvents, and other materials which could be harmful to trees and plants, and replace with good soil, at Contractor's expense
 - (5) Excavation Around Trees:
 - (a) Excavation within drip lines of trees shall be done only where absolutely necessary and with written permission from the County.
 - (b) Where trenching for utilities is required within drip lines, tunneling under and around roots shall be by hand digging and shall be approved by the County. Main lateral roots and taproots shall not be cut. All roots 2 inches in diameter and larger shall be tunneled under and heavily wrapped with wet burlap so as to prevent

scarring or excessive drying. Smaller roots that interfere with installation of new work may be cut with prior approval by the County. Roots must first be cut with a Vermeer, or equivalent, root cutter prior to any trenching.

- (c) Where excavation for new construction is required within drip line of trees, hand excavation shall be employed to minimize damage to root system. Roots shall be relocated in backfill areas wherever possible. If encountered immediately adjacent to location of new construction, roots shall be cut approximately 6 inches back from new construction.
- (d) Approved excavations shall be carefully backfilled with the excavated materials approved for backfilling. Backfill shall conform to adjacent grades without dips, sunken areas, humps, or other surface irregularities. Do not use mechanical equipment to compact backfill. Tamp carefully using hand tools, refilling and tamping until Final Acceptance as necessary to offset settlement.
- (e) Exposed roots shall not be allowed to dry out before permanent backfill is placed. Temporary earth cover shall be provided, or roots shall be wrapped with four layers of wet, untreated burlap and temporarily supported and protected from damage until permanently relocated and covered with backfill.
- (f) Accidentally broken roots should be sawed cleanly 3 inches behind ragged end.

1.05 SECURITY AND PARKING:

- A. The Contractor shall be responsible for project security for materials, tools, equipment, supplies, and completed and partially completed Work.
- B. Contractor is responsible for any charges associated with parking of Contractor and Contractor employee's vehicles either at County facilities or off-site. Unless otherwise stated, all parking at County facilities requires payment.

1.06 TEMPORARY CONTROLS:

- A. Noise Control
 - (1) Contractor acknowledge, that adjacent facilities may remain in operation during all or a portion of the Work period, and it shall take all reasonable

precautions to minimize noise as required by applicable laws and the Contract Documents.

- (2) Notice of proposed noisy operations, including without limitation, operation of pneumatic demolition tools, concrete saws, and other equipment, shall be submitted to the County a minimum of forty-eight (48) hours in advance of their performance.

B. Noise and Vibration

- (1) Equipment and impact tools shall have intake and exhaust mufflers.
- (2) Contractor shall cooperate with County to minimize and/or seize the use of noisy and vibratory equipment if that equipment becomes objectionable by its longevity.

C. Dust and Dirt

- (1) Contractor shall conduct demolition and construction operations to minimize the generation of dust and dirt, and prevent dust and dirt from interfering with the progress of the Work and from accumulating in the Work and adjacent areas including, without limitation, occupied facilities.
- (2) Contractor shall periodically water exterior demolition and construction areas to minimize the generation of dust and dirt.
- (3) Contractor shall ensure that all hauling equipment and trucks carrying loads of soil and debris shall have their loads sprayed with water or covered with tarpaulins, and as otherwise required by local and state ordinance.
- (4) Contractor shall prevent dust and dirt from accumulating on walks, roadways, parking areas, and planting, and from washing into sewer and storm drain lines.

D. Water

Contractor shall not permit surface and subsurface water, and other liquids, to accumulate in or about the vicinity of the Premises. Should accumulation develop, Contractor shall control the water or other liquid, and suitably dispose of it by means of temporary pumps, piping, drainage lines, troughs, ditches, dams, or other methods.

E. Pollution

- (1) No burning of refuse, debris, or other materials shall be permitted on or in the vicinity of the Premises.
 - (2) Contractor shall comply with applicable regulatory requirements and anti-pollution ordinances during the conduct of the Work including, without limitation, demolition, construction, and disposal operations.
- F. Lighting:
 - (1) If portable lights are used after dark, all light must be located so as not to direct light into neighboring property.

1.07 JOB SIGN(S):

- A. General:
 - (1) If required, contractor shall provide and maintain a Project identification sign with the design, text, and colors designated by the County and/or the Architect; locate sign as approved by the County.
 - (2) Signs other than the specified Project sign and or signs required by law, for safety, or for egress, shall not be permitted, unless otherwise approved in advance by the County.
- B. Materials:
 - (1) Structure and Framing: Structurally sound, new or used wood or metal; wood shall be nominal 3/4-inch exterior grade plywood.
 - (2) Sign Surface: Minimum 3/4-inch exterior grade plywood.
 - (3) Rough Hardware: Galvanized.
 - (4) Paint: Exterior quality, of type and colors selected by the County and/or the Architect.
- C. Fabrication:
 - (1) Contractor shall fabricate to provide smooth, even surface for painting.
 - (2) Size: 4'-0" x 8'-0", unless otherwise indicated.

- (3) Contractor shall paint exposed surfaces of supports, framing, and surface material with exterior grade paint: one coat of primer and one coat of finish paint.
- (4) Text and Graphics: As indicated.

1.08 PUBLICITY RELEASES:

- A. Contractor shall not release any information, story, photograph, plan, or drawing relating information about the Project to anyone, including press and other public communications medium, including, without limitation, on website(s).

END OF DOCUMENT

DOCUMENT 01 57 21
INDOOR AIR QUALITY CONTROLS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Construction procedures to promote adequate indoor air quality after construction.
- B. Building flush-out after construction and before occupancy.
- C. Procedures for testing baseline IAQ. Baseline IAQ requirements specify maximum indoor pollutant concentrations for acceptance of the facility.
- D. Requirements for Independent Materials Testing of specific materials anticipated to have measurable impact on IAQ.
- E. Testing indoor air quality before commencement of construction; existing building areas only.
- F. Testing indoor air quality after completion of construction.

1.02 PROJECT GOALS

- A. Dust and Airborne Particulates: Prevent deposit of dust and other particulates in HVAC ducts and equipment.
 - 1. Cleaning of ductwork is not contemplated under this Contract.
 - 2. Bear the cost of cleaning required due to failure to protect ducts and equipment from construction dust.
 - 3. Contractor shall bear the cost of cleaning required due to failure to protect ducts and equipment from construction dust.
 - 4. Establish condition of existing ducts and equipment prior to start of alterations.
- B. Airborne Contaminants: Procedures and products have been specified to minimize indoor air pollutants.
 - 1. Furnish products meeting the specifications.
 - 2. Avoid construction practices that could result in contamination of installed products leading to indoor air pollution.
- C. Ventilation: HVAC system has been designed to achieve the minimum requirements for ventilation specified in ASHRAE 62.1.

1.03 REFERENCE STANDARDS

- A. ASHRAE Std 52.2 - Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size; 2012, with 2015 amendments.
- B. ASHRAE Std 62.1 - Ventilation for Acceptable Indoor Air Quality; 2016.
- C. ASHRAE Std 129 - Measuring Air-Change Effectiveness; 1997 (Reaffirmed 2002).

- D. CAL (CDPH SM) - Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions From Indoor Sources Using Environmental Chambers; California Department of Public Health; v1.1, 2010.
- E. CAL (EESR) - California Energy Efficiency Standards Residential Alternative Calculation Method (ACM) Approval Manual; 2005.
- F. SMACNA (OCC) - IAQ Guidelines for Occupied Buildings Under Construction; 2007.

1.04 DEFINITIONS

- A. Definitions pertaining to sustainable development: As defined in ASTM E2114.
- B. Adequate ventilation: Ventilation, including air circulation and air changes, required to cure materials, dissipate humidity, and prevent accumulation of dust fumes, vapors, or gasses.
- C. Adsorptive Materials: Gypsum board, acoustical ceiling tile and panels, carpet and carpet tile, fabrics, fibrous insulation, and other similar products.
- D. Contaminants: Gases, vapors, regulated pollutants, airborne mold and mildew, and the like, as specified.
- E. Environmental pollution and damage: The presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare: unfavorably alter ecological balances: or degrade the utility of the environment for aesthetic, cultural, or historical purpose.
- F. Hazardous Materials: Any material that regulated as a hazardous material in accordance with 49 CFR 173, requires a Material Safety Data Sheet (MSDS) in accordance with 29 CFR 1910.1200, or which during end use, treatment, handling, storage, transportation or disposal meets or has components which meet or have the potential to meet the definition of hazardous Waste in accordance with 40 CFR 261. Throughout this specification, hazardous material includes hazardous chemicals.
 - 1. Hazardous materials include: pesticides, biocides, and carcinogens as listed by recognized authorities, such as the Environmental Protection Agency (EPA) and the international Agency for Research on Cancer (IARC).
 - 2. Do NOT submit MSDS sheets to Architect as construction submittals.
- G. Indoor Air Quality (IAQ): The composition and characteristics of the air in an enclosed space that affect the occupants of that space. The indoor air quality of the space refers to the relative quality of air in a building with respect to contaminants and hazards and is determined by the level of indoor air pollution and other characteristics of the air, including those that impact thermal comfort such as air temperature, relative humidity and air speed.
- H. Interior final finishes: materials and products will be exposed at interior, occupied spaces: including flooring, wallcovering, finish carpentry, and ceilings.

- I. Packaged dry products: materials and products that are installed in dry form and are delivered to the site in manufacture's packaging; including carpets, resilient flooring, ceiling tiles, and insulation.
- J. Particulates: Dust, dirt, and other airborne solid matter.
- K. Wet products: Materials and products installed in wet form, including paints, sealants, adhesives, and special coatings.
- L. Wet Work: Concrete, plaster, coatings, and other products that emit water vapor or volatile organic compounds during installation, drying, or curing.

1.05 ADMINISTRATIVE REQUIREMENTS

- A. Preconstruction Meeting
 - 1. After award of Contract and prior to the commencement of the Work, schedule and conduct meeting with Owner and Architect to discuss the proposed IAQ Management Plan and to develop mutual understanding relative to details of environmental protection.

1.06 SUBMITTALS

- A. Indoor Air Quality Management Plan: Describe in detail measures to be taken to promote adequate indoor air quality upon completion; use SMACNA (OCC) as a guide.
 - 1. Submit not less than 10 days before the Preconstruction meeting.
 - 2. Identify potential sources of odor and dust.
 - 3. Identify construction activities likely to produce odor or dust.
 - 4. Identify areas of project potentially affected, especially occupied areas.
 - 5. Evaluate potential problems by severity and describe methods of control.
 - 6. Describe construction ventilation to be provided, including type and duration of ventilation, use of permanent HVAC systems, types of filters and schedule for replacement of filters.
 - 7. Describe cleaning and dust control procedures.
 - 8. Describe coordination with commissioning procedures.
- B. Baseline Indoor Air Quality (IAQ) Test Reports.
- C. Independent Materials Testing Reports. Submit for the following products:
 - 1. Emissions:
 - a. Fireproofing ;material on appropriate substrate.
 - b. Ceiling tile.
 - c. Resilient flooring.
 - d. Carpet including adhesive and concrete flooring.
 - e. Interior paint on appropriate substrate, including any primer coat.
 - f. Wall covering.
 - 2. Lethal Toxic Potency: See Division 02 Specifications.

3. Microbial Growth: See Division 02 Specifications.
 - a. Fireproofing material on appropriate substrate.
- D. Product Data: Submit product data for filtration media used during construction and during operation. Include Minimum Efficiency Reporting Value (MERV).
- E. Interior Finishes Installation Schedule: Identify each interior finish that either generates odors, moisture, or vapors or is susceptible to adsorption of odors and vapors, and indicate air handling zone, sequence of application, and curing times.
- F. Duct and Terminal Unit Inspection Report.
- G. Product Data: Provide manufacturer's performance data for MERV 8 filtration media used during the construction period.
- H. Air Contaminant Test Plan: Identify:
 1. Testing agency qualifications.
 2. Locations and scheduling of air sampling.
 3. Test procedures, in detail.
 4. Test instruments and apparatus.
 5. Sampling methods.
- I. Air Contaminant Test Reports: Show:
 1. Location where each sample was taken, and time.
 2. Test values for each air sample; average the values of each set of 3.
 3. HVAC operating conditions.
 4. Certification of test equipment calibration.
 5. Other conditions or discrepancies that might have influenced results.
- J. Building Flush-out Reports: NOT USED.
- K. Ventilation Effectiveness Test Plan: Identify:
 1. Testing agency qualifications.
 2. Description of test spaces, including locations of air sampling.
 3. Test procedures, in detail; state whether tracer gas decay or step-up will be used.
 4. Test instruments and apparatus; identify tracer gas to be used.

5. Sampling methods.
 - L. Ventilation Effectiveness Test Reports: Show:
 1. Include preliminary tests of instruments and apparatus and of test spaces.
 2. Calculation of ventilation effectiveness, E.
 3. Location where each sample was taken, and time.
 4. Test values for each air sample.
 5. HVAC operating conditions.
 6. Other information specified in ASHRAE Std 129.
 7. Other conditions or discrepancies that might have influenced results.
 - LI. Documentation Photograph Requirements: Specified in Document 01 10 00.
- 1.07 QUALITY ASSURANCE
- A. Testing and Inspection Agency Qualifications: Independent testing agency having minimum of 5 years experience in performing the types of testing specified.
- 1.08 CONSTRUCTION INDOOR AIR QUALITY MANAGEMENT PLAN
- A. Develop, submit and implement Construction Indoor Air Quality (IAQ) Management Plan meeting SMACNA IAQ Guidelines for Occupied Buildings under Construction. Sample Construction Indoor Air Quality Management Plan is attached as Exhibit 1 to end of this section.
 - B. Construction Indoor Air Quality Management Plan to describe in detail measures specific to this project to be taken during construction to promote adequate indoor air quality upon completion.
 1. HVAC Protection: Describe steps to protect ductwork and HVAC equipment from dust and water damage.
 2. Source Control: Identify sources of VOCs and appropriate measures to mitigate their impacts.
 3. Pathway Interruption: Manipulate air paths to reduce contaminants of finished spaces.
 4. Housekeeping: Describe cleaning and dust control procedures.
 5. Quality Assurance and IAQ Monitoring: Describe steps to ensure compliance by Contractor and subcontractors.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Temporary Air Filters Used During Construction: MERV of 8, minimum, when tested in accordance with ASHRAE 52.2.

PART 3 EXECUTION

3.01 CONSTRUCTION PROCEDURES

- A. Prevent the absorption of moisture and humidity by adsorptive materials by:
 - 1. Sequencing the delivery of such materials so that they are not present in the building until wet work is completed and dry.
 - 2. Delivery and storage of such materials in fully sealed moisture-impermeable packaging.
 - 3. Provide sufficient ventilation for drying within reasonable time frame.
- B. Do not permit smoking or consumption of food and drink within the building at any time. Further, do not permit smoking within 25 feet of entrances, operable windows, intake louvers, and similar building openings.
- C. Begin construction ventilation when building is substantially enclosed.
- D. If extremely dusty or dirty work must be conducted inside the building, shut down HVAC systems for the duration; remove dust and dirt completely before restarting systems.
- E. When working in a portion of an occupied building, prevent movement of air from construction area to occupied area.
- F. HVAC equipment and ductwork may not be used for ventilation during construction:
 - 1. Provide temporary ventilation equivalent to 1.5 air changes per hour, minimum.
 - 2. Exhaust directly to outside.
 - 3. Seal HVAC air inlets and outlets immediately after duct installation.
- G. Do not store construction materials or waste in mechanical or electrical rooms.
- H. Prior to use of return air ductwork without intake filters clean up and remove dust and debris generated by construction activities.
 - 1. Inspect duct intakes, return air grilles, and terminal units for dust.
 - 2. Clean tops of doors and frames.
 - 3. Clean mechanical and electrical rooms, including tops of pipes, ducts, and conduit, equipment, and supports.
 - 4. Remove intake filters last, after cleaning is complete.
- I. Do not perform dusty or dirty work after starting use of return air ducts without intake filters.
- J. Use other relevant recommendations of SMACNA IAQ Guideline for Occupied Buildings Under Construction for avoiding unnecessary contamination due to construction procedures, including the following:
 - 1. HVAC Protection:
 - a. Use temporary heaters whenever feasible.
 - b. Seal all duct and equipment openings with plastic during the construction period.

- c. Seal all duct and equipment openings with plastic during transportation, delivery, installation, and the remainder of the construction period.
 - d. If permanently installed air handlers are used during construction, filtration media with a Minimum Efficiency Reporting Value (MERV) 8, as determined by ASHRAE 52.2, shall be used over each return air grille. Replace all filtration media immediately prior to occupancy.
 - e. Conduct periodic inspections during construction. If ducts become contaminated due to inadequate protection, clean ducts professionally.
 - f. Promptly repair all leaks in ducts and air handlers.
 - g. Do not use mechanical rooms to store construction waste materials. Keep mechanical rooms clean at all times.
2. Source Control:
- a. For Contractor information, all paints, carpet, adhesives, and sealants are specified as low-VOC and non-toxic. Use of materials that fail to meet specified VOC levels are prohibited for use in the interior of the building.
 - b. Recover, isolate and ventilate containers housing toxic materials.
 - c. Avoid exhaust fumes from idling vehicles and gasoline fueled tools.
 - d. Use electric or natural gas alternative for gasoline and diesel equipment where possible and practical.
 - e. Cycle equipment off when not being used or needed.
 - f. Pollution sources may be exhausted to the outside with portable fan system. Care should be taken to ensure exhaust does not re-circulate back into the building.
 - g. Containers of wet products should be kept closed as much as possible. Waste materials, which can release odor or dust, should be covered or sealed.
 - h. Smoking will not be permitted in indoor Project locations.
3. Pathway Interruption:
- a. During construction, isolate areas of work to prevent contamination of clean or finished spaces. Utilize dust curtains or temporary enclosures to prevent dust from migrating to other areas when applicable.
 - b. Ventilate using 100 percent outside air to exhaust contaminated air directly to the outside during installation of VOC emitting materials.
 - c. Use pressure differentials or barriers between work and clean areas to prevent contaminated air from entering clean areas.
 - d. Relocate pollutant sources (paints, sealers, adhesives, caulking, cleaners, etc.) as far away as possible from supply ducts, areas occupied by workers and absorbing materials when feasible. Absorbing materials include drywall, insulation, carpet, ceiling tile, etc. Supply and exhaust systems may have to be shut down or isolated during such activities.
4. Housekeeping:
- a. Protect building materials from weather and store in a clean area prior to unpacking for installation.

- b. Clean all coils, air filters, and fans before performing testing and balancing procedures.
 - c. Institute cleaning activities designed to control contaminants in building spaces before occupancy.
 - d. Suppress dust with wetting agents or sweeping compounds. Use an efficient and effective dust collecting method such as a damp cloth, wet mop, vacuum with particulate filters or wet scrubber.
 - e. Remove accumulations of water inside the building. Protect porous materials such as insulation and ceiling tile from exposure to moisture. Materials with evidence of moisture damage, including stains, are not acceptable, including both stored and installed materials; immediately remove from site and properly dispose.
5. Final Cleaning:
- a. Clean interior and exterior surfaces exposed to view; remove temporary labels, stains, and foreign substances; polish transparent and glossy surfaces.
 - b. Clean equipment and fixtures to sanitary condition.
 - c. Vacuum carpeted and soft surfaces with high efficiency particulate arrestor (HEPA) vacuum.
 - d. Comply with cleaning requirements specified in Section 01 70 00.
6. Scheduling:
- a. Complete applications of wet and odorous materials such as VOC in paints, sealants, and coatings before installing absorbing materials such as ceiling tiles, carpets, insulation, gypsum products, and fabric-covered furnishings.
 - b. Avoid exposure of all interior materials to moisture.
 - c. Protect stored on-site or installed absorptive materials from moisture damage.
 - d. If Owner authorizes the use of permanent heating, cooling, and ventilating systems during construction period, install filter media having a MERV 8 according to ASHRAE 52.2 at each return-air inlet for the air-handling system used during construction.
 - e. Replace all filtration media with filter media having a MERV 13 according to ASHRAE 52.2 immediately prior to occupancy.
- 3.02 CLOSEOUT PROCEDURE - GENERAL
- A. Contractor's Option: Either full continuous flush-out or satisfactory air contaminant testing is required, not both.
- 3.03 BUILDING FLUSH-OUT - NOT USED.

3.04 AIR CONTAMINANT TESTING

- A. Perform air contaminant testing before starting construction, as base line for evaluation of post-construction testing.
- B. Perform air contaminant testing before occupancy.
- C. Do not start air contaminant testing until:
 - 1. All construction is complete, including interior finishes.
 - 2. HVAC systems have been tested, adjusted, and balanced for proper operation.
 - 3. New HVAC filtration media have been installed.
- D. Indoor Air Samples: Collect from spaces representative of occupied areas:

1. Collect samples while operable windows and exterior doors are closed, HVAC system is running normally as if occupied, with design minimum outdoor air, but with the building unoccupied.
 2. Collect samples from spaces in each contiguous floor area in each air handler zone, but not less than one sample per 25,000 square feet; take samples from areas having the least ventilation and those having the greatest presumed source strength.
 3. Collect samples from height from 36 inches to 72 inches above floor.
 4. Collect samples from same locations on 3 consecutive days during normal business hours; average the results of each set of 3 samples.
- E. Outdoor Air Samples: Collect samples at outside air intake of each air handler at the same time as indoor samples are taken.
1. Record outside air levels of formaldehyde and TVOC contaminants
- F. Analyze air samples and submit report.
- G. Air Contaminant Concentration Limits:
1. Formaldehyde: Not more than 27 parts per billion.
 2. PM10 Particulates: Not more than 50 micrograms per cubic meter.
 3. PM2.5 Particulates: Not more than 15 micrograms per cubic meter.
 4. Ozone: Not more than 0.075 parts per million.
 5. Total Volatile Organic Compounds (TVOCs): Not more than 500 micrograms per cubic meter.
 6. Carbon Monoxide: Not more than 9 parts per million and not more than 2 parts per million higher than outdoor air.
 7. Regulated Pollutants: Not more than allowable by NAAQS.
- H. Test Reports: Prepare test reports showing the results and location of each test, a summary of the HVAC operating conditions, a listing of any discrepancies and recommendations for corrective actions, if required.
1. Include certification of test equipment calibration with each test report.
 2. If a test fails the standard, the Contractor is responsible to ventilate the building with 100 percent outside air until the building passes both air quality test and duct inspections. Retesting shall be performed at no additional expense to the Owner

3.05 INDEPENDENT MATERIALS TESTING

- A. Emissions: Indicate type and rate of emissions in a 24 hour period at 35 degrees Centigrade and 50 percent relative humidity per unit of product. Indicate type and rate of emissions under fire condition.
1. Small Scale Chamber: Test and report emissions from products and materials indicated in accordance with ASTM D5116.
 2. Full Scale Chamber: Test and report emissions from products and materials indicated in accordance with ASTM D6670.
- B. Lethal Toxic Potency: Test for lethal toxic potency of smoke produced from the materials and products indicated under fire conditions in accordance with ASTM E1678.

1. Report results in accordance with Section 13 of ASTM E1678.
- C. Support of Microbial Growth; Test and report in accordance with ASTM D6329. Indicate susceptibility of product or material to colonization and amplification of microorganisms. Identify microorganisms and conditions of testing.
 1. Normal conditions: Perform testing at 35 degrees Centigrade and 50 percent relative humidity.
 2. Extreme conditions: Perform worst case scenarios screening tests by providing an atmosphere where environmental conditions may be favorable for microbial growth.

END OF DOCUMENT

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DOCUMENT 01 62 00

PRODUCT OPTIONS AND SUBSTITUTIONS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. Instructions to Bidders;
- B. General Conditions, including, without limitation, Substitutions for Specified Items;
- C. Special Conditions.

1.02 SUBSTITUTIONS OF MATERIALS AND EQUIPMENT:

- A. Catalog numbers and specific brands or trade names followed by the designation "or equal" are used in conjunction with material and equipment required by the Specifications to establish the standards of quality, utility, and appearance required. Substitutions which are equal in quality, utility, and appearance to those specified may be reviewed subject to the provisions of the General Conditions.
- B. Wherever more than one manufacturer's product is specified, the first-named product is the basis for the design used in the work and the use of alternative-named manufacturers' products or substitutes may require modifications in that design. If such alternatives are proposed by Contractor and are approved by the County and/or the Architect, Contractor shall assume all costs required to make necessary revisions and modifications of the design resulting from the substitutions requested by the Contractor.
- C. When materials and equipment are specified by first manufacturer's name and product number, second manufacturer's name and "or approved equal," supporting data for the second product, if proposed by Contractor, shall be submitted in accordance with the requirements for substitutions.
- D. If the County and/or Architect, in reviewing proposed substitute materials and equipment, require revisions or corrections to be made to previously accepted Shop Drawings and supplemental supporting data to be resubmitted, Contractor shall promptly do so. If any proposed substitution is judged by the County and/or

Architect to be unacceptable, the specified material or equipment shall be provided.

- E. Samples may be required. Tests required by the County and/or Architect for the determination of quality and utility shall be made at the expense of Contractor, with acceptance of the test procedure first given by the County.
- F. In reviewing the supporting data submitted for substitutions, the County and/or Architect will use for purposes of comparison all the characteristics of the specified material or equipment as they appear in the manufacturer's published data even though all the characteristics may not have been particularly mentioned in the Contract Documents. If more than two (2) submissions of supporting data are required, the cost of reviewing the additional supporting data shall be borne by Contractor, and the County will deduct the costs from the Contract Price.

END OF DOCUMENT

DOCUMENT 01 65 00

DELIVERY, STORAGE AND HANDLING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Site Access, Conditions and Requirements;
- B. Special Conditions.

1.02 PRODUCTS

- A. Products are as defined in the General Conditions.
- B. Contractor shall not use and/or reuse materials and/or equipment removed from existing Premises, except as specifically permitted by the Contract Documents.
- C. Contractor shall provide interchangeable components of the same manufacturer, for similar components.

1.03 TRANSPORTATION AND HANDLING

- A. Contractor shall transport and handle Products in accordance with manufacturer's instructions.
- B. Contractor shall promptly inspect shipments to confirm that Products comply with requirements, quantities are correct, and products are undamaged.
- C. Contractor shall provide equipment and personnel to handle Products by methods to prevent soiling, disfigurement, or damage.

1.04 STORAGE AND PROTECTION

- A. Contractor shall store and protect Products in accordance with manufacturer's instructions, with seals and labels intact and legible. Contractor shall store sensitive products in weather-tight, climate controlled enclosures.

- B. For exterior storage of fabricated Products, Contractor shall place on sloped supports, above ground.
- C. Contractor shall provide off-site storage and protection when Site does not permit on-site storage or protection.
- D. Contractor shall cover products subject to deterioration with impervious sheet covering and provide ventilation to avoid condensation.
- E. Contractor shall store loose granular materials on solid flat surfaces in a well-drained area and prevent mixing with foreign matter.
- F. Contractor shall provide equipment and personnel to store Products by methods to prevent soiling, disfigurement, or damage.
- G. Contractor shall arrange storage of Products to permit access for inspection and periodically inspect to assure Products are undamaged and are maintained under specified conditions.

END OF DOCUMENT

DOCUMENT 01 71 23

FIELD ENGINEERING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Site Investigation, and Soils Investigation Report;
- B. Special Conditions;
- C. Site-Visit Certification.

1.02 REQUIREMENTS INCLUDED:

- A. Contractor shall provide and pay for field engineering services by a California-registered engineer, required for the project, including, without limitations:
 - (1) Survey work required in execution of the Project.
 - (2) Civil or other professional engineering services specified, or required to execute Contractor's construction methods.

1.03 QUALIFICATIONS OF SURVEYOR OR ENGINEERS:

- A. Contractor shall only use a qualified licensed engineer or registered land surveyor, to whom County makes no objection.

1.04 SURVEY REFERENCE POINTS:

- A. Existing basic horizontal and vertical control points for the Project are those designated on the Drawings.
- B. Contractor shall locate and protect control points prior to starting Site Work and preserve all permanent reference points during construction. In addition, Contractor shall:

- (1) Make no changes or relocation without prior written notice to County and Architect.
- (2) Report to County and Architect when any reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations.
- (3) Require surveyor to replace Project control points based on original survey control that may be lost or destroyed.

1.05 RECORDS:

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

1.06 SUBMITTALS:

- A. Contractor shall submit name and address of Surveyor and Professional Engineer to County and Architect prior to its/their work on the Project.
- B. On request of County and Architect, Contractor shall submit documentation to verify accuracy of field engineering work, at no additional cost to the County.
- C. Contractor shall submit a certificate signed by registered engineer or surveyor certifying that elevations and locations of improvements are in conformance or nonconformance with Contract Documents.

PART 2 – PRODUCTS

Not Used.

PART 3 - EXECUTION

- 3.01 Contractor is responsible for meeting all applicable codes, OSHA, safety and shoring requirements.
- 3.02 Contractor is responsible for any re-surveying required by correction of nonconforming work.

END OF DOCUMENT

DOCUMENT 01 73 29

CUTTING AND PATCHING

1. PART 1 – GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions;
- B. Special Conditions;
- C. Hazardous Materials Procedures and Requirements;
- D. Hazardous Materials Certification;
- E. Imported Materials Certification.

1.02 CUTTING AND PATCHING:

- A. Contractor shall be responsible for all cutting, fitting, and patching, including associated excavation and backfill, required to complete the Work or to:
 - (1) Make several parts fit together properly.
 - (2) Uncover portions of Work to provide for installation of ill-timed Work.
 - (3) Remove and replace defective Work.
 - (4) Remove and replace Work not conforming to requirements of Contract Documents.
 - (5) Remove Samples of installed Work as specified for testing.
 - (6) Provide routine penetrations of non-structural surfaces for installation of piping and/or electrical conduit.
 - (7) Attach new materials to existing remodeling areas, including painting (or other finishes) to match existing conditions.

- B. In addition to Contract requirements, upon written instructions from the County, Contractor shall uncover Work to provide for observations of covered Work in accordance with the Contract Documents; remove samples of installed materials for testing as directed by County; and remove Work to provide for alteration of existing Work.
- C. Contractor shall not cut or alter Work, or any part of it, in such a way that endangers or compromises the integrity of the Work, the Project, or work of others.

1.03 SUBMITTALS:

- A. Prior to any cutting or alterations that may affect the structural safety of Project, or work of others, and well in advance of executing such cutting or alterations, Contractor shall submit written notice to County pursuant to the applicable notice provisions of the Contract Documents, requesting consent to proceed with the cutting or alteration, including the following:
 - (1) The Work of the County or other trades.
 - (2) Structural value or integrity of any element of Project.
 - (3) Integrity or effectiveness of weather-exposed or weather-resistant elements or systems.
 - (4) Efficiency, operational life, maintenance or safety of operational elements.
 - (5) Visual qualities of sight-exposed elements.
- B. Contractor's Request shall also include:
 - (1) Identification of Project.
 - (2) Description of affected Work.
 - (3) Necessity for cutting, alteration, or excavations.
 - (4) Effects of Work on County, other trades, or structural or weatherproof integrity of Project.
 - (5) Description of proposed Work:
 - (a) Scope of cutting, patching, alteration, or excavation.

- (b) Trades that will execute Work.
- (c) Products proposed to be used.
- (d) Extent of refinishing to be done.
- (6) Alternates to cutting and patching.
- (7) Cost proposal, when applicable.
- (8) The scheduled date the Contractor intends to perform the Work and the duration of time to complete the Work.
- (9) Written permission of other trades whose Work will be affected.

1.04 QUALITY ASSURANCE:

- A. Contractor shall ensure that cutting, fitting, and patching shall achieve security, strength, weather protection, and appearance for aesthetic match, efficiency, operational life, maintenance, safety of operational elements, and the continuity of existing fire ratings.
- B. Contractor shall ensure that cutting, fitting, and patching shall successfully duplicate undisturbed adjacent profiles, materials, textures, finishes, colors, and that materials shall match existing construction. Where there is dispute as to whether duplication is successful or has been achieved to a reasonable degree, the County's decision shall be final.

1.05 PAYMENT FOR COSTS:

- A. Cost caused by ill-timed or defective Work or Work not conforming to Contract Documents, including costs for additional services of the County, its consultants, including but not limited to the Construction Manager, the Architect, the Project Inspector(s), Engineers, and Agents, will be paid by Contractor and/or deducted from the Contract by the County.
- B. County shall only pay for cost of Work if it is part of the original Contract Price or if a change has been made to the contract in compliance with the provisions of the General Conditions. Cost of Work performed upon instructions from the County, other than defective or nonconforming Work, will be paid by County on approval of written Change Order. Contractor shall provide written cost proposals prior to proceeding with cutting and patching.

PART 2 - PRODUCTS

2.01 MATERIALS:

- A. Contractor shall provide for replacement and restoration of Work removed. Contractor shall comply with the Contract Documents and with the Industry Standard(s), for the type of Work, and the Specification requirements for each specific product involved. If not specified, Contractor shall first recommend a product of a manufacturer or appropriate trade association for approval by the County.
- B. Materials to be cut and patched include those damaged by the performance of the Work.

PART 3 – EXECUTION

3.01 INSPECTION:

- A. Contractor shall inspect existing conditions of the Site and the Work, including elements subject to movement or damage during cutting and patching, excavating and backfilling. After uncovering Work, Contractor shall inspect conditions affecting installation of new products.
- B. Contractor shall report unsatisfactory or questionable conditions in writing to County as indicated in the General Conditions and shall proceed with Work as indicated in the General Conditions by County.

3.02 PREPARATION:

- A. Contractor shall provide shoring, bracing and supports as required to maintain structural integrity for all portions of the Project, including all requirements of the Project.
- B. Contractor shall provide devices and methods to protect other portions of Project from damage.
- C. Contractor shall, provide all necessary protection from weather and extremes of temperature and humidity for the Project, including without limitation, any work that may be exposed by cutting and patching Work. Contractor shall keep excavations free from water.

3.03 ERECTION, INSTALLATION AND APPLICATION:

- A. With respect to performance, Contractor shall:
 - (1) Execute fitting and adjustment of products to provide finished installation to comply with and match specified tolerances and finishes.
 - (2) Execute cutting and demolition by methods that will prevent damage to other Work, and provide proper surfaces to receive installation of repairs and new Work.
 - (3) Execute cutting, demolition excavating, and backfilling by methods that will prevent damage to other Work and damage to settlement.
- B. Contractor shall employ original installer or fabricator to perform cutting and patching for:
 - (1) Weather-exposed surfaces and moisture-resistant elements such as electrical conduits/boxes, sheet metal, sealants, waterproofing, and other trades.
 - (2) Sight-exposed finished surfaces.
- C. Contractor shall execute fitting and adjustment of products to provide a finished installation to comply with specified products, functions, tolerances, and finishes as shown or specified in the Contract Documents including, without limitation, the Drawings and Specifications.
- D. Contractor shall fit Work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces. Contractor shall conform to all Code requirements for penetrations or the Drawings and Specifications, whichever calls for a higher quality or more thorough requirement. Contractor shall maintain integrity of both rated and non-rated fire walls, ceilings, floors, etc.
- E. Contractor shall restore Work which has been cut or removed. Contractor shall install new products to provide completed Work in accordance with requirements of the Contract Documents and as required to match surrounding areas and surfaces.
- F. Contractor shall refinish all continuous surfaces to nearest intersection as necessary to match the existing finish to any new finish.

END OF DOCUMENT

DOCUMENT 01 74 19
CONSTRUCTION WASTE MANAGEMENT

PART 1 – GENERAL

1.01 SUMMARY

- A. This section specifies the requirements for the diversion of demolition (non-hazardous) and construction debris from landfill and submittal of the Waste Management Plan.
- B. Performance Requirement: Divert a minimum of 50% of construction and demolition (non-hazardous) debris from landfill. Diversion of 75% of the construction & demolition debris is the project goal.

1.03 DEFINITIONS

- A. "Conversion Rate" means the rate set forth in the standardized Conversion Rate Table approved by the County of Alameda for use in estimating the weight of materials identified in the Waste Management Plan and Waste Management Table.
- B. "Divert" means to use material for any purpose other than disposal in a landfill or transfer facility.
- C. "Good faith" shall be as defined by law.
- D. "Recycling Service" means an off-site service that provides processing of material and diversion from landfill.
- E. "Hauler" means the entity who transports construction and demolition debris to either a landfill or a recycling service.
- F. "Recycling Wizard" means an online database maintained by StopWaste.Org of approved recycling vendors that can be accessed at www.StopWaste.Org or by calling 1-877-STOPWASTE.
- G. "Waste Management Plan or Plan" means a waste management plan required under this contract that is used to track and report the means of disposal of all construction debris generated on this project.
- H. "WasteTracking.com powered by Green Halo Systems" means the web based system required for use in developing a waste management plan, uploading recycling data throughout the construction process and submitting the final report demonstrating the project compliance online. More information about WasteTracking.com powered by Green Halo Systems is available by visiting them online at www.wastetracking.com or calling (888) 525-1301.

1.04 QUALITY ASSURANCE

- A. The Contractor shall obtain all special permits and licenses and meet all special requirements for performance and completion of the work of this section.
- B. Regulatory requirements
 - 1. Approval of the Waste Management Plan and Waste Management Table using the WasteTracking.com powered by Green Halo Systems by the Owner's Representative is required before beginning construction or demolition.
- C. Recycling service company qualifications – Submit certification for recycling services listed in the approved Waste Management Plan that accepted waste will be diverted from landfill. Certification shall be demonstrated in one of the following ways:
 - 1. Recycling service is listed in the Green Halo System as an approved recycler for Alameda County projects; or
 - 2. Recycling service is listed within Alameda County Waste Management Authority's Recycling Wizard, a Directory of where to recycle construction and demolition debris materials, or equivalent database/listing at StopWaste.Org. A database of construction and demolition recyclers can be found at www.StopWaste.Org or can be obtained by calling 1-877-STOPWASTE; or.
 - 3. If not listed as described in items 1 and 2 above, submit certification in writing from any recycling services that verifies accepted waste will be diverted from landfill.

1.05 SUBMITTALS

- A. Submit specified Waste Management Plan to indicate how waste will be diverted from landfills. Plan to include procedures and schedule for debris disposal. Submittal shall be made using WasteTracking.com powered by Green Halo Systems using the following URL: ACGSA.WasteTracking.com. Submittal is required within 7 calendar days after receipt of Notice to Proceed; and
- B. Submit written documentation from recycling services that are not listed in the WasteTracking.com powered by Green Halo Systems or the Stopwaste.Org Recycling Wizard identifying where the construction and demolition material is taken, what method or process is being used to recycle the material, and identifying applicable state and local permits held by the recycling service provider and recycling facility; and
- C. Submit completed Waste Management Plan to report on the means of disposal of waste generated from project at the following project milestones:
 - 1. Fifty (50) percent progress payment; and
 - 2. One hundred (100) percent construction complete. County approval of final Waste Management Plan is required before full release of retention.

1.06 WASTE MANAGEMENT PLAN

- A. Plan Development: Using the website [ACGSA.WasteTracking.com](https://www.acgsa.wastetracking.com) develop a plan for diverting the specified percentage of construction debris from landfill. The plan shall include the following:
1. Submit within 7-calendar days after receipt of Notice to Proceed.
 2. Propose means and methods for collecting and separating each type of debris deemed reusable or recyclable.
 3. Identify the off-site recycling service and hauler of each designated debris item, who has agreed to accept and divert that item from landfill, in the proposed quantities anticipated. Schedule each item and list off-site recycling service and hauler company name, telephone number, address, and person contacted.
 4. Include a "good faith" estimate of each type of construction waste that would be generated if no diversion methods were implemented. Submit with calculations based upon weight or volume of each. The following items are subject to the "good faith" estimate and diversion requirement:
 - a. Asphalt & Concrete
 - b. Brick/Masonry/Tiles
 - c. Building Materials (doors, windows, fixtures, etc.)
 - d. Cardboard and other paper products
 - e. Carpet/Carpet Padding/Foam
 - f. Ceiling Tiles (acoustic)
 - g. Drywall
 - h. Electrical Components (light fixtures, cables, etc)
 - i. Film Plastic & Styrofoam Blocks
 - j. Landscape Debris (Plant & tree trimmings)
 - k. Mechanical Debris (ducts, controls, plumbing fixtures, etc)
 - l. Scrap Metal
 - m. Unpainted Wood and Pallets
 - n. Other (painted wood & drywall, roofing, etc)
 - o. Mixed C&D (defined as a mixture of three or more materials from construction or demolition sites that will be taken to a "qualified" facility for recycling.)
 - p. Trash/garbage
 5. Construction waste quantities entered in volume will be converted automatically using the defined Conversion Rate approved by Alameda County that is integrated into WasteTracking.com powered by Green Halo Systems.
- B. Plan Implementation
1. Contractor shall do all of the following:
 - a. Retain a copy of, and upload into WasteTracking.com powered by Green Halo Systems, all weight tickets, copies of receipts and invoices and any other documentation related to the reuse, recycling, and disposal

- of generated waste/debris from demolition and construction activities;
and
 - b. Maintain a log of each load of each category item diverted from landfill. Log in separately debris sent to a Class III landfill and materials sent to recycling facilities.
 - 1) Include in log: type of load, load weight, name of hauling service, name of recycling service or landfill, and date accepted by recycling service or by landfill.
 - 2) Owner reserves the right to audit the log at any time. Contractor shall retain and provide to the Owner all weight tickets, copies of receipts and invoices and any other documentation related to the disposal or recycling of generated waste/debris from demolition and construction activities.
 - c. Units of measure: Use same units as stated in the approved plan "good faith" estimate of construction waste that would be generated if no remedial methods were implemented.
2. Material handling
- a. Separation facilities
 - 1) Designate a specific on site area or areas to facilitate separation of materials for potential reuse, salvage, recycling, and return.
 - 2) Keep waste bins and pile areas neat and clean. Clearly mark bins for each category of waste. Do not co-mingle non-recyclable waste with materials designated for reuse or recycling.
 - b. Environmental controls during handling, storage, or transport: Do not permit designated materials to become contaminated or to contaminate site or surrounding areas.
3. Training and coordination
- a. Provide access and training as needed to subcontractors to the online construction and demolition debris waste management tool Green Halo Systems for the purposes of input of waste management information.
 - b. Furnish copies of the Waste Management Plan to all on-site supervisors, each subcontractor, and the Owner.
 - c. Instruction: Provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse, and return methods to be used by all entities at the appropriate stages of the Project.
 - d. Meetings: Include construction waste management on the agenda of meetings. At a minimum, discuss waste management goals and issues at the following meetings:

- 1) Pre-bid meetings.
- 2) Pre-construction meeting.
- 3) Regularly scheduled job-site meetings.

PART 2 - PRODUCTS

2.01 MATERIALS, EQUIPMENT AND FACILITIES

Furnish all materials, tools, equipment, devices, appurtenances, facilities, and services required for performing waste management of debris covered under this Section.

PART 3 - EXECUTION

3.01 EXAMINATION AND PREPARATION

- A. Set up and maintain in good standing a project account with WasteTracking.com powered by Green Halo Systems using the website [ACGSA.WasteTracking.com](https://www.acgsa.org/WasteTracking.com) to be used exclusively for this project to develop a waste management plan, upload all reuse, recycling and waste disposal data throughout the construction process and submit the final online report demonstrating project compliance.
- B. Perform as required in the approved Waste Management Plan.

3.02 DISPOSAL OF DEBRIS

- A. Dispose of waste, trash and debris in a safe, acceptable manner, in accordance with applicable laws and ordinances and as prescribed by authorities having jurisdiction. Burying of trash and debris on the site is prohibited.
- B. Remove demolished materials from site as work progresses. Remove debris from the site so that its presence will not delay the progress of the work.
- C. Debris shall be the property of the Contractor and shall be removed and disposed of in a legal manner off the County's property in accordance with the approved Waste Management Plan described herein. Location of recycling facility or dump and length of haul shall be the Contractor's responsibility.

END OF DOCUMENT

DOCUMENT 01 76 00

PROTECTING INSTALLED CONSTRUCTION

PART 1 – GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions;
- B. Special Conditions.

PART 2 - PRODUCTS

2.01 PRODUCTS FOR PATCHING AND EXTENDING WORK:

- A. New Materials: As specified in the Contract Documents including, without limitation, in the Specifications, Contractor shall match existing products, conditions, and work for patching and extending work.
- B. Type and Quality of Existing Products: Contractor shall determine by inspection, by testing products where necessary, by referring to existing conditions and to the Work as a standard.

PART 3 - EXECUTION

3.01 EXAMINATION:

- A. Contractor shall verify that demolition is complete and that areas are ready for installation of new Work.
- B. By beginning restoration Work, Contractor acknowledges and accepts the existing conditions.

3.02 PREPARATION:

- A. Contractor shall cut, move, or remove items as necessary for access to alterations and renovation Work. Contractor shall replace and restore these at completion.
- B. Contractor shall remove unsuitable material not as salvage unless otherwise indicated in the Contract Documents. Unsuitable material may include, without

limitation, rotted wood, corroded metals, and deteriorated masonry and concrete. Contractor shall replace materials as specified for finished Work.

- C. Contractor shall remove debris and abandoned items from all areas of the Site and from concealed spaces.
- D. Contractor shall prepare surface and remove surface finishes to provide for proper installation of new Work and finishes.
- E. Contractor shall close openings in exterior surfaces to protect existing work from weather and extremes of temperature and humidity. Contractor shall insulate ductwork and piping to prevent condensation in exposed areas. Contractor shall insulate building cavities for thermal and/or acoustical protection, as detailed.

3.03 INSTALLATION:

- A. Contractor shall coordinate Work of all alternations and renovations to expedite completion and to accommodate County occupancy.
- B. Designated Areas and Finishes: Contractor shall complete all installations in all respects, including operational, and electrical work.
- C. Contractor shall 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 condition.
- D. Contractor shall refinish visible existing surfaces to remain in renovated rooms and spaces, to specified condition for each material, with a neat transition to adjacent finishes.
- E. Contractor shall install products as specified in the Contract Documents, including without limitation, the Specifications.

3.04 TRANSITIONS:

- A. Where new Work abuts or aligns with existing, Contractor shall perform a smooth and even transition. Patched Work must match existing adjacent work in texture and appearance.
- B. When finished surfaces are cut so that a smooth transition with new Work is not possible, Contractor shall terminate existing surface along a straight line at a natural line of division and make a recommendation for resolution to the County and the Architect for review and approval.

3.05 ADJUSTMENTS:

- A. Where removal of walls results in adjacent spaces becoming one, Contractor shall rework to a smooth plane without breaks, steps, or bulkheads.
- B. Where a change of plane of 1/8 inch or more occurs, Contractor shall submit a recommendation for providing a smooth transition to the County and the Architect for review and approval.
- C. Contractor shall fit Work at penetrations of surfaces.

3.06 REPAIR OF DAMAGED SURFACES:

- A. Contractor shall patch or replace portions of existing surfaces which are damaged, lifted, discolored, or showing other imperfections.
- B. Contractor shall repair substrate prior to patching finish.

3.07 CULTIVATED AREAS AND OTHER SURFACE IMPROVEMENTS:

- A. Cultivated or planted areas and other surface improvements which are damaged by actions of the Contractor shall be restored by Contractor to their original condition or better, where indicated.
- B. Contractor shall protect and replace, if damaged, all existing guard posts, barricades, and fences.
- C. Contractor shall give special attention to avoid damaging or killing trees, bushes and/or shrubs on the Premises and/or identified the Contract Documents, including without limitation, the Drawings.

3.08 FINISHES:

- A. Contractor shall finish surfaces as specified in the Contract Documents, including without limitations, the provisions of all Divisions of the Specifications.
- B. Contractor shall finish patches to produce uniform finish and texture over entire area. When finish cannot be matched, Contractor shall refinish entire surface to nearest intersections.

3.09 CLEANING:

- A. Contractor shall continually clean the Site and the Premises as indicated in the Contract Documents, including without limitation, the provisions in the General Conditions and the Specifications regarding cleaning.

END OF DOCUMENT

DOCUMENT 01 77 00

CONTRACT CLOSEOUT

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Completion of Work;
- B. Special Conditions;
- C. Construction Facilities and Temporary Controls.

1.02 CLOSEOUT PROCEDURES

Contractor shall comply with all closeout provisions as indicated in the General Conditions.

1.03 FINAL CLEANING

- A. Contractor shall execute final cleaning prior to final inspection.
- B. Contractor shall clean and/or pressure wash concrete surfaces exposed to view; remove temporary labels, tape, stains, and foreign substances, polish transparent and glossy surfaces.
- C. Contractor shall clean equipment and fixtures to a sanitary condition.
- D. Contractor shall replace filters of operating equipment.
- E. Contractor shall clean debris from lawn and planter boxes around work area, and drainage systems.
- F. Contractor shall clean Site, sweep paved areas, and rake clean landscaped surfaces.
- G. Contractor shall remove waste and surplus materials, rubbish, and construction facilities from the Site.

1.04 ADJUSTING

- A. Contractor shall adjust operating products and equipment to ensure smooth and unhindered operation.
- B. Record Documents and Shop Drawings: Contractor shall legibly mark each item to record actual construction, including:
 - (1) Measured depths of foundations in relation to finish slab datum.
 - (2) Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - (3) Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
 - (4) Field changes of dimension and detail.
 - (5) Details not on original Contract Drawings.
 - (6) Changes made by modification(s).
 - (7) References to related Shop Drawings and modifications.
- C. County will provide one set of reproducible drawings to Contractor.
- D. Contractor shall submit all required documents to County and/or Architect prior to or with its final Application for Payment.

1.06 INSTRUCTION OF COUNTY PERSONNEL:

- A. Before final inspection, at agreed upon times, Contractor shall instruct County's designated personnel in operation, adjustment, and maintenance of products, equipment, and systems.
- B. For equipment requiring seasonal operation, Contractor shall perform instructions for other seasons within six months.
- C. Contractor shall use operation and maintenance manuals as basis for instruction. Contractor shall review contents of manual with personnel in detail to explain all aspects of operation and maintenance.
- D. Contractor shall prepare and insert additional data in Operation and Maintenance Manual when need for such data becomes apparent during instruction.

- E. Contractor shall use operation and maintenance manuals as basis for instruction. Contractor shall review contents of manual with personnel in detail to explain all aspects of operation and maintenance.

1.07 SPARE PARTS AND MAINTENANCE MATERIALS:

- A. Contractor shall provide products, spare parts, maintenance, and extra materials in quantities specified in the Specifications and in Manufacturer's recommendations.
- B. Contractor shall provide County all required Operation and Maintenance Data.

PART 2 – PRODUCTS Not used.

PART 3 – EXECUTION Not used.

END OF DOCUMENT

DOCUMENT 01 78 23

OPERATION AND MAINTENANCE INSTRUCTIONS

PART 1 – GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Completion of the Work;
- B. Special Conditions.

1.02 QUALITY ASSURANCE:

- A. Contractor shall prepare instructions and data by personnel experienced in maintenance and operation of described products.

1.03 FORMAT:

- A. Contractor shall prepare data in the form of an instructional manual entitled "OPERATIONS AND MAINTENANCE MANUAL & INSTRUCTIONS" ("Manual").
- B. Binders: Contractor shall use commercial quality, 8-1/2 by 11 inch, three-side rings, with durable plastic covers; two inch maximum ring size. When multiple binders are used, Contractor shall correlate data into related consistent groupings.
- C. Cover: Contractor shall identify each binder with typed or printed title "OPERATION AND MAINTENANCE MANUAL & INSTRUCTIONS"; and shall list title of Project and identify subject matter of contents.
- D. Contractor shall arrange content by systems process flow under section numbers and sequence of Table of Contents of the Contract Documents.
- E. Contractor shall provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.
- F. Text: The content shall include Manufacturer's printed data, or typewritten data on 24 pound paper.

- G. Drawings: Contractor shall provide with reinforced punched binder tab and shall bind in with text; folding larger drawings to size of text pages.

1.04 CONTENTS, EACH VOLUME:

- A. Table of Contents: Contractor shall provide title of Project; names, addresses, and telephone numbers of the Architect, any engineers, subconsultants, Subcontractor(s), and Contractor with name of responsible parties; and schedule of products and systems, indexed to content of the volume.
- B. For Each Product or System: Contractor shall list names, addresses, and telephone numbers of Subcontractor(s) and suppliers, including local source of supplies and replacement parts.
- C. Product Data: Contractor shall mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.
- D. Drawings: Contractor shall supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Contractor shall not use Project Record Documents as maintenance drawings.
- E. Text: The Contractor shall include any and all information as required to supplement product data. Contractor shall provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.
- F. Warranties and Bonds: Contractor shall bind in one copy of each.

1.05 MANUAL FOR MATERIALS AND FINISHES:

- A. Building Products, Applied Materials, and Finishes: Contractor shall include product data, with catalog number, size, composition, and color and texture designations. Contractor shall provide information for re-ordering custom manufactured products.
- B. Instructions for Care and Maintenance: Contractor shall include Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- C. Moisture Protection and Weather Exposed Products: Contractor shall include product data listing applicable reference standards, chemical composition, and

details of installation. Contractor shall provide recommendations for inspections, maintenance, and repair.

- D. Additional Requirements: Contractor shall include all additional requirements as specified in the Specifications.
- E. Contractor shall provide a listing in Table of Contents for design data, with tabbed fly sheet and space for insertion of data.

1.06 MANUAL FOR EQUIPMENT AND SYSTEMS:

- A. Each Item of Equipment and Each System: Contractor shall include description of unit or system, and component parts and identify function, normal operating characteristics, and limiting conditions. Contractor shall include performance curves, with engineering data and tests, and complete nomenclature, and commercial number of replaceable parts.
- B. Panelboard Circuit Directories: Contractor shall provide electrical service characteristics, controls, and communications.
- C. Contractor shall include color coded wiring diagrams as installed.
- D. Operating Procedures: Contractor shall include start-up, break-in, and routine normal operating instructions and sequences. Contractor shall include regulation, control, stopping, shut-down, and emergency instructions. Contractor shall include summer, winter, and any special operating instructions.
- E. Maintenance Requirements: Contractor shall include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- F. Contractor shall provide servicing and lubrication schedule, and list of lubricants required.
- G. Contractor shall include manufacturer's printed operation and maintenance instructions.
- H. Contractor shall include sequence of operation by controls manufacturer.
- I. Contractor shall provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- J. Contractor shall provide control diagrams by controls manufacturer as installed.

- K. Contractor shall provide Contractor's coordination drawings, with color coded piping diagrams as installed.
- L. Contractor shall provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- M. Contractor shall provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- N. Additional Requirements: Contractor shall include all additional requirements as specified in Specification(s).
- O. Contractor shall provide a listing in Table of Contents for design data, with tabbed fly sheet and space for insertion of data.

1.08 SUBMITTAL:

- A. Contractor shall submit to the County for review two (2) copies of preliminary draft or proposed formats and outlines of the contents of the Manual within thirty (30) days of Contractor's start of Work.
- B. For equipment, or component parts of equipment put into service during construction and to be operated by County, Contractor shall submit draft content for that portion of the Manual within ten (10) days after acceptance of that equipment or component.
- C. Contractor shall submit two (2) copies of a complete Manual in final form prior to final Application for Payment. Copy will be returned with Architect/Engineer comments. Contractor must revise the content of the Manual as required by County prior to County's approval of Contractor's final Application for Payment.
- D. Contractor must submit two (2) copies of revised Manual in final form within ten (10) days after final inspection.

END OF DOCUMENT

DOCUMENT 01 78 36

WARRANTIES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Warranty/Guarantee Information;
- B. Special Conditions.

1.02 FORMAT

- A. Binders: Contractor shall use commercial quality, 8-1/2 by 11 inch, three-side rings, with durable plastic covers; two inch maximum ring size.
- B. Cover: Contractor shall identify each binder with typed or printed title "WARRANTIES" and shall list title of Project.
- C. Table of Contents: Contractor shall provide title of Project; name, address, and telephone number of Contractor and equipment supplier, and name of responsible principal. Contractor shall identify each item with the number and title of the specific Specification, document, provision, or section in which the name of the product or work item is specified.
- D. Contractor shall separate each warranty with index tab sheets keyed to the Table of Contents listing, providing full information and using separate typed sheets as necessary. Contractor shall list each applicable and/or responsible subcontractor(s), supplier(s), and/or manufacturer(s), with name, address, and telephone number of each responsible principal(s).

1.03 PREPARATION:

- A. Contractor shall obtain warranties, executed in duplicate by each applicable and/or responsible subcontractor(s), supplier(s), and manufacturer(s), within ten (10) days after completion of the applicable item or work. Except for items put into use with County's permission, Contractor shall leave date of beginning of time of warranty until the date of completion is determined.

- B. Contractor shall verify that documents are in proper form, contain full information, and are notarized, when required.
- C. Contractor shall co-execute submittals when required.
- D. Contractor shall retain warranties until time specified for submittal.

1.04 TIME OF SUBMITTALS:

- A. For equipment or component parts of equipment put into service during construction with County's permission, Contractor shall submit a draft warranty for that equipment or component within ten (10) days after acceptance of that equipment or component.
- B. Contractor shall submit for County approval all warranties and related documents within ten (10) days after date of completion. Contractor must revise the warranties as required by the County prior to County's approval of Contractor's final Application for Payment.
- C. For items of work delayed beyond date of completion, provide updated submittal within ten days after acceptance, listing the date of acceptance as start of warranty period.

END OF DOCUMENT

DOCUMENT 01 78 39

PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Documents on Work;
- B. Special Conditions.

PART 2 - RECORD DRAWINGS

2.01 GENERAL:

- A. As indicated in the Contract Documents, the County will provide Contractor with one set of reproducible (mylars) plans of the original Contract Drawings.
- B. Contractor shall maintain at each Project Site one set of marked-up blueline prints and each month, or as otherwise agreed, shall transfer all changes and information to those marked-up blueline prints. Contractor shall submit to the Project County one set of reproducible vellums of the Project Record Drawings ("As-Builts") showing all changes incorporated into the Work since the preceding monthly submittal. The Record Drawings shall be available at the Project Site. The Contractor shall submit reproducible vellums at the conclusion of the Project following review of the blueline prints.
- C. Label and date each Record Drawing "RECORD DOCUMENT" in legibly printed letters.
- D. All deviations in construction, including but not limited to pipe and conduit locations and deviations caused by without limitation Change Orders, Construction Claim Directives, RFI's, and Addenda, shall be accurately and legibly recorded by Contractor.
- E. Locations and changes shall be done by Contractor in a neat and legible manner and, where applicable, indicated by drawing a "cloud" around the changed or additional information.

2.02 RECORD DRAWING INFORMATION:

- A. Contractor shall record the following information:
- (1) Locations of Work buried under or outside each building, including, without limitation, all utilities, plumbing and electrical lines, and conduits.
 - (2) Actual numbering of each electrical circuit.
 - (3) Locations of significant Work concealed inside each building whose general locations are changed from those shown on the Contract Drawings.
 - (4) Locations of all items, not necessarily concealed, which vary from the Contract Documents.
 - (5) Installed location of all cathodic protection anodes.
 - (6) Deviations from the sizes, locations, and other features of installations shown in the Contract Documents.
 - (7) Locations of underground work, points of connection with existing utilities, changes in direction, valves, manholes, catch basins, capped stubouts, invert elevations, etc.
 - (8) Sufficient information to locate Work concealed in each building with reasonable ease and accuracy. In some instances, this may be by dimension, in others, it may be in relation to the spaces in the building near which it was installed.
- B. Contractor shall provide additional drawings as necessary for clarification.
- C. Contractor shall provide reproducible record drawings, made from final Shop Drawings marked "No Exceptions Taken" or "Approved as Noted."

PART 3 - RECORD SPECIFICATIONS

3.01 GENERAL:

- A. Contractor shall mark each section legibly to record manufacturer, trade name, catalog number, and supplier of each Product and item of equipment actually installed.

PART 4 - MAINTENANCE OF RECORD DOCUMENTS

4.01 GENERAL

- A. Contractor shall store Record Documents apart from documents used for construction:
 - (1) Provide files and racks for storage of Record Documents.
 - (2) Maintain Record Documents in a clean, dry, legible condition and in good order.
- B. Do not use Record Documents for construction purposes.

END OF DOCUMENT

SECTION 02 41 00 - DEMOLITION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Selective demolition of building elements for alteration purposes.

1.02 DEFINITIONS

- A. Demolish (Demo): Dismantle a defined component of existing construction, remove it from the Site, and dispose of it either as specified or in lawful manner.
- B. Dispose: Remove from the Project Site in lawful manner.
- C. Reinstall: Install a removed component of existing construction into new construction as indicated.
- D. Remove: Dismantle a defined component of existing construction in a manner which protects and preserves the component for future use/installation; definition includes lawful disposal, unless otherwise specifically indicated to be reinstalled, salvaged, or other described action.
- E. Salvage: Remove in a manner preserving the existing condition and integrity of the component, set aside, store and protect for future reinstallation.

1.03 REFERENCE STANDARDS

- A. 29 CFR 1926 - U.S. Occupational Safety and Health Standards; current edition.
- B. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2013.

1.04 ADMINISTRATIVE REQUIREMENTS

- 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.
- B. Coordination: Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.

1.05 SUBMITTALS

- A. Proposed Protection Measures: Submit report, including drawings, that indicates the measures proposed for protecting individuals and property, for environmental protection, for dust control and, for noise control. Indicate proposed locations and construction of barriers.
- B. Demolition Plan: Submit demolition plan as specified by OSHA and local authorities.
 - 1. Indicate extent of demolition, removal sequence, bracing and shoring, and location and construction of barricades and fences.
 - 2. Identify demolition firm and submit qualifications.
 - 3. Include a summary of safety procedures.
- 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 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. Inventory: Submit a list of items to be removed and salvaged and deliver to Owner prior to start of demolition.
- E. Predemolition Photographs or Video: Submit before Work begins.
- F. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.
- G. Project Record Documents: Accurately record actual locations of capped and active utilities and subsurface construction.
- H. Inventory: Submit a list of items that have been removed and salvaged.
- I. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.
- J. Warranties: Documentation indicated that existing warranties are still in effect after completion of selective demolition.

1.06 QUALITY ASSURANCE

- A. Demolition Firm Qualifications: Company specializing in the type of work required.
 - 1. Minimum of five years of documented experience.

1.07 FIELD CONDITIONS

- A. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- B. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- C. 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.
- D. Storage or sale of removed items or materials on-site is not permitted.
- E. 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.

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/ASSE A10.6 and NFPA 241.

PART 3 EXECUTION

3.01 SCOPE

- A. Remove portions of existing buildings as indicated on Drawings.
- B. Remove other items indicated, for salvage, relocation, and recycling.
- C. List of Items to be Turned over to Owner:
 - 1. Unused detention hardware.
 - 2. Unused detention toilets and lavatories.

3.02 EXAMINATION

- A. Verify that utilities have been disconnected and capped before starting selective demolition operations.
- B. Review record documents of existing construction provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in record documents.

- C. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.
- E. Survey of Existing Conditions: Record existing conditions by use of measured drawings and preconstruction photographs.
 - 1. Inventory and record the condition of items to be removed and salvaged. Provide photographs 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.

3.03 GENERAL PROCEDURES AND PROJECT CONDITIONS

- A. Comply with other requirements specified in Section 01 70 00.
- B. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
 - 1. Obtain required permits.
 - 2. Comply with applicable requirements of NFPA 241.
 - 3. Use of explosives is not permitted.
 - 4. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.
 - 5. Provide, erect, and maintain temporary barriers and security devices.
 - 6. Use physical barriers to prevent access to areas that could be hazardous to workers or the public.
 - 7. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
 - 8. Do not close or obstruct roadways or sidewalks without permit.
 - 9. Conduct operations to minimize obstruction of public and private entrances and exits; do not obstruct required exits at any time; protect persons using entrances and exits from removal operations.
- C. Do not begin removal until receipt of notification to proceed from Owner.
- D. Do not begin removal until built elements to be salvaged or relocated have been removed.
- E. Do not begin removal until vegetation to be relocated has been removed and specified measures have been taken to protect vegetation to remain.
- F. Protect existing structures and other elements that are not to be removed.
 - 1. Provide bracing and shoring.

2. Prevent movement or settlement of adjacent structures.
 3. Stop work immediately if adjacent structures appear to be in danger.
- G. Minimize production of dust due to demolition operations; do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.
- H. If hazardous materials are discovered during removal operations, stop work and notify Architect and Owner; hazardous materials include regulated asbestos containing materials, lead, PCB's, and mercury.
- I. Perform demolition in a manner that maximizes salvage and recycling of materials.
1. Comply with requirements of Section 01 7419.
 2. Dismantle existing construction and separate materials.
 3. Set aside reusable, recyclable, and salvageable materials; store and deliver to collection point or point of reuse.

3.04 EXISTING UTILITIES

- A. Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.
- B. Protect existing utilities to remain from damage.
- C. Do not disrupt public utilities without permit from authority having jurisdiction.
- D. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.
- E. Remove exposed piping, valves, meters, equipment, supports, and foundations of disconnected and abandoned utilities.
- F. Refrigerant: Remove refrigerant from mechanical equipment to be selectively demolished according to 40 CFR 82 and regulations of authorities having jurisdiction.

3.05 PREPARATION

- A. 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.
1. Comply with requirements for access and protection specified in Section 015000 Temporary Facilities and Controls.
- B. Temporary Facilities: 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. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
 3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
 4. Cover and protect furniture, furnishings, and equipment that have not been removed.
 5. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Section 015000 Temporary Facilities and Controls.
- C. Temporary Shoring: 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.

3.06 SELECTIVE DEMOLITION FOR ALTERATIONS

- A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
1. Verify that construction and utility arrangements are as indicated.
 2. Report discrepancies to Architect before disturbing existing installation.
- B. Separate areas in which demolition is being conducted from other areas that are still occupied.
1. Provide, erect, and maintain temporary dustproof partitions of construction indicated on drawings in locations indicated on Drawings.
 2. Provide sound retardant partitions of construction indicated on Drawings in locations indicated on Drawings.
- C. Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage.
- D. 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, to minimize disturbance of adjacent surfaces. 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 fire watch and portable fire-suppression devices during flame-cutting operations.
 5. Maintain adequate ventilation when using cutting torches.
 6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
 7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
 8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
- E. Remove existing work as indicated and as required to accomplish new work.
1. Remove rotted wood, corroded metals, and deteriorated masonry and concrete; replace with new construction specified.
 2. Remove items indicated on Drawings.
 3. Core Drilling: Core drill slabs as required to install new items as detailed on Drawings. If required based on existing slab conditions, employ methods of detecting existing tensioned and un-tensioned reinforcing, and other embedded items, that will not be hazardous to humans or damage Owner's existing facilities and equipment. If Owner has specific requirements, comply with those requirements.
 4. Powder-actuated Fasteners and Post-installed Anchors: Verify existing slab conditions employing methods of detection specified for core drilling; locate fasteners and anchors to avoid structural damage to existing slabs and existing tensioned reinforcing. See structural Drawings for additional requirements and limitations.
- F. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, Telecommunications, and medical gasses): Remove existing systems and equipment as indicated.
1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components.
 2. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
 3. Refer to Section 01 10 00 for other limitations on outages and required notifications.
 4. Verify that abandoned services serve only abandoned facilities before removal.
 5. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification.
- G. Protect existing work to remain.
1. Prevent movement of structure; provide shoring and bracing if necessary.
 2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
 3. Repair adjacent construction and finishes damaged during removal work.

4. Patch as specified for patching new work.
 - H. 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.
 - I. 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.
 - J. 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.
- 3.07 DEBRIS AND WASTE REMOVAL
- A. Remove debris and trash from site.
 - B. Do not allow demolished materials to accumulate on-site.
 - C. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
 - D. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
 - E. Remove from site all materials not to be reused on site; do not burn or bury.
 - F. Leave site in clean condition, ready for subsequent work.
 - G. Clean up spillage and wind-blown debris from public and private lands.
- 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

SECTION 03 30 00 - CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Concrete forming and accessories.
- B. Concrete for composite floor construction.
- C. Floors and slabs on grade.(interior and exterior).
- D. Concrete reinforcing.
- E. Joint devices associated with concrete work.
- F. Concrete curing.

1.02 REFERENCE STANDARDS

- A. ACI 117 - Standard Specifications for Tolerances for Concrete Construction and Materials; 2010.
- B. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete; 1991 (Reapproved 2009).
- C. ACI 301 - Specifications for Structural Concrete; 2010 (Errata 2012).
- D. ACI 302.1R - Guide for Concrete Floor and Slab Construction; 2004 (Errata 2007).
- E. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete; 2000.
- F. ACI 308R - Guide to Curing Concrete; 2001 (Reapproved 2008).
- G. ACI 309R - Guide for Consolidation of Concrete; 2005.
- H. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; 2014 (Errata 2016).
- I. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2016.
- J. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete; 2015.
- K. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2016.
- L. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2016b.
- M. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete; 2016a.
- N. ASTM C150/C150M - Standard Specification for Portland Cement; 2016.

- O. ASTM C295/C295M - Standard Guide for Petrographic Examination of Aggregates for Concrete; 2012.
- P. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete; 2015.
- Q. ASTM C1059/C1059M - Standard Specification for Latex Agents for Bonding Fresh to Hardened Concrete; 2013.
- R. ASTM C1293 - Standard Test Method for Determination of Length Change of Concrete Due to Alkali-Silica Reaction; 2008b.
- S. ASTM C1602/C1602M - Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete; 2012.
- T. ICRI 310.2R - Selecting and Specifying Concrete Surface Preparation; 2013.
- U. PCA (GS) - Portland Cement Association; Guide Specification for Concrete Subject to Alkali-Silica Reactions[.]

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate placement of embedded items with erection of concrete formwork and placement of form accessories.
 - 2. Coordinate the use and application of specified curing methods for slabs and floor surfaces with accepted flooring system manufacturers.
- B. Preinstallation Meeting: Conduct a preinstallation meeting one week prior to the start of the work of this Section.
 - 1. Discuss construction document requirements, required clarifications to construction documents, construction schedule, and coordination of affected trades.

1.04 SUBMITTALS

- A. Product Data: Submit manufacturers' data on all specified manufactured products showing compliance with specified requirements and installation instructions.
 - 1. Curing Compounds: Provide data on method of removal in the event of incompatibility with floor covering adhesives.
- B. Mix Designs: Submit proposed mix design for each class of concrete specified. Include mix identification number (unique for each submitted mix), intended use of mix, air content, proportions of ingredients, aggregate analysis, cement brand and type, slump, water/cement ratio, and strength test reports for 7 and 28 day strengths.
 - 1. Indicate proposed mix design complies with requirements of ACI 301, Section 4 - Concrete Mixtures.
 - 2. Indicate proposed mix design complies with requirements of ACI 318, Chapter 5 - Concrete Quality, Mixing and Placing.
- C. Shop Drawings: Comply with requirements of ACI SP-66. Include bar schedules, shapes of bent bars, spacing of bars, and location of splices.

1.05 QUALITY ASSURANCE

- A. Perform work of this Section in accordance with ACI 117, ACI 301 and ACI 318.

PART 2 PRODUCTS

2.01 FORMING

- A. Forming Materials: Contractor's choice of standard products with sufficient strength to withstand hydrostatic head without distortion in excess of permitted tolerances.
 - 1. Form Coating: Release agent that will not adversely affect concrete or interfere with application of coatings.

2.02 REINFORCING

- A. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi).
 - 1. Type: Deformed billet-steel bars.
 - 2. Finish: Unfinished.
- B. Steel Welded Wire Reinforcement (WWR): Galvanized, plain type, ASTM A1064/A1064M.
 - 1. WWR Style: 4 x 8-W6 x W10.
 - 2. Mesh Size and Wire Gage: As indicated on Drawings.
- C. Reinforcement Accessories:
 - 1. Tie Wire: Annealed, minimum 16 gage, 0.0508 inch.
 - 2. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for adequate support of reinforcement during concrete placement.

2.03 CONCRETE MATERIALS

- A. Cement: ASTM C150/C150M, Type I - Normal Portland type.
 - 1. Acquire all cement for entire project from same source.
- B. Fine and Coarse Aggregates: ASTM C33.
 - 1. Acquire all aggregates for entire project from same source.
 - 2. Tested according to ASTM C295/C295M or ASTM C1293 and according to PCA (GS) Section 5.1.
- C. Fly Ash: ASTM C618, Class C or F.
 - 1. Acquire all fly ash for entire project from same source.
 - 2. Limit use to 20 percent of cement content, by weight, unless otherwise specified.
- D. Water: ASTM C1602/C1602M; clean and not detrimental to concrete.

2.04 BONDING AND JOINTING PRODUCTS

- A. Latex Bonding Agent: Non-redispersable acrylic latex, complying with ASTM C1059/C1059M, Type II.
 - 1. Manufacturers:
 - a. Kaufman Products Inc; SureBond: www.kaufmanproducts.net.

- b. SpecChem, LLC; Strong Bond Acrylic Bonder: www.specchemllc.com/sle.
 - c. W.R. Meadows, Inc.; ACRY-LOK: www.wrmeadows.com.
 - B. Slab Isolation Joint Filler: 1/2 inch thick, height equal to slab thickness, with removable top section that will form 1/2 inch deep sealant pocket after removal.
 - C. Slab Contraction Joint Device: Preformed linear strip intended for pressing into wet concrete to provide straight route for shrinkage cracking.
 - D. Slab Construction Joint Devices: Combination keyed joint form and screed, galvanized steel, with rectangular or round knockout holes for conduit or rebar to pass through joint form at 6 inches on center; ribbed steel stakes for setting.
- 2.05 CONCRETE MIX DESIGN - GENERAL
- A. Proportioning Normal Weight Concrete: Comply with ACI 211.1 recommendations.
 - B. Concrete Strength: Establish required average strength for each type of concrete on the basis of field experience or trial mixtures, as specified in ACI 301.
 - 1. For trial mixtures method, employ independent testing agency acceptable to Architect for preparing and reporting proposed mix designs.
- 2.06 CONCRETE MIXES
- A. Normal Weight Slab Concrete:
 - 1. Applications: Slabs on grade and elevated slabs.
 - 2. Compressive Strength, when tested in accordance with ASTM C39/C39M at 28 days: 3,000 pounds per square inch.
 - 3. Fly Ash Content: Maximum 20 percent of cementitious materials by weight.
 - 4. Maximum Slump: 4 inches.
- 2.07 MIXING
- A. Transit Mixers: Comply with ASTM C94/C94M.
 - 1. Deliver concrete and discharge entire load within 1-1/2 hours, or before drum has turned 300 revolutions, whichever occurs first, after introduction of mixing water.
 - B. Add water in accordance with ACI 304R, add at one time only, not more than 2 gal/cu yd of concrete, and provided the increase in slump does not exceed one inch.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify lines, levels, and dimensions before proceeding with work of this Section.

3.02 PREPARATION

- A. Formwork: Comply with requirements of ACI 301. Design and fabricate forms to support all applied loads until concrete is cured, and for easy removal without damage to concrete.

- B. Verify that forms are clean and free of rust before applying release agent.
- C. Prepare existing concrete surfaces to be repaired according to ICRI 310.2R.
- D. Remove all fins, projections, and other detrimental irregularities on surfaces to receive waterproofing systems; comply with waterproofing system manufacturer's requirements for surface preparation.
- E. Where new concrete is to be bonded to previously placed concrete, prepare existing surface by cleaning and applying bonding agent in according to bonding agent manufacturer's instructions.
 - 1. Use latex bonding agent only for non-load-bearing applications.
- F. In locations where new concrete is doweled to existing work, drill holes in existing concrete, insert steel dowels and pack solid with non-shrink grout.

3.03 INSTALLING REINFORCEMENT AND OTHER EMBEDDED ITEMS

- A. Comply with requirements of ACI 301. Clean reinforcement of loose rust and mill scale, and accurately position, support, and secure in place to achieve not less than minimum concrete coverage required for protection.
- B. Install welded wire reinforcement in maximum possible lengths, and offset end laps in both directions. Splice laps with tie wire.

3.04 PLACING CONCRETE

- A. Place concrete in accordance with ACI 304R.
- B. Place concrete for floor slabs in accordance with ACI 302.1R.
- C. Notify Architect not less than 24 hours prior to commencement of placement operations.
- D. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.
- E. Ensure reinforcement will not be disturbed during concrete placement.
- F. Place concrete continuously without construction (cold) joints wherever possible; where construction joints are necessary, before next placement prepare joint surface by removing laitance and exposing the sand and sound surface mortar, by sandblasting or high-pressure water jetting.
- G. Consolidate concrete placed in forms by mechanical vibrating equipment supplemented by hand spading, rodding, and tamping according to ACI 309R. Vibration of forms and reinforcing in not permitted.
- H. Finish floors level and flat, unless otherwise indicated, within the tolerances specified in this Section.

3.05 SLAB JOINTING

- A. Locate joints as indicated on Drawings.

- B. Anchor joint fillers and devices to prevent movement during concrete placement.
- C. Isolation Joints: Use preformed joint filler with removable top section for joint sealant, total height equal to thickness of slab, set flush with top of slab.
- D. Contraction Joint Devices: Use preformed joint device, with top set flush with top of slab.
- E. Construction Joints: Where not otherwise indicated, use metal combination screed and key form, with removable top section for joint sealant.

3.06 SEPARATE FLOOR TOPPINGS

- A. Prior to placing floor topping, roughen substrate concrete surface and remove deleterious material. Broom and vacuum clean.
- B. Place required dividers, edge strips, reinforcing, and other items to be cast in.
- C. Apply bonding agent to substrate in accordance with manufacturer's instructions.
- D. Apply sand and cement slurry coat on base course, immediately prior to placing toppings.
- E. Place concrete floor toppings to required lines and levels.
 - 1. Place topping in checkerboard panels not to exceed 20 feet in either direction.
- F. Screed toppings level, maintaining surface flatness of maximum 1:1000.

3.07 CONCRETE FINISHING

- A. Finish concrete in accordance with Section 03 35 00 - Concrete Finishing.

3.08 CURING AND PROTECTION

- A. Comply with requirements of ACI 308R. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
- B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
- C. Surfaces Not in Contact with Forms:
 - 1. Curing - Slabs and Floors To Receive Adhesive-Applied Flooring: Curing compounds and other surface coatings are usually considered unacceptable by flooring and adhesive manufacturers. Unless approved otherwise in writing by Architect and accepted flooring manufacturers, cure slabs and floors to receive adhesive-applied flooring according to Contractor's Option - Slab Moisture Control specified under ADMINISTRATIVE REQUIREMENTS in this Section.
 - 2. Curing - Slabs and Floors Not Receiving Adhesive-Applied Flooring: Begin after initial curing but before surface is dry.
 - a. Curing Compound: Apply specified curing compound in two coats at right angles, using application rate recommended by manufacturer.

3.09 DEFECTIVE CONCRETE

- A. Test Results: The testing agency shall report test results in writing to Architect and Contractor within 24 hours of test.
- B. Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.
- C. Repair or replacement of defective concrete will be determined by the Architect. The cost of additional testing shall be borne by Contractor when defective concrete is identified.
- D. Repair interior and exterior slab cracks, holes, and voids exceeding 1/16 inch wide by grinding crack to 1/8 inch wide and fill with epoxy bonding system. Grind smooth and flush with adjacent surface.

3.10 PROTECTION

- A. Do not permit traffic over unprotected concrete floor surface until fully cured.

END OF SECTION

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SECTION 03 35 00 - CONCRETE FINISHING

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes for interior and exterior concrete flatwork.

1.02 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review concrete design mixture and examine procedures for ensuring quality of concrete materials and finishes. Require representatives of each entity directly concerned with cast-in-place concrete to attend, including the following:
 - a. Contractor's superintendent.
 - b. Independent testing agency responsible for concrete design mixtures.
 - c. Ready-mix concrete manufacturer.
 - d. Concrete Subcontractor.
 - e. Special concrete finish Subcontractor.
 - 2. Review concrete finishes and finishing, cold- and hot-weather concreting procedures, curing procedures, methods for achieving specified floor and slab flatness and levelness floor and slab flatness and levelness measurement, concrete repair procedures, and concrete protection.

1.03 SUBMITTALS

- A. Product Data: For each type of product.
- B. Construction Joint Layout: Indicate proposed construction joints required to construct the structure.
 - 1. Location of construction joints is subject to approval of the Architect.
- C. Material Certificates: For each of the following, signed by manufacturers:
 - 1. Curing compounds.
 - 2. Floor and slab treatments.
- D. Floor surface flatness and levelness measurements indicating compliance with specified tolerances.
- E. Field quality-control reports.
- F. Minutes of preinstallation conference.

1.04 SUSTAINABILITY SUBMITTALS

- A. CAL-Green documentation and verification data as specified in Section 018114 - Sustainable Design Requirements – CAL-Green, for the following measures:
 - 1. 4.504.2.2 and 5.504.4.3 Paints and coatings.

2. 4.504.2.3 and 5.504.4.3.1 Aerosol paints and coatings.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified installer who employs on Project personnel qualified as ACI-certified Flatwork Technician and Finisher and a supervisor who is an ACI-certified Concrete Flatwork Technician.

1.06 FIELD CONDITIONS

- A. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
 1. When average high and low temperature is expected to fall below 40 deg F (4.4 deg C) for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301 (ACI 301M).
 2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.
- B. Hot-Weather Placement: Comply with ACI 301 (ACI 301M) and as follows:
 1. Maintain concrete temperature below 90 deg F (32 deg C) at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
 2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

PART 2 PRODUCTS

2.01 CONCRETE, GENERAL

- A. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:
 1. ACI 301 (ACI 301M).
 2. ACI 117 (ACI 117M).

2.02 CURING MATERIALS

- A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.
 1. Products:
 - a. BASF Corporation-Construction Systems; Confilm.
 - b. ChemMasters, Inc; Spray-Film.
 - c. Dayton Superior; AquaFilm J74RTU.
 - d. Euclid Chemical Company (The); an RPM company; Eucobar.
 - e. L&M Construction Chemicals, Inc; E-CON.
 - f. Lambert Corporation; LAMBCO Skin.

- g. Sika Corporation; Caltexol CIMFILM.
- B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. (305 g/sq. m) when dry.
- C. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
 - 1. Use for floors to be polished in accordance with Section 033543 - Polished Concrete Floor Finishing.
- D. Water: Potable.
- E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, nondissipating, certified by curing compound manufacturer to not interfere with bonding of floor covering.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. BASF Corporation-Construction Systems; MasterKure CC 160 WB (Pre-2014: Kure-N-Seal WB).
 - b. ChemMasters, Inc; Safe-Cure & Seal 309.
 - c. Dayton Superior; Cure & Seal 309 J18.
 - d. Euclid Chemical Company (The); an RPM company; Euco Diamond Hard.
 - e. L&M Construction Chemicals, Inc; Dress & Seal WB.
 - f. W.R. Meadows, Inc; Vocomp-20.

2.03 REPAIR MATERIALS

- A. Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch (3.2 mm) and that can be feathered at edges to match adjacent floor elevations.
 - 1. Cement Binder: ASTM C 150/C 150M, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
 - 2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.
 - 3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch (3.2 to 6 mm) or coarse sand as recommended by underlayment manufacturer.
 - 4. Compressive Strength: Not less than 4100 psi (29 MPa) at 28 days when tested according to ASTM C 109/C 109M.
- B. Repair Overlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/4 inch (6.4 mm) and that can be filled in over a scarified surface to match adjacent floor elevations.
 - 1. Cement Binder: ASTM C 150/C 150M, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
 - 2. Primer: Product of topping manufacturer recommended for substrate, conditions, and application.
 - 3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch (3.2 to 6 mm) or coarse sand as recommended by topping manufacturer.

4. Compressive Strength: Not less than 5000 psi (34.5 MPa) at 28 days when tested according to ASTM C 109/C 109M.

PART 3 EXECUTION

3.01 FINISHING FLOORS AND SLABS

- A. General: Comply with ACI 302.1R recommendations for screeding, restraighening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Scratch Finish: While still plastic, texture concrete surface that has been screeded and bull-floated or darbied. Use stiff brushes, brooms, or rakes to produce a profile amplitude of 1/4 inch (6 mm) in one direction.
 1. Apply scratch finish to surfaces indicated.
- C. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power-driven floats. Restraighten, cut down high spots, and fill low spots. Repeat float passes and restraighening until surface is left with a uniform, smooth, granular texture.
 1. Apply float finish to surfaces indicated, to receive trowel finish, and to be covered with fluid-applied or sheet waterproofing, built-up or membrane roofing, or sand-bed terrazzo.
- D. Trowel Finish: After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.
 1. Apply a trowel finish to surfaces indicated, exposed to view, and to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin-film-finish coating system.
- E. Finish surfaces to the following tolerances, according to ASTM E 1155 (ASTM E 1155M), for a randomly trafficked floor surface:
 1. Slab on Grade:
 - a. Corridor Flooring: Specified overall values of flatness, F(F) 45; and of levelness, F(L) 35; with minimum local values of flatness, F(F) 30; and of levelness, F(L) 24.
 - b. Thinset Flooring, Resilient Floor Covering: Specified overall values of flatness, F(F) 35; and of levelness, F(L) 20; with minimum local values of flatness, F(F) 24; and of levelness, F(L) 17.
 2. Suspended Slabs
 - a. Corridor Flooring: Specified overall values of flatness, F(F) 45; and of levelness, F(L) 35; with minimum local values of flatness, F(F) 30; and of levelness, F(L) 24.
 - b. Thinset flooring, resilient floor covering: Specified overall values of flatness, F(F) 30; and of levelness, F(L) 20; with minimum local values of flatness, F(F) 24; and of levelness, F(L) 15.

- c. Carpeted floors: Specified overall values of flatness, F(F) 25; and of levelness, F(L) 20; with minimum local values of flatness, F(F) 24, and of levelness, F(L) 15.
 - d. Subfloors Under Concrete Toppings: Specified overall values of flatness, F(F) 20; and of levelness, F(L) 15; with minimum local values of flatness, F(F) 15, and of levelness, F(L) 10.
- 3. Concrete Slabs to be hard troweled finish: Specified overall values of flatness, F(F) 50; and of levelness, F(L) 30; with minimum local values of flatness, F(F) 35; and of levelness, F(L) 20.
- F. Broom Finish: Apply a broom finish to exterior concrete slabs, platforms, steps, ramps, and elsewhere as indicated.
 - 1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.

3.02 CONCRETE PROTECTING AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 (ACI 301M) for hot-weather protection during curing.
- B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h (1 kg/sq. m x h) before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- C. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for remainder of curing period.
- D. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.
- E. Cure concrete according to ACI 308.1, by one or a combination of the following methods:
 - 1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
 - a. Water.
 - b. Continuous water-fog spray.
 - c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch (300-mm) lap over adjacent absorptive covers.
 - 2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches (300 mm), and sealed by waterproof tape or adhesive. Cure

- for not less than seven days. Immediately repair any holes or tears during curing period, using cover material and waterproof tape.
- a. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive floor coverings.
 - b. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive penetrating liquid floor treatments.
 - c. Cure concrete surfaces to receive floor coverings with either a moisture-retaining cover or a curing compound that the manufacturer certifies does not interfere with bonding of floor covering used on Project.
3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.
- a. Removal: After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer[unless manufacturer certifies curing compound does not interfere with bonding of floor covering used on Project].
4. Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.

3.03 JOINT FILLING

- A. Prepare, clean, and install joint filler according to manufacturer's written instructions.
- B. Defer joint filling until concrete has aged at least 6 month(s). Do not fill joints until construction traffic has permanently ceased.
- C. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joints clean and dry.
- D. Install semirigid joint filler full depth in saw-cut joints and at least 2 inches (50 mm) deep in formed joints. Overfill joint and trim joint filler flush with top of joint after hardening.

3.04 CONCRETE SURFACE REPAIRS

- A. Defective Concrete: Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval.
- B. Patching Mortar: Mix dry-pack patching mortar, consisting of 1 part portland cement to 2-1/2 parts fine aggregate passing a No. 16 (1.18-mm) sieve, using only enough water for handling and placing.
- C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.

1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch (13 mm) in any dimension to solid concrete. Limit cut depth to 3/4 inch (19 mm). Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
 2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement so that, when dry, patching mortar matches surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.
 3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Architect.
- D. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.
1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch (0.25 mm) wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
 2. After concrete has cured at least 14 days, correct high areas by grinding.
 3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.
- E. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.
- F. Repair defective areas, except random cracks and single holes 1 inch (25 mm) or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch (19-mm) clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete, except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
- G. Repair random cracks and single holes 1 inch (25 mm) or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.

- H. Perform structural repairs of concrete, subject to Architect's approval, using epoxy adhesive and patching mortar.
- I. Repair materials and installation not specified above may be used, subject to Architect's approval.

3.05 FIELD QUALITY CONTROL

- A. Special Inspections: Owner will engage a special inspector and qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.
- B. Testing Agency: Engage a qualified testing and inspecting agency to perform tests and inspections and to submit reports.
- C. Measure floor and slab flatness and levelness according to ASTM E 1155 (ASTM E 1155M) within 24 hours of finishing.

3.06 PROTECTION OF LIQUID FLOOR TREATMENTS

- A. Protect liquid floor treatment from damage and wear during the remainder of construction period. Use protective methods and materials, including temporary covering, recommended in writing by liquid floor treatments installer.

END OF SECTION

SECTION 03 35 41 - CONCRETE SEALING

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes concrete sealing.
 - 1. Concrete for sealed concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, initial finishing, and curing is specified in Section 033000 Cast-in-Place Concrete.

1.02 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Before submitting design mixtures, review concrete design mixture and examine procedures for ensuring quality of concrete materials. Require representatives of each entity directly concerned with sealed concrete to attend, including the following:
 - a. Contractor's superintendent.
 - b. Independent testing agency responsible for concrete design mixtures.
 - c. Ready-mix concrete manufacturer.
 - d. Cast-in-place concrete subcontractor.
 - e. Sealed concrete finishing Subcontractor.

1.03 SUBMITTALS

- A. Product Data: For each type of product.
- B. Sealed Concrete Schedule: Submit plan showing sealed concrete surfaces and schedule of sealing operations for each area of sealed concrete before start of sealing operations. Include locations of all joints, including construction joints.
- C. Samples for Initial Selection: For each type of product requiring color selection.
- D. Samples for Verification: For each type of exposed color.
- E. Qualification Data: For Installer.
- F. Material Certificates: For each of the following, signed by manufacturers:
 - 1. Repair materials.
 - 2. Liquid floor treatments.

1.04 SUSTAINABILITY SUBMITTALS

- A. CAL-Green documentation and verification data as specified in Section 01 81 14 - Sustainable Design Requirements - CAL-Green, for the following measures:
 - 1. 4.504.2.2 and 5.504.4.3 Paints and coatings.

1.05 QUALITY ASSURANCE

- A. Applicator's Qualifications: Company specializing in performing work of this Section with 3 years minimum experience.
- B. Coordination: Test compatibility of sealer with adhesive used for access flooring pedestals.
- C. Certifications:
 - 1. Submit manufacturer's certificate stating proper amount of materials was ordered and shipped to Project.
 - 2. Submit sealer manufacturer's certificate indicating review of Project conditions and intent to issue extended warranty. Submittal of certificate is required prior to application of materials.
- D. Field Samples
 - 1. Cast and finish three 4 foot by 4 foot sample panels with dry shake hardener finish for Architect's review of color consistency and workmanship. Provide workmanship and procedures necessary to match Architect approved submittal.
- E. Maintain accepted sample application during construction as standard for Work.
- F. Architect's Review:
 - 1. Architect will review field sample for visual acceptance of materials and workmanship.
 - 2. Replace unsatisfactory Work as directed by Architect.
 - 3. Approved samples may remain as part of the Work.

1.06 FIELD CONDITIONS

- A. Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other construction activities.

1.07 SCHEDULING

- A. Schedule application of products at proper time intervals after concrete finishing and curing operations.
- B. Maintain proper moisture content of concrete before, during, and after application of specified products.

PART 2 PRODUCTS

2.01 LIQUID FLOOR TREATMENTS

- A. Water Based Acrylic Sealing Compounds:
 - 1. ASTM C1315, Type I, Class A, VOC compliant, free of natural or petroleum waxes. Dries clear with satin sheen.
 - 2. Compatible with subsequent coatings and toppings.

3. VOC Requirement: Less than 100 g/L
4. Acceptable Products:
 - a. L&M Construction Chemicals, Inc.; Lumiseal WB Plus.
 - b. W. R. Meadows; VOCOMP-30.
 - c. Monopole; MonoChem AquaSeal W20.
 - d. Monopole; MonoChem PermaSeal.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that damage and defects in concrete surface have been repaired as specified in Section 033000 and accepted by Architect.
- B. Verify that surfaces are clean, dry, dust free, and free of efflorescence, oil or other matter detrimental to sealer application.
- C. Verify that joint sealant work in adjoining surfaces is complete prior to applications of sealers. Delay application until sealants have cured.
- D. Ensure concrete has cured for time period required by manufacturer of product to be applied 28 days minimum before application of products.

3.02 PREPARATION

- A. Provide protection as necessary to protect adjacent materials and surfaces from dirt, dust, and other surface or physical damage.
- B. Prevent migration of airborne materials by use of tarpaulins, wind breaks, and similar containment devices.
- C. Maintain control of concrete chips, dust and debris. Collect water to prevent damage to adjacent surfaces.
- D. Remove loose particles, foreign matter, and oil by method which will not affect sealer application.
- E. Prepare surfaces in accordance with manufacturer's directions.

3.03 SEALING

- A. Apply sealed concrete finish system to cured and prepared slabs to match accepted mockup.
 1. Apply penetrating liquid floor treatment for sealed concrete in sealing sequence and according to manufacturer's written instructions, allowing recommended drying time between successive coats.
 2. Liquid Membrane-Forming Sealer:
 - a. Apply sealer using low pressure airless sprayer in single coat at 400 to 600 ft/gal coverage unless greater amount is recommended by manufacturer to obtain penetration and full coverage.

- b. Do not allow flooding or puddling of material on surface.
- c. Do not dilute or alter material as packaged.

3.04 ADJUSTING

- A. Repair or replace adjacent Work which has been damaged by finishing operations.

3.05 CLEANING

- A. Clean-up and remove debris daily.
- B. Clean spillage, overspray, or drift from adjacent surfaces; remove immediately in accordance with manufacturer's instructions

3.06 PROTECTION OF LIQUID FLOOR TREATMENTS

- A. Protect liquid floor treatment from damage and wear during the remainder of construction period. Use protective methods and materials, including temporary covering, recommended in writing by liquid floor treatments installer.

END OF SECTION

SECTION 03 54 00 - CAST UNDERLAYMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Liquid-applied self-leveling floor underlayment.

1.02 REFERENCE STANDARDS

- A. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or (50-mm) Cube Specimens); 2016a.
- B. ASTM C348 - Standard Test Method for Flexural Strength of Hydraulic-Cement Mortars; 2014.
- C. ASTM C472 - Standard Test Methods for Physical Testing of Gypsum, Gypsum Plasters and Gypsum Concrete; 1999 (Reapproved 2014).
- D. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2016.
- E. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2009.
- F. ASTM E413 - Classification for Rating Sound Insulation; 2010.

1.03 SUBMITTALS

- A. Product Data: Provide manufacturer's data sheets documenting physical characteristics and product limitations of underlayment materials. Include information on surface preparation, mixing instructions, environmental limitations, storage and handling requirements, installation instructions, and compliance with specified regulatory requirements, including substantiating test data for fire rated assemblies and sound rating.
- B. Certificate: Certify that products and systems meet or exceed specified regulatory requirements.

1.04 QUALITY ASSURANCE

- A. Applicator Qualifications: Company specializing in performing the work of this Section.
 - 1. Approved by manufacturer.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Keep dry and protect from direct sun exposure, freezing, and ambient temperature greater than 105 degrees F.

1.06 REGULATORY REQUIREMENTS

- A. Conform to applicable code for combustibility or flame spread requirements.
- B. Conform to basis of design UL Assembly Design specified on Drawings.

1.07 MOCK-UP

- A. Comply with general mock-up requirements specified in Section 01 4000.
- B. Mock-up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
 - 1. Prepare mock-up in location designated by Architect.
 - 2. Do not proceed with underlayment work until workmanship of mock-up has been approved by Architect.
 - 3. Mock-up may remain as part of the Work.

1.08 FIELD CONDITIONS

- A. Do not install underlayment until floor penetrations and peripheral work are complete.
- B. Maintain minimum ambient temperatures of 50 degrees F 24 hours before, during and 72 hours after installation of underlayment.
- C. During the curing process, ventilate spaces to remove excess moisture.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Acceptable Manufacturers - Cementitious Underlayment:
 - 1. ARDEX Engineered Cements; ARDEX K 15 with ARDEX MC ULTRA: www.ardexamericas.com.
 - 2. Dayton Superior Corporation; Level Topping with Level Primer J42: www.daytonsuperior.com.
 - 3. LATICRETE International, Inc.; LATICRETE SUPERCAP SC500 with LATICRETE SUPERCAP Primer Plus: www.laticretesupercap.com/#sle.
 - 4. Maxxon Corporation; Level-Right: www.maxxon.com.
 - 5. ProSpec, an Oldcastle brand; Level Set Deep Pour 3: www.prospec.com.
 - 6. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 MATERIALS

- A. Cast Underlayments, General:
 - 1. Conform to applicable code for combustibility or flame spread requirements.
 - 2. Provide certificate of compliance from authority having jurisdiction indicating approval of underlayment materials in the required fire rated assembly.

- B. Cementitious Underlayment: Blended cement mix, that when mixed with water in accordance with manufacturer's directions will produce self-leveling underlayment with the following properties:
 - 1. Compressive Strength: Minimum 4000 psi after 28 days, tested per ASTM C109/C109M.
 - 2. Flexural Strength: Minimum 1250 psi after 28 days, tested per ASTM C348.
 - 3. Density: 125 lb/cu ft, nominal.
 - 4. Final Set Time: 1-1/2 to 2 hours, maximum.
 - 5. Thickness: Capable of thicknesses from feather edge to maximum 3-1/2 inch.
 - 6. Surface Burning Characteristics: Flame spread/Smoke developed index of 0/0 in accordance with ASTM E84.
- C. Aggregate: Dry, well graded, washed silica aggregate, approximately 1/8 inch in size and acceptable to underlayment manufacturer.
- D. Reinforcement: Galvanized metal lath complying with recommendations of underlayment manufacturer for specific project circumstances.
- E. Water: Potable and not detrimental to underlayment mix materials.
- F. Primer: Manufacturer's recommended type.
- G. Joint and Crack Filler: Latex based, as recommended by manufacturer, compatible with substrate and underlayment mix materials.
- H. Sealer: Manufacturer's proprietary overspray material, formulated to seal cured floor surfaces to receive subsequent adhered finishes.

2.03 MIXING

- A. Site mix materials in accordance with manufacturer's instructions.
- B. Add aggregate, if recommended or required by manufacturer, for areas where thickness will exceed 1 inch. Mix underlayment and water for at least two minutes before adding aggregate, and continue mixing to assure that aggregate has been thoroughly coated.
- C. Mix to self-leveling consistency without over-watering.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that substrate surfaces are clean, dry, unfrozen, do not contain petroleum byproducts, or other compounds detrimental to underlayment material bond to substrate.
- B. Proceed with application only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. General: Prepare and clean substrate according to manufacturer's written instructions.

1. Treat nonmoving substrate cracks according to manufacturer's written instructions to prevent cracks from telegraphing (reflecting) through underlayment.
2. Fill substrate voids to prevent underlayment from leaking.
- B. Concrete: Mechanically prepare steel troweled concrete to create a textured surface necessary to achieve the best bond; acceptable methods include bead blasting and scarifying. Do not use acid etching.
- C. Wood: Install metal lath for reinforcement of underlayment.
- D. Metal Substrates: Mechanically remove, according to manufacturer's written instructions, rust, foreign matter, and other contaminants that might impair underlayment bond. Apply corrosion-resistant coating compatible with underlayment if recommended in writing by underlayment manufacturer.
- E. Nonporous Substrates: For ceramic tile, quarry tile, and terrazzo substrates, remove waxes, sealants, and other contaminants that might impair underlayment bond; prepare surfaces according to manufacturer's written instructions.
- F. Adhesion Tests: After substrate preparation, test substrate for adhesion with underlayment according to manufacturer's written instructions.
- G. Remove substrate surface irregularities. Fill voids and deck joints with filler. Finish smooth.
- H. Vacuum clean surfaces.
- I. Prime substrate in accordance with manufacturer's instructions. Allow to dry.
- J. Close floor openings.
- K. Install sound reduction mat where tile and other hard-surface floor finishes are indicated in accordance with manufacturer's instructions.

3.03 APPLICATION

- A. Install underlayment in accordance with manufacturer's instructions.
- B. General: Mix and apply underlayment components according to manufacturer's written instructions.
 1. Close areas to traffic during underlayment application and for time period after application recommended in writing by manufacturer.
 2. Coordinate application of components to provide optimum adhesion to substrate and between coats.
 3. Retain subparagraph below for moving joints in floor. Detail joints on Drawings and revise below to suit Project.
 4. At substrate expansion, isolation, and other moving joints, allow joint of same width to continue through underlayment.
- C. Pump or pour material onto substrate. Do not retemper or add water.

1. Pump, move, and screed while the material is still highly flowable.
 2. Be careful not to create cold joints.
 3. Wear spiked shoes while working in the wet material to avoid leaving marks.
- D. Place to indicated thickness, with top surface level to 1/8 inch in 10 ft.
1. For final thickness over 1-1/2 inches, place underlayment in layers. Allow initial layer to harden to the point where the material has lost its evaporative moisture. Immediately prime and begin application of the subsequent layer within 24 hours.
- E. Place after partition installation.
- F. Where additional aggregate has been used in the mix, add a top layer of neat mix (without aggregate), if needed to level and smooth the surface.
- G. If a fine, feathered edge is desired, steel trowel the edge after initial set, but before it is completely hard.
- H. Sound Reduction Mat: Discontinue mat at intersections with demising walls and similar locations where indicated. Provide continuous perimeter isolation at those intersection locations using same material as specified sound reduction mat. Install perimeter isolation according to sound reduction mat manufacturer's recommendations.

3.04 CURING

- A. Once underlayment starts to set, prohibit foot traffic until final set has been reached.
- B. Air cure in accordance with manufacturer's instructions.
- C. Apply sealer to cured flooring surfaces scheduled to receive adhered and glued-down finishes.
- D. Seal damaged floor surfaces, regardless of scheduled finish, in accordance with manufacturer's instructions.

3.05 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field inspection and testing, as specified in Section 01 40 00 - Quality Requirements.
- B. Placed Material: Agency will inspect and test for conformance to specified requirements.

3.06 PROTECTION

- A. Protect against direct sunlight, heat, and wind; prevent rapid drying to avoid shrinkage and cracking.
- B. Do not permit traffic over unprotected floor underlayment surfaces.

END OF SECTION

SECTION 04 20 00 - UNIT MASONRY

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Concrete masonry units.
- B. Mortar and grout.
- C. Reinforcement and anchorage.
- D. Accessories.

1.02 REFERENCE STANDARDS

- A. ACI 530/530.1/ERTA - Building Code Requirements and Specification for Masonry Structures and Related Commentaries; 2013.
- B. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2016.
- C. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete; 2015.
- D. ASTM C90 - Standard Specification for Loadbearing Concrete Masonry Units; 2016.
- E. ASTM C129 - Standard Specification for Nonloadbearing Concrete Masonry Units; 2014a.
- F. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar; 2011.
- G. ASTM C150/C150M - Standard Specification for Portland Cement; 2016.
- H. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes; 2006 (Reapproved 2011).
- I. ASTM C270 - Standard Specification for Mortar for Unit Masonry; 2014a.
- J. ASTM C387/C387M - Standard Specification for Packaged, Dry, Combined Materials for Concrete and High Strength Mortar; 2015.
- K. ASTM C404 - Standard Specification for Aggregates for Masonry Grout; 2011.
- L. ASTM C476 - Standard Specification for Grout for Masonry; 2016.
- M. ASTM C780 - Standard Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry; 2015a.

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Direct and coordinate placement of metal anchors supplied for installation under other Sections.

- B. Preinstallation Meeting: Convene meeting one week before starting work of this Section.
 - 1. Require attendance by all relevant installers.
 - 2. Require attendance of parties directly affecting work of this Section.
 - 3. Review conditions of installation, installation procedures, and coordination with related work.

1.04 SUBMITTALS

- A. Product Data: Provide data for masonry units, mortar, and masonry accessories.
- B. Samples: Submit four samples of facing brick units to illustrate color, texture, and extremes of color range.
- C. Manufacturer's Certificate: Certify that masonry units meet or exceed specified requirements.

1.05 SUSTAINABILITY SUBMITTALS

- A. CAL-Green documentation and verification data as specified in Section 01 81 14 Sustainable Design Requirements - CAL-Green, for the following measures:
 - 1. A5.405.1: Regional materials, certificates indicating location of material manufacturer and point of extraction, harvest, or recovery for each raw material.
 - 2. A5.405.4 Recycled content materials, equivalent in performance to virgin materials. Provide cost documentation showing value of recycled content using A5.405.02.
 - 3. A5.406.1, .2 and .3: Materials selected for longevity, reduced maintenance and recyclability.
 - 4. Section A5.405.5: Provide documentation that cement and concrete used are made with recycled content and/or alternative energy.

1.06 QUALITY ASSURANCE

- A. Comply with provisions of ACI 530/530.1/ERTA, except where exceeded by requirements of the Contract Documents.
- B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

1.07 MOCK-UP

- A. Comply with general mock-up requirements specified in Section 01 40 00.
- B. Mock-up: Construct a masonry wall as a mock-up panel sized 8 feet long by 6 feet high; include mortar and accessories and structural backup in mock-up.
 - 1. Locate where directed.
 - 2. Mock-up may remain as part of the Work.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, handle, and store masonry units by means that will prevent mechanical damage and contamination by other materials.

PART 2 PRODUCTS

2.01 CONCRETE MASONRY UNITS (CMU)

- A. Concrete Block: Comply with referenced standards and as follows:
 - 1. Size: Standard units with nominal face dimensions of 16 x 8 inches and nominal depth of 8 inches.
 - 2. Special Shapes: Provide non-standard blocks configured for corners, lintels, headers, control joint edges, and other detailed conditions.
 - 3. Load-Bearing Units: ASTM C90, normal weight.
 - a. Hollow block, as indicated.
 - b. Exposed Faces: Manufacturer's standard gray color and texture.
 - 4. Non-Loadbearing Units: ASTM C129, normal weight.
 - a. Hollow block, as indicated.

2.02 MORTAR AND GROUT MATERIALS

- A. Portland Cement: ASTM C150/C150M, Type I or II.
 - 1. Not more than 0.10 percent alkali.
 - 2. Hydrated Lime: ASTM C207, Type S.
 - 3. Mortar Aggregate: ASTM C144.
 - 4. Grout Aggregate: ASTM C404.
- B. Water: Clean and potable.
- C. Packaged Dry Material for Mortar for Unit Masonry: Premixed Portland cement, hydrated lime, and sand; complying with ASTM C387/C387M and capable of producing mortar of the specified strength in accordance with ASTM C270 with the addition of water only.
 - 1. Type: Type N.
 - 2. Color: Standard gray.

2.03 REINFORCEMENT AND ANCHORAGE

- A. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi), deformed billet bars; galvanized.
- B. Single Wythe Joint Reinforcement: Truss type; ASTM A1064/A1064M steel wire, mill galvanized to ASTM A641/A641M, Class 3; 0.1483 inch side rods with 0.1483 inch cross rods; width as required to provide not more than 1 inch and not less than 1/2 inch of mortar coverage on each exposure.

2.04 ACCESSORIES

- A. Preformed Control Joints: Rubber material. Provide with corner and tee accessories, fused joints.
 - 1. Acceptable Manufacturers:
 - a. Blok-Lok Limited; RS: www.blok-lok.com.
 - b. Hohmann & Barnard, Inc. (including Dur-O-Wal brand); RS: www.h-b.com.
 - c. WIRE-BOND; Rubber Control Joint: www.wirebond.com.
 - d. Prior approved equal.
- B. Cleaning Solution: Non-acidic, not harmful to masonry work or adjacent materials.
 - 1. Acceptable Product: ProSoCo, Inc.; Product Safety Clean: www.prosoco.com.
 - a. Prior approved equal.

2.05 MORTAR AND GROUT MIXES

- A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures unless otherwise indicated.
- B. Bonding Mortar: ASTM C 270, Type S. Use portland cement and lime or use mortar cement.
- C. Joint Grout: ASTM C 476, using portland cement with latex modifier in quantities approved by the additive manufacturer.
- D. Mortar for Unit Masonry: ASTM C270, using the Proportion Specification.
 - 1. Interior Loadbearing Masonry: Type N.
 - 2. Interior Non-loadbearing Masonry: Type N.
- E. Grout: ASTM C476; consistency required to fill completely volumes indicated for grouting; fine grout for spaces with smallest horizontal dimension of 2 inches or less; coarse grout for spaces with smallest horizontal dimension greater than 2 inches.
- F. Mixing: Use mechanical batch mixer and comply with referenced standards.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive masonry.
- B. Verify that related items provided under other Sections are properly sized and located.
- C. Verify that built-in items are in proper location, and ready for roughing into masonry work.
- D. Review substrate to verify that portland cement plaster, if used, has cured for 28 days prior to the start of the work of this section.

- E. Do not proceed with the work of this section until substrate and environmental conditions conform to the requirements of this section. Installation of materials constitutes acceptance of adjacent and underlying construction.
 - 1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
- F. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Provide temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent bracing.
- B. Layout out walls in advance for accurate pattern of surface bond with uniform joint widths and for accurate location of opening, expansion joints, returns, and offsets. Avoid use of less-than-half size units at corners, jambs and other locations.
- C. Establish lines, levels, and coursing. Lay out coursing so that height of three units plus three mortar joints equals eight inches.

3.03 COURSING

- A. Establish lines, levels, and coursing indicated. Protect from displacement.
- B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.
- C. Concrete Masonry Units:
 - 1. Bond: As indicated on Drawings.
 - 2. Coursing: One unit and one mortar joint to equal 8 inches.
 - 3. Mortar Joints: Concave.

3.04 INSTALLATION, GENERAL

- A. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match the construction immediately adjacent to opening.
- B. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.
- C. Select and arrange units for exposed thin brick veneer to produce a uniform blend of colors and textures. Mix units from several pallets or cubes as they are placed.
- D. Matching Existing Masonry: Match coursing, bonding, color, and texture of existing masonry.

3.05 PLACING AND BONDING

- A. Lay hollow masonry units with face shell bedding on head and bed joints.
- B. Buttering corners of joints or excessive furrowing of mortar joints is not permitted.
- C. Remove excess mortar and mortar smears as work progresses.
- D. Remove excess mortar with water repellent admixture promptly. Do not use acids, sandblasting or high pressure cleaning methods.
- E. Interlock intersections and external corners.
- F. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.
- G. Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.
- H. Isolate masonry partitions from vertical structural framing members with a control joint as indicated.
- I. Isolate top joint of masonry partitions from horizontal structural framing members and slabs or decks with compressible joint filler.
- J. Expansion or control Joints: Provide sealant and backer rod in compliance with Section 079500 and Article 1.4.A.6 of this Section. Size and spacing of expansion joints to be on shop drawings and stamped and signed by a structural engineer.

3.06 REINFORCEMENT AND ANCHORAGE - GENERAL

- A. Unless otherwise indicated on Drawings or specified under specific wall type, install horizontal joint reinforcement 16 inches on center.
- B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.
- C. Place continuous joint reinforcement in first and second joint below top of walls.
- D. Lap joint reinforcement ends minimum 6 inches.

3.07 REINFORCEMENT AND ANCHORAGE - SINGLE WYTHER MASONRY

- A. Install horizontal joint reinforcement 8 inches on center.
- B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.
- C. Place continuous joint reinforcement in first and second joint below top of walls.
- D. Lap joint reinforcement ends minimum 6 inches.

3.08 GROUTED COMPONENTS

- A. Reinforce bond beams as indicated on Drawings.
- B. Lap splices as detailed on Drawings.
- C. Support and secure reinforcing bars from displacement. Maintain position within 1/2 inch of dimensioned position.
- D. Place and consolidate grout fill without displacing reinforcing.
- E. Grout solid all hollow concrete unit masonry located below grade, and at other locations indicated.
- F. At bearing locations, fill masonry cores with grout for a minimum 12 inches both sides of opening.

3.09 CONTROL AND EXPANSION JOINTS

- A. Provide sealed expansion joint at all internal corners, whether or not specifically noted or detailed.
- B. Install preformed control joint device in continuous lengths. Seal butt and corner joints in accordance with manufacturer's instructions.
- C. Size control joints as indicated on drawings; if not indicated, 3/4 inch wide and deep.
- D. Form expansion joint as detailed on drawings.

3.10 BUILT-IN WORK

- A. As work progresses, install built-in metal door frames and other items to be built into the work and furnished under other Sections.
- B. Install built-in items plumb, level, and true to line.
- C. Bed anchors of metal door frames in adjacent mortar joints. Fill frame voids solid with grout.
 - 1. Fill adjacent masonry cores with grout minimum 16 inches from framed openings.
- D. Do not build into masonry construction organic materials that are subject to deterioration.

3.11 TOLERANCES

- A. Maximum Variation From Unit to Adjacent Unit: 1/16 inch.
- B. Maximum Variation from Plane of Wall: 1/4 inch in 10 ft and 1/2 inch in 20 ft or more.
- C. Maximum Variation from Plumb: 1/4 inch per story non-cumulative; 1/2 inch in two stories or more.
- D. Maximum Variation from Level Coursing: 1/8 inch in 3 ft and 1/4 inch in 10 ft; 1/2 inch in 30 ft.

- E. Maximum Variation of Mortar Joint Thickness: Head joint, minus 1/4 inch, plus 3/8 inch.

3.12 CUTTING AND FITTING

- A. Cut and fit for chases, pipes, conduit, and sleeves. Coordinate with other Sections of work to provide correct size, shape, and location.
- B. Obtain approval prior to cutting or fitting masonry work not indicated or where appearance or strength of masonry work may be impaired.

3.13 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field quality control tests, as specified in Section 01 40 00 - Quality Requirements.
- B. Concrete Masonry Unit Tests: Test each variety of concrete unit masonry in accordance with ASTM C140/C140M for conformance to requirements of this specification.
- C. Mortar Tests: Test each type of mortar in accordance with ASTM C780, testing with same frequency as masonry samples.

3.14 CLEANING

- A. Remove excess mortar and mortar droppings.
- B. Replace defective mortar. Match adjacent work.
- C. Clean soiled surfaces with specified cleaning solution, at low pressure or by hand methods only; do not introduce excessive moisture into masonry wall surfaces during cleaning operations.
- D. Use non-metallic tools and stiff brushes in cleaning operations.

3.15 PROTECTION

- A. Without damaging completed work, provide protective boards at exposed external corners that are subject to damage by construction activities.

END OF SECTION

SECTION 05 05 55 - SECURITY FASTENERS

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Security fasteners.
 - 2. Maintenance tools and spare replacement fasteners.
- B. Scope of Work Described Under this Section (may be provided under other sections by reference to this section):
 - 1. Exposed fasteners within detention portion of Project including fasteners of Project components shall be security screws, except at following locations:
 - a. Mechanical and electrical rooms and closets including roof mounted equipment.
 - b. Inside control rooms.
 - c. Above suspended ceilings, behind access panels, and within pipe chases.
 - d. Fasteners within manholes and catch basins.

1.02 SUBMITTALS

- A. Product Data. Submit in accordance with Section 013000.

1.03 MAINTENANCE

- A. Extra Materials:
 - 1. Maintenance Tools: Provide Owner with three sets of tools for security screws in accordance with Section 01 78 23- Operation and Maintenance Data. Package each set in tool kit for easy handling and storage.
 - 2. Spare Replacement Fasteners: Provide 50 spare screws for each style, material and size of removable fasteners used on the project. Package in sturdy boxes marked with detailed information on each fastener type for ease of selection.

PART 2 PRODUCTS

2.01 NON-REMOVABLE FASTENERS

- A. Type A: Tamper proof bolt and/or nut; ASTM A 307 solid bar steel, standard course tread, non corrosive zinc nickel coated or Type 316 stainless steel with break-off "button" style head at bolts and break-off hex head nuts leaving a "round" or "conical" nut body that cannot be removed unless the bolts are drilled and extracted and the nuts are cut off. Provide at the following locations and installations:
 - 1. At bunks, clothes hooks, shelf units, stools, wall shelf, wall bench, TV monitor stands, writing surfaces, privacy screen panels, woven rod panels, and all other floor or wall mounted items that are exposed to view in the defined security/detention areas.
 - 2. Types:

- a. Type A1: Machine bolt and nut pairs or individually for engagement with pre-installed pre-threaded sockets or studs.
 - b. Type A2: Machine bolt or nut for use with expansion shields, chemical setting, or other blind hole fastening devices.
 3. Acceptable Manufacturers:
 - a. J. P. Ruklic, 17200 Palmer Road, Homewood, IL.
 - b. B & G Manufacturing, 3067 Unionville Pike, Hatfield, PA.
 - c. Guardnut, Inc., Santa Rosa, CA.
 - B. Type B: Drive-pin fasteners designed for blind hole installation in solid substrates for use where specifically indicated.
 1. Acceptable types:
 - a. Type B1 Deformed Spikes: Headed steel shafts with deformed shanks designed to drive into pre-drilled holes in cementitious substrates such as concrete and routed masonry and wedge into the material through . Basis of Design: Rawl Spike as manufactured by Powers.
 - b. Type B2 Alloy Shield Drive Pin Fasteners: Headed alloy expansion shield with headed steel drive pin designed to easily insert into a pre-drilled hole but secure upon driving the pin flush with the shield head. Basis of Design: Zamac (plastic types not allowed).
 - C. Type C: Blind rivet fasteners for hollow metal substrates.
 1. Material: Stainless Steel.
 2. Diameter and Length: As required for particular use.
- 2.02 REMOVABLE SECURITY FASTENERS BOLTS, NUTS AND SCREWS
- A. General: Provide security type fasteners throughout the facility inclusive of factory fabricated products, assemblies, and for installations such as door hardware, hinges, equipment and other items accessible to inmates, unless specifically excluded.
 - B. Manufacturers/Suppliers:
 1. Camcar Division of Textron, Inc., Rockford, Illinois, 815/226/7721.
 2. Holo-Krome Company, West Harford, Connecticut, 203/523-5235.
 3. Riteloc Company, Freeport, New York, 516/378-1020.
 4. Safety Socket Screw Corporation, Chicago, Illinois, 312/763-2020.
 5. Tamper-Pruf Screws, Inc., Paramount, California, 213/531-9364.
 - C. Security Screws Performance: Operable by tools produced for use on security screws.
 1. Security screws: Withstand numerous removals and replacements with security screw tools.
 2. Contractor: Provide security screws for Project; operable by maximum two different sets of tools.
 - D. Diameters: No. 4 through 3/4 inch.
 - E. Length: As required for the particular use.
 - F. Base Material: As required for strength, durability, and corrosion resistance.

1. Black Grade 9 Alloy Steel: Where specific corrosion resistance is not an issue.
 2. Plating: Provide plated alloy steel where additional corrosion resistance is required at exterior or wet areas.
 3. Stainless Steel for use in stainless steel substrates. Use thread compound to reduce galling and ensure ease of installation without over-stressing the fastener.
- G. Head Shapes: Socket head cap, button, flat, or low head as required by application or as specified. Provide Allen head type for screw sizes No. 6, No. 8, and No. 10.
- H. Tool Style:
1. Type 1: Not used.
 2. Type 2: Tamper-resistant center-pin reject style that may be removed only with manufacturer's specially designed extraction tool. Provide at the following locations and installations:
 - a. Building exterior.
 - b. Within interior Security Perimeter, including inmate areas, and correctional officer areas, (inclusive of stairwells), interior of inmate cells, and exterior of mechanical, elevator equipment, and electrical rooms where incidental or common contact by inmates is anticipated. Use of security screws in the interior of rooms where inmates are not allowed is not required. Review locations with the Architect and Construction Manager.
 - c. Acceptable Product: "Torx Style 2" security fasteners by Camcar Division of Textron, Inc.
 - d. Type F thread cutting screws are acceptable for thread cleaning purposes, but shall not be used for field cutting threads.

2.03 THREAD COMPOUNDS

- A. Provide thread compounds to ensure corrosion resistance and additional locking properties for the security screws.
1. Anti-galling compound: For use on stainless steel fasteners.
 - a. Products: Permatex Never Seez or equal.
 2. Thread locker: For use as required to ensure tight securement and additional tamper resistance.
 - a. Manufacturers:
 - 1) Permatex Threadlocker Red
 - 2) Loctite Threadlocker Red 271
 - 3) 3M Scotch-Weld Threadlocker TL 71.
 - b. Use only for seldom accessed threads such as window stops and detention furnishings. Do not use on detention grade hardware.

PART 3 EXECUTION

3.01 PREPARATION

- A. Cleaning: Clean threads of fasteners and screw holes prior to

3.02 INSTALLATION

- A. Anti-galling and thread locker Compounds: Apply in accordance with manufacturer's instructions.
- B. Security Screws: Install security screws to proper torque levels as recommended by manufacturer. Architect may require witnessed torque testing of any screws in the facility.
- C. Broken Fasteners: Remove broken fasteners and repair substrate to allow installation of replacement fasteners. Do not leave broken fasteners in place.

END OF SECTION

SECTION 05 50 00 - METAL FABRICATIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Shop fabricated steel items.

1.02 REFERENCE STANDARDS

- A. AAMA 2603 - Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2015.
- B. ANSI A14.3 - American National Standard for Ladders -- Fixed -- Safety Requirements; 2008.
- C. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2014.
- D. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2012.
- E. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2015.
- F. ASTM A283/A283M - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates; 2013.
- G. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2013.
- H. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing; 2014.
- I. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2010.
- J. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2015.
- K. ASTM A780/A780M - Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings; 2009 (Reapproved 2015).
- L. ASTM B85/85M - Standard Specification for Aluminum-Alloy Die Castings; 2014.
- M. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2014.
- N. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate (Metric); 2014.

- O. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; 2012.
- P. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2015 (Errata 2016).
- Q. IAS AC172 - Accreditation Criteria for Fabricator Inspection Programs for Structural Steel; International Accreditation Service, Inc; 2011.
- R. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer; 1999 (Ed. 2004).

1.03 SUBMITTALS

- A. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.
 - 1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.

1.04 SUSTAINABILITY SUBMITTALS

- A. CAL-Green documentation and verification data for the following measures:
 - 1. 4.504.2.1 and 5.504.4.1 Adhesives and sealants.
 - 2. 4.504.2.2 and 5.504.4.3 Paints and coatings.
 - 3. 4.504.2.3 and 5.504.4.3.1 Aerosol paints and coatings.
 - 4. A5.405.1: Regional materials, certificates indicating location of material manufacturer and point of extraction, harvest, or recovery for each raw material.
 - 5. A5.405.4 Recycled content materials, equivalent in performance to virgin materials. Provide cost documentation showing value of recycled content using A5.405.02.
 - 6. Section A5.405.5: Provide documentation that cement and concrete used are made with recycled content and/or alternative energy.

1.05 QUALITY ASSURANCE

- A. Fabricator Qualifications: A qualified steel fabricator that is accredited by IAS AC172.
- B. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
- C. Welding Qualifications: Qualify procedures and personnel according to the following:
 - 1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
 - 2. AWS D1.2/D1.2M, "Structural Welding Code - Aluminum."
 - 3. AWS D1.6/D1.6M, "Structural Welding Code - Stainless Steel."

1.06 FIELD CONDITIONS

- A. If possible, design metal fabrications so that they do not have to fit other construction, and delete this article.
- B. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication.

PART 2 PRODUCTS

2.01 MATERIALS - STEEL

- A. General: Comply with recycled content product requirements specified in Section 018113.
- B. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 20 percent.
- C. Steel Sections: ASTM A36/A36M.
- D. Steel Tubing: ASTM A501/A501M hot-formed structural tubing.
- E. Plates: ASTM A283/A283M.
- F. Steel Sheet: Uncoated, cold-rolled, ASTM A 1008/A 1008M, commercial steel, exposed or electrolytic zinc-coated, ASTM A 879/A 879M, with steel sheet substrate complying with ASTM A 1008/A 1008M, commercial steel, exposed.
- G. Pipe: ASTM A53/A53M, Grade B Schedule 40, black finish.
- H. Stainless Steel Components:
 - 1. ASTM A666, Type 304.
 - 2. Stainless Steel Finish: No. 4 Satin.
- I. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.
- J. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.
- K. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.
- L. Paint Maximum Product Emissions Limits: Top coat and primer interior paints must meet current requirements for VOC (Volatile Organic Compounds) limits of South Coast Air Quality Management District (SCAQMD) Rule No. 1113 and CAL-Green Table 5.504.4.3 for VOC Content Limits for Architectural Coatings.
 - 1. CAL-Green Requirements for typical paint coatings:
 - a. Primers, Sealers, and Undercoaters: 100 grams per liter of product minus water.
- M. Universal Primer:
 - 1. Manufacturer's standard, lead free primer, capable of providing sound foundation for field applied top coats despite prolonged exposure.
 - 2. Standard: FS TT-P-645.
 - 3. Compatible with finish paint system specified in Sections 099113 and 099123.
 - 4. Acceptable Products:
 - a. Dunn-Edwards Corporation; BRPR00-1 Bloc-Rust Premium, Interior / Exterior, Red Oxide or White, Waterborne Alkyd Rust Preventative Metal Primer.
Applied at a dry film thickness of not less than 2.0 mils.

- b. Sherwin-Williams; S-W Pro Industrial ProCryl Universal Acrylic Primer, B66W310. Applied at a dry film thickness of not less than 3.0 mils.
- c. Tnemec; Series 115 Uni-Bond DF. Applied at a dry film thickness of not less than 3.0 mils.

N. High-Performance Coatings Primer

- 1. Acceptable Products:
 - a. Dunn-Edwards; Carboline, Carbocrylic 3358 Direct to Metal Primer.
 - b. Sherwin-Williams; Pro Industrial Pro-Cyrl Universal Primer, B66-310 Series.
 - c. Tnemec; Series 115 Uni-Bond DF.

2.02 FASTENERS

- A. Fastener Materials: Unless otherwise indicated, provide the following:
 - 1. Interior Aluminum Components: Type 304 stainless-steel fasteners.
 - 2. Exterior Aluminum Components: Type 316 stainless-steel fasteners.
 - 3. Interior Stainless-Steel Components: Type 304 stainless-steel fasteners.
 - 4. Exterior Stainless-Steel Components: Type 304 stainless-steel fasteners.
 - 5. Uncoated Steel Components: Plated-steel fasteners complying with ASTM B 633, Class Fe/Zn 25 for electrodeposited zinc coating where concealed; Type 304 stainless-steel fasteners where exposed.
 - 6. Galvanized-Steel Components: Plated-steel fasteners complying with ASTM B 633, Class Fe/Zn 25 for electrodeposited zinc coating.
 - 7. Dissimilar Metals: Type 304 stainless-steel fasteners.
- B. Fasteners for Anchoring to Other Construction: Select fasteners of type, grade, and class required to produce connections suitable for anchoring railings to other types of construction indicated and capable of withstanding design loads .
- C. ICC-ES AC193 is for mechanical anchors and ICC-ES AC308 is for adhesive anchors.
- D. Post-Installed Anchors: Fastener systems with working capacity greater than or equal to the design load, according to an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC193 .
 - 1. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B 633 or ASTM F 1941 (ASTM F 1941M), Class Fe/Zn 5, unless otherwise indicated.
 - 2. Material for Exterior Locations and Where Stainless Steel Is Indicated: Alloy Group 2 (A4) stainless-steel bolts, ASTM F 593 (ASTM F 738M), and nuts, ASTM F 594 (ASTM F 836M).

2.03 FABRICATION

- A. Fit and shop assemble items in largest practical sections, for delivery to site.
- B. Fabricate items with joints tightly fitted and secured.
- C. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.

- D. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

2.04 FABRICATED ITEMS

- A. Provide and install items listed in schedule and shown on Drawings with anchorage and attachments necessary for installation.
- B. Countertop Supports: 2 x 2 inch square steel tube, as detailed, prime paint finish.

2.05 ACCESSORIES

- A. Non-Shrink Grout: ASTM C1107/C1107M, Grade B; pre-mixed compound consisting of non-metallic aggregate, cement, and manufacturer's specified water reducing and plasticizing agents; non-staining, non-gas-forming, containing no chlorides; plastic consistency as measured according to ASTM C230/C230M; capable of developing minimum compressive strength of 10,000 psi in 28 days.

2.06 FINISHES - STEEL

- A. General:
 - 1. Prepare surfaces to be primed in accordance with SSPC-SP6, or as recommended by finish coating manufacturer.
 - 2. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.
- B. Prime paint steel items, unless otherwise specified.
 - 1. Exceptions: Galvanize items to be embedded in concrete and items to be imbedded in masonry.
 - 2. Exceptions: Do not prime surfaces in direct contact with concrete, where field welding is required, and items to be covered with sprayed fireproofing.
 - 3. Prime Painting: One coat.
- C. Galvanizing of Non-structural Items: Galvanize after fabrication to ASTM A123/A123M requirements.

2.07 FABRICATION TOLERANCES

- A. Squareness: 1/8 inch maximum difference in diagonal measurements.
- B. Maximum Offset Between Faces: 1/16 inch.
- C. Maximum Misalignment of Adjacent Members: 1/16 inch.
- D. Maximum Bow: 1/8 inch in 48 inches.
- E. Maximum Deviation From Plane: 1/16 inch in 48 inches.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive work.

3.02 PREPARATION

- A. Clean and strip primed steel items to bare metal where site welding is required.
- B. Supply setting templates to the appropriate entities for steel items required to be cast into concrete or embedded in masonry.

3.03 INSTALLATION

- A. Install items plumb and level, accurately fitted, free from distortion or defects.
- B. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
- C. Field weld components as indicated on Drawings.
- D. Obtain approval prior to site cutting or making adjustments not scheduled.

3.04 TOLERANCES

- A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.
- B. Maximum Offset From True Alignment: 1/4 inch.
- C. Maximum Out-of-Position: 1/4 inch.

3.05 ADJUSTING AND CLEANING

- A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas. Paint uncoated and abraded areas with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.
 - 1. Apply by brush or spray to provide a minimum 2.0-mil dry film thickness.
- B. Touchup Painting: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint are specified in Section 09 91 23 - Interior Painting.
- C. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A780/A780M.

END OF SECTION

SECTION 07 81 00 - APPLIED FIREPROOFING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Fireproofing of interior structural steel not exposed to damage or moisture.

1.02 REFERENCE STANDARDS

- A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2016.
- B. ASTM E605/E605M - Standard Test Methods for Thickness and Density of Sprayed Fire-Resistive Material (SFRM) Applied to Structural Members; 1993 (2015)e1.
- C. ASTM E736/E736M - Standard Test Method for Cohesion/Adhesion of Sprayed Fire-Resistive Materials Applied to Structural Members; 2000 (2015)e1.
- D. ASTM E759/E759M - Standard Test Method for Effect of Deflection on Sprayed Fire-Resistive Material Applied to Structural Members; 1992 (Reapproved 2015).
- E. ASTM E760/E760M - Standard Test Method for Effect of Impact on Bonding of Sprayed Fire-Resistive Material Applied to Structural Members; 1992 (Reapproved 2015)e1.
- F. ASTM E859/E859M - Standard Test Method for Air Erosion of Sprayed Fire-Resistive Material (SFRM) Applied to Structural Members; 1993 (Reapproved 2015)e1.
- G. ASTM E937/E937M - Standard Test Method for Corrosion of Steel by Sprayed Fire-Resistive Material (SFRM) Applied to Structural Members; 1993 (Reapproved 2015).
- H. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi; 2015.

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Coordinate with placement of ceiling hanger tabs, mechanical component hangers, and electrical components.
- B. Preinstallation Meeting: Convene one week before starting work of this Section.
 - 1. Discuss application procedures and limitations, and sequencing in relation to other work.

1.04 SUBMITTALS

- A. Product Data: Provide data indicating product characteristics.
- B. Design Data:
 - 1. Indicate UL or other nationally recognized independent testing agency test assembly number.

2. Submit description of areas and elements to receive fireproofing for each fire resistance rating.
- C. Submit column and beam sizes and fireproofing thicknesses in a schedule with associated UL assembly numbers.
- D. Test Reports: Reports from reputable independent testing agencies for proposed products, indicating compliance with specified criteria, conducted under conditions similar to those on project, for:
 1. Bond strength.
 2. Bond impact.
 3. Compressive strength.
 4. Fire tests using substrate materials similar those on project.
- E. Manufacturer's Installation Instructions: Indicate special procedures.
- F. Manufacturer's Certificate: Certify that sprayed-on fireproofing products meet or exceed requirements of contract documents.
- G. Manufacturer's Field Reports: Indicate environmental conditions under which fireproofing materials were installed.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this Section, with not less than five years of documented experience.
- B. Installer Qualifications: Company specializing in performing work of the type specified in this Section, and:
 1. Having minimum five years of documented experience.
 2. Approved by manufacturer.

1.06 PRECONSTRUCTION TESTING

- A. Preconstruction Testing Service: Owner will engage a qualified testing agency to perform preconstruction testing on field mockups of fireproofing.
 1. Provide test specimens and assemblies representative of proposed materials and construction.
- B. Preconstruction Adhesion and Compatibility Testing: Test for compliance with requirements for specified performance and test methods.
 1. Bond Strength: Test for cohesive and adhesive strength according to ASTM E 736. Provide bond strength indicated in referenced fire-resistance design, but not less than minimum specified in Part 2.
 2. Density: Test for density according to ASTM E 605. Provide density indicated in referenced fire-resistance design, but not less than minimum specified in Part 2.
 3. Verify that manufacturer, through its own laboratory testing or field experience, attests that primers or coatings are compatible with fireproofing.

4. Schedule sufficient time for testing and analyzing results to prevent delaying the Work.
5. For materials failing tests, obtain applied-fireproofing manufacturer's written instructions for corrective measures including the use of specially formulated bonding agents or primers.

1.07 FIELD CONDITIONS

- A. Do not apply spray fireproofing when temperature of substrate material and surrounding air is below 40 degrees F or when temperature is predicted to be below said temperature for 24 hours after application.
- B. Provide ventilation in areas to receive fireproofing during application and 24 hours afterward, to dry applied material.
- C. Provide temporary enclosure to prevent spray from contaminating air.
- D. Do not allow roof traffic during installation of roof fireproofing and drying period.

1.08 WARRANTY

- A. Correct defective Work within a two year period after Date of Substantial Completion.
 1. Include coverage for fireproofing to remain free from cracking, checking, dusting, flaking, spalling, separation, and blistering.
 2. Reinstall or repair failures that occur within warranty period.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Basis of Design Manufacturers:
 1. GCP Applied Technologies: www.gcpat.com/fireproofing/sle.
 2. Other Acceptable Manufacturers:
 - a. Carboline Company: www.carboline.com.
 - b. Isolatek International Inc.: www.isolatek.com.
 - c. Southwest Fireproofing Products Company: www.sfrm.com.

2.02 FIREPROOFING ASSEMBLIES

- A. Provide assemblies as indicated on the Drawings.

2.03 MATERIALS, GENERAL

- A. Assemblies: Provide fireproofing, including auxiliary materials, according to requirements of each fire-resistance design and manufacturer's written instructions.
- B. Source Limitations: Obtain fireproofing from single source.

- C. Fire-Resistance Design: Indicated on Drawings, tested according to ASTM E 119 or UL 263 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - 1. Steel members are to be considered unrestrained unless specifically noted otherwise.
- D. VOC Content: Products shall comply with VOC content limits of authorities having jurisdiction.
 - 1. Flat Paints and Coatings: 50 g/L.
 - 2. Nonflat Paints and Coatings: 150 g/L.
 - 3. Primers, Sealers, and Undercoaters: 200 g/L.
 - 4. Anticorrosive and Antirust Paints Applied to Ferrous Metals: 250 g/L.
- E. Asbestos: Provide products containing no detectable asbestos.

2.04 MATERIALS

- A. Sprayed Fire-Resistive Material for Interior Applications, Concealed: Manufacturer's standard factory mixed material, which when combined with water is capable of providing the indicated fire resistance, and conforming to the following requirements:
 - 1. Composition: Gypsum-based; not mineral-fiber-based.
 - 2. Bond Strength: 200 psf, minimum, when tested in accordance with ASTM E736/E736M when set and dry.
 - 3. Dry Density: Minimum average density of 15 lb/cu ft, with minimum individual density of any test sample of 14 lb/cu ft, when tested in accordance with ASTM E605/E605M.
 - 4. Compressive Strength: 10 pounds per square inch, minimum.
 - 5. Effect of Impact on Bonding: No cracking, spalling or delamination, when tested in accordance with ASTM E760/E760M.
 - 6. Corrosivity: No evidence of corrosion, when tested in accordance with ASTM E937/E937M.
 - 7. Air Erosion Resistance: Weight loss of 0.025 g/sq ft, maximum, when tested in accordance with ASTM E859/E859M after 24 hours.
 - 8. Surface Burning Characteristics: Maximum flame spread index of 0 (zero) and maximum smoke developed index of 0 (zero), when tested in accordance with ASTM E84.
 - 9. Effect of Deflection: No cracking, spalling, or delamination, when tested in accordance with ASTM E759/E759M.
 - 10. Thickness: As required for fire-resistance design indicated, measured according to requirements of fire-resistance design or ASTM E 605, whichever is thicker, but not less than 0.375 inch.
 - 11. Fungal Resistance: No growth after 28 days when tested according to ASTM G21.
 - 12. Basis of Design Product:
 - a. Match existing products.

2.05 ACCESSORIES

- A. Primer Adhesive: Type recommended by fireproofing manufacturer.
- B. Metal Lath: Expanded metal lath; minimum 1.7 pounds per square foot, galvanized finish.
- C. Water: Clean, potable.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine substrates, areas, and conditions, with installer present, for compliance with requirements for substrates and other conditions affecting performance of the Work and according to each fire-resistance design. Verify compliance with the following:
 - 1. Substrates are free of dirt, oil, grease, release agents, rolling compounds, mill scale, loose scale, incompatible primers, paints, and encapsulants, or other foreign substances capable of impairing bond of fireproofing with substrates under conditions of normal use or fire exposure.
 - 2. Objects penetrating fireproofing, including clips, hangers, support sleeves, and similar items, are securely attached to substrates.
 - 3. Substrates receiving fireproofing are not obstructed by ducts, piping, equipment, or other suspended construction that will interfere with fireproofing application.
- B. Verify that concrete work on steel deck has been completed before beginning fireproofing work.
- C. Verify that roof construction, installation of roof-top HVAC equipment, and other related work is complete before beginning fireproofing work.
- D. Conduct tests according to fireproofing manufacturer's written recommendations to verify that substrates are free of substances capable of interfering with bond.
- E. Verify that surfaces are ready to receive fireproofing.
- F. Verify that clips, hangers, supports, sleeves, and other items required to penetrate fireproofing are in place.
- G. Verify that ducts, piping, equipment, or other items that would interfere with application of fireproofing have not been installed.
- H. Verify that voids and cracks in substrate have been filled. Verify that projections have been removed where fireproofing will be exposed to view as a finish material.
- I. Prepare written report, endorsed by installer, listing conditions detrimental to performance of the Work.
- J. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Cover other work subject to damage from fallout or overspray of fireproofing materials during application.
- B. Perform tests as recommended by fireproofing manufacturer in situations where adhesion of fireproofing to substrate is in question.
- C. Remove incompatible materials that could affect bond by scraping, brushing, scrubbing, or sandblasting.
- D. Prepare substrates to receive fireproofing in strict accordance with instructions of fireproofing manufacturer.
- E. Prime substrates where included in fire-resistance design and where recommended in writing by fireproofing manufacturer unless compatible shop primer has been applied and is in satisfactory condition to receive fireproofing.
- F. Protect surfaces not scheduled for fireproofing and equipment from damage by overspray, fall-out, and dusting.
- G. Close off and seal duct work in areas where fireproofing is being applied.
- H. For applications visible on completion of Project, repair substrates to remove surface imperfections that could affect uniformity of texture and thickness in finished surface of fireproofing. Remove minor projections and fill voids that would telegraph through fire-resistive products after application.

3.03 APPLICATION

- A. Construct fireproofing assemblies that are identical to fire-resistance design indicated and products as specified, tested, and substantiated by test reports; for thickness, primers, sealers, topcoats, finishing, and other materials and procedures affecting fireproofing work.
- B. Comply with fireproofing manufacturer's written instructions for mixing materials, application procedures, and types of equipment used to mix, convey, and apply fireproofing; as applicable to particular conditions of installation and as required to achieve fire-resistance ratings indicated.
- C. Install auxiliary materials as required, as detailed, and according to fire-resistance design and fireproofing manufacturer's written recommendations for conditions of exposure and intended use. For auxiliary materials, use attachment and anchorage devices of type recommended in writing by fireproofing manufacturer.
- D. Install metal lath over structural members as indicated or as required by UL Assembly Design Numbers.

- E. Spray apply fireproofing to maximum extent possible. Following the spraying operation in each area, complete the coverage by trowel application or other placement method recommended in writing by fireproofing manufacturer.
- F. Extend fireproofing in full thickness over entire area of each substrate to be protected.
- G. Install body of fireproofing in a single course unless otherwise recommended in writing by fireproofing manufacturer.
- H. Apply fireproofing in thickness and density necessary to achieve required ratings, with uniform density and texture.
- I. In exposed locations, trowel surface smooth and form square edges, using tools and procedures recommended by fireproofing manufacturer.
- J. Where sealers are used, apply products that are tinted to differentiate them from fireproofing over which they are applied.
- K. Provide a uniform finish complying with description indicated for each type of fireproofing material and matching finish approved for required mockups.
- L. Cure fireproofing according to fireproofing manufacturer's written recommendations.
- M. Do not install enclosing or concealing construction until after fireproofing has been applied, inspected, and tested and corrections have been made to deficient applications.
- N. Finished Condition: Upon complete drying or curing, will not exhibit cracks, voids, spalls, delamination, or any exposure of substrate. Surface irregularities (texture and shape only) are acceptable

3.04 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements, for additional requirements.
- B. A. Special Inspections: Engage a qualified special inspector to perform the following special inspections:
 - 1. Test and inspect as required by the IBC, 1704.10.
- C. Perform the tests and inspections of completed Work in successive stages. Do not proceed with application of fireproofing for the next area until test results for previously completed applications of fireproofing show compliance with requirements. Tested values must equal or exceed values as specified and as indicated and required for approved fire-resistance design.
- D. Tests:
 - 1. Perform thickness and density tests on installed fireproofing in accordance with ASTM E605.
 - 2. Provide Thickness Tests as follows:
 - a. 25 percent of primary beams and columns.
 - b. 10 percent of secondary beams and columns.

- c. 10 locations of deck for each 10,000 square feet of floor area or portion thereof.
 - 3. Provide 1 density test for each 10,000 square feet of floor area or portion thereof, but not less than two per floor.
 - 4. Provide 1 bond strength test in accordance with ASTM E736 for each 10,000 square feet of floor area or portion thereof, but not less than two per floor.
 - E. Inspect the installed fireproofing after application and curing for integrity, prior to its concealment. Ensure that actual thicknesses, densities, and bond strengths meet requirements for specified ratings and requirements of the Authority Having Jurisdiction.
 - F. Re-inspect the installed fireproofing for integrity of fire protection, after installation of subsequent work.
 - G. Fireproofing will be considered defective if it does not pass tests and inspections.
 - 1. Remove and replace fireproofing that does not pass tests and inspections, and retest.
 - 2. Apply additional fireproofing, per manufacturer's written instructions, where test results indicate insufficient thickness, and retest.
 - H. Prepare test and inspection reports.
- 3.05 ADJUSTING
- A. Repair and replace fireproofing within areas where test results indicate fireproofing does not comply with requirements.
 - B. Patch damage to fireproofing caused by other trades before final inspection of this work and prior to enclosure by other building components.
 - C. Patch areas where average thickness of material is less than minimum required by indicated design, and locations where individual thickness is deficient by more than 1/4 inch or 25 percent of required thickness, whichever is less.
 - D. Patch areas where inspection cuts and tests have been made.
- 3.06 CLEANING
- A. Remove excess material, overspray, droppings, and debris.
 - B. Remove fireproofing from materials and surfaces not required to be fireproofed.
 - C. At exposed fireproofing, clean surfaces that have become soiled or stained, using manufacturer's recommended procedures.

END OF SECTION

SECTION 07 84 00 - FIRESTOPPING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Firestopping systems, materials, and accessories.
- B. Perimeter fire/smoke barriers.
- C. Fire-resistive joint systems.
- D. Firestopping at electrical junction boxes in fire-rated walls.
- E. Firestopping of all penetrations and interruptions to fire rated assemblies, whether indicated on Drawings or not, and other openings indicated.
- F. Contractor's responsibility for determining required scope of firestopping system work, and for determining applicable tested/listed systems for the entire project, and for securing jurisdictional authority approval of firestopping systems.

1.02 SYSTEM DESCRIPTION

- A. General: Make firestop and smoke seal assembly selections that comply with UL Fire Resistance Directory, authority having jurisdiction, and applicable codes for:
 - 1. Materials, fabrication, and installation of firestops and smoke seals.
 - 2. Fire containment.
 - 3. Fire resistant construction joints.
 - 4. Dynamic partition head details.
 - 5. Edge of slab and curtain wall conditions.
 - 6. Penetrations through fire-rated floors, walls, and shafts.
 - 7. Duct and damper firestops.
 - 8. Intumescent wraps and pads at receptacle boxes and recessed items within fire rated walls.
 - 9. Coordinate with mechanical and electrical to provide single manufacturer for all firestopping materials.
- B. Firestop Voids and Openings in Following Locations:
 - 1. Duct, cable, cable tray, conduit, piping, and other penetrations through floor slabs (except on-grade slabs) and through fire rated walls and partitions.
 - 2. Penetrations of vertical shafts, pipe chases, elevator shafts, and utility shafts.
 - 3. Openings between floor slab edges and exterior walls, including glass and aluminum curtain walls.
 - 4. Openings, gaps, and cracks at abutting fire rated assemblies and components, such as wall-to-wall and wall-to-floor including overhead floor and roof decks.
 - 5. Blank openings into or through fire rated floors and walls.
 - 6. Other locations indicated or scheduled.
- C. Design Requirements:

1. Firestop materials used to fill floor openings in which smallest dimension is 4 inches shall support same loads that floor was designed to support. If equal floor loading capacity cannot be obtained with firestop material, provide fire rated permanent covering to support loads and traffic, capable of being removed to allow access.
2. Insulated Piping and Duct Penetrations: Install firestop systems intended for use with type of insulation on penetrating item.
 - a. Install firestop systems intended for use with type of insulation on penetrating item.
 - b. If compatible firestop system is unavailable, remove insulation at contact area with firestop material
 - c. Coordinate with trades who installed insulation to ensure proper re-sealing of cut edges of insulation.
3. Provide Products that Do Not Deteriorate when Exposed to Following Conditions:
 - a. Plumbing and Wet-Pipe Sprinkler Systems: Moisture-resistant through-penetration firestop.
 - b. Exposed to View:
 - 1) Flame-spread value of less than 25 and smoke-developed value of less than 450, ASTM E84.
 - 2) Compatible with applied finishes.
- D. F and T Rating Requirements: Conform to F and T ratings, ASTM E 814 (ANSI/UL 1479).
 1. Comply with applicable codes and authority having jurisdiction.
 2. F Ratings: Equal to fire resistance rating of assembly being penetrated but not less than one hour.
 3. T Ratings: Equal to F ratings or as required by authority having jurisdiction.
- E. Testing Requirements:
 1. Utilize systems and materials tested and approved by UL or other nationally recognized independent testing agency acceptable to authorities having jurisdiction.
 2. Determine fire ratings in accordance with ASTM E814 (ANSI/UL 1479) for through penetration firestops, ASTM E119 (UL263) for fire rated assemblies, and as required by applicable codes and authority having jurisdiction.
- F. Large openings may be closed with same type construction as adjacent floor, roof, and wall assembly.
- G. Sealing around penetrations fire rated assemblies without approved firestop system is not permitted. Methods and materials not permitted include but are not limited to:
 1. Joint compound at gypsum board assemblies.
 2. Mortar at masonry and concrete assemblies.
 3. Use of joint sealants.
- H. Whenever finished firestop materials are scheduled to receive finish paint or other coatings, test compatibility of firestop materials with coatings to be applied.

1.03 DEFINITIONS

- A. Firestopping: A material or combination of materials used to retain the integrity of fire- and smoke-rated construction by maintaining an effective barrier against the spread of flame, and to impede the passage of smoke, gases, and moisture through penetrations, blank openings, construction joints, and perimeter fire/smoke containment in or adjacent to fire- and smoke-rated wall, floor, ceiling, and other rated construction assemblies.
- B. Assembly: Particular arrangement of materials specific to type of construction described or detailed in referenced UL or other approved design.
- C. Barrier: Time-rated fire walls, smoke barrier walls, time-rated floor/ceiling assemblies, and structural floors.
- D. Penetration: Opening or foreign material passing through or into barrier or structural floor such that full thickness of rated materials is interrupted.
- E. Membrane Penetration: An opening made through one side of an assembly without passing completely through the assembly.
- F. Construction Gaps: Gaps between adjacent sections of walls, exterior walls, top of wall and ceiling, structural floors or roof decks, and adjacent sections of structural floors.
- G. System: Specific products and applications, classified and numbered by UL or other approved testing agency to close specific barrier penetrations.
- H. Sleeve: Metal fabrication or pipe section extending through thickness of barrier used to permanently guard penetration.
- I. VOC: Volatile organic compound(s).

1.04 REFERENCE STANDARDS

- A. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2012.
- B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2009.
- C. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials; 2009.
- D. ASTM E814 - Standard Test Method for Fire Tests of Penetration Firestop Systems; 20109.
- E. ASTM E1399 - Standard Test Method for Cyclic Movement and Measuring the Minimum and Maximum Joint Widths of Architectural Joint Systems; 1997 (Reapproved 2009).

- F. ASTM E1966 - Standard Test Method for Fire Resistive Joint Systems; 2007 (Reapproved 2007).
 - G. ASTM E2174 - Standard Practice for On-Site Inspection of Installed Firestops; 2010a¹.
 - H. ASTM E2307 - Standard Test Method for Determining Fire Resistance of Perimeter Fire Barriers Using Intermediate-Scale, Multi-story Test Apparatus; 2004.
 - I. ASTM E2393 - Standard Practice for On-Site Inspection of Installed Fire Resistive Joint Systems and Perimeter Fire Barriers; 2010a.
 - J. ASTM E2837 - Standard Test Method for Determining the Fire Resistance of Continuity Head-of-Wall Joint Systems Installed Between Rated Wall Assemblies and Nonrated Horizontal Assemblies; 2013.
 - K. IFC - International Firestop Council Recommended Guidelines for Evaluating Firestop Systems Engineering Judgements; current edition.
 - L. ITS (DIR) - Directory of Listed Products; current edition.
 - M. FCIA - Firestop Contractors International Association Manual of Practice; current edition.
 - N. FM 4991 - Approval Standard for Firestop Contractors; 2013.
 - O. FM (AG) - FM Approval Guide; current edition.
 - P. UL 2079 - Standard for Tests for Fire Resistance of Building Joint Systems; Current Edition, Including All Revisions.
 - Q. UL (DIR) - Online Certifications Directory; current listings at database.ul.com.
 - R. NFPA 96 - Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations; 2011.
 - S. UL (FRD) - Fire Resistance Directory; current edition.
 - T. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; current edition.
 - U. UL 1479 - Standard for Fire Tests of Through-Penetration Firestops; current edition.
 - V. UL 2079 - Standard for Tests for Fire Resistance of Building Joint Systems; current edition.
- 1.05 ADMINISTRATIVE REQUIREMENTS
- A. Coordination: Coordinate installation of firestopping systems with affected trades and adjacent work.
 - B. Preinstallation Meeting: Convene one week before starting work of this Section. Notify Owner, who may request attendance by an independent consultant.

1. Convene under general provisions of Section 01 7000.
 2. Require attendance of parties directly concerned with the work of this Section, including those who are required to coordinate with the work, and those who are required to protect the work upon completion. Include the manufacturer's technical representative.
 3. Review installation procedures and coordination required with related work, and conditions which could affect successful performance of the work.
 4. Product and classification schedule.
 5. Test firestop materials to confirm compatibility with adjacent materials and chemicals and solvents with which they may come into contact during construction.
- C. Sequencing: Sequence work to permit firestopping materials to be installed after adjacent and surrounding work is complete.
1. Do not cover or conceal firestopping installations until Owner's inspection agency and jurisdictional authority have inspected each installation.

1.06 SUBMITTALS

- A. Jurisdictional Authority Submittal: Prior to submission to Architect, submit to jurisdictional authority and local fire department complete product data indicating proposed product characteristics, performance characteristics, limitation criteria, and documentation of proposed firestop materials and systems for actual project conditions.
1. Include manufacturer's complete installation instructions and UL Design or other approved testing agency data sheets for each proposed firestop system.
 2. Include complete test data forms or jurisdictional acceptance for proposed assemblies not conforming to specific UL Design numbers or other approved testing agency system designs.
 3. Submit certificate from authority having jurisdiction indicating approval of materials and systems to be used, with one complete copy, for information only, of the approved jurisdictional authority submittal.
- B. Schedule of Firestopping: List each type of penetration, fire rating of the penetrated assembly, and firestopping test or design number.
- C. Product Data: Provide data on product characteristics, performance ratings, and limitations.
- D. Provide manufacturer's certification stating:
1. Each penetration of fire rated walls and floor, partition heads, and edge of slabs will be firestopped with a firestopping system tested by UL or other recognized testing agency for substrate and penetrating item.
 2. Authorities having jurisdiction have approved firestopping systems for this project.
 3. Products and Classifications Schedule:
 - a. Provide tabular form schedule for firestops, fire containment, and fire resistant construction joints.
 - b. Schedule to identify:

- 1) Construction penetrated including fire resistance rating.
 - 2) Penetrating item.
 - 3) Products and manufacturers included in each system.
 - 4) Form material used.
 - 5) Firestop classification and description from UL or other nationally recognized independent testing agency acceptable to authority having jurisdiction.
 - 6) Fire containment and fire resistant construction joint description.
 - 7) F and T ratings.
- c. Update schedule periodically to include addition and changes.

E. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

1.07 SUSTAINABILITY SUBMITTALS

- A. CAL-Green documentation and verification data as specified in Section 01 81 14 Sustainable Design Requirements - CAL-Green, for the following measures:
1. 4.504.2.1 and 5.504.4.1 Adhesives and sealants.
 2. 4.504.2.2 and 5.504.4.3 Paints and coatings.

1.08 QUALITY ASSURANCE

- A. Fire Testing: Provide firestopping assemblies of designs that provide the scheduled fire ratings when tested in accordance with methods indicated.
1. Listing in UL (FRD), FM (AG), or ITS (DIR) will be considered as constituting an acceptable test report.
 2. Valid evaluation report published by ICC Evaluation Service, Inc. (ICC-ES) at www.icc-es.org will be considered as constituting an acceptable test report.
 3. Submission of actual test reports is required for assemblies for which none of the above substantiation exists.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this Section with minimum three years documented experience.
- C. Installer Qualifications: Company specializing in performing the work of this section and:
1. Approved by Factory Mutual Research under FM Standard 4991, Approval of Firestop Contractors, or meeting any two of the following requirements:
 - a. With minimum 5 years documented experience installing work of this type.
 - b. Verification of at least five satisfactorily completed projects of comparable size and type.
 - c. Licensed by local authorities having jurisdiction (AHJ).
- D. Obtain firestop systems for each type and condition of penetration from a single manufacturer; intermixing of system components for each type and condition of penetration by different manufacturers is not permitted.

- E. Listed and tested assemblies and systems must be utilized, if they exist, before alternative systems requiring Engineering Judgement (EJ) or Equivalent Fire Resistance Rated Assembly (EFRRA) will be considered. Comply with IFC and FCIA for EJ and EFRRA design and submittal requirements.
- F. Testing Requirements:
 - 1. Utilize systems and materials tested and approved by UL or other nationally recognized independent testing agency acceptable to authorities having jurisdiction.
 - 2. Determine fire ratings in accordance with ASTM E814 (ANSI/UL 1479) for through penetration firestops, ASTM E119 (UL263) for fire rated assemblies, and as required by applicable codes and authority having jurisdiction.

1.09 REGULATORY REQUIREMENTS

- A. Comply with execution requirements of authority having jurisdiction including, if applicable, the requirement that all firestopping work be performed by a single qualified firm or subcontractor.

1.10 DELIVERY, STORAGE, AND PROTECTION

- A. Deliver materials in original unopened containers identified with manufacturer's brand designation and applicable UL label.
- B. Do not use damaged or expired materials.

1.11 FIELD CONDITIONS

- A. Comply with firestopping manufacturer's recommendations for temperature and conditions during and after installation. Maintain minimum temperature before, during, and for 3 days after installation of materials.
- B. Provide ventilation in areas where solvent-cured materials are being installed.

1.12 WARRANTY

- A. Include agreement to repair or replace joint sealers which fail in joint adhesion, extrusion resistance, migration resistance, general durability, or apparent deterioration beyond manufacturer's printed limitations for stipulated warranty period from Date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Basis of Design Manufacturers:
 - 1. 3M Fire Protection Products: www.3m.com.
 - 2. Other Acceptable Manufacturers:
 - a. Hilti, Inc.: www.us.hilti.com.
 - b. Specified Technologies, Inc.: www.stifirestop.com.

- c. Pecora Corporation: www.pecora.com.
- d. Prior approved equal.

2.02 FIRESTOPPING - GENERAL REQUIREMENTS

- A. General: Use firestopping systems which are acceptable for those applications for which they are specifically designed. Use of other UL listed systems is Contractor's Option, subject to compliance with specified performance, regulatory, and quality assurance requirements.
 - 1. Fire Ratings: Refer to Drawings for required systems and ratings.
 - 2. Where there is no specific tested and classified firestop system for an indicated condition, obtain from the firestopping system manufacturer an Engineering Judgement (EJ) or Equivalent Fire Resistance Rated Assembly (EFRRA) according to IFC and FCIA.
 - 3. Materials, fabrication, and installation of firestops and smoke seals.
 - 4. Fire containment.
 - 5. Fire resistant construction joints.
 - 6. Dynamic partition head details.
 - 7. Edge of slab and curtain wall conditions.
 - 8. Penetrations through fire-rated floors, walls, and shafts.
 - 9. Duct and damper firestops.
 - 10. Intumescent wraps and pads at receptacle boxes and recessed items within fire rated walls.
 - 11. Coordinate with mechanical and electrical to provide single manufacturer for all firestopping materials.
- B. Large openings may be closed with same type construction as adjacent floor, roof, and wall assembly.
- C. Sealing around penetrations fire rated assemblies without approved firestop system is not permitted. Methods and materials not permitted include but are not limited to:
 - 1. Joint compound at gypsum board assemblies.
 - 2. Mortar at masonry and concrete assemblies.
 - 3. Use of joint sealants.
- D. Whenever finished firestop materials are scheduled to receive finish paint or other coatings, test compatibility of firestop materials with coatings to be applied.
- E. Primers, Sleeves, Forms, Insulation, Packing, Stuffing, and Accessories: Type required for tested assembly design.
- F. Scope: Install firestopping at all locations requiring protected openings where piping, conduit, cables, sleeves, ductwork and similar items penetrate fire-resistive, fire-rated, and smoke assemblies, including but not limited to:
 - 1. Penetrations through wall, floor, and roof assemblies, including empty openings and openings containing penetrations.
 - 2. Membrane penetrations where items penetrate one side of the barrier assembly.

3. Joints between rated assemblies to allow independent movement.
 4. Perimeter barriers between exterior wall assemblies and floor and roof assemblies.
 5. Joints, through-penetrations, and membrane penetrations in smoke-rated assemblies.
- G. Materials: Comply with ASTM E814, UL 1479, and UL 2079 as applicable to achieve indicated fire ratings.
- H. General Characteristics:
1. Surface Burning: ASTM E84 and UL 723; flame spread less than 25, smoke developed less than 450.
 2. Mold Resistance: Provide firestopping materials with mold and mildew resistance rating of 0 as determined by ASTM G21.
 3. Air Leakage of Perimeter Firestopping Barriers and Penetrations: UL 2079; L-rating less than 2.0 cfm/sf or 5.0 cfm/lf as applicable to the type and location of joint.
 4. Durability and Longevity: Permanent.
 5. Side Effects During Installation: Non-toxic.
 6. Side Effects Under Fire Exposure: Non-toxic.
 7. Long Term Side Effects: None.
- I. Perimeter Fire Containment Firestopping: Use any system that has been tested according to ASTM E2307 to have fire resistance F Rating equal to required fire rating of the floor assembly.
1. Movement: In addition, provide systems that have been tested to show movement capability as indicated.
 2. Temperature Rise: In addition, provide systems that have been tested to show T Rating as indicated.
 3. Air Leakage: In addition, provide systems that have been tested to show L Rating as indicated.
 4. Where floor assembly is not required to have a fire rating, provide systems that have been tested to show L Rating as indicated.
- J. Head-of-Wall Joint System Firestopping at Joints Between Fire-Rated Wall Assemblies and Non-Rated Horizontal Assemblies: Use any system that has been tested according to ASTM E2837 to have fire resistance F Rating equal to required fire rating of floor or wall, whichever is greater.
1. Movement: In addition, provide systems that have been tested to show movement capability as indicated.
- K. Floor-to-Floor, Wall-to-Wall, and Wall-to-Floor Joints, Except Perimeter, Where Both Are Fire-Rated: Use any system that has been tested according to ASTM E1966 or UL 2079 to have fire resistance F Rating equal to required fire rating of the assembly in which the joint occurs.
1. Movement: In addition, provide systems that have been tested to show movement capability as indicated.
 2. Air Leakage: In addition, provide systems that have been tested to show L Rating as indicated.

3. Watertightness: In addition, provide systems that have been tested to show W Rating as indicated.
 4. Listing by FM (AG), ITS (DIR), UL (DIR), or UL (FRD) in their certification directories will be considered evidence of successful testing.
- L. Through Penetration Firestopping: Use any system that has been tested according to ASTM E814 to have fire resistance F Rating equal to required fire rating of penetrated assembly.
1. Temperature Rise: In addition, provide systems that have been tested to show T Rating as indicated.
 2. Air Leakage: In addition, provide systems that have been tested to show L Rating as indicated.
 3. Watertightness: In addition, provide systems that have been tested to show W Rating as indicated.
 4. Listing by FM (AG), ITS (DIR), UL (DIR), or UL (FRD) in their certification directories will be considered evidence of successful testing.
- M. Fire Rated Joint Systems: Integrity and indicated fire-resistance ratings as determined by UL 2079, ASTM E1399 or ASTM E1966.
- N. Fire Rated Construction: Maintain barrier and structural floor fire resistance ratings including resistance to cold smoke at all penetrations, connections with other surfaces and types of construction, at separations required to permit building movement and sound or vibration absorption, and at other construction gaps.
- O. Smoke Barrier Construction: Maintain barrier and structural floor resistance to cold smoke at all penetrations, connections with other surfaces and types of construction, at separations required to permit building movement and sound or vibration absorption, and at other construction gaps.
- P. Sealant shall have a VOC content of 250 g/L or less.
- Q. Sealant shall comply with the testing and product 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."
- R. Select adhesives, primers and sealants meeting CAL-Green requirements.
1. Adhesives shall meet or exceed the VOC and chemical component limits of CAL-Green Table 5.504.4.1 Adhesive VOC Limit requirements.
 2. Sealants and Sealant Primers shall meet or exceed the VOC and chemical component limits of CAL-Green Table 5.504.4.2 Sealant VOC Limit requirements.
 3. Current requirement refers to the date on which the materials are installed in the building.
 4. SCAQMD Rule #1168 is referenced in section 018114 that was current as of the date of this specification. Refer to www.aqmd.gov/rules for the actual current version of the rule that will be applicable at the date of installation during construction.

5. Interior refers to all building construction that is inside of the exterior weatherproofing material.

2.03 MATERIALS

- A. Putty Compound: 100 percent solids intumescent or vinyl-type formulation, free of asbestos, silicones, solvents, halogens, PCB's, and inorganic fibers; flame spread/smoke developed rating 0/0 when tested in accordance with ASTM E84; paintable, not sensitive to freezing after set.
 1. Product: 3M Brand; "Fire Barrier" Moldable Putty.
- B. Sealant Compound: One-part intumescent, endothermic, ablative, or elastomeric acrylic water-based caulking material required by applicable UL Design; flame spread/smoke developed rating 0/0 when tested in accordance with ASTM E84.
 1. Product: 3M Brand; "Fire Barrier" CP 25WB+ Caulk.
- C. Firestopping Sealant: Silicone elastomer type; single component; non-sagging; neutral cure, re-entrable and repairable; UL classified.
 1. Product: 3M Brand; "Fire Barrier" 2000+ Silicone Sealant.
- D. Spray-Applied Compound: Water-based, flexible coating which dries to form a flexible seal; tested in accordance with ASTM E1399, complying with wind sway and thermal category, 500 cycles at minimum 10 cycles/minute.
 1. Product: 3M Brand; "FireDam Spray 100.
- E. Foam Compound: Two-part, liquid-silicone elastomer formulated to foam in place when mixed; flame spread/smoke developed rating 0/0 when tested in accordance with ASTM E84.
- F. Plastic Pipe Device: Intumescent strip material, factory or site fabricated in flexible metal collar with adjustable, screw-tightened stainless steel clamp; UL classified for use with PVC, CPVC, CCPVC, CCABS, PVDF, PP, PB, and FRPP plastic pipe.
- G. Composite Sheet: Composite, intumescent sheet, designed for firestopping large openings in conjunction with other firestopping components, capable of being cut to size in the field and fabricated to fit required penetration openings.
 1. Product: 3M Brand; "Fire Barrier" CS-195+ Composite Sheet.
- H. Blanket Material: Refractory ceramic fiber blanket encapsulated with aluminum foil scrim complying with NFPA 96; widths and thicknesses required by applicable UL Design; specifically designed as a flexible, fireproof enclosure for kitchen exhaust ducts and fire-rated air ductwork.
- I. Fire-Safing Insulation: ASTM C665, Type I; high-melt mineral fibers and resinous binders formed into blankets, density not less than 4.0 lbs/cu ft, tested for 3-hour fire containment for required depths and dimensions.
- J. Firestopping Pads: Intumescent, dielectric fire putty formed to 7 x 7 or 9.5 x 9.5 inch self-adhering pads, 2-hour fire rating listed by UL.

1. Product: 3M Brand; Fire Barrier Wrap/Strip FS 195.

K. Fire Rated Cable Pathways: Re-enterable device modules comprised of steel raceway with intumescent foam pads allowing 0 to 100 percent cable fill. These device modules shall be engineered such that two or more devices may be ganged together for greater capacity.

1. Basis of Design Product:

a. Specified Technologies, Inc.; EZ-Path or a comparable product.

1) One to Two Cables: EZ-Path Firestop Grommet.

2) One to Nine Cables: EZ-Path Series 22.

3) Ten or more cables: EZ-Path Series 33 and 44.

2.04 ACCESSORIES

A. Provide necessary accessory materials specified in UL Design to achieve complete firestop system at each penetration. Include collars, sleeves, attachment devices, intumescent materials, and other items required.

B. Primers, Sleeves, Forms, and Accessories: Type required for tested assembly design, and as recommended by firestopping manufacturer for specific substrate surfaces.

C. Dam Material: Mineral fiberboard, mineral fiber matting, sheet metal, alumina silicate fire board, or other permanent material required as part of the firestopping system, or removable if not specifically required as part of the firestopping system.

D. Retainers: Impale type clips to support mineral fiber safing blankets.

E. Foam Type: Foam backer rod.

F. Sleeves:

1. Steel Type: Cylindrical; gauge, seam lap, and length as required by UL system listing.

2. Wire Mesh Type: #8 steel wire cloth fabricated from galvanized steel wire that is 0.020 inch diameter by 1/8 inch on center in both directions.

G. Labels:

1. Provide label for each firestop condition.

2. Type information in non-fading ink on 20 pound (minimum) paper.

3. Include following information on each label:

a. Manufacturer's name.

b. Product name.

c. Product type (sealant, putty, mortar, or other generic material description).

d. F-Rating.

e. T-Rating. State when not required for condition.

f. Testing and listing agency filing number, such as UL System number

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for opening configurations, penetrating items, substrates, and other conditions affecting performance of the Work.
- B. Verify openings are ready to receive the work of this Section.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Surface Cleaning: Clean out openings immediately before installing penetration firestopping to comply with manufacturer's written instructions and with the following requirements:
 - 1. Remove from surfaces of opening substrates and from penetrating items foreign materials that could interfere with adhesion of penetration firestopping.
 - 2. Clean opening substrates and penetrating items to produce clean, sound surfaces capable of developing optimum bond with penetration firestopping. Remove loose particles remaining from cleaning operation.
 - 3. Remove laitance and form-release agents from concrete.
- B. Priming: Prime substrates where recommended in writing by manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.
- C. Masking Tape: Use masking tape to prevent penetration firestopping from contacting adjoining surfaces that will remain exposed on completion of the Work and that would otherwise be permanently stained or damaged by such contact or by cleaning methods used to remove stains. Remove tape as soon as possible without disturbing firestopping's seal with substrates.
- D. Remove incompatible materials that could adversely affect bond.
- E. Install backing or damming materials required to arrest liquid material leakage.

3.03 INSTALLATION - GENERAL

- A. Install materials in manner described in fire test report and in accordance with manufacturer's instructions, completely closing openings.
- B. Do not cover installed firestopping until inspected by Owner's Independent Testing Agency.
- C. Apply firestopping materials in sufficient thicknesses to achieve scheduled fire ratings, to uniform density and texture.

- D. Install material at openings which contain penetrating sleeves, piping, ductwork, conduit and other items requiring firestopping.
- E. Remove dam material after firestopping material has cured only if dam material is not required as part of the firestopping system; otherwise dam material to remain permanently in place.
- F. Do not cover installed firestopping until inspected by authorities having jurisdiction.
- G. Install labeling required by code.

3.04 INSTALLATION - FIRE SAFING INSULATION

- A. Install safing insulation to completely fill spaces between floor slab edges and spandrel construction as detailed.
- B. Install safing insulation to completely fill voids between floor and roof deck flutes and top of wall construction where wall ratings are indicated.
- C. Install and support safing insulation permanently in position to comply with tested fire assembly and applicable building code requirements.

3.05 INSTALLATION - FIRESTOPPING PADS

- A. Install firestopping pads on back side of electrical junction boxes in fire-rated walls where boxes are located in same stud space on opposite sides of same wall, and elsewhere required by jurisdictional authority and local fire department.

3.06 IDENTIFICATION

- A. Identify penetration firestopping with preprinted metal or plastic labels. Attach labels permanently to surfaces adjacent to and within 6 inches (150 mm) of firestopping edge so labels will be visible to anyone. Refer toking to remove penetrating items or firestopping. Use mechanical fasteners or self-adhering-type labels with adhesives capable of permanently bonding labels to surfaces on which labels are placed. Include the following information on labels:
 - 1. The words "Warning - Penetration Firestopping - Do Not Disturb. Notify Building Management of Any Damage."
 - 2. Contractor's name, address, and phone number.
 - 3. Designation of applicable testing and inspecting agency.
 - 4. Date of installation.
 - 5. Manufacturer's name.
 - 6. Installer's name.
 - 7. Wall partitions are required to have protected openings or penetrations permanently identified with signs or stenciling. Such identification shall be located in accessible concealed floor, floor-ceiling or attic spaces:
 - a. Be repeated at intervals not exceeding 30 feet measured horizontally along the wall or partition; and

- b. Include lettering not less than 0.5 inch in height, incorporating the suggested wording: "FIRE AND/OR SMOKE BARRIER-PROTECT ALL OPENINGS," also identify wall specific rating 1 HR, 2 HR etc...as indicated on architectural drawings.

- 8. Include UL design number

3.07 FIELD QUALITY CONTROL

- A. Perform field inspection and testing in accordance with Section 01 4000.
- B. Inspect installed firestopping systems according to applicable requirements of ASTM E2174 and ASTM E2393.
- C. Independent Testing Agency: Inspection agency employed and paid by Owner, will examine penetration firestopping in accordance with ASTM E2174, "Standard Practice for On-Site Inspection of Installed Fire Stops and ASTM E2393, "Standard Practice for On-Site Inspection of Installed Fire Stop Joint Systems.
- D. Do not conceal firestops, fire containments, and fire resistant construction joints prior to required inspection.
- E. Notify authority having jurisdiction and designated inspectors of work released for inspection.
- F. Inspection Requirements:
 - 1. Visually examine firestopping, fire containments, and fire resistant construction joints to verify compliance with Contract Documents.
 - 2. Examine firestopping, fire containments, and fire resistant construction joints for proper installation, adhesion, and curing appropriate for each material.
 - 3. Submit written inspection report including following information:
 - a. Identify construction penetrated including fire resistance rating.
 - b. Identify penetrating item.
 - c. Identify products and manufacturers included in each system.
 - d. Identify form material used.
 - e. Firestop classification and description from UL, FM, Warnock Hersey or other independent testing agency.
 - f. Fire containment and fire resistant construction joint description.
 - g. F and T rating.
 - h. State whether firestop, fire containment, and fire resistant construction joint is or is not in full compliance with testing agency classification, description and manufacturer's requirements. If variations occur confirm acceptance of variation by manufacturer and authority having jurisdiction.
- G. Re-examine firestopping, fire containments, and fire resistant construction joints immediately prior to concealment by other construction to ensure no damage has occurred since initial inspection.

- H. Repair or replace penetration firestopping and joints at locations where inspection results indicate firestopping or joints do not meet specified requirements.

3.08 CLEANING

- A. Clean adjacent surfaces of firestopping materials.
- B. Clean off excess fill materials adjacent to openings as the Work progresses by methods and with cleaning materials that are approved in writing by penetration firestopping manufacturers and that do not damage materials in which openings occur.
- C. Provide final protection and maintain conditions during and after installation that ensure that penetration firestopping is without damage or deterioration at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, immediately cut out and remove damaged or deteriorated penetration firestopping and install new materials to produce systems complying with specified requirements.

3.09 PROTECTION

- A. Protect adjacent surfaces from damage by material installation.

END OF SECTION

SECTION 07 92 00 - JOINT SEALANTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Nonsag gunnable joint sealants.
- B. Self-leveling pourable joint sealants.
- C. Joint backings and accessories.

1.02 REFERENCE STANDARDS

- A. ASTM C661 - Standard Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer; 2015.
- B. ASTM C794 - Standard Test Method for Adhesion-In-Peel of Elastomeric Joint Sealants; 2015a.
- C. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2014a.
- D. ASTM C1087 - Standard Test Method for Determining Compatibility of Liquid-Applied Sealants with Accessories Used in Structural Glazing Systems; 2016.
- E. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2016.
- F. ASTM C1248 - Standard Test Method for Staining of Porous Substrate by Joint Sealants; 2008 (Reapproved 2012).
- G. ASTM C1521 - Standard Practice for Evaluating Adhesion of Installed Weatherproofing Sealant Joints; 2013.

1.03 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
- B. Convene pre-installation conference 3 weeks prior to commencing work of this Section.
- C. Conference Purpose and Agenda:
 - 1. Required Attendance: Contractor's quality control supervisor or superintendent, Architect, all affected trades, and sealant manufacturer.
 - 2. Visit Project site to analyze site conditions, and inspect surfaces and joints to be sealed in order that recommendations may be made should adverse conditions exist.
 - 3. Review mock-up and field sample.
 - 4. Discuss following items:
 - a. Approved submittals.
 - b. Substrate conditions.
 - c. Preparatory work.
 - d. Weather conditions under which work will be done.
 - e. Anticipated frequency and extent of joint movement.

- f. Joint design.
- g. Sealant installation procedures.

1.04 SUBMITTALS

- A. Refer to Section 01 33 00 - Submittal Procedures, for submittal procedures.
- B. Product Data for Sealants: Submit manufacturer's technical data sheets for each product to be used, that includes the following.
 - 1. Physical characteristics, including movement capability, VOC content, hardness, cure time, and color availability.
 - 2. List of backing materials approved for use with the specific product.
 - 3. Substrates that product is known to satisfactorily adhere to and with which it is compatible.
 - 4. Substrates the product should not be used on.
 - 5. Substrates for which use of primer is required.
 - 6. Substrates for which laboratory adhesion and/or compatibility testing is required.
 - 7. Installation instructions, including precautions, limitations, and recommended backing materials and tools.
 - 8. Sample product warranty.
 - 9. Certification by manufacturer indicating that product complies with specification requirements.
- C. Product Data for Accessory Products: Submit manufacturer's technical data sheet for each product to be used, including physical characteristics, installation instructions, and recommended tools.
- D. Product test reports: For sealant, based on evaluation of comprehensive tests performed by a qualified testing agency.
- E. Shop Drawings: In schedule form including:
 - 1. Joint location and designation.
 - 2. Product manufacturer, name, formulation, and color
 - 3. Detailed drawings for each installation condition, including joint conditions, sealant profiles, backings, substrates, and other application related information; manufacturer's standard drawing details are acceptable if necessary information is conveyed.
- F. Color Cards for Selection: Where sealant color is not specified, submit manufacturer's color cards showing standard colors available for selection.
- G. Initial samples of cured sealants indicating full range of colors available.
- H. Samples for Verification: Where custom sealant color is specified, obtain directions from Architect and submit at least two physical samples for verification of color of each required sealant.
- I. Certificate: Certify that products meet or exceed specified requirements.

1. Manufacturer's Project Acceptance Document: Certification that manufacturer and installer will warrant sealant for specific site, design, details, and application indicated for this project.
 2. Installer Certification: Written document from Manufacturer stating installer is certified, approved, and licensed, or acceptable to install specified products.
- J. Preconstruction Laboratory Test Reports: Submit at least four weeks prior to start of installation.
- K. Installation Plan: Submit at least four weeks prior to start of installation.
- L. Preinstallation Field Adhesion Test Plan: Submit at least two weeks prior to start of installation.
- M. Field Quality Control Plan: Submit at least two weeks prior to start of installation.
- N. Preinstallation Field Adhesion Test Reports: Submit filled out Preinstallation Field Adhesion Test Reports log within 10 days after completion of tests; include bagged test samples and photographic records.
- O. Installation Log: Submit filled out log for each length or instance of sealant installed.
- P. Field Quality Control Log: Submit filled out log for each length or instance of sealant installed, within 10 days after completion of inspections/tests; include bagged test samples and photographic records, if any.
- Q. Manufacturer and Installer qualification.
- R. Warranties: Sample of special warranties.

1.05 SUSTAINABILITY SUBMITTALS

- A. CAL-Green documentation and verification data for the following measures:
1. 4.504.2.1 and 5.504.4.1 Adhesives and sealants.

1.06 QUALITY ASSURANCE

- A. Maintain one copy of each referenced document covering installation requirements on site.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum 20 years documented experience.
- C. Installer Qualifications: Company specializing in performing the work of this section with minimum 5 years documented experience and approved by manufacturer.
- D. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.
- E. Preconstruction Laboratory Testing: Arrange for sealant manufacturer(s) to test each combination of sealant, substrate, backing, and accessories.
1. Adhesion Testing: In accordance with ASTM C794.
 2. Compatibility Testing: In accordance with ASTM C1087.

3. Stain Testing: In accordance with ASTM C1248; required only for stone substrates.
 4. Allow sufficient time for testing to avoid delaying the work.
 5. Deliver to manufacturer sufficient samples for testing.
 6. Report manufacturer's recommended corrective measures, if any, including primers or techniques not indicated in product data submittals.
 7. Testing is not required if sealant manufacturer provides data showing previous testing, not older than 24 months, that shows satisfactory adhesion, lack of staining, and compatibility with project specific substrates.
- F. Installation Plan: Include schedule of sealed joints, including the following:
1. Joint width indicated in contract documents.
 2. Joint depth indicated in contract documents; to face of backing material at centerline of joint.
 3. Method to be used to protect adjacent surfaces from sealant droppings and smears, with acknowledgement that some surfaces cannot be cleaned to like-new condition and therefore prevention is imperative.
 4. Approximate date of installation, for evaluation of thermal movement influence.
 5. Installation Log Form: Include the following data fields, with known information filled out.
 - a. Unique identification of each length or instance of sealant installed.
 - b. Location on project.
 - c. Substrates.
 - d. Sealant used.
 - e. Stated movement capability of sealant.
 - f. Primer to be used, or indicate as "No primer" used.
 - g. Size and actual backing material used.
 - h. Date of installation.
 - i. Name of installer.
 - j. Actual joint width; provide space to indicate maximum and minimum width.
 - k. Actual joint depth to face of backing material at centerline of joint.
 - l. Air temperature.
- G. Preinstallation Field Adhesion Test Plan: Include destructive field adhesion testing of one sample of each combination of sealant type and substrate, except interior acrylic latex sealants, and include the following for each tested sample.
1. Identification of testing agency.
 2. Name(s) of sealant manufacturers' field representatives who will be observing
 3. Preinstallation Field Adhesion Test Log Form: Include the following data fields, with known information filled out.
 - a. Substrate; if more than one type of substrate is involved in a single joint, provide two entries on form, for testing each sealant substrate side separately.
 - b. Test date.
 - c. Location on project.
 - d. Sealant used.
 - e. Stated movement capability of sealant.

- f. Test method used.
 - g. Date of installation of field sample to be tested.
 - h. Date of test.
 - i. Copy of test method documents.
 - j. Age of sealant upon date of testing.
 - k. Test results, modeled after the sample form in the test method document.
 - l. Indicate use of photographic record of test.
- H. Field Quality Control Plan:
 - 1. Visual inspection of entire length of sealant joints.
 - 2. Non-destructive field adhesion testing of sealant joints, except interior acrylic latex sealants.
 - a. For each different sealant and substrate combination, allow for one test every 12 inches in the first 10 linear feet of joint and one test every 24 inches thereafter.
 - b. If any failures occur in the first 10 linear feet, continue testing at 12 inch intervals at no extra cost to Owner.
 - 3. Destructive field adhesion testing of sealant joints, except interior acrylic latex sealant.
 - a. For each different sealant and substrate combination, allow for one test every 100 feet in the first 1000 linear feet, and one test per 1000 linear feet thereafter, or once per floor on each elevation.
 - b. If any failures occur in the first 1000 linear feet, continue testing at frequency of one test per 500 linear feet at no extra cost to Owner.
 - 4. Field testing agency's qualifications.
 - 5. Field Quality Control Log Form: Show same data fields as on Preinstallation Field Adhesion Test Log, with known information filled out and lines for multiple tests per sealant/substrate combinations; include visual inspection and specified field testing; allow for possibility that more tests than minimum specified may be necessary.
- I. Field Adhesion Test Procedures:
 - 1. Allow sealants to fully cure as recommended by manufacturer before testing.
 - 2. Have a copy of the test method document available during tests.
 - 3. Record the type of failure that occurred, other information required by test method, and the information required on the Field Quality Control Log.
 - 4. When performing destructive tests, also inspect the opened joint for proper installation characteristics recommended by manufacturer, and report any deficiencies.
 - 5. Deliver the samples removed during destructive tests in separate sealed plastic bags, identified with project, location, test date, and test results, to Owner.
 - 6. If any combination of sealant type and substrate does not show evidence of minimum adhesion or shows cohesion failure before minimum adhesion, report results to Architect.
- J. Non-Destructive Field Adhesion Test: Test for adhesion in accordance with ASTM C1521, using Nondestructive Spot Method.
 - 1. Record results on Field Quality Control Log.

2. Repair failed portions of joints.
 - K. Destructive Field Adhesion Test: Test for adhesion in accordance with ASTM C1521, using Destructive Tail Procedure.
 1. Sample: At least 18 inch long.
 2. Minimum Elongation Without Adhesive Failure: Consider the tail at rest, not under any elongation stress; multiply the stated movement capability of the sealant in percent by two; then multiply 1 inch by that percentage; if adhesion failure occurs before the "1 inch mark" is that distance from the substrate, the test has failed.
 3. If either adhesive or cohesive failure occurs prior to minimum elongation, take necessary measures to correct conditions and re-test; record each modification to products or installation procedures.
 4. Record results on Field Quality Control Log.
 5. Repair failed portions of joints.
 - L. Field Adhesion Tests of Joints: Test for adhesion using most appropriate method in accordance with ASTM C1521, or other applicable method as recommended by manufacturer.
- 1.07 DELIVERY, STORAGE, AND HANDLING.
- A. Deliver materials to Project site in original unopened containers or bundles with manufacturer's labels. Labels on delivered materials shall show manufacturer, product name and designation, color, expiration period for use, pot life, curing time, and mixing instructions for multicomponent materials.
 - B. Store and handle materials to prevent their deterioration or damage due to moisture , temperature changes, contaminants or other causes.
- 1.08 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 (5 deg C)].
 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.
 - B. Weather Conditions: Proceed with work only when existing and forecasted weather conditions permit installation according to manufacturer's instructions and warranty requirements.
- 1.09 WARRANTY
- A. Refer to Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

- B. Special Installer's Warranty: Installer agrees to repair or replace non-silicone 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.
- C. Special Manufacturer's Warranty: Manufacturer agrees to furnish joint sealants to repair or replace those silicone joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
 - 1. Warranty Period: 20 years from date of Substantial Completion.
- D. 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.
- E. Warranty: Include coverage for installed sealants and accessories that fail to achieve watertight seal , exhibit loss of adhesion or cohesion, or do not cure.

PART 2 PRODUCTS

2.01 JOINT SEALANT APPLICATIONS

- A. Scope:
 - 1. Interior Joints: Do not seal interior joints unless specifically indicated to be sealed. Interior joints to be sealed include, but are not limited to, the following items.
 - a. Joints between door, window, and other frames and adjacent construction.
 - b. In sound-rated wall and ceiling assemblies, gaps at electrical outlets, wiring devices, piping, and other openings; between wall/ceiling and other construction; and other flanking sound paths.
 - 1) Exception: Such gaps and openings in gypsum board finished stud walls and suspended ceilings.
 - 2) Exception: Through-penetrations in sound-rated assemblies that are also fire-rated assemblies.
 - c. Other joints indicated below.
 - 2. Do not seal the following types of joints.
 - a. Intentional weepholes in masonry.
 - b. Joints indicated to be treated with manufactured expansion joint cover or some other type of sealing device.
 - c. Joints where sealant is specified to be provided by manufacturer of product to be sealed.
 - d. Joints where installation of sealant is specified in another section.
 - e. Joints between suspended panel ceilings/grid and walls.

- B. Exterior Joints: Use nonsag non-staining silicone sealant, unless otherwise indicated.

2.02 JOINT SEALANTS - GENERAL

- A. Colors: As indicated on the drawings.

2.03 SECURITY JOINT SEALANTS

- A. Type SJS-1 Flexible Polyurethane Security Sealant:

1. Acceptable Products:
 - a. Pecora; Dynaflex.
 - b. Sonneborn, Division of ChemRex, Inc.; Ultra.
2. Type and Grade: S (Single component) Grade NS.
3. Class: 12-1/2.
4. Uses related to exposure: T (traffic) and NT (non-traffic).
5. Hardness, Shore A: 55 minimum.
6. Uses related to joint substrates: M, G, A and O as applicable to joint substrates indicated.
 - a. Use O Joint Substrates: Galvanized steel, steel, stainless steel, ceramic, concrete, and masonry.

- B. Type SJS-2 Rigid Epoxy Security Sealant:

1. Acceptable Products:
 - a. Pecora; Dynapoxy EP-1100.
 - b. Pecora: Dynapoxy EP-1200.
 - c. Sika Corporation, Inc.; Sakador 31-Hi-Mod Gel.
 - d. Sonneborn, Division of ChemRex, Inc.; Epolith (R)-Por-G.
2. Type and grade: M (multi-component) Grade NS.
3. Uses related to exposure: T (traffic) and NT (non-traffic).
4. Hardness, Shore D: 70 minimum.
5. Uses related to joint substrates: M, A and O as applicable to joint substrates indicated.
 - a. Use O Substrates: Galvanized steel, steel and stainless steel.

2.04 ACCESSORIES

- A. Backer Rod: Cylindrical cellular foam rod with surface that sealant will not adhere to, compatible with specific sealant used, and recommended by backing and sealant manufacturers for specific application.

1. Closed Cell: 25 to 33 percent larger in diameter than joint width.
 - a. Location: Exterior.
2. Open Cell: 25 to 33 percent larger in diameter than joint width.
 - a. Location: Interior.

- B. Preformed, Pre-Compressed, Self-Expanding, Secondary Sealant System: Expanding cellular foam impregnated with water-based, non-drying, polymer-modified 100 percent acrylic dispersion.

1. Movement: Capable of movements of plus 25 percent, minus 25 percent (50 percent total) of nominal material size.
2. Product:
 - a. Emseal Joint Systems Ltd.; BACKERSEAL.
 - b. As indicated on Drawings.
- C. Backing Tape: Self-adhesive polyethylene tape with surface that sealant will not adhere to and recommended by tape and sealant manufacturers for specific application.
 1. Pressure sensitive polyethylene tape or tetrafluorethylene self-adhesive tape required by sealant manufacturer to suit application.
 2. Minimum Thickness of 11 mils.
- D. Masking Tape: Self-adhesive, nonabsorbent, non-staining, removable without adhesive residue, and compatible with surfaces adjacent to joints and sealants.
- E. Joint Cleaner: Non-corrosive and non-staining type, type recommended by sealant manufacturer; compatible with joint forming materials.
- F. Primers: Type recommended by sealant manufacturer to suit application; non-staining.
 1. Non-staining to joint substrate beyond the substrate surface.
 2. Required for use unless not required by results of:
 - a. "Manufacturer's sealant-substrate compatibility and adhesion test" described under Source Quality Control.
 - b. "Field hand-pull adhesion test" under Field Quality Control.
- G. Tooling Liquids: Non-staining material approved by manufacturer to reduce adhesion of sealant to joint finishing tools.

2.05 SOURCE QUALITY CONTROL

- A. Tests:
 1. Coordinate testing of sealant compatibility and adhesion to sealant backing materials.
 2. Manufacturer's Sealant-Substrate Compatibility and Adhesion Test:
 - a. Test Methods:
 - 1) Determine if priming and other specific joint preparation techniques are not required to obtain rapid, optimum adhesion of sealants to joint substrates.
 - 2) Comply with ASTM C510, ASTM C794, and ASTM C1087.
 - b. Submit not less than 9 pieces, 3 by 5 inches in size of each type of material, including joint substrates, shims, sealant backing, and miscellaneous materials.
 - c. Schedule sufficient time for testing and analysis of results to prevent delay in the progress of the Work.
 - d. Investigate sealant material's failing compatibility/adhesion tests and obtain manufacturer's written instructions for corrective measures, including the use of specially formulated primers.
 - e. Include in Test Report, Manufacturer's:
 - 1) Interpretation of test results regarding sealant performance.
 - 2) Primers and substrate preparation required to achieve adhesion.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that joints are ready to receive work.
- B. Verify that backing materials are compatible with sealants.
- C. Verify that backer rods are of the correct size.
- D. Preinstallation Adhesion Testing: Install a sample for each test location indicated in the test plan.
 - 1. Test each sample as specified in PART 1 under QUALITY ASSURANCE article.
 - 2. Notify Architect of date and time that tests will be performed, at least 7 days in advance.
 - 3. Arrange for sealant manufacturer's technical representative to be present during tests.
 - 4. Record each test on Preinstallation Adhesion Test Log as indicated.
 - 5. If any sample fails, review products and installation procedures, consult manufacturer, or take whatever other measures are necessary to ensure adhesion; re-test in a different location; if unable to obtain satisfactory adhesion, report to Architect.
 - 6. After completion of tests, remove remaining sample material and prepare joint for new sealant installation.

3.02 PREPARATION

- A. Remove loose materials and foreign matter that could impair adhesion of sealant.
- B. Clean joints, and prime as necessary, in accordance with manufacturer's instructions.
- C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.
- D. 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.
- E. Provide isolation joints where necessary to prevent surface cracking of concrete topping
- F. Concrete Floor Joints That Will Be Exposed in Completed Work: Test joint filler in inconspicuous area to verify that it does not stain or discolor slab.

3.03 INSTALLATION

- A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.
- B. Perform installation in accordance with ASTM C1193.
- C. Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer, except where specific dimensions are indicated.

- D. 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.
 - 1. Prime joint substrates unless priming is not required by:
 - a. "Manufacturer's sealant-substrate compatibility and adhesion test" described in Source Quality Control article.
 - b. "Field hand-pull adhesion test" described in Field Quality Control article.
 - 2. Apply primer to substrate areas where joint sealant is to adhere.
 - 3. Comply with manufacturer's sequencing requirements for joint priming and sealant backing bond breaker rod installation to assure required primer application coverage and rate without placement of primer on backer rod surface to be in contact with sealant and avoid three-sided sealant adhesion.
 - 4. Do not allow spillage and migration of primer onto surfaces not to receive primer.
 - 5. Install sealant to primed substrates after primer has cured.
- E. 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.
 - 4. Install closed cell backings at exterior locations.
 - 5. Install open cell backings at interior locations.
- F. Install bond breaker backing tape where backer rod cannot be used.
- G. Install sealant free of air pockets, foreign embedded matter, ridges, and sags, and without getting sealant on adjacent surfaces.
- H. Do not install sealant when ambient temperature is outside manufacturer's recommended temperature range, or will be outside that range during the entire curing period, unless manufacturer's approval is obtained and instructions are followed.
- I. 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.
- J. 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 and according to Figure 8B in ASTM C 1193.
 5. Provide recessed joint configuration of recess depth and at locations indicated on Drawings and according to Figure 8C in ASTM C 1193.
 - a. Use masking tape to protect surfaces adjacent to recessed tooled joints.
- K. Nonsag Sealants: Tool surface concave, unless otherwise indicated; remove masking tape immediately after tooling sealant surface.
- L. Concrete Floor Joint Filler: After full cure, shave joint filler flush with top of concrete slab.

3.04 FIELD QUALITY CONTROL

- A. Perform field quality control inspection/testing as specified in PART 1 under QUALITY ASSURANCE article.
- B. Field-Adhesion Testing: Field test joint-sealant adhesion to joint substrates as follows:
1. Extent of Testing: Test completed and cured sealant joints as follows:
 - a. Perform 10 tests for the first 1000 feet of joint length for each kind of sealant and joint substrate.
 - b. Perform one test for each 1000 feet of joint length thereafter or one test per each floor per elevation.
 2. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.
 - a. For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.
 3. Inspect tested joints and report on the following:
 - a. Whether sealants filled joint cavities and are free of voids.
 - b. Whether sealant dimensions and configurations comply with specified requirements.
 - c. Whether sealants in joints connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. Compare these results to determine if adhesion complies with sealant manufacturer's field-adhesion hand-pull test criteria.
 4. Record test results in a field-adhesion-test log. Include dates when sealants were installed, names of persons who installed sealants, test dates, test locations, whether joints were primed, adhesion results and percent elongations, sealant material, sealant configuration, and sealant dimensions.

5. Repair sealants pulled from test area by applying new sealants following same procedures used originally to seal joints. Ensure that original sealant surfaces are clean and that new sealant contacts original sealant.
- C. Evaluation of Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.
- D. Non-Destructive Adhesion Testing: If there are any failures in first 100 linear feet, notify Architect immediately.
- E. Destructive Adhesion Testing: If there are any failures in first 1000 linear feet, notify Architect immediately.
- F. Remove and replace failed portions of sealants using same materials and procedures as indicated for original installation.
- G. Repair destructive test location damage immediately after evaluation and recording of results.

3.05 CLEANING AND CURING

- 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.
- B. Cure sealants in compliance with manufacturer's instructions and recommendations to obtain high early-bond strength, internal cohesive strength, and surface durability.

3.06 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.

3.07 POST-OCCUPANCY

- A. Post-Occupancy Inspection: Perform visual inspection of entire length of project sealant joints at a time that joints have opened to their greatest width; i.e. at the low temperature in the thermal cycle. Report failures immediately and repair.

3.08 SEALANT SYSTEMS FOR SECURITY RATED AREAS.

- A. Interior vertical and horizontal joints between plant-precast concrete units, and vertical control and expansion joints in unit masonry on interior surfaces of exterior walls.
 1. Joint Sealant: Flexible polyurethane security sealant SJS-1.

2. Joint Sealant Color: Match Color of finish paint.
- B. Interior vertical and horizontal joints in plant-precast concrete units, cast-in-place concrete and unit masonry walls.
 1. Joint Sealant: Flexible polyurethane security sealant SJS-1.
 2. Joint Sealant Color: Match Color of finish paint.
- C. Interior perimeter joints of door and window frames in unit masonry and concrete walls.
 1. Joint Sealant: Flexible polyurethane security sealant SJS-1.
 2. Joint Sealant Color: Match Color of finish paint.
- D. Interior joints between plumbing fixtures and adjoining walls, floors and counters.
 1. Joint Sealant: Flexible polyurethane security sealant SJS-1.
 2. Joint Sealant Color: Match Color of finish paint.
- E. Interior floor joints.
 1. Joint Sealant: Flexible polyurethane security sealant SJS-1.
 2. Joint Sealant Color: Match color of exposed concrete.
- F. Interior perimeter joints of surface mounted items on concrete, unit masonry or precast concrete walls, floors or ceilings, including surface mounted lights, grilles, registers, wall mounted furniture, enclosures, housings, mirrors, shelves, intercoms, sprinkler escutcheons, etc. with a gap that exceeds 1/32 inch (1.0mm) wide.
 1. Joint Sealant: Flexible polyurethane security sealant SJS-1.
 2. Joint Sealant Color: Match Color of finish paint.
- G. Nylon electrical, data and communication device cover plates. Seal back side perimeter of cover plate to wall with sealant.
 1. Joint Sealant: Flexible polyurethane security sealant SJS-1.
 2. Joint Sealant Color: Match Color of finish paint.
- H. Floor joint between second level walkway slab and steel edge plate.
 1. Joint Sealant: Flexible polyurethane security sealant SJS-1.
 2. Joint Sealant Color: Match color of exposed concrete.
- I. Joint between modular metal detention wall panels and concrete or unit masonry surfaces.
 1. Joint Sealant: Flexible polyurethane security sealant SJS-1.
 2. Joint Sealant Color: Match Color of finish paint.
- J. Joints in modular metal detention wall panels.
 1. Joint Sealant: Rigid epoxy security sealant SJS-2.
 2. Joint Sealant Color: Match Color of finish paint.
- K. Interior perimeter joints of door and window frames in modular metal detention wall panels.
 1. Joint Sealant: Rigid epoxy security sealant SJS-2.
 2. Joint Sealant Color: Match Color of finish paint.

END OF SECTION

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SECTION 08 11 13 - HOLLOW METAL DOORS AND FRAMES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Non-fire-rated hollow metal doors and frames.
- B. Fire-rated hollow metal doors and frames.
- C. Security resistant hollow metal doors and frames.
- D. Hollow metal borrowed lites glazing frames.

1.02 ABBREVIATIONS AND ACRONYMS

- A. ANSI - American National Standards Institute.
- B. ASCE - American Society of Civil Engineers.
- C. HMMA - Hollow Metal Manufacturers Association.
- D. NAAMM - National Association of Architectural Metal Manufacturers.
- E. NFPA - National Fire Protection Association.
- F. SDI - Steel Door Institute.
- G. UL - Underwriters Laboratories.

1.03 REFERENCE STANDARDS

- A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
- B. 2016 California Building Code Chapter 11B.
- C. ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames and Frame Anchors; 2011.
- D. ANSI/SDI A250.8 - Specifications for Standard Steel Doors and Frames (SDI-100); 2014.
- E. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames; 2011.
- F. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2007.
- G. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable; 2016.

- H. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2015.
- I. ASTM E2112 - Standard Practice for Installation of Exterior Windows, Doors and Skylights; 2007.
- J. BHMA A156.115 - American National Standard for Hardware Preparation in Steel Doors and Steel Frames; 2014.
- K. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2009.
- L. ITS (DIR) - Directory of Listed Products; current edition.
- M. NAAMM HMMA 830 - Hardware Selection for Hollow Metal Doors and Frames; 2002.
- N. NAAMM HMMA 831 - Hardware Locations for Hollow Metal Doors and Frames; 2011.
- O. NAAMM HMMA 840 - Guide Specifications for Installation and Storage of Hollow Metal Doors and Frames; 2007.
- P. NAAMM HMMA 861 - Guide Specifications for Commercial Hollow Metal Doors and Frames; 2006.
- Q. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2016.
- R. NFPA 105 - Standard for the Installation of Smoke-Control Door Assemblies; 2013.
- S. SDI 117 - Manufacturing Tolerances for Standard Steel Doors and Frames; 2013.
- T. NFPA 257 - Standard on Fire Test for Window and Glass Block Assemblies; 2007.
- U. UL (DIR) - Online Certifications Directory; current listings at database.ul.com.
- V. UL 10B - Standard for Fire Tests of Door Assemblies; Current Edition, Including All Revisions.
- W. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies; Current Edition, Including All Revisions.
- X. UL 1784 - Standard for Air Leakage Tests of Door Assemblies; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate with wall construction for anchor placement.
 - 2. Coordinate installation of hardware.
- B. Pre-installation Conference: Conduct conference at Project site.

1.05 SUBMITTALS

- A. Product Data: Materials and details of design and construction, hardware locations, reinforcement type and locations, anchorage and fastening methods, and finishes; and one copy of referenced grade standard.
- B. Shop Drawings: Details of each opening, showing elevations, glazing, frame profiles, and any indicated finish requirements.
- C. Installation Instructions: Manufacturer's published instructions, including any special installation instructions relating to this project.
- D. Manufacturer's Certificate: Certification that products meet or exceed specified requirements.
 - 1. Submit manufacturer's certification that oversize fire rated assemblies conform to design, materials, and construction equivalent to requirements of individual listings for tested assemblies.

1.06 SUSTAINABILITY SUBMITTALS

- A. CAL-Green documentation and verification data as specified in Section 01 81 14 Sustainable Design Requirements - CAL-Green, for the following measures:
 - 1. 4.504.2.1 and 5.504.4.1 Adhesives and sealants.
 - 2. 4.504.2.2 and 5.504.4.3 Paints and coatings.
 - 3. 4.504.2.3 and 5.504.4.3.1 Aerosol paints and coatings.

1.07 QUALITY ASSURANCE

- A. Conform to requirements of ANSI A250.8 - SDI-100, and as supplemented in this Section.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this Section with minimum three years documented experience.
 - 1. Provide hollow metal frames from SDI Certified manufacturer.
- C. Maintain at project site copies of reference standards relating to installation of products specified.

1.08 REGULATORY REQUIREMENTS

- A. Conform to 2016 California Building Code for fire rated assemblies.
- B. Fire rated assembly construction to conform to UL 10C.
 - 1. Oversize Fire Rated Assemblies: For assemblies which exceed sizes of tested assemblies, provide certification or label from an approved independent testing and inspection agency indicating that door and frame assembly conform to the requirements of design, materials, and construction as established by individual listings for tested assemblies.
 - 2. Temperature Rise Rating: At stair enclosures, provide doors which have a Temperature Rise Rating of 450 degrees F maximum in 30 minutes of fire exposure.

- C. Installed Frame and Door Assemblies: Comply with NFPA 80, 2013 Edition for fire rated class indicated.
- D. Installed Fire-rated Window Assemblies: Comply with NFPA 257, 2007 Edition for fire rated class indicated.
- E. Installed Smoke Control Frame and Door Assemblies: Comply with NFPA 105, 2013 Edition.

1.09 DELIVERY, STORAGE, AND HANDLING

- A. Comply with NAAMM HMMA 840 or ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.
- B. Protect with resilient packaging; avoid humidity build-up under coverings; prevent corrosion and adverse effects on factory applied painted finish.
- C. Inspect hollow metal products upon delivery for damage. Minor damage may be repaired provided refinishing is equal in all respects to new work and is acceptable to Architect; otherwise replace damaged items with new products as specified.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Acceptable Manufacturers:
 - 1. Amweld Building Products, Inc.: www.amweld.com.
 - 2. ASSA ABLOY, Ceco or Curries: www.assaabloydss.com.
 - 3. Pioneer Industries : www.pioneerindustries.com.
 - 4. Steelcraft, an Allegion brand: www.allegion.com/us.
 - 5. Prior approved equal.

2.02 DESIGN CRITERIA

- A. Requirements for Hollow Metal Doors and Frames:
 - 1. Steel used for fabrication of doors and frames shall comply with one or more of the following requirements; Galvannealed steel conforming to ASTM A653/A653M, cold-rolled steel conforming to ASTM A1008/A1008M, or hot-rolled pickled and oiled (HRPO) steel conforming to ASTM A1011/A1011M, Commercial Steel (CS) Type B for each.
 - 2. Accessibility: Comply with 2016 CBC Chapter 11B.
 - 3. Door Top Closures: Flush end closure channel, with top and door faces aligned.
 - 4. Door Edge Profile: Hinged edge square, and lock edge beveled.
 - 5. Typical Door Face Sheets: Flush.
 - 6. Glazed Lights: Non-removable stops on non-secure side; sizes and configurations as indicated on Drawings.
 - 7. Hardware Preparations, Selections and Locations: Comply with NAAMM HMMA 830 and NAAMM HMMA 831 or BHMA A156.115 and ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.

- B. Combined Requirements: If a particular door and frame unit is indicated to comply with more than one type of requirement, comply with all the specified requirements for each type. Where two requirements conflict, comply with the most stringent.

2.03 HOLLOW METAL DOORS

- A. Door Finish: Factory primed and field finished.
- B. Interior Doors, Non-Fire-Rated:
 - 1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
 - a. Level 4 - Maximum-duty.
 - b. Physical Performance Level A, 1,000,000 cycles; in accordance with ANSI/SDI A250.4.
 - c. Model 2 - Seamless.
 - d. Door Face Metal Thickness: 14 gage, 0.067 inch, minimum.
 - 2. Core Material: Manufacturers standard core material/construction and in compliance with requirements.
 - 3. Door Thickness: 1-3/4 inch, nominal.
- C. Interior Doors, Fire-Rated:
 - 1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
 - a. Level 4 - Maximum-duty.
 - b. Physical Performance Level A, 1,000,000 cycles; in accordance with ANSI/SDI A250.4.
 - c. Model 2 - Seamless.
 - d. Door Face Metal Thickness: 14 gage, 0.067 inch, minimum.
 - 2. Fire Rating: As indicated on Door Schedule, tested in accordance with UL 10B ("neutral or negative pressure fire tests").
 - a. Temperature-Rise Rating (TRR) Across Door Thickness: In accordance with local building code and authorities having jurisdiction.
 - b. Provide units listed and labeled by UL (DIR) or ITS (DIR).
 - c. Attach fire rating label to each fire rated unit.
 - 3. Core Material: Manufacturers standard core material/construction in compliance with requirements.
 - 4. Door Thickness: 1-3/4 inch, nominal.
 - 5. Thickness: 1-3/4 inches.

2.04 HOLLOW METAL FRAMES

- A. Comply with standards and/or custom guidelines as indicated for corresponding door in accordance with applicable door frame requirements.
- B. Frame Finish: Factory primed and field finished.
- C. General:
 - 1. Comply with the requirements of grade specified for corresponding door.
 - a. ANSI A250.8 - SDI-100, Level 2 and 3 Door Frames: 14 gage, 0.067 inch, minimum thickness.

2. Finish: Factory primed, for field finishing.
 3. Provide mortar guard boxes for hardware cut-outs in frames to be installed in masonry or to be grouted.
 4. Frames Wider than 48 Inches: Reinforce with steel channel fitted tightly into frame head, flush with top.
- D. Interior Door Frames, Non-Fire Rated: Full profile/continuously welded type.
1. Terminated Stops: Provide at interior doors; closed end stop terminated 6 inch, maximum, above floor at 45 degree angle.
 2. Frame Metal Thickness: 14 gage, 0.067 inch, minimum.
- E. Door Frames, Fire-Rated: Full profile/continuously welded type.
1. Fire Rating: Same as door, labeled.
 2. Frame Metal Thickness: 14 gage, 0.067 inch, minimum.
- F. Security Resistant Door Frames: With same security resistance as door; face welded or full profile/continuously welded construction, ground smooth, fully prepared and reinforced for hardware installation.
1. Frame Metal Thickness: 12 gage, 0.093 inch, minimum.
- G. Frames for Interior Glazing or Borrowed Lights: Construction and face dimensions to match door frames, and as indicated on Drawings.

2.05 FINISHES

- A. Primer: Rust-inhibiting, complying with ANSI/SDI A250.10, door manufacturer's standard.

2.06 FRAME ANCHORS

- A. Frame Anchors: ASTM A 879/A 879M, Commercial Steel (CS), 04Z (12G) coating designation; mill phosphatized.
1. For anchors built into exterior walls, steel sheet complying with ASTM A 1008/A 1008M or ASTM A 1011/A 1011M, hot-dip galvanized according to ASTM A 153/A 153M, Class B.
- B. Jamb Anchors:
1. Stud-Wall Type: Designed to engage stud, welded to back of frames; not less than 0.042 inch thick.
- C. Floor Anchors: Formed from same material as frames, minimum thickness of 0.042 inch, and as follows:
1. Monolithic Concrete Slabs: Adjustable-type anchors with two holes to receive fasteners.
 2. Separate Topping Concrete Slabs: Adjustable-type anchors with extension clips, allowing not less than 2-inch height adjustment. Terminate bottom of frames at finish floor surface.

2.07 ACCESSORIES

- A. Glazing: As specified in Section 08 80 00.
- B. Silencers: Resilient rubber, fitted into drilled hole; 3 on strike side of single door, 3 on center mullion of pairs, and 2 on head of pairs without center mullions.
- C. Temporary Frame Spreaders: Provide for factory- or shop-assembled frames.
- D. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A 153/A 153M.
- E. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hollow-metal frames of type indicated.
- F. Bituminous Coating: Cold-applied asphalt mastic, compounded for 15-mil dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

2.08 FABRICATION

- A. Fabricate hollow-metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for metal thickness. Where practical, fit and assemble units in manufacturer's plant. To ensure proper assembly at Project site, clearly identify work that cannot be permanently factory assembled before shipment.
- B. Comply with ANSI A250.8 - SDI-100.
- C. Reinforce frames wider than 48 inches with roll formed steel channels fitted tightly into frame head, flush with top.
- D. Prepare scheduled frames for silencers. Provide three single silencers for single doors and mullions of double doors on strike side and two single silencers on frame head at double doors without mullions.
- E. Attach required fire rating label to each frame, panel and door unit.
- F. Configure exterior frames with special profile to receive snap-in weatherstripping.
- G. Prepare doors and frames for hardware in accordance with templates provided under Section 08 71 00 - Door Hardware.
- H. Hollow-Metal Doors:
 - 1. Steel-Stiffened Door Cores: Provide minimum thickness 0.026 inches, steel vertical stiffeners of same material as face sheets extending full-door height, with vertical webs spaced not more than 6 inches apart. Spot weld to face sheets no more than 5 inches o.c. Fill spaces between stiffeners with glass- or mineral-fiber insulation.
 - 2. Fire Door Cores: As required to provide fire-protection and temperature-rise and temperature-rise ratings indicated.
 - 3. Vertical Edges for Single-Acting Doors: Bevel edges 1/8 inch in 2 inches .

4. Top Edge Closures: Close top edges of doors with inverted closures, except provide flush closures at exterior doors of same material as face sheets.
5. Bottom Edge Closures: Close bottom edges of doors where required for attachment of weather stripping with end closures or channels of same material as face sheets.
- I. Hollow-Metal Frames: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.
 1. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
 2. Floor Anchors: Weld anchors to bottoms of jambs with at least four spot welds per anchor; however, for slip-on drywall frames, provide anchor clips or countersunk holes at bottoms of jambs.
 3. Jamb Anchors: Provide number and spacing of anchors as follows:
 - a. Stud-Wall Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:
 - 1) Three anchors per jamb up to 60 inches high.
 - 2) Four anchors per jamb from 60 to 90 inches high.
 - 3) Five anchors per jamb from 90 to 96 inches high.
 - 4) Five anchors per jamb plus one additional anchor per jamb for each 24 inches or fraction thereof above 96 inches high.
 4. 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.
 - b. Double-Door Frames: Drill stop in head jamb to receive two door silencers.
- J. Fabricate concealed stiffeners and edge channels from either cold- or hot-rolled steel sheet.
- K. Hardware Preparation: Factory prepare hollow-metal work to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to SDI A250.6, the Door Hardware Schedule, and templates.
 1. Reinforce doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.
 2. Comply with applicable requirements in SDI A250.6 and BHMA A156.115 for preparation of hollow-metal work for hardware.
- L. Stops and Moldings: Provide stops and moldings around glazed lites and louvers where indicated. Form corners of stops and moldings with butted or mitered hairline joints.
 1. Single Glazed Lites: Provide fixed stops and moldings welded on secure side of hollow-metal work.
 2. Provide fixed frame moldings on outside of exterior and on secure side of interior doors and frames.
 3. Provide loose stops and moldings on inside of hollow-metal work.
 4. Coordinate rabbet width between fixed and removable stops with glazing and installation types indicated.

2.09 FINISHES

- A. Primer: Rust-inhibiting, complying with ANSI A250.10.
- B. Bituminous Coating: Asphalt emulsion or other high-build, water-resistant, resilient coating.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify that opening sizes and tolerances are acceptable.
- C. Verify that finished walls are in plane to ensure proper door alignment.
- D. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
- E. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 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. Drill and tap doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.
- C. Coat inside of frames to be installed in masonry or to be grouted, with bituminous coating, prior to installation.

3.03 INSTALLATION

- A. General: Install hollow-metal work plumb, rigid, properly aligned, and securely fastened in place. Comply with Drawings and manufacturer's written instructions.
- B. Install doors and frames in accordance with manufacturer's instructions and related requirements of specified door and frame standards or custom guidelines indicated.
 - 1. Comply with ASTM E2112 for installation of weather barrier materials in conjunction with installation of doors.
- C. Install fire rated units in accordance with NFPA 80.
- D. Hollow-Metal Frames: Install hollow-metal frames for doors, transoms, sidelites, borrowed lites, and other openings, of size and profile indicated. Comply with SDI A250.11 or NAAMM-HMMA 840 as required by standards specified.
 - 1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.

- a. At fire-rated openings, install frames according to NFPA 80.
 - b. Where frames are fabricated in sections because of shipping or handling limitations, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces.
 - c. Install frames with removable stops located on secure side of opening.
 - d. Install door silencers in frames before grouting.
 - e. Remove temporary braces necessary for installation only after frames have been properly set and secured.
 - f. Check plumb, square, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.
 - g. Field apply bituminous coating to backs of frames that will be filled with grout containing antifreezing agents.
2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and 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. Metal-Stud Partitions: Solidly pack mineral-fiber insulation inside frames.
4. Installation Tolerances: Adjust hollow-metal door 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 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.
- E. Hollow-Metal Doors: Fit hollow-metal doors accurately in frames, within clearances specified below. Shim as necessary.
 1. Non-Fire-Rated Steel Doors:
 - a. Between Door and Frame Jambs and Head: 1/8 inch plus or minus 1/32 inch.
 - b. Between Edges of Pairs of Doors: 1/8 inch to 1/32 inch plus or minus 1/32 inch.
 - c. At Bottom of Door: 3/4 inch plus or minus 1/32 inch.
 - d. Between Door Face and Stop: 1/16 inch to 1/8 inch plus or minus 1/32 inch.
 2. Fire-Rated Doors: Install doors with clearances according to NFPA 80.
- F. Glazing: Comply with installation requirements in Section 088000 "Glazing" and with hollow-metal manufacturer's written instructions.
 1. Secure stops 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.

3.04 TOLERANCES

- A. Clearances Between Door and Frame: Comply with related requirements of specified frame standards or custom guidelines indicated in accordance with SDI 117 or NAAMM HMMA 861

3.05 ADJUSTING

- A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow-metal work that is warped, bowed, or otherwise unacceptable.
- B. Remove grout and other bonding material from hollow-metal work immediately after installation.
- C. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.
- D. Adjust for smooth and balanced door movement.

3.06 SCHEDULE

- A. Refer to Door and Frame Schedule on the drawings.

END OF SECTION

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SECTION 08 34 63 - DETENTION DOORS AND FRAMES

PART 1 GENERAL

1.01 SUMMARY

- A. This Section includes the following:
 - 1. Swinging steel detention doors.
 - 2. Steel detention door frames.
 - 3. Steel detention sidelight frames.
 - 4. Steel detention borrowed-light frames.
- B. Related Sections include the following.
 - 1. Section 01 35 13 – Special Project Procedures for Detention Facilities.
 - 2. Section 05 05 55 - Security Fasteners.
 - 3. Section 05 50 00 - Metal Fabrications for embeds and anchor bolt requirements.
 - 4. Section 07 92 00 - Joint Sealants for security sealants.
 - 5. Section 08 71 63 - Detention Door Hardware for door hardware for detention doors.
 - 6. Section 08 88 53 - Security Glazing for glazing in detention doors, sidelights, and borrowed lights.
 - 7. Section 09 96 03 - Special Coatings for painting requirements.
 - 8. Section 13 42 60 - Modular Metal Detention Wall Panel System.

1.02 SCOPE AND RESPONSIBILITIES

- A. Under the requirements of this specification, the Detention Equipment Contractor (DEC) shall be responsible for furnishing and installing all Detention hollow metal doors, frames and door accessories, as specified, in all locations unless shown to be the responsibility of the Modular Metal Detention Wall Panel System manufacturer.
- B. Fully coordinate this Scope of Work with the Scope of Work shown in the Modular Metal Detention Wall Panel System sections.

1.03 DEFINITIONS

- A. Uncoated Steel Sheet Thicknesses: Indicated as the minimum thicknesses.
- B. Metallic-Coated Steel Sheet Thicknesses: Indicated as the minimum thicknesses of uncoated base metals.
- C. Stainless-Steel Sheet Thicknesses: Indicated as the specified thicknesses for which over- and under-thickness tolerances apply, according to ASTM A 480/A 480M.
- D. Nominal Surface of Floor Covering: Top surface of floor; for resilient tile and carpet, nominal surface of floor covering is defined as top of concrete slab.

1.04 REFERENCES

- A. ASTM A366/A 366M-97 Standard Specification for Commercial Steel (CS), Carbon (0.15 Maximum Percent), Cold Rolled

- B. ASTM A569A 569M-97 Standard Specification for Steel, Carbon, (0.15 Maximum Percent), Hot Rolled Sheet and Strip, Commercial Quality
- C. ASTM A653/A, 653M-96, Specification for Steel Sheet, Zinc Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by Hot Dip Process, Commercial Quality
- D. ASTM A 666-96b Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate and Flat Bar
- E. ASTM B 117-95 Standard Practice for Operation salt Spray (Fog) Apparatus
- F. ASTM 143-90a (1990) Standard Test Method for Slump of Hydraulic Cement Concrete
- G. ASTM D610-95 Standard Test Method for Evaluating Degree of Rusting on Painted Steel Surfaces
- H. ASTM D 714-87 (1994), Standard Test Method for Evaluating Degree of Blistering of Paints
- I. ASTM D 1735-92, Standard Practice for Testing Water Resistance of Coatings Using Water Fog Apparatus
- J. ASTM E 152-81a Method for Fire Tests of Door Assemblies
- K. ASTM F1450-12a, Standard Test Methods for Hollow Metal Swinging Door Assemblies for Detention Facilities
- L. ASTM 1577-96, Standard Test Methods for Detention Locks for Swinging Doors
- M. ASTM A167 and A240, Stainless Steel Type 304
- N. NAAAM Hollow Metal Manual, all sections.
- O. NAAAM HMMA 850-83 Fire-Rated Hollow Metal Doors and Frames, Second Edition
- P. ANSI / NFPA 80-2013 Fire Door and Windows
- Q. ANSI / NFPA 252-2003 Standard Methods for Fire Test of Door Assemblies
- R. ANSI / NFPA 257-2007 Methods for Fire Test of Window Assemblies
- S. ANSI/UL 10 (B)-97 through 2001, 10 (C)-98 through 2001, Fire Tests of Window Assemblies
- T. ANSI / UL 752 Bullet-Resistance Equipment

1.05 PERFORMANCE REQUIREMENTS

- A. Detention Doors: Provide detention doors and frames that comply with Security Grade 1, or Security Grade 3, whichever applies, according to the latest edition of ASTM F 1450-12a, as determined by testing manufacturer's standard products representing those indicated for this Project.

- B. Detention Sidelight and Borrowed-Light Frames: Provide detention vision frames that comply with ASTM F 1592 and removable glazing stop test according to HMMA 863-04, based on testing manufacturer's standard units.

1.06 SUBMITTALS

- A. Product Data: Include construction details, material descriptions, core descriptions, label compliance, fire-resistance rating, and finishes for each type of detention door, frame and access panel, as specified.
- B. Provide performance testing reports which support the testing requirements specified.
- C. Shop Drawings: For detention doors and frames. Include conditions at openings, details of construction, dimensions of profiles, and details of joints and connections. Show anchorage and accessories. Include fastener types, sizes and spacing. Identify each detention door and frame using same reference numbers for openings as those on Drawings.
- D. It is the DEC's responsibility to coordinate detention/security items in this scope of work, and to answer all manufacturer questions or concerns that are not strictly design related. The DEC shall redline the manufacturers' individual shop drawings and/or schedules, and note corrections prior to submittal for Architectural/Consultant review. When multiple items are submitted by the manufacturer on a single cutsheet, the DEC shall note with an arrow, circle or note cloud, to show which product on the sheet is submitted for this scope of work. DEC submittals not reviewed and redlined prior to submittal to Architect/Consultant for final review, will be returned rejected.
- E. Shop Drawings: For access panels.
 - 1. Door and panel units: Show types, elevations, lock type, thickness of metals, and full size profiles of door members.
 - 2. General: Show connections of units and hardware to other Work. Include schedules showing location of each type and size of door and panel units.
- F. Coordination Drawings: Drawings of each opening, including detention door and frame, drawn to scale and coordinating detention door hardware. Show the following:
 - 1. Locations, dimensions, and profiles of detention door hardware reinforcements.
 - 2. Locations and installation details of detention door hardware.
 - 3. Elevations of each detention door design type showing dimensions, locations of detention door hardware, and preparations for power, signal, and electrified and pneumatic control systems.
 - 4. Details of each detention frame type.
 - 5. Details of mortar boxes in detention frames for hardware and communication devices.
 - 6. Oversize Construction Certification: For detention door assemblies required to be fire rated and exceeding limitations of labeled assemblies, submit certification of a testing agency acceptable to authorities having jurisdiction that each detention door and frame assembly has been constructed to comply with design, materials, and construction equivalent to requirements for labeled construction.

1.07 QUALIFICATION OF MANUFACTURERS

- A. Qualifications of Detention Hollow Metal Manufacturers: Detention hollow metal manufacturing firms who have not been pre-qualified, shall have not less than five (5) years continuous successful experience with manufacturing hollow metal. These firms shall now be actively engaged in the manufacture of Detention hollow metal doors and frames of the type required for this project. Fabrication methods and product quality shall meet or exceed standards set by the Hollow Metal Manufacturers Association, (HMMA), a division of the National Association of Architectural Metal Manufacturers (NAAMM), and be tested in accordance with ASTM F 1450-12a.
1. Submittal Requirements: In addition to a written request for substitutions, a full size corner sample of each type door and frame showing door construction, face stiffening, insulation, and top hinge reinforcements shall be provided. Provide details of each type of door and frame. Provide a list of 10 facilities of similar scope and size where the product has been installed for a minimum of 5 years. Provide the following information on the 10 facilities:
 - a. List name and location of installation.
 - b. Date of occupancy by Owner.
 - c. Owner's representative to contact and telephone number.
 - d. Name of DEC, Construction Manager or General Contractor, and Architect including names of contacts and phone numbers.
 - e. The manufacturer shall also submit an audited and certified financial statement indicating a consolidated net worth of \$1,000,000.
 - f. Provide performance data and tests: All Detention hollow-metal door manufacturers shall submit to the Architect / Consultant evidence of compliance with ASTM F 1450-12a and HMMA 863-04. Test reports and documentation shall be in accordance with ASTM F 1450-12a.
 - 1) Test Specimens: Test doors shall be 3'-0" W by 7'-0" H with 100 square inch vision panel, 4" x 25" clear opening, positioned generally as shown in ASTM F 1450-12a, figure 3. Test doors and frames shall be prepared for hardware as specified in ASTM F 1450-12a, Section 6 "Specimen Preparation".
 - 2) Testing Procedures: Test doors and frames shall be furnished with hardware in accordance ASTM F 1450-12a, Section 6 - "Specimen Preparation". Latch throw of the lock shall not exceed 1". Assemblies shall be tested in accordance with procedures outlined in ASTM F 1450-12a, 7.2 - "Door Assembly Impact Test".
 - 3) Door Static Load Test: Doors shall be tested in accordance with procedures outlined in ASTM F 1450-12a, 7.3 - "Door Static Load Test".
 - 4) Door Rack Test: Doors shall be tested in accordance with procedures outlined in ASTM F 1450-12a, 7.4 - "Door Rack Test".
 - 5) Performance Criteria for load testing shall be in accordance with applicable paragraphs of ASTM F 1450-12a, Section 7 - "Procedures".
 - 6) Glass Stop Test: A rectangular view window test frame shall be constructed with a glass opening size of 28" x 33" (+1"). The frame shall be constructed

of commercial quality steel meeting ASTM standard A366 or A569, 12-gauge maximum. Refer to HMMA 863-04, Figure 5, for test frame configuration.

- 7) A steel plate of [] minimum thickness shall be glazed in place using the specified glass stop.
- 8) The test frame assembly shall then be rigidly fixed in the vertical position with the removable glass stop on the opposite side of the 3/8 inch plate from the impact ram.
- 9) A target on the side of the 3/8 inch plate shall be marked in one corner no more than 6" away from the stops.
- 10) Using the door ram pendulum system specified in ASTM F 1450-12a, Figure 2 deliver 400 impacts of 200 Ft-lbs. each, on the target area. Removable glass stops and the 3/8 inch plate shall remain firmly in place so that removal cannot be accomplished without removing the retaining screws. There shall be no more than one broken screw in the assembly after impact test.
- 11) Fire rated doors and frames shall be provided for those openings indicated in the schedule as requiring fire protection ratings. Such doors and frames shall be constructed as tested in accordance with ASTM E-152, UL-10B or NFPA-252 and labeled by a recognized testing agency having a factory inspection service.
 - (a) Substitution after the bid date will not be allowed.
 - (b) Approval of a Hollow Metal Manufacturer does not relieve that company from fully complying with the product as specified.

1.08 QUALITY ASSURANCE

- A. Installer Qualifications: An authorized representative of detention door and frame manufacturer for installation of units required for this Project. Refer to Section 01 35 13 Special Project Procedures for Detention Facilities.
- B. Source Limitations: Obtain detention doors and frames through one source from a single manufacturer.
- C. Welding: Qualify procedures and personnel according to the following:
 1. AWS D1.3, "Structural Welding Code--Sheet Steel."
- D. Fire-Rated Detention Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled, by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to NFPA 252 or UL 10B.
 1. Test Pressure: Test at atmospheric pressure.
 2. Oversize Fire-Rated Detention Door Assemblies: For units exceeding sizes of tested assemblies, provide certification by a testing agency acceptable to authorities having jurisdiction that detention doors comply with standard construction requirements for tested and labeled, fire-rated detention door assemblies except for size.

3. Temperature-Rise Rating: If indicated, provide detention doors that have a temperature-rise rating of 450 deg F maximum in 30 minutes of fire exposure.
- E. Fire-Rated Detention Sidelight and Borrowed-Light Frames: Assemblies complying with NFPA 80 that are listed and labeled, by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to NFPA 257.
- F. Fire-Resistance Ratings for Access Panels: Wherever a fire-resistance classification is indicated, provide access door and panel assemblies with panel door, frame, hinge, and latch from manufacturer listed in Underwriter's Laboratories (UL), "Building Materials Directory" for rating shown.
 1. Provide 90 minute UL label at 2-hour rated partitions.
- G. Smoke-Control Detention Door Assemblies: Comply with NFPA 105.

1.09 DELIVERY, STORAGE, AND HANDLING

- A. Deliver detention doors and frames palletized, wrapped, or crated to provide protection during transit and Project-site storage. Do not use non-vented plastic.
- B. Deliver detention frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.
 1. Where frames are to be cast into precast concrete modules, take additional precautions, including bracing for detention frames, to ensure that detention frames are not deformed or damaged by concrete forces.
- C. Inspect detention doors and frames, on delivery, for damage. Minor damage may be repaired provided refinished items match new work and are approved by Architect; otherwise, remove and replace damaged items as directed.
- D. Store detention doors and frames under cover at building site. Place units in a vertical position with heads up, spaced by blocking, on minimum 4 inch high wood blocking. Avoid using non-vented plastic or canvas shelters that could create a humidity chamber.
 1. If wrappers on detention doors become wet, remove cartons immediately. Provide minimum 1/4 inch space between each stacked detention door to permit air circulation.

1.10 COORDINATION

- A. Coordinate installation of anchorages for detention frames. 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 concrete or masonry. Deliver such items to Project site in time for installation.
- B. Coordinate intercom backboxes with the Electronic Security Contractor drawings for locations of frame mounted intercoms. Intercom backboxes shall be shallow style, installed back to back, rotated so the intercom call button is at the lowest point of the intercom cover plate, and the call button is no greater than 48 inch (centerline) above the finished floor.

1.11 MAINTENANCE TOOLS

- A. Tool Kit: Provide security bits for use with security fasteners, each packaged in a compartmented kit configured for easy handling and storage, as required in Section 05 05 55 - Security Fasteners.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Detention Hollow Metal Manufacturers: Unless pre-approved prior to bidding, provide products by one of the following:
 - 1. Trussbilt, LLC: Vadnais Heights, MN.
 - 2. American Steel Products: Swainsboro, GA.
 - 3. Slate Steel Door Industries: Hartselle, AL.
 - 4. Titan Steel Door: Murrayville, GA.

2.02 MATERIALS

- A. Hot-Rolled Steel Sheet: ASTM A 1011/A 1011M, CS (Commercial Steel), Type B: Free of scale, pitting or surface defects: Pickled and oiled.
- B. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, CS (Commercial Steel), Type B.
- C. Metallic-Coated Steel Sheet: ASTM A 653/A 653M CS (Commercial Steel), Type B; G60 (Z180) zinc galvanized or A60 (ZF180) zinc-iron-alloy glavannealed coating by hot dipped Process.
- D. Stainless-Steel Sheet: ASTM A 240/A 240M, austenitic stainless steel, Type 304, No. 3 finish unless otherwise indicated.
- E. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
- F. Concealed Bolts: ASTM A 307, Grade A, unless otherwise indicated.
- G. Post-installed Expansion Anchors in Concrete: With capability to sustain, without failure, a load equal to 4 times the load imposed, as determined by testing per ASTM E 488, conducted by a qualified independent testing agency.
 - 1. Corrosion Protection: Carbon-steel components zinc plated to comply with ASTM B 633, Class Fe/Zn 5 (0.005 mm) for Class SC 1 service condition (mild).
 - 2. Corrosion Protection: Stainless-steel components complying with ASTM F 593 and ASTM F 594, Alloy Group 1 or 2 (ASTM F 738M and ASTM F 836M, Alloy Group 1 or 4) for bolts and nuts; ASTM A 666 or ASTM A 276, Type 304 or 316, for anchors.
 - 3. Corrosion Protection: Components fabricated from nickel-copper-alloy rods complying with ASTM B 164 for UNS No. N04400 alloy.
- H. Powder-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory

devices for attaching detention frames of type indicated. Refer to Section 05 05 55 - Security Fasteners.

- I. Cast-in-Place Anchors in Concrete: Anchors of type indicated below, fabricated from corrosion-resistant materials capable of sustaining, without failure, a load equal to 4 times the load imposed, as determined by testing per ASTM E 488, conducted by a qualified independent testing agency.
 - 1. Threaded or wedge type; galvanized ferrous castings, either ASTM A 47 (ASTM A 47M) malleable iron or ASTM A 27/A 27M cast steel. Provide bolts, washers, and shims as needed, hot-dip galvanized per ASTM A 153/A 153M.
- J. Embedded Plate Anchors: Fabricated from mild steel shapes and plates, minimum 3/16 inch thick; with minimum 1/2 inch diameter headed studs welded to back of plate.
- K. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.
- L. Detention Door, Sidelight and Borrowed-Light Glazing: Comply with Section 088853 "Security Glazing."
- M. Grout-field installed by general contractor: Comply with ASTM C 476, with a slump of 4 inches (102 mm) for detention frames built into masonry, 8 to 11 inches (200 to 280 mm) for detention frames installed in concrete as measured according to ASTM C 143/C 143M.
- N. Epoxy Filler: Bondo or other substitution acceptable to the Architect.
- O. Electrical Conduit:
 - 1. Raceways: Circular raceways shall be 3/4 inch diameter U.L. approved rigid steel conduit, intermediate metal conduit (IMC) or electrical metallic tubing (EMT), galvanized inside and outside.
 - 2. Raceway Fittings: Fittings and couplings for conduit shall be galvanized or cadmium plated compatible with conduit materials. Fittings for rigid conduit and IMC shall be threaded.

2.03 DETENTION DOORS

- A. General: Provide flush-design detention doors, 2 inches thick, of seamless hollow construction, unless otherwise indicated. Construct detention doors with smooth, flush surfaces without visible joints or seams on exposed faces or stile edges.
 - 1. Visible joints or seams around glazed, louvered panel inserts are permitted.
 - 2. For single-acting swinging detention doors, bevel both vertical edges 1/8 inch in 2 inches.
 - 3. For sliding detention doors, square both vertical edges.
- B. Metallic Core Construction: Provide the following core construction welded to both detention door faces:
 - 1. Steel-Stiffened Core: 0.042 inch thick, steel vertical stiffeners extending full-door height, with vertical webs spaced not more than 4 inches apart, spot welded to face

- sheets a maximum of 3 inches o.c. Fill spaces between stiffeners with insulation of minimum 0.6-lb/cu. ft. density.
2. Truss-Stiffened Core: 0.013 inch thick steel, truncated triangular stiffeners extending between face sheets and for full height and width of door; with stiffeners welded to face sheets not more than 3 inch o.c. vertically and 2-3/4 inches horizontally. Fill spaces between stiffeners with insulation of minimum 0.8-lb/cu. ft. density.
 3. Fire Detention Door Cores: As required to provide fire-protection and temperature-rise ratings indicated.
- C. Vertical Edge Channels: 0.123 inch thick, continuous steel channel extending full-door height at each vertical edge, with webs of channels flush with door edges; welded to top and bottom channels to create a fully welded perimeter channel.
- D. Top and Bottom Channels: 0.123 inch thick metal channel spot welded, not more than 4 inches o.c., to face sheets.
1. Reinforce tops and bottoms of detention doors with inverted horizontal channels of same material as face sheet so flanges of channels are even with bottom and top edges of face sheets.
 2. Close top edge with 0.074 inch thick closing channel of same material as face sheet; welded so webs of channels are flush with top door edges.
 3. Close bottom edge with 0.074 inch thick closing channel of same material as face sheet; welded so webs of channels are flush with bottom door edges.
- E. Hardware Reinforcement: Fabricate reinforcing plates from same material as detention door face sheets to comply with the following minimum thickness:
1. Full-Mortise Hinges and Pivots: 0.187 inch thick.
 2. Maximum-Security Surface Hinges: 12 gage 0.105 inch by 10 inch channel with 3/8 inch by 1 inch by 6 inch back-up at each hinge.
 3. Strike Reinforcements: 10 gage 0.134 inch thick.
 4. Slide-Device Hanger Attachments: As recommended by device manufacturer.
 5. Lock Fronts, Concealed Holders, and Surface-Mounted Closers: 0.093 inch thick.
 6. All Other Surface-Mounted Hardware: 0.093 inch thick.
 7. Lock Pockets: 0.123 inch thick at secure side; welded to face sheet.
- F. Frames shall be reinforced, drilled and tapped for all templated mortised hardware only, in accordance with the final approved hardware schedule and templates provided by the hardware supplier.
- G. Loose Glazing Stops: Loose glazing stops shall be pressed steel angles, no less than 1-1/4 inch by 1-1/4 inch by 10 gage 0.134 inch.
1. Angle tops shall be butt and notch and tight fitting at the corner joints, and secured in place with 1/4-28 special hardened tamperproof button head Torx security screws spaced 8 inches o.c. maximum and not more than 2 inches from each corner.
 2. The frame underneath the glazing stops and the inside of the glazing stop shall be chemically treated for maximum paint adhesion and painted with a rust-inhibitive primer prior to installation in the frame.

- H. Hardware Enclosures: Provide enclosures and junction boxes for electrically operated detention door hardware, interconnected with UL-approved, 1/2 inch diameter conduit and connectors.
 - 1. Enclosures for mechanical paracentric locks with lock mountings. Provide unitized pocket preparation, which after fabrication forms a one-piece box that provides for the lock mounting plate to be recessed into the door such that, when secured in place, the mounting plate outside surface is flush with the door face sheet.
 - a. Lock preparation shall be constructed from 0.123 inch steel, punched for keying options as required, and drilled and tapped to receive lock mounting plate.
 - b. Finished preparation shall be a unitized lock pocket, which completely surrounds the lock and is securely welded to both face sheets and the perimeter edge channel.
 - c. Provide 0.067 inch enclosed lock bolt keeper in edge of door for jamb-mounted locks.
- I. Interior Steel Detention Door Face Sheets: Fabricated from hot-rolled steel sheets, metallic-coated steel sheets where indicated and stainless steel sheets where indicated and other metal components from hot- or cold-rolled steel sheets.
 - 1. Security Grade 1: 12 gage 0.105 inch thick steel, - provided at Segregation Cell doors only. Provide galvanealed material where noted on architectural door schedule.
 - 2. Security Grade 3: 14 gage 0.075 inch thick steel - provided at all other Detention Hollow Metal (SHM) doors. Provide galvanealed material where noted on architectural door schedule.
- J. Exterior Steel Detention Door Face Sheets: Fabricated from metallic-coated steel sheets, and other metal components from hot- or cold-rolled steel sheets.
 - 1. Security Grade 3: 14 gage 0.075 inch thick steel, galvanealed.
- K. Astragals: As required by NFPA 80 to provide fire ratings indicated.

2.04 DETENTION FRAMES

- A. General: Fabricate detention frames of full-welded unit construction, with corners mitered, reinforced, and continuously welded full depth and width of detention frame. Knockdown frames are not acceptable.
- B. Interior Steel Detention Frames: Fabricated from hot-rolled steel sheets, metallic-coated steel sheets where indicated and stainless steel sheets for stainless-steel detention doors, and other metal components from hot- or cold-rolled steel sheets.
 - 1. Security Grade 1: 12 gage 0.105 inch thick steel. Provide galvanealed material where noted on architectural door schedule.
- C. Exterior Steel Detention Frames: Fabricated from metallic-coated steel sheets, and other metal components from hot- or cold-rolled steel sheets.
 - 1. Security Grade 1: 12 gage 0.105 inch thick steel, galvanealed.
- D. Hardware Reinforcement: Fabricate reinforcing plates from same material as detention frame to comply with the following minimum thickness:

1. Full-Mortise Hinges and Pivots: 3/16 inch by full width of jamb by 10 inch in length. The top hinge shall be additionally reinforced with 1/32 inch formed angle welded both to hinge reinforcing and frame face.
 2. Strikes, Flush Bolts, and Closers: 0.187 inch thick.
 3. Surface-Mounted Hardware: 12 gage 0.105 inch thick.
 4. Provide a key cylinder protection pipe extension on both sides of the frame for all wide jamb electric locks. Where a recessed pocket is provided on the stop side of the frame, the cylinder protection pipe will only be required on the side of the frame with the lock cover plate. Provide a 3/16 inch steel pipe that extends 1/4 inch beyond the face of the key cylinder. Weld attach the 3 inch diameter pipe extension to the cover plate at four locations.
- E. Hardware Enclosures: Provide enclosures and junction boxes for electrically operated detention door hardware, and frame mounted communication devices interconnected with UL-approved, 1/2 inch diameter conduit and connectors.
1. Provide enclosures with access for conduit, tapped holes for hardware and internal fastener protection so fasteners will seat after frame is grouted full.
 2. Electrical access boxes will not be permitted except at hardware pockets or communication mortar boxes. Provide knockout at top and bottom of each box to accept conduit.
 3. Lock pockets for jamb mounted locks: Provide 0.123 inch thick steel enclosure with:
 - a. Surface mounted cover, minimum 10 gage 0.134 inch thick steel plate with uniform beveled edges on the side closest to the lock strike or frame rabbet, secured with a minimum of 8 flathead Torx security screws.
 - b. Secure lock to frame or pocket in accordance with lock manufacturer's recommendations for each lock type.
 - c. Provide concealed lock front preparation with frame rabbet cutout only to allow passage of latch bolt and deadbolt actuator. Lock front and case are not exposed.
 - d. Provide key access ports at locks keyed two sides or side opposite the door swing. Size key access port to accommodate paracentric keys on a key ring.
 - e. Provide conduit between electric lock pocket and door position switch and between back-to-back communication boxes where scheduled for each frame. All other conduit will be field installed.
 - 1) Coordinate intercom backboxes with the Electronic Security Contractor drawings for locations of frame mounted intercoms. Intercom backboxes shall be shallow style, installed back to back, rotated so the intercom call button is at the lowest point of the intercom cover plate, and the call button is no greater than 48" (centerline) above the finished floor.
- F. Mullions and Transom Bars: Provide closed or tubular mullions and transom bars where indicated. Fasten mullions and transom bars at crossings and to jambs by butt-welding. Reinforce joints between detention frame members with concealed clip angles or sleeves of same metal and thickness as detention frame.

- G. Head Reinforcement: Leave vertical mullions in detention frames open at top for grouting.
- H. Grout Holes: Provide grout holes in frames to be installed in existing wall or concrete wall openings. Weld 0.093 inch back reinforcing plate with 1-3/8 inch diameter hole to inside of frame. Flush cover plate, same gauge as frame, to be shipped loose for field installation after frame is grouted full. Weld cover plate to frame and grind smooth for a seamless finish.
- I. Supports and Anchors: After fabricating, galvanize units to be built into exterior walls according to ASTM A 153/A 153M, Class B.
- J. Jamb Anchors: Weld jamb anchors to detention frames near hinges and directly opposite on strike jamb as required to secure detention frames to adjacent construction. Locate jamb anchors at 16" on center and as follows:
 - 1. Detention Door Frames: One additional anchor for each 16 inches or fraction thereof more than 40 inches in height.
 - 2. Detention Sidelight and Borrowed-Light Frames: One additional anchor for each 16 inches or fraction thereof more than 40 inches in height.
 - 3. Masonry Type: Adjustable, corrugated or perforated, strap-and-stirrup anchors to suit detention frame size; formed of same material and thickness as detention frame; with strap not less than 2 inches wide by 10 inches long with hole in strap for vertical wall reinforcing.
 - 4. Embedment Type for Precast Concrete Walls: 0.187 inch thick by 6 inch long embed, plates with two 3/8 inch diameter by 4 inch headed studs per embed.
 - a. Width of plate to be 1/2 inch greater than the depth of the frame.
 - b. Provide shims and weld both sides of frame to embed.
 - 5. Post-installed Expansion Anchors for In-Place Concrete or Masonry: Minimum 1/2 inch diameter concealed bolts with expansion shields or inserts. Provide conduit spacer from detention frame to wall, welded to detention frame. Reinforce detention frames at anchor locations.
- K. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, formed of same material and thickness as detention frame, and as follows:
 - 1. Monolithic Concrete Slabs: Clip-type anchors, with two holes to receive fasteners, welded to bottom of jambs and mullions with at least four spot welds per anchor.
 - 2. Separate Topping Concrete Slabs: Adjustable-type anchors with extension clips, allowing not less than 2 inch height adjustment, welded to jambs and mullions with at least 4 spot welds per anchor. Terminate bottom of detention frames at finish floor surface.
- L. Rubber Door Silencers: Except on weather-stripped detention doors, drill stops in strike jambs to receive three silencers on single-detention-door frames and drill head jamb stop to receive two silencers on double-detention-door frames. Install plastic plugs to keep holes clear during construction.

- M. Grout Guards: Provide grout guards of same material as detention frame, welded to detention frame at back of hardware cutouts and glazing-stop screw and silencer preparations to close off interior of openings and prevent mortar or other materials from obstructing hardware operation or installation.

2.05 STOPS AND MOLDINGS

- A. General: Provide stops and moldings around glazed panels where indicated.
 - 1. Frame Stops for Detention Doors: Minimum 5/8 inch high, unless otherwise indicated.
 - 2. Frame Stops for Detention Sidelights and Borrowed Lights: Minimum 5/8 inch high, unless otherwise indicated.
 - 3. Glazing stops shall be 1-1/4 inch by 1-1/4 inch by 10 gage 0.134 inch.
- B. Fixed Detention Door Moldings: Formed from 12 gage 0.105 inch thick sheet reinforcing 'Z', of same material as detention door face sheets, spot-welded to face sheets a maximum of 5 inches o.c.
- C. Fixed Detention Frame Moldings: Formed integral with detention frames, unless otherwise indicated. Form corners with butted or mitered hairline joints.
- D. Stops for Security Glazing: Formed from 0.123 inch thick, pressed-steel angle. Form corners with butt and notch ends to be tight fitting at the corner joints. Secure with minimum 1/4-28 pinned torx button head security machine screws spaced uniformly not more than 8 inches o.c. and not more than 2 inches from each corner.
- E. Deliver frames to project site with stops temporarily secured with 2 Torx 1/4-28 security screws. Ship security screws (plus 10% spare) in appropriate containers labeled and tagged to match detention frames.
- F. Coordinate rabbet width between fixed and removable stops with type of glass or panel and type of installation indicated.

2.06 ACCESSORIES

- A. Food Pass / Cuff Port Openings: Provide a flush mounted food pass door at the center of fire rated hollow metal doors or leading edge for non-fire rated doors. The food pass opening shall be fabricated from 10 gage 0.134 inch interior channels securely welded to the inside of both face sheets. Reinforcing for food pass locks shall be 10 gage 0.134 inch channels or pockets. The clear opening shall be as depicted on the architectural drawings. The door shall be constructed of minimum 10 gage 0.134 inch body and shall have a 10 gage 0.134 inch backup plate securely welded and finished smooth so as to be flush to the inside and outside door skins. Door to contain formed metal recessed pull for outside access. Door flap to be affixed with two hinges on food pass equal to Southern Folger type 203FP (for 90 degree open). Provide a snap lock equal to Southern Folger 1017A at fire rated openings, and a dead bolt lock equal to Southern Folger 1010A at non-rated doors:

2.07 FABRICATION

- A. Fabricate detention doors and frames rigid, neat in appearance, and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for thickness of metal. Weld exposed joints continuously; grind, fill, dress, and make smooth, flush, and invisible. Where practical, fit and assemble units in manufacturer's plant. To ensure proper assembly at Project site, clearly identify work that cannot be permanently factory assembled before shipment.
 - 1. Exterior Detention Doors: Provide weep-hole openings in bottom of detention doors to permit entrapped moisture to escape. Seal joints in top edges of detention doors against water penetration.
 - 2. Fabricate detention doors and frames to comply with manufacturing tolerances indicated in HMMA 863-04.
- B. Continuously weld detention frame corners, with contact edges closed tight and faces mitered.
- C. Fabricate multiple-opening detention frames with mullions that have closed tubular shapes and with no visible seams or joints.
- D. Exposed Fasteners: Provide countersunk security fasteners for exposed screws and bolts, unless otherwise indicated.
- E. Hardware Preparation: Factory-prepare detention doors and frames to receive mortised hardware, including cutouts, reinforcement, mortising, drilling, and tapping, according to final door hardware schedule and templates provided by detention door hardware supplier. Comply with applicable requirements in DHI A115 Series for detention door and frame preparation for door hardware.
 - 1. Reinforce detention doors and frames to receive surface-mounted door hardware. Drilling and tapping may be done at Project site.
 - 2. Locate door hardware as indicated or, if not indicated, according to HMMA 863-04, "Guide Specifications for Detention Hollow Metal Doors and Frames."
- F. Factory-cut openings in detention doors for accessories.
- G. Welding: Weld components to comply with referenced AWS standard. Weld before finishing components to greatest extent possible. Remove weld spatter and welding oxides from exposed surfaces by descaling or grinding.
 - 1. Welds shall be administered using a minimum 240-volt 225 amps welder. No 110 VAC welds will be allowed.
- H. Glazing Channels: Provide minimum clearances for thickness and type of glass indicated, according to GANA's "Glazing Manual."
- I. Security Fasteners: Fabricate detention doors and frames using security fasteners with head style appropriate for fabrication requirements, strength, and finish of adjacent materials, except that a maximum of two different sets of tools shall be required to operate security fasteners for Project. Provide stainless-steel security fasteners in

stainless-steel materials, exterior doors and frames and interior doors and frames located in wet areas. Refer to Section 05 05 55 - Security Fasteners.

2.08 FINISHES, GENERAL

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Finish detention doors and frames after assembly.

2.09 METALLIC-COATED STEEL FINISHES

- A. Surface Preparation: Clean surfaces with non-petroleum solvent so surfaces are free of oil and other contaminants. After cleaning, apply a conversion coating suited to organic coating to be applied over it. Clean welds, mechanical connections, and abraded areas and apply galvanizing repair paint specified below to comply with ASTM A 780.
 - 1. Galvanizing Repair Paint: High-zinc-dust-content paint for regalvanizing welds in steel, complying with SSPC-Paint 20.
 - 2. Factory Priming for Field-Painted Finish: Apply shop primer specified below immediately after surface preparation and pretreatment. Apply a smooth coat of even consistency to provide a uniform dry film thickness of not less than 0.7 mils (0.02 mm).
 - 3. Shop Primer: Manufacturer's or fabricators standard, fast-curing, lead- and chromate-free primer complying with ANSI A224.1 acceptance criteria; recommended by primer manufacturer for zinc-coated steel; compatible with substrate and field-applied finish paint system indicated; and providing a sound foundation for field-applied topcoats despite prolonged exposure.
- B. Steel Sheet Finishes
 - 1. Surface Preparation: Clean surfaces to comply with SSPC-SP 1, "Solvent Cleaning"; remove dirt, oil, grease, or other contaminants that could impair paint bond. Remove mill scale and rust, if present, from uncoated steel, complying with SSPC-SP 3, "Power Tool Cleaning," or SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
 - 2. Factory Priming for Field-Painted Finish: Apply shop primer specified below immediately after surface preparation and pretreatment. Apply a smooth coat of even consistency to provide a uniform dry film thickness of not less than 0.7 mils (0.02 mm).
 - 3. Shop Primer: Manufacturer's or fabricators standard, fast-curing, corrosion-inhibiting, lead- and chromate-free, universal primer complying with ANSI A224.1 acceptance criteria; compatible with substrate and field-applied finish paint system indicated; and providing a sound foundation for field-applied topcoats despite prolonged exposure.

2.10 STAINLESS-STEEL FINISHES (WHERE SCHEDULED)

- A. General: Remove tool and die marks and stretch lines or blend into finish. Grind and polish surfaces to produce uniform, directionally textured, polished finish indicated, free of cross scratches. Run grain with long dimension of each piece.

1. Bright, Directional Polish: No. 3 finish, unless otherwise indicated.
- B. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.

2.11 SOURCE QUALITY CONTROL

- A. Owner may select one detention door at random from detention doors delivered to Project and have it cut in half or otherwise taken apart for verification that construction complies with requirements.
 1. Should examination disclose door construction at variance from that specified, the door manufacturer shall, upon direction of the Architect-Engineer, replace all doors shipped to the project, as of the date of inspection, with doors constructed in conformance with project specifications. Under conditions of non-conformity, the door manufacturer shall pay for the destroyed door, replacement doors and related labor.
 2. Should examination prove the door was constructed in conformance with the specifications, the Owner will pay to replace the destroyed door and related labor.

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 doors and frames.
 1. Examine rough-ins for embedded and built-in anchors to verify actual locations of detention frame connections before detention frame installation.
 2. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of detention doors and frames.
 3. Inspect built-in and cast-in anchor installations before installing detention frames to verify that anchor installations comply with requirements. Prepare inspection reports.
 - a. Remove and replace anchors where inspections indicate that they do not comply with specified requirements. Reinspect after repairs or replacements are made.
 - b. Perform additional inspections to determine compliance of replaced or additional work. Prepare inspection reports.
 4. Verify locations of detention doors and frames with those indicated on Coordination Drawings.
 5. For material whose orientation is critical for its performance as a ballistic barrier, verify installation orientation.
 6. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Prior to installation and with spreaders removed, adjust detention 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 face.
3. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of door rabbet.
4. Plumbness: Plus or minus 1/16 inch, measured at jambs on a perpendicular line from head to floor.

3.03 INSTALLATION

- A. General: Install detention doors and frames plumb, rigid, properly aligned, and securely fastened in place, complying with Drawings, Coordination Drawings, DHI A115.IG, and manufacturer's written recommendations.
- B. Detention Frames: Install detention frames for detention doors, transoms, sidelights, borrowed lights and other openings, of sizes and profiles indicated.
 1. Set masonry anchorage devices where required for securing detention frames to in-place concrete or masonry construction.
 - a. Set anchorage devices opposite each anchor location according to details on Shop Drawings and anchorage device manufacturer's written instructions. Leave drilled holes rough, not reamed, and free of dust and debris.
 - b. Embedment-Masonry-Type Jamb Anchors: Weld wall angle anchors to embedded steel plates to match locations of detention frame angle anchors. Remove jamb faces from detention frames and set detention frames into opening until detention frame anchors contact and match embedded anchors. Weld detention frame anchors to embedded anchors with 1 inch long welds at each end of angle. Reinstall jamb faces of detention frames.
 - c. Post-installed Expansion Jamb Anchors: After bolt is tightened, weld bolt head to provide non-removable condition. Grind, dress, and finish smooth welded bolt head.
 - d. Floor anchors may be set with powder-actuated fasteners instead of post-installed expansion anchors if so indicated on Shop Drawings. Refer to Section 05 05 55 - Security Fasteners.
 - e. Placing Detention Frames: Set detention frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces and spreaders, leaving surfaces smooth and undamaged.
 - 1) At fire-rated openings, install detention frames according to NFPA 80.
 - 2) Field splice only at approved locations. Weld, grind, and finish as required to conceal evidence of splicing on exposed faces.
 - 3) Install detention frames with removable stops located on secure (non-inmate) side of opening.
 - f. Assemble detention frames fabricated in sections. Install angle splices at each corner, of same material and thickness as detention frame, and extend at least 4 inches on both sides of joint.

- g. Continuously weld and finish smooth joints between faces of abutted, multiple-opening, detention frame members.
 - h. Field Welding: Comply with the following requirements:
 - 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.
 - i. Grout-field installed by general contractor: Fill space between detention frames and concrete or masonry with grout. Install grout in lifts and take other precautions, including bracing detention frames, to ensure that detention frames are not deformed or damaged by grout forces. If a light consistency grout (greater than 5 inch slump in accordance with ASTM C 143) is to be used, special precautions shall be taken in the field by the Installer to protect tapped holes, electrical knock-outs, lock pockets, grout guards, junction boxes, etc., in the frames.
- C. Swinging Detention Doors: Fit non-fire-rated detention doors accurately in their respective detention frames, with the following clearances:
- 1. Between Doors and Frames at Jambs and Head: 1/8 inch.
 - 2. Between Edges of Pairs of Doors: 1/8 inch.
 - 3. At Door Sills with Threshold: 1/8 inch over threshold.
 - 4. At Door Sills without Threshold: 5/8 inch.
- D. Fire-Rated Detention Doors: Install with clearances as specified in NFPA 80.
- E. Smoke-Control Detention Doors: Install according to NFPA 105.
- F. Comply with installation tolerances indicated in HMMA 863-04.
- G. Glazing: Comply with installation requirements in Section 08 88 53 - Security Glazing unless otherwise indicated.

3.04 FIELD QUALITY CONTROL

- A. Inspect installed products to verify compliance with requirements. Prepare inspection reports and indicate compliance with and deviations from the Contract Documents.
- B. Remove and replace detention work where inspections indicate that work does not comply with specified requirements.
- C. Perform additional inspections to determine compliance of replaced or additional work. Prepare inspection reports.
- D. Prepare field quality-control certification that states installed products and their installation comply with requirements in the Contract Documents.

3.05 ADJUSTING AND CLEANING

- A. Final Adjustments: Check and readjust operating hardware items just before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including detention doors, frames, steel grating, and door accessories, that are warped, bowed, or otherwise unacceptable.
- B. Clean grout and other bonding material off detention doors and frames immediately after installation.
- C. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying primer.
 - 1. After finishing smooth field welds, apply air-drying primer.
- D. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780.

END OF SECTION

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SECTION 08 71 00 - DOOR HARDWARE

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

- A. Drawings and Conditions of Contract, including General and Supplementary Conditions and Division 1 Administration Sections, apply to this Division.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Commercial door hardware for swinging doors.

1.3 SUBMITTALS

- A. Product Data: Include construction and installation details, material descriptions, dimensions of individual components and profiles, and finishes.
- B. Product Test Reports: Based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for locks, latches, delayed-egress locks and closers.
- C. Maintenance Data: For each type of door hardware to include in maintenance manuals. Include final hardware schedule.
- D. Warranty: Special warranty specified in this Section.
- E. Other Action Submittals:
 - 1. Door Hardware Sets: Prepared by or under the supervision of Architectural Hardware Consultant, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final door hardware sets with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
 - a. Format: Use same scheduling sequence and format and use same door numbers as in the Contract Documents.
 - b. Content: Include the following information:
 - 1) Identification number, location, hand, fire rating, and material of each door and frame.
 - 2) Type, style, function, size, quantity, and finish of each door hardware item. Include description and function of each lockset and exit device.

- 3) Complete designations of every item required for each door or opening including name and manufacturer.
 - 4) Fastenings and other pertinent information.
 - 5) Location of each door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
 - 6) Explanation of abbreviations, symbols, and codes contained in schedule.
 - 7) Mounting locations for door hardware.
 - 8) Door and frame sizes and materials.
 - 9) List of related door devices specified in other Sections for each door and frame.
- c. Submittal Sequence: Submit the final door hardware sets at earliest possible date, particularly where approval of the door hardware sets must precede fabrication of other work that is critical in Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the door hardware sets.

1.4 QUALITY ASSURANCE

- A. Source Limitations: Obtain each type and variety of door hardware from a single manufacturer, unless otherwise indicated.
- B. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80, 2007 edition that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to NFPA 252, 2003 edition.
1. Test Pressure: After 5 minutes into the test, neutral pressure level in furnace shall be established at 40 inches or less above the sill.

1.5 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 related to the final door hardware sets, and include basic installation instructions, templates, and necessary fasteners with each item or package.

1.6 COORDINATION

- A. Templates: Distribute door hardware templates for doors, frames, and other work specified to be factory prepared for installing door hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

1.7 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period: Three years from date of Substantial Completion, except as follows:

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

- A. General: Provide door hardware for each door to comply with requirements in this Section and door hardware sets indicated in Part 3 "Door Hardware Sets" Article.
 - 1. Door Hardware Sets: Provide quantity, item, size, finish or color indicated, and named manufacturers' products.
- B. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
 - 1. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers specified.

2.2 HINGES, GENERAL

- A. Quantity: Provide the following, unless otherwise indicated:
 - 1. Three Hinges: For doors with heights 61 to 90 inches.
- B. Template Requirements: Except for hinges and pivots to be installed entirely (both leaves) into wood doors and frames, provide only template-produced units.
- C. Hinge Weight: Unless otherwise indicated, provide the following:
 - 1. Interior Doors: Standard-weight hinges for openings to 40 inches wide.
 - 2. Interior Doors: Heavy-weight hinges for openings over 40 inches wide.
- D. Hinge Base Metal: Unless otherwise indicated, provide the following:
 - 1. Interior Hinges: Stainless steel, with stainless-steel pin.
 - 2. Hinges for Fire-Rated Assemblies: Stainless steel, with stainless-steel pin.
- E. Hinge Options: Where indicated in door hardware sets or on Drawings:
 - 1. Tips: Hospital tips and matching plug, finished to match leaves.
 - 2. Non-removable Pins: Provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed.

F. Fasteners: Comply with the following:

1. Screws: Phillips flat-head; machine screws (drilled and tapped holes) for metal doors and wood screws for wood doors and frames. Finish screw heads to match surface of hinges.
 - a. Provide pinned Torx drive type fasteners at door hardware for doors and frames located in inmate accessible areas. Administration and visitation areas are the only areas not accessible to inmates.

2.3 HINGES

A. Butts and Hinges: BHMA A156.1.

B. Template Hinge Dimensions: BHMA A156.7.

C. Manufacturers:

1. Baldwin Hardware Corporation (BH).
2. Bommer Industries, Inc. (BI).
3. Cal-Royal Products, Inc. (CRP).
4. Hager Companies (HAG).
5. Lawrence Brothers, Inc. (LB).
6. McKinney Products Company; an ASSA ABLOY Group company (MCK).
7. PBB, Inc. (PBB).
8. Stanley Commercial Hardware; Div. of The Stanley Works (STH).

D. Antifriction-Bearing, Full-Mortise (Butt) Hinges: BHMA A156.1

1. Heavy weight; Grade 1, with 4 ball bearings
2. Standard weight; Grade 2, with 2 ball bearings
3. Hinge Options:
 - a. Tips: Flat bottom and matching plug, finished to match leaves.
 - b. Nonremovable Pins.
4. Base Metal: Stainless steel.

2.4 LOCKS AND LATCHES, GENERAL

A. Accessibility Requirements: Where indicated to comply with accessibility requirements, comply with California Title 24 Chapter 11B.

B. Latches and Locks for Means of Egress Doors: Comply with NFPA 101. Latches shall not require more than 5 lbf to release the latch. Locks shall not require use of a key, tool, or special knowledge for operation.

C. Lock Trim: Match existing.

1. Escutcheons (Roses): Forged.

2. Dummy Trim: Match lever lock trim and escutcheons.
 3. Lockset Designs: Match existing except provide ADA compliant levers rather than knobs.
- D. Lock Throw: Comply with testing requirements for length of bolts required for labeled fire doors, and as follows:
1. Mortise Locks: Minimum 3/4-inch latchbolt throw.
 2. Deadbolts: Minimum 1-inch bolt throw.
- E. Backset: 2-3/4 inches, unless otherwise indicated.
- F. Rabbeted Meeting Doors: Provide special rabbeted front and strike on locksets for rabbeted meeting stiles.
- G. Strikes: Manufacturer's standard strike with strike box for each latchbolt or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, and as follows:
1. Strikes for Mortise Locks and Latches: BHMA A156.13.
 2. Strikes for Auxiliary Deadlocks: BHMA A156.5.

2.5 MECHANICAL LOCKS AND LATCHES

- A. Lock Functions: Function numbers and descriptions indicated in door hardware sets comply with the following:
1. Mortise Locks: BHMA A156.13.
- B. Mortise Locks: Stamped steel case with steel or brass parts; BHMA A156.13, Grade 1; Series 1000. Security locksets to also meet security grade 1.
1. Manufacturers and respective products: Match existing.

2.6 AUXILIARY LOCKS AND LATCHES

- A. Auxiliary Locks: BHMA A156.5, Grade 1.
1. Manufacturers: Match existing.

2.7 LOCK CYLINDERS

- A. Standard Lock Cylinders: BHMA A156.5, Grade 1.
- B. Cylinders: Manufacturer's standard tumbler type, constructed from brass or bronze, stainless steel, or nickel silver, and complying with the following:
1. Number of Pins: Match existing system.
 2. Mortise Type: Threaded cylinders with rings and straight- or clover-type cam.

- C. Permanent Cores: Manufacturer's standard; finish face to match lockset; complying with the following:
 - 1. Interchangeable Cores: Core insert, removable by use of a special key; usable with other manufacturers' cylinders.
 - 2. Stamping: Permanently inscribe each permanent core with a visual key control number and include the following notation:
 - a. Notation: "DO NOT DUPLICATE." These visual key control marks or codes will not include the actual key cuts.
- D. Construction Keying: Comply with the following:
 - 1. Construction Cores: Provide construction cores that are replaceable by permanent cores.
 - a. Furnish permanent cores to Owner for installation.
- E. Manufacturer: Same manufacturer as for locks and latches.

2.8 KEYING

- A. Keying System: Factory registered, complying with guidelines in BHMA A156.28, Appendix A. Incorporate decisions made in keying conference, and as follows:
 - 1. Match existing keying system.
- B. Keys: Nickel silver.
 - 1. Stamping: Permanently inscribe each key with a visual key control number and include the following notation:
 - a. Notation: "DO NOT DUPLICATE." These visual key control marks or codes will not include the actual key cuts.
 - 2. Quantity: In addition to one extra key blank for each lock, provide the following:
 - a. Cylinder Change Keys: Three.
 - b. Master Keys: Two
 - c. Construction Master Keys: Six each

2.9 CLOSERS, GENERAL

- A. Accessibility Requirements: Where handles, pulls, latches, locks, and other operating devices are indicated to comply with accessibility requirements, comply with California Title 24 Chapter 11B.

2.10 CLOSERS

- A. Traditional Surface Closers: Rack-and-pinion hydraulic type; with adjustable sweep and latch speeds controlled by key-operated valves; with forged-steel main arm; enclosed in a cast-aluminum alloy shell; complying with the following:
 - 1. Manufacturer: LCN. No Substitutions.
 - 2. Mounting: Opposite hinge side (Push side).
 - 3. Type: Parallel Arm.
 - a. Delayed action closing where indicated.
 - 4. Backcheck: Adjustable, effective between 60 and 85 degrees of door opening.

2.11 PROTECTIVE TRIM UNITS, GENERAL

- A. Size: 1-1/2 inches less than door width on push side and 1/2 inch less than door width on pull side, by height specified in door hardware sets.
- B. Fasteners: Manufacturer's standard machine or self-tapping screws.
- C. Metal Protective Trim Units: BHMA A156.6; beveled top and 2 sides; fabricated from the following material:
 - 1. Material: 0.050-inch-thick stainless steel.
 - 2. Manufacturers:
 - a. American Floor Products Co., Inc. (AFP).
 - b. Baldwin Hardware Corporation (BH).
 - c. Hager Companies (HAG).
 - d. Hiawatha, Inc. (HIA).
 - e. IPC Door and Wall Protection Systems, Inc.; Div. of InPro Corporation (IPC).
 - f. IVES Hardware; an Ingersoll-Rand Company (IVS).
 - g. Pawling Corporation (PAW).
 - h. Rockwood Manufacturing Company (RM).
 - i. Trimco (TBM).

2.12 PROTECTIVE TRIM UNITS

- A. Kick Plates: 12 inches high by door width, with allowance for frame stops.

2.13 STOPS AND HOLDERS

- A. Stops and Bumpers: BHMA A156.16, Grade 1.

1. Provide wall stops for doors unless other type stops are scheduled or indicated. Where floor or wall stops are not appropriate, provide overhead holders.
- B. Combination Overhead Stops and Holders: BHMA A156.8, Grade 1.
- C. Manufacturers:
 1. Glynn-Johnson; an Ingersoll-Rand Company (GJ).
 2. Hager Companies (HAG).
 3. Hiawatha, Inc. (HIA).
 4. IVES Hardware; an Ingersoll-Rand Company (IVS).
 5. Rixson Specialty Door Controls; an ASSA ABLOY Group company (RIX).
 6. Rockwood Manufacturing Company (RM).
 7. SARGENT Manufacturing Company; an ASSA ABLOY Group company (SGT).
 8. Stanley Commercial Hardware; Div. of The Stanley Works (STH).
 9. Trimco (TBM).

2.14 STOPS

- A. Wall Bumpers: Polished cast brass or aluminum with rubber bumper; 2-1/2-inch diameter, minimum 3/4-inch projection from wall, with backplate for concealed fastener installation; with convex bumper configuration.

2.15 DOOR GASKETING

- A. Standard: BHMA A156.22.
- B. General: Provide continuous weather-strip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated or scheduled. Provide noncorrosive fasteners for exterior applications and elsewhere as indicated.
 1. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.
- C. Air Leakage: Not to exceed 0.50 cfm per foot of crack length for gasketing other than for smoke control, as tested according to ASTM E 283.
- D. Smoke-Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke-control ratings indicated, based on testing according to UL 1784.
 1. Provide smoke-labeled gasketing on 20-minute-rated doors and on smoke-labeled doors.
- E. Gasketing Materials: ASTM D 2000 and AAMA 701/702.
- F. Manufacturers:
 1. Hager Companies (HAG).

2. National Guard Products (NGP).
3. Pemko Manufacturing Co. (PEM).
4. Reese Enterprises (RE).
5. Sealeze; a unit of Jason Incorporated (SEL).
6. Zero International (ZRO).

2.16 THRESHOLDS

- A. Standard: BHMA A156.21.
- B. Accessibility Requirements: Where thresholds are indicated to comply with accessibility requirements, comply with the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)."
 1. Bevel raised thresholds with a slope of not more than 1:2. Provide thresholds not more than 1/2 inch high.
- C. Thresholds for Means of Egress Doors: Comply with NFPA 101. Maximum 1/2 inch high.
- D. Manufacturers:
 1. Hager Companies (HAG).
 2. National Guard Products (NGP).
 3. Pemko Manufacturing Co. (PEM).
 4. Reese Enterprises (RE).
 5. Sealeze; a unit of Jason Incorporated (SEL).
 6. Zero International (ZRO).

2.17 FABRICATION

- A. Base Metals: Produce door hardware units of base metal, 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. Do not furnish manufacturer's standard materials or forming methods if different from specified standard.
- B. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to 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. Steel Machine Screws: For the following fire-rated applications:
 - a. Mortise hinges to doors.
 - b. Strike plates to frames.

- c. Closers to doors and frames.
- 2. Steel Through Bolts: For the following fire-rated applications unless door blocking is provided:
 - a. Surface hinges to doors.
 - b. Closers to doors and frames.
 - c. Surface-mounted exit devices.
- 3. Spacers or Sex Bolts: For through bolting of hollow-metal doors.

2.18 FINISHES

- A. Standard: BHMA A156.18.
 - 1. Finish and Base Metal Table: (BHMA/US number). Match existing.
 - a. Hinges: Match existing.
 - b. Exit Devices: Match existing.
 - c. Locks: Match existing.
 - d. Pulls and Push Plates/Bars: Match existing.
 - e. Closers: 689-Sprayed AL.
 - f. Protective Plates: 630-US32D on stainless steel.
 - g. Stops: Match existing.
 - h. Thresholds: Mill Aluminum.
 - i. Weatherstrips and Sweeps: 628-Clear anodized aluminum.
- 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

3.1 EXAMINATION

- A. Examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.
- B. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Steel Doors and Frames: Comply with DHI A115 Series.
 - 1. Surface-Applied Door Hardware: Drill and tap doors and frames according to ANSI A250.6.

3.3 INSTALLATION

- A. Mounting Heights: Mount door hardware units at heights indicated as follows unless otherwise indicated or required to comply with governing regulations.
 - 1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
 - 2. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush 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 specified in Division 09 Sections. 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. Thresholds: Set thresholds for exterior doors in full bed of sealant complying with requirements specified in Division 07 Section "Joint Sealants."

3.4 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: Unless otherwise required by authorities having jurisdiction, adjust sweep period so that, from an open position of 70 degrees, the door will take at least 3 seconds to move to a point 3 inches from the latch, measured to the leading edge of the door.

3.5 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.

3.6 DOOR HARDWARE SCHEDULE

Hardware Set H1 (20 minute rated opening)

- 3 ea. Hinges
- 1 ea. Single cylinder deadbolt
- 1 ea. Closer (chase side of door)
- 1 ea. Flush cup pull (recessed in door)
- 3 ea. Silencers
- 1 set Weatherstripping

Hardware Set H2 (20 minute rated opening)

- 3 ea. Hinges
- 1 ea. Passage set
- 1 ea. Closer
- 3 ea. Silencers
- 1 ea. Door Stop
- 1 set Weatherstripping

Hardware Set H3

- 3 ea. Hinges
- 1 ea. Passage set
- 3 ea. Silencers
- 1 ea. Door Stop

Hardware Set H4

- 3 ea. Hinges
- 1 ea. Privacy set
- 3 ea. Silencers
- 1 ea. Door Stop

END OF SECTION 08 7100

SECTION 08 71 63 - DETENTION DOOR HARDWARE

PART 1 GENERAL

1.01 SUMMARY

- A. This Section includes the following:
 - 1. Electrical and Mechanical Security Hardware for Swinging Doors and Gates.
 - 2. Sliding Devices
 - 3. Miscellaneous Hardware for Security Doors
 - 4. Hardware Schedule for Security Doors.
- B. Related Sections include the following:
 - 1. Section 01 35 13 Special Project Procedures for Detention Facilities.
 - 2. Section 05 05 55 - Security Fasteners.
 - 3. Section 08 34 63 - Detention Doors and Frames.

1.02 SCOPE AND RESPONSIBILITIES

- A. It is the intent of this section for the existing hardware to be re-used. The products specified in this section are to be used in the event that the existing hardware cannot be re-used.
- B. Fully coordinate this Scope of Work with the Scope of Work shown in the Modular Metal Detention Wall Panel System scope of work. Provide copies of approved shop drawings to Modular Metal Detention Wall Panel System manufacturer for coordination.
- C. Under the requirements of this specification, the Detention Equipment Contractor (DEC) shall be responsible for furnishing and installing all hardware as specified, in all locations unless the hardware is furnished and installed by the Modular Metal Detention Wall Panel System manufacturer.

1.03 SUBMITTALS

- A. General: Submit the following according to Conditions of the Contract and Division 1 Specification Sections. All submittals shall be supplied on USB drive.
- B. Product Data: Manufacturer's printed product data and catalog cuts indicating product characteristics, performance and limiting criteria.
- C. Shop Drawings: For each type of hardware item: Include plans, wiring diagrams, method of construction, installation and attachment details and other information necessary to show compliance with requirements.
- D. It is the DEC's responsibility to coordinate detention/security items in this scope of work, and to answer all manufacturer questions or concerns that are not strictly design related. The DEC shall redline the manufacturers' individual shop drawings and/or schedules, and note corrections prior to submittal for Architectural/Consultant review. When multiple items are submitted by the manufacturer on a single cut sheet, the DEC shall note with an arrow, circle or note cloud, to show which product on the sheet is submitted for this scope

of work. DEC submittals not reviewed and redlined prior to submittal to Architect/Consultant for final review, will be returned rejected.

- E. Samples: Provide samples of each item of security hardware as requested by the Architect-Engineer. Samples shall be shipped as directed, to the location as directed, and shall be shipped within 10 days of receipt of notification of the requirement to provide samples. In addition, if required, provide hardware for all mockups. All mockups shall be completely functional, wired to temporary switches prior to Architect-Consultant's inspection.
- F. Hardware schedule coordinated with doors, frames, and related work to ensure proper size, thickness, hand and function of door hardware.
 - 1. Hardware Schedule Content: Based on hardware indicated, organize schedule into "hardware sets" indicating complete designations of every item required for each door or opening. Include the following information:
 - a. Type, style, exact function, size, and finish of each hardware item.
 - b. Name and manufacturer of each item.
 - c. Fastenings and other pertinent information.
 - d. Location of each hardware set cross-referenced to indications on Drawings both on floor plans and in door and frame schedule.
 - 1) Door numbers and frame types in schedule to match door numbers and frame types shown on Drawings.
 - 2) Hardware sets shall match specified hardware sets found at the end of this specification section. Hardware set extensions (i.e.: "SH1.a") used to signify hardware sets with additional hardware requirements are acceptable.
 - e. Explanation of all abbreviations, symbols, and codes contained in schedule.
 - f. Mounting locations for hardware.
 - g. Door and frame sizes and materials.
 - 2. Submittal Sequence: Submit schedule at earliest possible date, particularly where acceptance of Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include with schedule the product data, shop drawings of other work affected by door hardware, and other information essential to the coordinated review of schedule.
 - 3. Fire Rated Openings: Provide hardware for fire-rated openings in compliance with NFPA Standard 80. This requirement takes precedence over other requirements for such hardware. Provide only hardware which has been tested and listed by UL bears appropriate label or symbol for the types and sizes of doors required and compliance with the requirements of the required label and function of the opening wherever possible.
 - 4. The DEC is responsible for counts, quantities, proper handling and correct nomenclature of all material provided under, and related to, this scope of work.
- G. Keying Schedule: The owner shall provide an approved key schedule to the DEC at the time of detention hardware submittal review.

- H. Submittal of written confirmation from the hardware manufacturer showing individual field technicians as approved installers shall be required.
- I. Operating/Maintenance Manuals: Furnish O&M Manuals, as outlined in Division 1, for all security hardware and all security locking devices. Provide detailed parts lists and cutsheets for all items with mechanical moving parts or electrical components on the approved security hardware schedule. These manuals shall include instructions for the care of the materials, parts list to aid the Owner in ordering replacement parts, as well as instructions for contacting the appropriate personnel not only during the warranty period, but beyond. Manuals shall also include the final approved key schedule and "as built" shop drawings of all components. The Detention Equipment Contractor must have full time employees trained in the maintenance and repair of this equipment.

1.04 DELIVERY, STORAGE AND HANDLING

- A. Packing and Marking: Each piece of security hardware furnished under this Section shall be packaged and marked according to the hardware set and door number listed in the approved hardware schedule.
- B. Deliver all components cartoned or crated to provide protection during transit and job storage.
- C. Inspect all components upon delivery for damage. Damages may be repaired, provided the repaired items are equal in all respects to new work and acceptable to the Architect-Engineer; otherwise, remove and replace damaged items as directed.
- D. Store all components in a locked storage area for all components deemed necessary by the Detention Equipment Contractor. Do not store any materials directly on the ground or concrete. Provide adequate ventilation and protection to insure materials are kept dry, clean and secure. Store all materials in the manner and order as prescribed by the Detention Equipment Contractor and/or manufacturer.

1.05 COORDINATION

- A. Examine the drawings and specifications of other trades whose work may influence the installation and/or operation of the detention hardware. Prior to the start of work, review the project drawings and specifications and coordinate work with all other trades and Divisions of the Specifications affecting Work of this Section.
 - 1. Responsibilities for electrical and mechanical hardware installation shall include the following:
 - a. Furnish and install door locks, door position switches, limit switches, lock feature switches and push buttons, as required for the system to perform the functions as defined in the "Door Control" section of the Division 28 specifications.
 - b. Coordinate the integration and interfacing of the products and equipment specified in this section with Division 28 Contractor specified, and in accordance with shop drawings and submittals approved by the Architect / Consultant.

- c. Review all control submittals submitted by Division 28 Contractor and confirm that all scheduled controls and monitoring will function in accordance with the specified function. A written confirmation of this review shall be submitted to the Architect / Consultant.
- d. Coordinate the power requirements with all equipment furnished in this section.

1.06 MAINTENANCE

- A. Contractor shall furnish spare parts required in each section, packaged to protect parts from damage and to allow for easy storage.
- B. Supplier of equipment shall stock replacement parts for each system and be able to replace any part of the system within 24 hours.
- C. Provide spare door hardware parts as follows:
 - 1. Hinges: 10 pair
 - 2. Closers: 1 each hand, type and size used
 - 3. Door position switches: 2 % of total doors, or minimum of 10 (whichever is greater)
 - 4. Furnish the following material:
 - a. Two (2) each of all locks specified (less cylinder).
 - b. All parts shall be packaged and labeled to provide for long term storage.

PART 2 PRODUCTS

2.01 GENERAL

- A. Security design criteria are based upon the requirements and features of the products listed herein. The use of one manufacturer's numeric designation does not imply other manufacturer's products will not be accepted.
- B. Fire Rated Openings: Provide hardware for fire-rated openings in compliance with NFPA Standard 80. This requirement takes precedence over other requirements for such hardware. Provide only hardware which has been tested and listed by UL, bears appropriate label or symbol for the types and sizes of doors required and compliance with the requirements of the required label and function of the opening wherever possible.

2.02 MISCELLANEOUS HARDWARE FOR SECURITY DOORS

- A. Acceptable Manufacturers
 - 1. Except as otherwise specified herein, the equipment and materials of this section shall be products manufactured by one of the listed manufacturers and must be equal to the part specified in the product description.
- B. Products/Manufacturers
 - 1. Hinges: Southern-Folger, Portland, Northwest Specialty Hardware
 - 2. Pulls: Southern-Folger, Portland, Northwest Specialty Hardware.
 - 3. Door Position Switches (DPS): Sentrol, Southern-Folger,
 - 4. Door Closers: LCN (No substitutions)
 - 5. Door Stops: Ives

6. Thresholds: Reese, National Guard and Pemko
7. Weatherstrip: Reese, National Guard and Pemko
8. Smoke Seal: Reese, National Guard and Pemko
9. Silencers: Ives

C. Product Description

1. Hinges: Southern-Folger:
 - a. Full Mortise Detention Hinges shall be 4-1/2" x 4-1/2" x 0.188" thick investment cast 304 stainless steel with hospital tips and integral studs on both leaves. Pins shall be hardened stainless or alloy steel, concealed and non-removable. Each hinge shall be supplied with eight (8) 1/4-20 flat head machine screws. All hinges and screws shall be US32D finished.
 - b. Furnish three hinges for door through 84-inches in height and one additional hinge for each additional 30-inches of height or fraction thereof. Furnish three hinges for doors through 36-inches in width and one additional hinge for each additional 12-inches of width or fraction thereof.
 - c. Except where otherwise indicated, hinges shall be mortised, 4-1/2" x 4-1/2", cast steel or stainless steel, ball bearing, with pins made non-removable by a concealed hardened roll pin. All hinges shall be furnished with 1/4-20 TORX FHMS.
 - d. Hinges shall be certified, by an independent testing lab, to meet or exceed the cycle requirements of ASTM 1758, Grade 1A.
 - e. Hinges furnished for use on labeled fire doors shall also comply with the requirements of NFPA 80.
2. Electric Power Transfer Hinge, RRB #4-1/2SRS-CE
3. Full surface hinges, equal to Southern Folger #3/#3FP where indicated on architectural details for food pass applications in rated openings.
4. Strikes: All locks and latches shall be furnished with manufacturer's standard strikes complete with dust boxes to fully conceal the strike pocket. Where monitor strikes are specified, provide strikes as appropriate for the lock specified. All monitor strikes shall be designed to fit within a 2" face frame without protruding beyond the 2" frame depth.
5. Fasteners:
 - a. Manufacturer hardware to conform to published template, generally prepared for machine screw installation. Do not provide hardware, which has been prepared for self-tapping of sheet metal screws.
 - b. Furnish screws for installation with each hardware item. All exposed screw heads, whether door is open or closed, shall be Torx (with security stud) flat-head or oval head screws except as otherwise indicated. Screws shall be the same material and finished to match the applied hardware item. Other types of security screws are unacceptable unless specifically approved by the Architect-Consultant.
6. Pull:
 - a. Grip Type Door Pulls shall be cast of brass or bronze with satin finish of approximately US26D unless specified otherwise in hardware schedule.

- Approximate overall length, 8-11/16"; handhold, 5-1/4"; grip clearance, 1-1/2"; attachment holes, 7-3/4" o.c. Provide two (2) 3/8-16 x 5/8" flat head torx screws of same finish and material as pull.
- b. Flush Type Door Pulls shall be cast of brass or bronze with satin finish of approximately US26D unless specified otherwise in hardware schedule. Size 4" x 5" x 1/8" x pocket rip 1" deep. Provide four (4) 1/4-20 x 3/8" flat head torx screws of same finish and material as pull.
- 7. Door Position Switch, Southern Folger 201023, or as required by hardware schedule:
 - a. Recessed Magnetic Door Position Switch-Triple Biased shall be a five-reed switch magnet mortised type assembly used for remotely monitoring the door status/position. The device shall be triple bias for tamper resistance.
 - b. The device shall be moisture resistant and fit within a 2" hollow metal jamb or head. The device shall be field adjustable on 2 axis and supplied with a 5' vinyl jacketed lead wire and a 3-pin Molex connector. The device shall be all steel construction. The switch and magnet shall be encased in epoxy resin.
 - c. Where this device is used in an exterior location, provide a complete water-tight installation.
 - 8. High Security Closer (LCN #4210/4510T series) shall be surface mounted with security screws at all exposed locations and shall have fully adjustable spring tension. Closers shall have cast iron cylinders and two separately adjustable non-critical valves for closing speed and latching speed, plus a third valve for adjusting the hydraulic back-check. Closers shall be sized appropriately based on scheduled door width, per manufacturer's recommendations. A smooth molded case cover shall conceal the closer body. Closer to be located on the side of door/frame farthest from inmate contact, unless an exterior door. Mount closer for exterior doors on interior side of the door. Maximum opening clearance shall be 180-degrees. Parallel arm shall be used on the 4210 series closer, this closer shall be used at all locations not in direct contact with inmates. A track arm shall be used on the 4510T series closer, which shall be provided at dayrooms, and locations with direct inmate contact. Provide finish of standard powder coated aluminum. DEC shall be responsible for coordinating the installation of the closer with jobsite frame installation conditions prior to installation. Closer shall have sufficient force to fully close door to achieve a secured and locked indication. Closer body shall not be inhibited by, or touch the wall or any other object after installation. If the above conditions cannot be achieved, request direction from the Architect/Consultant, by providing suggested solution using LCN security grade products. DEC is responsible for proper closer placement and installation.
 - 9. Concealed Door Closers (LCN #2210 series) shall be concealed in surface of door and frame with security screws and shall have fully adjustable spring tension. Maximum opening allowed shall be 180 degrees. Provide standard finish of powder coat aluminum. Closer shall be mounted with Torx head security screws. The 2210DPS combo closer is not acceptable and shall not be permitted.
 - 10. Wall Mounted Door Stops (Wall mount only) (Ives FS18L) shall be a tamper resistant device that is embedded into the wall with an epoxy resin adhesive.

Bumper shall be 2" diameter x 3-1/2" long and made from a non-hazardous silicone elastomer, 80 durometer. The threaded and grooved steel mounting shank shall be 5/8" in diameter and embedded into the bumper at least half the length of the bumper. Mounting shank shall extend 2-1/2" beyond the bumper bottom for embedding into the wall.

- a. At Cell Doors: Provide wall-mounted door bumper 80" off of the floor and 8" from edge of door when in the opened position. If the above conditions cannot be achieved, request direction from the Architect.
 - b. At all Other Security Doors: Provide wall-mounted door bumper 8" off of the floor and 8" from edge of door when in the opened position. If the above conditions cannot be achieved, request direction from the Architect.
11. Thresholds: Provide thresholds as in "Security Hardware Schedule", and where required on security doors per architectural details. All doors into rated stairways shall be provided with Reese S204A thresholds (or approved equal).
12. Weatherstripping:
- a. Provide weatherstripping at all exterior doors equal to Reese DB469C door sweep plus 797B weatherstrip, or approved, at all heads and jambs (and astragals if pairs), After installation, razor cut gasketing into pieces not over 12" in length, installed per manufacturer's recommendations. Do not break weatherstrip at head of frame for closer installation. SILL SWEEP MUST BE FASTENED WITHIN 1/2" MAXIMUM FROM EDGE OF DOOR ON EACH SIDE.
 - b. Provide rain drips equal to Reese R199A and R201A at frame head and door bottom at all exterior doors installed per manufacturer's recommendations. Apply head drip directly to door frame header 1/4" above door opening.
13. Interlocking Threshold: Equal to Reese TJ3A/T550A provided as noted in hardware sets and at all dayroom separation doors.
14. Smoke/Fire Gasket: Provide head and jamb gasketing equal to Reese 797B weatherstrip and Reese 964C Sill sweep, or approved equal, at all fire and/or smoke rated openings. After installation, razor cut gasketing into pieces not over 12" in length, installed per manufacturer's recommendations. Do not break weatherstrip at head of frame for closer installation. SILL SWEEP MUST BE FASTENED WITHIN 1/2" MAXIMUM FROM EDGE OF DOOR ON EACH SIDE.
15. Door Silencers: (Ives SR64) shall be standard resilient type and removable for replacement.

2.03 MECHANICAL LOCKS FOR SECURITY DOORS

A. Acceptable Manufacturers

1. Except as otherwise specified herein as "No Substitution", the equipment and materials of this section shall be products manufactured by one of the listed manufacturers and must be equal to the part outlined in the product description:
 - a. Southern Folger, San Antonio, TX.

B. Mechanical Locks and Accessories for Swinging and sliding Doors

1. Standard Features

- a. Lock case to be high tensile strength alloy steel with cold rolled steel cover
- b. All locks to operate by inserting a key into matching cylinder and rotating key to unlock the lock.
- c. All lock steel parts shall be zinc plated for corrosion protection and are suitable for both interior and exterior applications.
- d. Keyed One Side (K1) or Keyed Two Sides (K2).
- e. At rated locations, provide smoke gasketing, weather strip, sweeps, sill threshold, door skirts, plates, angles, closers and/or additional material as required per the manufacturer's recommendations to obtain the appropriate label as per the architectural drawings. This requirement takes precedence over other requirements for scheduled hardware. Provide only hardware which has been tested and listed by UL bears the appropriate label or symbol for the types and sizes of doors required and compliance with the requirements of the required label and function of the opening wherever possible.

C. Products

- 1. Mechanical Deadbolt, RRB 9010:
 - a. Lock size to be approximately 4-1/4" x 3" x 1-1/4". Deadbolt to be 3/4" x 1" hot rolled steel with 5/8" throw. Deadbolt locking and unlocking activated by key only.
 - b. The lock shall be supplied with MEDECO high security small format mogul cylinders.
 - c. Provide extended bolt throw at food pass locations as required by hollow metal fabrication. DEC shall fully coordinate with hardware and hollow metal manufacturers.
- 2. Mechanical Latch, RRB 9017:
 - a. Lock size to be approximately 4-1/4" x 3" x 1-1/4". Beveled dead-latching latchbolt to be 7/16" x 1" stainless steel with 5/8" throw.
 - b. Beveled latch bolt to be retracted by key operation only. Latchbolt to snap-lock on closing.
 - c. The lock shall be supplied with MEDECO high security small format mogul key cylinders to match the existing facility.
 - d. Provide extended bolt throw at food pass locations as required by hollow metal fabrication. DEC shall fully coordinate with hardware and hollow metal manufacturers.
- 3. Mechanical Deadlock, RRB 7080:
 - a. Lock size to be approximately 5-1/2" x 3-3/4" x 1-1/2". Deadbolts to be 3/4" x 2" with 3/4" throw. Deadbolt locking and unlocking activated by key only.
 - b. Deadbolt to be made of cold rolled steel with 1/4" diameter hardened steel inserts (2 each) unless otherwise specified.
 - c. The lock shall be supplied with a six (6)-pin paracentric key cylinder.
 - d. Provide 1-1/2" x 1-1/2" x 1/4" x 10" high custom galvanized angle strike to receive lock bolt where installed in fence system. Weld custom strike to fence frame.

- e. Provide 3" x 3" gate stop gusset angles where required to stop gate swing. Welded at corners of gate opening.
 - 4. Institutional Mortise Lockset, RRB 1020:
 - a. A security mortise lockset for 2" thick individual swing doors that comply with the standard test methods defined in ASTM F1577-05. Locksets shall be supplied with high security rose and functions as specified by the door and/or hardware schedule. Lockset shall be UL listed for use with fire-rated doors where specified.
 - b. Lockset case and cover shall be 12-gauge (minimum) heavy-duty wrought steel, zinc dichromate plated. Latchbolt shall be one-piece stainless steel anti-friction type with 3/4" throw, meeting ANSI A156.13. Deadbolt shall be investment cast stainless steel with hardened steel insert and a 1" throw. Deadlock actuator shall be stainless steel. Strike shall be ANSI standard, universal brass or stainless steel. Faceplate shall be 16 gauge (Minimum) stainless steel, US32D finish.
 - c. Latchset shall be supplied with solid stainless steel (US32D finish) steel lever handles (both sides) unless otherwise specified.
 - d. Lockset shall be supplied with MEDECO high security small format Mogul Key Cylinders to match existing, unless otherwise specified. All exposed fasteners shall be stainless steel tamper proof.
 - e. Lock functions must match EXACTLY with functions specified herein.
 - 5. Galvanized Material
 - a. All exterior material shall be hot dipped galvanized.
- 2.04 ELECTRO-MECHANICAL LOCKS AND SLIDING DEVICES FOR SECURITY DOORS
- A. Acceptable Manufacturers:
 - 1. Except as otherwise specified herein as "No Substitution", the equipment and materials of this section shall be products manufactured by one of the listed manufacturers and must be equal to the part outlined in the product description.
 - a. Southern Folger, San Antonio, TX
 - B. The lock shall be 24 VDC motor operated security locks for individual swinging doors: Locks shall be frame mounted, complete with integral electronic components. RRB 5020M:
 - 1. Functions:
 - a. Locks to operate electrically through either 24 VDC constant duty motors. Locks to be remotely unlocked electrically by momentary contact switch, or mechanically operated by key at the lock.
 - b. Refer to the requirements of the Emergency Release function of the door control system specified in Division 28. The electrically controlled locks shall be furnished with the capabilities of a half cycle function (maintained and momentary) when controlled with the Emergency Release control function. The lock shall operate through PLC as if it's a full cycle lock with normal door control function.
 - c. Half Cycle Operation

- 1) When a momentary signal is applied to the unlock input, the latchbolt shall retract. The latchbolt shall remain mechanically retracted. When power is removed, the latchbolt remains retracted.
- 2) When a momentary signal is applied to the lock input, the latchbolt shall extend, locking the door if closed and allowing the door to be slam-locked if open.
- d. Manual Operation
 - 1) Each lock shall have local manual key override lock/unlock feature. Keyed one side (K1), Keyed two sides (K2).
 - 2) Rotating the key shall mechanically retract the latchbolt. Removing the key shall extend the bolt, locking the door if closed and allowing the door to be slam-locked if open.
2. Components
 - a. Mechanical
 - 1) Lock shall operate as a fail-secure slam-lock. Unlocks when energized.
 - 2) Lock body shall be made of steel or stainless steel.
 - 3) Lock shall be supplied with a security key cylinder protection pipe to protect the key cylinder. The protection pipe will be supplied unpainted for installation in the hollow metal frame by the hollow metal manufacturer.
 - 4) Cylinder extensions shall be provided for locks keyed two sides or keyed stop side unless provisions are allowed for recessed pocket in hollow metal.
 - b. Electrical
 - 1) Motor Operated Lock:
 - (a) Lock shall operate when supplied with 24 VDC.
 - (b) Single Phase, 3.3 amp max.
 - (c) Lock shall be provided with a lock status switch to provide interlocking capabilities.
 - (d) Switches shall be of the snap acting mechanical type. UL listed and rated at least 5 amps.
 - (e) Locks shall be factory wired to a plug disconnect.
 - (f) Lock status switch shall be capable of providing the following indications:
 - (g) a. Deadlocked indication
 - (h) b. Unsecure indication
 - c. Features: Where specified by the security hardware/door schedule, the following features shall be provided:
 - 1) Local Electric Keyswitch (CKS): Day key provides local electric operation ONLY and may be disabled remotely via central control point. Master key provides both electric and Mechanical operation.
 - 2) Remote Latch Holdback (RLHB): Latchbolt is retracted by the PLC and remains mechanically retracted until the PLC locks extends and locks the device. Refer to the Division 28 descriptions for unlock operation and Emergency Release.

- 3) Provide MEDECO high security small format mogul cylinders as directed by owner to match existing.
 - d. Weather resistant motor housing shall be constructed of a minimum ¼” (6.4MM) steel plate, framed and stiffened as required.
 - e. Removable front cover panel shall be constructed of 10-gauge galvanized steel.
 - f. The doorjamb and vertical members shall be free of hooks or lugs used for locking or any other purpose.
- C. Electric Mortise Lock, RRB 1050FSE:
- 1. Function:
 - a. A 24 VDC, 0.3 AMP electric security mortise lockset for 2” thick individual swing doors that comply with the standard test methods defined in ASTM F1577-05. Locksets shall be supplied with high security rose trim, levers and functions as specified by the door and/or hardware schedule. Lockset shall be UL listed for use with fire-rated doors where specified. Lockset shall fit standard ANSI (A115.1) door edge and frame preparation.
 - b. Lever handles retract latchbolt from one side or both sides.
 - c. Electrically locks or unlocks levers.
 - d. Stainless steel latchbolt and deadlock actuator.
 - e. Functions to be as specified in the hardware schedule.
 - f. Lockset case and cover shall be 12-gauge (minimum) heavy-duty wrought steel, zinc dichromate plated. Latchbolt shall be one-piece stainless steel anti-friction type with ¾” throw, meeting ANSI A156.13. Deadlock actuator shall be stainless steel. Strike shall be ANSI standard, universal brass or stainless steel. Faceplate shall be 16 gauge (Minimum) stainless steel, US32D finish.
 - g. Latchset shall be supplied with solid stainless steel (US32D finish) steel lever handles (both sides) unless otherwise specified.
 - h. Lockset shall be supplied with MEDECO high security small format mogul cylinders as directed by owner to match existing, except as otherwise indicated on the hardware schedule.
 - i. All exposed fasteners shall be stainless steel tamper proof.
 - j. Lock shall be provided with fail secure function.

2.05 KEYING AND KEYS

A. Keying and Keys

- 1. The DEC is responsible for scheduling and meeting with the Owner, Architect/Consultant and other involved parties to determine keying requirements. A complete keying schedule shall be submitted to the owner for review and approval. During the submittal review, the key schedule may be modified as desired by the Owner. Up to 25 key codes could be added with no additional cost.
- 2. Mogul type cylinders shall be keyed in sets and master keyed, sub-master keyed etc. to level as directed by the Owner.
- 3. MEDECO High Security small format Mogul Cylinders shall be keyed in sets and master keyed, sub-master keyed etc., to the level as directed by the Owner. Key cylinders shall match the existing facility keying.

- a. Provide five (5) keys per master code.
 - b. Provide eight (8) keys per change key code.
4. Paracentric prison locks or keys shall not be allowed EXCEPT on the emergency release pilaster of the 57700 sliders.
- B. Key Control System:
 1. Keying: Provide key system as directed by the Owner.
 2. The DEC shall be responsible for all keys and in the unlikely event any key is lost, the DEC shall bear all costs incurred in having locks re-keyed. The DEC shall turn all keys over to the Owner as directed by the Owner for inclusion into the key cabinet.
 3. Provide key cabinets equal to Viking Key Cabinet with capacity for all keys required herein, plus 100%, installed in a location (or locations) as directed by the owner. Multiple cabinets may be required. Cabinets shall carry all required mogul, paracentric and commercial keys for each area.
 4. Key cabinet shall be provided with RRB 9010 deadbolt lock and must include MEDECO small format mogul cylinder. Snap locks will not be accepted, paracentric locks will not be accepted.
 - a. Cabinet shall be fabricated from 10 gauge steel with 10 gauge leaf panels, carrying keys on both sides, and shall hold all keys assigned to each area unless otherwise instructed by the owner.
 - b. Provide a printed index for recording the location of each key, and the lock it operates.
 5. When requested by the Owner, in writing, the DEC shall surrender any or all keys assigned to them.
 6. All keys shall be stamped with a maximum of six (6) characters, as directed by Owner. Each key shall be such that meets the 2006 NFPA-101 Life Safety Code (22.7.5) to identify key(s) by touch and sight. This system shall be coordinated and installed by the facility maintenance staff after closeout to satisfy this code requirement.

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

- A. Examine and inspect anchors, and grounds that are to receive materials, fixtures, assemblies, and equipment specified herein. Check location, "rough in", and field dimensions prior to beginning work. Report all unsatisfactory conditions in writing to the Architect-Engineer and general contractor.
 1. Do not begin installation until all unsatisfactory conditions have been corrected.
- B. Examine and inspect hardware for reuse of existing including removal, verification of function, adjustment, turning over unused hardware over to the Owner.
- C. Verify all dimensions and be responsible for their correctness. No extra compensation will be allowed for differences between actual measurements and the dimensions indicated on the drawings.

3.02 INSTALLATION

- A. Install security materials and accessories in accordance with the final shop drawings, manufacturer's data, and as herein specified.
 - 1. Provide manufacturer's supervision of installation, including testing and interfacing of systems.
- B. Install all components and complete system as indicated and in accordance with manufacturer's recommendations and instructions.
- C. Nuts of all bolted work shall be drawn tight and threads battered or welded. Bolting may be used in the installation of detention equipment provided that the nuts are not accessible to inmates or exposed to view. Bolts shall be special oval head or flat head Torx security type. Screws shall be the same material and finished to match the applied hardware item. Other types of security bolts are unacceptable unless specifically approved by the Architect-Engineer. Provide two sets of wrenches for each size bolt used.

3.03 ADJUSTING

- A. Final Adjustments: Prior to final inspection check and re-adjust all components to operate within their designed capacity. All components shall be adjusted and tested to verify correct operation prior to final inspection.
- B. All devices shall be tested for specified and manufacturer described operation.
- C. All tests required by local agencies shall be performed.
- D. All tests required by Owner and Owner's representative shall be performed.
- E. Systems not meeting the minimum level of acceptability as defined in the test procedures shall be repaired and retested.
- F. Provide documentation of test procedures and results.
- G. Equipment manufacturer's representative shall certify that the systems are installed and operate as specified.
- H. All costs to test and retest systems shall be the responsibility of the Detention Equipment Contractor.

3.04 SECURITY HARDWARE SCHEDULE

- A. Replace in kind any hardware that is found to be unusable.

END OF SECTION

SECTION 08 80 00 - GLAZING

PART 1 - GENERAL

1.1 SUMMARY

- A. Types of glazing included:
 - 1. Heat-treated (tempered) float glass.

1.2 DEFINITIONS

- A. Manufacturer is used in this Section to refer to a firm that produces primary glass or fabricated glass as defined in the referenced glazing standard.
- B. Deterioration of Insulating Glass: Failure of the hermetic seal under normal use due to causes other than glass breakage and improper practices for maintaining, and cleaning insulating glass. Evidence of failure is the obstruction of vision by dust, moisture, or film on the interior surfaces of glass. Improper practices for maintaining and cleaning glass do not comply with the manufacturer's directions.

1.3 SYSTEM PERFORMANCE REQUIREMENTS

- A. General: Provide glazing systems that are produced, fabricated, and installed to withstand normal thermal movement, wind loading, and impact loading (where applicable), without failure including loss or glass breakage attributable to the following: defective manufacture, fabrication, and installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; and other defects in construction.
- B. Normal thermal movement results from the following maximum change (range) in ambient and surface temperatures acting on glass-framing members and glazing components. Base engineering calculation on materials' actual surface temperatures due to both solar heat gain and nighttime sky heat loss.
 - 1. Temperature Change (Range): 120 F deg, ambient; 180 F deg, material surfaces.

1.4 SUBMITTALS

- A. Product Data: For each glass product and glazing material indicated.
- B. Samples for verification purposes of 12-inch square samples of each type of glass indicated except for clear monolithic glass products, and 12-inch-long samples of each color required (except black) for each type of sealant or gasket exposed to view. Install sealant or gasket sample between two strips of material representative in color of the adjoining framing system.

- C. Glass fabricator shall submit copy of his glass manufacturer's certification for insulating products.
- D. Product certificates signed by glazing materials manufacturers certifying that their products comply with specified requirements.
- E. Maintenance data for glass and other glazing materials to include in Operating and Maintenance Manual specified in Division 01.

1.5 QUALITY ASSURANCE

- A. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below, except where more stringent requirements are indicated. Refer to these publications for glazing terms not otherwise defined in this Section or in referenced standards.
 - 1. GANA Publications: "GANA Glazing Manual."
 - 2. LSGA Publications: "LSGA Design Guide."
 - 3. GANA Laminated Division Publication: "Laminated Glass Design Guide."
 - 4. IGMA Publications: TM-3000 "Vertical Glazing Guidelines" and TB-3001 "Sloped Glazing Guidelines."
- B. Safety Glass: Products complying with ANSI Z97.1 and testing requirements of 16 CFR Part 1201 for Category II materials.
 - 1. Subject to compliance with requirements, provide safety glass permanently marked with certification label of Safety Glazing Certification Council (SGCC) or other certification agency acceptable to authorities having jurisdiction.
- C. Glazier Qualifications: Engage an experienced glazier who has completed glazing similar in material, design, and extent to that indicated for Project with a record of successful in-service performance.
- D. Single-Source Responsibility for Glass: Obtain glass from one source for each product indicated below:
 - 1. Heat-treated glass of each (ASTM C 1048) condition indicated.
 - 2.
- E. Single-Source Responsibility for Glazing Accessories: Obtain glazing accessories from one source for each product and installation method indicated.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Protect glazing materials to comply with manufacturer's directions and as needed to prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.
 - 1. Where insulating glass units will be exposed to substantial altitude changes, comply with insulating glass fabricator's recommendations for venting and sealing to avoid hermetic seal ruptures.

1.7 PROJECT CONDITIONS

- A. Environmental Conditions: Do not proceed with glazing when ambient and substrate temperature conditions are outside the limits permitted by glazing materials manufacturer or when glazing channel substrates are wet from rain, frost, condensation, or other causes.
 - 1. Install liquid sealants at ambient and substrate temperatures above 40 deg F.

1.8 WARRANTY

- A. General: Warranties specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and will be in addition to and run concurrent with other warranties made by the Contractor under requirements of the Contract Documents.
- B. Manufacturer's Warranty on Insulating Glass: Submit written warranty signed by manufacturer of insulating glass agreeing to furnish replacements for insulating glass units that deteriorate as defined in "Definitions" article, f.o.b. point of manufacture, freight allowed Project site, within specified warranty period indicated below. Warranty covers only deterioration due to normal conditions of use and not to handling, installing, protecting, and maintaining practices contrary to glass manufacturer's published instructions.
 - 1. Warranty Period: Manufacturer's standard but not less than 10 years after date of Completion.

PART 2 - PRODUCTS

2.1 GLASS PRODUCTS, GENERAL

- A. Thickness: Where glass thickness is indicated, it is a minimum. Provide glass lites in thicknesses as needed to comply with requirements indicated.
- B. Strength: Where fully tempered glass is indicated, provide Kind FT heat-treated float glass.

- C. Thermal and Optical Performance Properties: Provide glass with performance properties specified, as indicated in manufacturer's published test data, based on procedures indicated below:

1. For monolithic-glass lites, properties are based on units with lites 1/4-inch thick.

2.2 MANUFACTURERS

- A. Products: Subject to compliance with requirements, provide products of one of the following manufacturers:

1. Manufacturers of Glass:
 - a. Guardian Industries Corp.
 - b. LOF Glass, Inc.
 - c. PPG Industries, Inc.
 - d. AFG Industries, Inc.

2.3 HEAT-TREATED FLOAT GLASS (CTG)

- A. Fabrication Process: By horizontal (roller-hearth) process.
- B. Uncoated, Clear, Heat-Treated Float Glass: ASTM C 1048, Condition A (uncoated surfaces), Type I (transparent glass, flat), Class 1 (clear), Quality q3 (glazing select), 6 mm thick, kind as indicated below.
1. Kind FT (fully tempered) where indicated.
- C. Manufacturers: Provide heat-treated glass by manufacturer of clear float glass listed in paragraph 2.1 above.
- D. Fire Rating: Fire rating classified and labeled by UL for fire rating scheduled at opening locations on drawings, when tested in accordance with ASTM E2010-01 NFPA 257 UL 9 and UL 10C.

2.4 ELASTOMERIC GLAZING SEALANTS

- A. General: Provide products of type indicated, complying with the following requirements:
1. Compatibility: Select glazing sealants and tapes of proven compatibility with other materials they will contact, including glass products, seals of insulating glass units, and glazing channel substrates, under conditions of installation and service, as demonstrated by testing and field experience.
 2. Suitability: Comply with sealant and glass manufacturer's recommendations for selecting glazing sealants that are suitable for applications indicated and conditions existing at time of installation.
 3. Colors of Exposed Glazing Sealants: Provide selections made by Architect from manufacturer's full range for products of type indicated.

- B. Elastomeric Glazing Sealant Standard: Provide manufacturer's standard chemically curing, elastomeric sealants of base polymer indicated that comply with ASTM C 920 requirements indicated below:
1. Two-Part Polysulfide Glazing Sealant: Type M; Grade NS; Class 25; Uses NT, M, G, A, and, as applicable to uses indicated, O.
 2. One-Part Acid-Curing Silicone Glazing Sealant: Type S; Grade NS; Class 25; Uses NT, G, A, and, as applicable to uses indicated, O.
 3. One-Part Non-Acid-Curing Silicone Glazing Sealant: Type S; Grade NS, Class 25; Uses NT, G, A, and, as applicable to uses indicated, O; and complying with the following requirements for modulus and additional joint movement capability.
 - a. Medium Modulus: Tensile strength of not less than 45 nor more than 75 psi at 100 percent elongation when tested per ASTM D 412 after 14 days at 77 deg. F and 50 percent relative humidity.
 - b. Additional capability, when tested per ASTM C 719 for adhesion and cohesion under maximum cyclic movement, to withstand the following percentage increase and decrease of joint width, as measured at time of application, and remain in compliance with other requirements of ASTM C 920: 50 percent.
- C. Glazing Sealant for Fire-Resistive Glazing Products: Identical to product used in test assembly to obtain fire-protection rating.

2.5 GLAZING TAPES

- A. Back-Bedding Mastic Glazing Tape: Preformed, butyl-based elastomeric tape with a solids content of 100 percent; non-staining and non-migrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape and glass manufacturers for application indicated; packaged on rolls with a release paper backing; and complying with ASTM C 1281 and AAMA 800 for products indicated below:
1. AAMA 806.3 tape, for glazing applications in which tape is subject to continuous pressure.
 2. AAMA 807.3 tape, for glazing applications in which tape is not subject to continuous pressure.
- B. Expanded Cellular Glazing Tape: Closed-cell, PVC foam tape; factory coated with adhesive on both surfaces; packaged on rolls with release liner protecting adhesive; and complying with AAMA 800 for the following types:
1. Type 1, for glazing applications in which tape acts as the primary sealant.
 2. Type 2, for glazing applications in which tape is used in combination with a full bead of liquid sealant.

2.6 MISCELLANEOUS GLAZING MATERIALS

- A. General: Provide products of material, size, and shape complying with referenced glazing standard, requirements of manufacturers of glass and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.
- B. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.
- C. Setting Blocks: Elastomeric material with a Shore A durometer hardness of 85, plus or minus 5.
- D. Spacers: Elastomeric blocks or continuous extrusions with a Shore A durometer hardness required by glass manufacturer to maintain glass lites in place for installation indicated.
- E. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side walking).
- F. Cylindrical Glazing Sealant Backing: ASTM C 1330, Type O (open-cell material), of size and density to control glazing sealant depth and otherwise produce optimum glazing sealant performance.
- G. Perimeter Insulation for Fire-Resistive Glazing: Identical to product used in test assembly to obtain fire-resistance rating.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine glass framing, with glazier present, for compliance with the following:
 - 1. Manufacturing and installation tolerances, including those for size, squareness, offsets at corners.
 - 2. Presence and functioning of weep system.
 - 3. Minimum required face or edge clearances.
 - 4. Effective sealing between joints of glass-framing members.
- B. Do not proceed with glazing until unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings that are not firmly bonded to substrates.

3.3 GLAZING, GENERAL

- A. Comply with combined recommendations of manufacturers of glass, sealants, gaskets, and other glazing materials, except where more stringent requirements are indicated, including those in referenced glazing publications.
- B. Glazing channel dimensions as indicated on Drawings provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances. Adjust as required by Project conditions during installation.
- C. Protect glass from edge damage during handling and installation. Remove damaged glass from Project site and legally dispose of off site. Damaged glass is glass with edge damage or other imperfections that, when installed, weaken glass and impair performance and appearance.
- D. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction sealant-substrate testing.
- E. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing standard, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.
- F. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.
- G. Provide spacers for glass sizes larger than 50 united inches (length plus height) as follows:
 - 1. Locate spacers inside, outside, and directly opposite each other. Install correct size and spacing to preserve required face clearances, except where gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and comply with system performance requirements.
 - 2. Provide 3-mm (1/8-inch) minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.
- H. Provide edge blocking to comply with requirements of referenced glazing publications, unless otherwise required by glass manufacturer.
- I. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.
- J. Where wedge-shaped gaskets are driven into one side of channel to pressurize sealant or gasket on opposite side, provide adequate anchorage so gasket cannot walk out when installation is subjected to movement.

- K. Square cut wedge-shaped gaskets at corners and install gaskets in manner recommended by gasket manufacturer to prevent corners from pulling away; seal corner joints and butt joints with sealant recommended by gasket manufacturer.

3.4 TAPE GLAZING

- A. Position tapes on fixed stops so that, when compressed by glass, their exposed edges are slightly below sightline of stops.
- B. Install tapes continuously but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.
- C. Where framing joints are vertical, cover these joints by applying tapes to heads and sills first and then to jambs. Where framing joints are horizontal, cover these joints by applying tapes to jambs and then to heads and sills.
- D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.
- E. Do not remove release paper from tape until just before each lite is installed.
- F. Apply heel bead of elastomeric sealant.
- G. Center glass lites in openings on setting blocks and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.
- H. Apply cap bead of elastomeric sealant over exposed edge of tape.

3.5 PROTECTION AND CLEANING

- A. Protect exterior glass from damage immediately after installation by attaching crossed streamers to framing held away from glass. Do not apply markers to glass surface. Remove nonpermanent labels, and clean surfaces.
- B. Protect glass from contact with contaminating substances resulting from construction operations including weld splatter. If, despite such protection, contaminating substances do come into contact with glass, remove them immediately as recommended by glass manufacturer.
- C. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for build-up of dirt, scum, alkali deposits, or stains; remove as recommended by glass manufacturer.
- D. Remove and replace glass that is broken, chipped, cracked, abraded, or damaged in any way, including natural causes, accidents and vandalism, during construction period.

- E. Wash glass on both exposed surfaces in each area of Project not more than 4 days before date scheduled for inspections that establish date of Completion. Wash glass as recommended by glass manufacturer.

END OF SECTION

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SECTION 08 88 53 - SECURITY GLAZING

PART 1 GENERAL

1.01 SUMMARY

- A. This Section includes the following:
 - 1. Security glazing.
 - 2. Glazing accessories.
- B. Related Sections: The following Sections contain requirements that relate to this Section.
 - 1. Section 01 35 13 Special Project Procedures for Detention Facilities.
 - 2. Section 050555 "Security Fasteners."
 - 3. Section 079200 "Joint Sealants" for security sealants.
 - 4. Section 083463 "Detention Doors & Frames."

1.02 SCOPE AND RESPONSIBILITIES

- A. Refer to the Modular Metal Detention Wall Panel System section for the related Scope of Work provided in that Section. Fully coordinate this Scope of Work with the Scope of Work shown in the Modular Metal Detention Wall Panel System sections.
- B. Refer to Prefabricated Pre-Cast Cell Modules Section for the related Scope of Work provided in that Section. Fully coordinate this Scope of Work with the Scope of Work shown in the Prefabricated Pre-Cast Cell Modules Section.
- C. Under the requirements of this specification, the DEC shall be responsible for furnishing and installing all glass and glazing accessories, as specified, in all locations, unless indicated otherwise.

1.03 PERFORMANCE REQUIREMENTS

- A. Provide security glazing that complies with the requirements listed below as indicated by the test ratings for specific glazing types.
 - 1. H.P. White Laboratory, Inc.; HPW TP-0500.00.
 - 2. American Society for Testing and Materials; ASTM F-1915-12.
 - 3. Underwriter's Laboratories, Inc.; UL 752, UL 972.

1.04 SUBMITTALS

- A. General: Submit the following according to Conditions of Contract and Division 1 Specification Sections.
- B. Product data for each security glazing type, including type of materials, thickness, installation requirements, method of test, and performance. Submit 2 copies of the most recent literature & cleaning instructions and any other documentation deemed necessary to demonstrate compliance to the specification.
- C. Test reports showing compliance with specified requirements.

- D. Certification by manufacturer that products supplied comply with performance requirements specified.
- E. Maintenance data covering cleaning and protection requirements to include in the Operation and Maintenance Manual specified in Division 1.
- F. Upon request of the Architect, submit 2 samples, 12" square, of each type of security glazing product.
- G. Submit a composite detail of the glass and frame assembly. This detail shall show and define all products in the assembly including, but not limited to, the following: Frame, glass stop, glass, setting blocks, glazing tape, and sealant. All products used in the glazing composite must be compatible.
- H. Product Data for Credit MR 4.1 and Credit MR 4.2: For products having recycled content, documentation indicating percentage by weight of postconsumer and preconsumer recycled content. a. Include statements indicating cost for each product having recycled content.

1.05 QUALITY ASSURANCE

- A. Comply with ASTM F-1915-12 containment test for forced entry performance. Round robin testing is not acceptable.
- B. Certified Safety Glazing: Category II products complying with test requirements of 16 CFR 1201 and ANSI Z97.1, certified by Safety Glazing Certification Council, and permanently labeled.
- C. Manufacturer Qualifications: Firm with minimum 5 years experience in manufacturing security glazing products that are similar to those indicated for this Project and that have a record of successful in-service performance.
- D. Installer Qualifications: Engage an experienced Installer who has a minimum of 5 years experience in installing security glazing similar to that required for this Project.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Protect products according to manufacturer's recommendations. Specifically, avoid damage to glass edges, and prevent damage from temperature changes, sunlight, and moisture.
 - 1. Furnish polycarbonate materials with a strippable water resistant masking paper on exposed surfaces.

1.07 PROJECT CONDITIONS

- A. Environmental Conditions: Do not install glazing when either air or substrate temperature exceeds the range recommended by sealant manufacturer or when substrate is wet, damp, or covered with snow, ice, or frost.
- B. Install bulk sealants only at air and substrate temperatures above 40 deg F (4 deg C).

1.08 WARRANTY - LAMINATED PRODUCTS

- A. Warranty: Submit a written warranty, executed by manufacturer, agreeing to replace laminates that delaminate within 5 years from date of Substantial Completion. If delamination damage occurs and upon inspection is found beyond a reasonable doubt to be caused by security sealant contact with raw glazing edge, the DEC shall be responsible for replacing the glazing at their expense.
- B. Warranty shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and will be in addition to and run concurrent with other warranties made by the Contractor under requirements of the Contract Documents.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Acceptable Manufacturers:
 - 1. Global Security Glazing (Polycarbonate, Laminated Polycarbonate, Glass-Clad Polycarbonate & Laminated Fire Rated Glass, including wire and Ultimex)
 - 2. Sheffield Plastics (Polycarbonate & Laminated Polycarbonate) Ultimex equal products, are pending testing, and therefore must be provided by Global.
 - 3. LTI Smart Glass/Safety First (Glass-Clad Polycarbonate & Laminated Fire Rated Wire Glass) Ultimex equal products, are pending testing, and therefore must be provided by Global.
- 4. Acceptable Distributors:
 - a. Global Security Glazing, Selma, AL (800) 633-2513
 - b. Allied Protective Glazing LLC., Pittsfield, MA (413) 769-2909
 - c. Cope Plastics, Hazelwood, MO (877) 528-2594
 - d. LTI Smart Glass, Pittsfield, MA (413) 637-5001
- 5. Available Products: Unless pre-approved prior to bidding, provide the products specified.
 - a. Products submitted from manufacturers without complete supporting test reports from an independent testing facility, are unacceptable, and will be returned rejected. The DEC shall then be responsible for providing glass and material from a manufacturer with complete, and current, test reports that meet these specifications.
- 6. The DEC and glazing manufacturer agree to comply with the requirements as defined in section 3.4 and to provide materials and warranty as required by the contract documents using the materials listed in section 2.5.

2.02 MATERIALS

- A. Float Glass:
 - 1. Clear Heat Strengthened Glass: ASTM C 1048, Condition A (uncoated surfaces), Class 1 (clear), Kind HS (heat strengthened).

2. Tinted Heat-Strengthened Glass: ASTM C 1048, Condition A (uncoated surfaces), Class 2 (tinted, heat-absorbing, and light-reducing), Kind HS (heat strengthened), tint color as specified with security glazing type.
 3. Clear Tempered Glass: ASTM C 1048, Condition A (uncoated surfaces), Class 1 (clear), Kind FT (fully tempered).
 4. Chemically Tempered Glass: ASTM C 1036, Class 1 (clear) chemically tempered; edges seamed prior to tempering
 5. ASTM C 1048, Condition A (uncoated surfaces), Class 1 (clear), Kind HS (heat strengthened).
- B. Polycarbonate Sheet: Rigid, flat polycarbonate sheet; thickness as indicated.
1. Relative Burning Characteristics: Average extent of burning less than 1 inch, when tested per ASTM D 635, using the thickness of material indicated for Project.
- C. NOTE: Where detention glass and products are scheduled in commercial grade frames, all testing, containment, and attack ratings are diminished, or may be void entirely by the glass manufacturer. Proceed at your own risk.

2.03 GLASS CLAD POLYCARBONATE LAMINATES

- A. Type SG1 - Interior
1. 1" clear glass clad polycarbonate laminate, to Global Security Glazing Secur-Tem + Poly SP028, or approved equal. H.P. White (TP-0500-03) Level B ballistics, WMFL Level II - 60 minute physical attack, ASTM 1915-12 Grade 1 - 60 minute containment rated; of the following make up:
 - a. 1/8" Clear heat strengthened glass
 - b. .050" Urethane
 - c. 1/4" Polycarbonate
 - d. .025" Urethane
 - e. 3/8" Polycarbonate
 - f. .050" Urethane
 - g. 1/8" Clear heat strengthened glass
- B. Type SG1F45 - Interior, Fire Rated 20-45 minutes
1. 1" UL fire rated glazing for 3/4 hour in 1 hour rated masonry and door openings, equal to Global Security Glazing Inferno-Lite FRP-4540. ASTM-1915-12 level 1, 40 minute containment. Glazing shall be installed with UL classified Rectorseal Blaze Seal. 1296 sq. in. max., with no more than 42" clear in any single dimension.
- C. Type SG2 - Interior
1. 3/4" clear glass clad polycarbonate laminate, equal to Global Security Glazing Secur-Tem + Poly SP019, or approved equal. H.P. White TP-0500.02 Level IV forced entry, WMFL Level III, ASTM F1915-12 Grade 2 - 40 minute containment, ASTM F 1233 9mm ballistic rating.
 - a. 1/8" Clear heat strengthened glass
 - b. .050" Urethane
 - c. 1/4" Polycarbonate

- d. .025" Urethane
 - e. 1/8" Polycarbonate
 - f. .050" Urethane
 - g. 1/8" Clear heat strengthened glass
- D. Type SG2AF45 - Exterior, Graylite, Insulated, Obscured view, Fire Rated 20-45 minutes (REC YARD)
 - 1. 2-1/4" Clear HS glass, with Obscure view air-gap unit, laminated to Global Security Glazing Ultimax 45 - Grade 2, or approved equal. H.P. White TP-0500.02 Level IV forced entry, WMFL Level III, ASTM F1915-12 Grade 2 - 40 minute containment, ASTM F 1233 9mm ballistic rating, per the following make up:
 - a. 1/4" Graylite 14 (temp or HS)
 - b. .030" arctic snow PVB
 - c. .030" clear PVB
 - d. 1/8" Clear Heat Strengthened
 - e. 1/4" Air Space
 - f. Ultimax 45 grade II (1-9/16")
- E. Type SG3 - Interior
 - 1. 11/16" (Nominal) clear glass clad polycarbonate equal to Global Security Glazing Secur-Tem + Poly 2116 or approved equal. H.P. White TP-0500.02 Level II forced entry, ASTM F1915-12 Grade 3 - 20 minute containment, H.P. White TP-0500.02 Level B ballistic rating (Spall; no penetration); of the following makeup:
 - a. 1/8" Clear heat strengthened glass
 - b. .050" Urethane
 - c. 3/8" Polycarbonate
 - d. .050" Urethane
 - e. 1/8" Clear heat strengthened glass
- F. Type SG3F45 - Interior, Fire Rated 20-45 minutes
 - 1. 13/16" UL fire rated glazing for 3/4 hour in 1 hour rated masonry and door openings, equal to Global Security Glazing Inferno-Lite FRP-4510. ASTM 1915-12 level 3, 10 minute containment. Glazing shall be installed with UL classified Rectorseal Blaze Seal. 1296 sq. in. max., with no more than 42" clear in any single dimension.
- G. Type SG5F180 - For Narrow Vision Lites in Fire Rated doors only
 - 1. 5/16" (8mm) thick laminated fire-rated and impact safety-rated glazing material. Listed for use in doors, sidelites, transoms and borrowed lites with fire rating requirements ranging from 20 minutes to 3 hours as provided by FireLite Plusâ. Install with UL classified Rectorseal Blaze Seal.

2.04 FABRICATION

- A. Fabricate glazing with bite and edge clearance dimensions, including tolerances, as recommended by manufacturer and GANA "Glazing Manual." Exception: Where specific bite dimensions are indicated on drawings, as required for proper securement of glazing in frames, comply with those dimensions.

- B. Cut or drill holes in laminated units as required or indicated.
- C. Grind exposed edges smooth, using methods recommended by manufacturer.
- D. Coordinate speak-port locations as indicated on architectural drawings, with glass manufacturer.

2.05 GLAZING ACCESSORIES

- A. Installation Materials-General: Select products that have appropriate performance characteristics as recommended by glazing manufacturer and that are compatible with materials they will contact.
 - 1. Provide a letter from the glass manufacturer that states all glazing materials submitted are compatible with the glass submitted.
- B. Glazing Tape:
 - 1. Pre-shimmed, 100 percent solids, polyisobutylene-butyl rubber with internal spacer rod.
 - 2. At fire rated openings, provide only Kerafix Flexlit at all Ultimex products, and Rectorseal Blaze Seal at FRP Inferno-Lite and Fire Lite Plus.
- C. Glazing Sealant:
 - 1. Provide at exterior side of exterior security glazing only: One part silicone rubber meeting Federal Specification TT-S-00230C, Class A, ASTM C-920 Type S, Grade NS, Class 25; Equal to Dow Corning 795. Color shall be black.
- D. Security Sealant:
 - 1. Provide on both sides of all interior security glazing only: Dynaflex SC. One part non-sag tamper resistant elastomeric STPU meeting Federal Specifications TT-S-00230C, Type II, Class B and ASTM C-920-98, Type S, Grade NS, Class 12.5 as manufactured by Picora. When applying directly to a polycarbonate surface, application area must be primed with Picora P-120 primer prior to use as required per published manufacturer recommendations. Color shall be Aluminum Stone #515.
- E. Setting Blocks:
 - 1. TPR (Thermoplastic rubber) with 70-90 shore "A" durometer hardness, chemically compatible with glazing components.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine frames and rabbets in which glazing is to be installed for possible damaging conditions. In particular, check for conditions that would void the manufacturer's warranty.
 - 1. Verify that minimum edge engagement of framing is 1 inch (25 mm).
 - 2. Submit Installer's report describing unacceptable conditions.
 - 3. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Clean surfaces to receive glazing just before installing glazing.

3.03 INSTALLATION - GENERAL

- A. Comply with recommendations for installation contained in the GANA "Glazing Manual" and "Sealant Manual" except when specifically not recommended or prohibited by the glazing or glazing accessory manufacturer; comply with manufacturers' recommendations.
- B. Protect glazing from edge and surface damage during handling and installation.
- C. Do not install glazing that has edge or surface damage or defects that reduce glazing strength or diminish appearance.
- D. Permanently adhere setting and edge blocks to frame.
- E. Do not block weep holes.
- F. Applied Stops: Fasten as indicated, after glazing has been set in frame. Do not exert excess force on glazing and glazing spacers.
- G. Remove protective masking paper on polycarbonate materials only as required to set glazing.

3.04 TAPE GLAZING

- A. Install tape continuously, placed so that when compressed the exposed face will be 1/8 inch (3 mm nominal) below face of framing.
- B. Do not use joints in tape, except at corners; seal joints with compatible sealant
- C. After installation of stops, install security sealant over exposed tape on both sides of all security glass/polycarbonate provided per this specification section and per 2.5.D.1 above.
 - 1. Security sealant shall be installed as a cap bead only and is never to come in contact with the raw cut edge of the glazing material. Setting blocks shall be installed in a heel bead of glazing sealant equal to Dow Corning 795 per 3.3.D above. If security sealant is found on raw glazing edge during inspection, the DEC shall be responsible for replacing the glass at their expense.
- D. Apply fillet bead of Dow Corning 795 glazing sealant over exposed tape on exterior side of exterior glazing only.

3.05 PROTECTION AND CLEANING

- A. Apply warning tape or bands across opening without touching glazing, immediately after installing glazing in frames.
- B. Do not apply tape or labels to glazing; remove temporary labels.

- C. Protect glazing during subsequent construction operations; remove dirt, contaminants, staining agents and other deposits promptly using manufacturer's recommended procedures.
- D. Replace glazing that is damaged.
- E. Provide final protection and maintain conditions in a manner acceptable to manufacturer and Installer that ensures that security glazing is without damage or deterioration at the time of Substantial Completion.
- F. Remove protective masking paper from polycarbonate glazing just prior to cleaning.
- G. Wash both sides of glazing not more than 10 days before inspections for Substantial Completion.

3.06 OWNER PERSONNEL INSTRUCTION

- A. Have manufacturers' maintenance instructions on hand at time of instruction.
- B. Instruct designated Owner personnel on maintaining security glazing.

END OF SECTION

SECTION 09 01 90 - MAINTENANCE REPAINTING

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes maintenance repainting as follows:

1. Removing existing paint.
2. Patching substrates.
3. Repainting.

1.02 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.03 SEQUENCING AND SCHEDULING

- A. Perform maintenance repainting in the following sequence, which includes work specified in this and other Sections:

1. Dismantle existing surface-mounted objects and hardware except items indicated to remain in place. Tag items with location identification and protect.
2. Verify that temporary protections have been installed.
3. Examine condition of surfaces to be painted.
4. Remove existing paint to the degree required for each substrate and surface condition of existing paint.
5. Apply paint system.
6. Reinstall dismantled surface-mounted objects and hardware unless otherwise indicated.

1.04 SUBMITTALS

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

1. Include recommendations for product application and use.
2. Include test data substantiating that products comply with requirements.

- B. Samples: For each type of paint system and each pattern, color, and gloss; minimum 6 inch long in least dimension, but not less than whole pattern.

1. Include stepped Samples defining each separate coat, including fillers and primers. Resubmit until each required sheen, color, and texture is achieved.
2. For each painted color being matched to a standardized color-coding system, include the color chips from the color-coding-system company with Samples.
3. Include a list of materials for each coat of each Sample.
4. Label each Sample for location and application.
5. Sample Size:
 - a. Painted Surfaces: 12 by 12 inches Samples for each color and material, on hardboard.

- C. Product List: For each paint product indicated, include the following:

1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.
2. VOC content.

D. Color Matching Certificate: For computer-matched colors.

E. Preconstruction Test Reports: For cleaning materials, paint removers and paint coatings and systems.

1.05 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra paint materials, from the same production run, that match products applied and that are packaged with protective covering for storage and identified with labels describing contents, including material, finish, source, and location on building.

1. Quantity: Furnish Owner with an additional 3 percent, but not less than 1 gallon or one case, as appropriate, of each material and color applied.

1.06 MOCKUPS

A. Mockups: Prepare mockups of maintenance repainting processes for each type of coating system and substrate indicated and each color and finish required to demonstrate aesthetic effects and to set quality standards for materials and execution. Duplicate appearance of approved Sample submittals.

1. Locate mockups on existing surfaces where directed by Architect.
2. Surface-Preparation Mockups: On existing surfaces using applicable specified methods of cleaning and other surface preparation, provide mockup sample of at least 100 sq. ft..
3. Coating Mockups: Two surfaces of at least 100 sq. ft. to represent surfaces and conditions for application of each type of coating system under same conditions as the completed Work.
4. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
5. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.07 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 daily.

1.08 FIELD CONDITIONS

A. Weather Limitations: Proceed with maintenance repainting only when existing and forecasted weather conditions are within the environmental limits set by each manufacturer's written instructions and specified requirements.

- B. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.
- C. Do not apply paint in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than above the dew point; or to damp or wet surfaces.
- D.
 - 1. Painting may continue during inclement weather if surfaces and areas to be painted are enclosed and heated within temperature limits specified by manufacturer for surface preparation and during paint application and drying periods.

PART 2 PRODUCTS

2.01 PREPARATORY CLEANING MATERIALS

- A. Water: Potable.
- B. Hot Water: Water heated to a temperature of 140 to 160 deg F.
- C. Detergent Solution: Solution prepared by mixing 2 cups of tetrasodium pyrophosphate (TSPP), 1/2 cup of laundry detergent that contains no ammonia, 5 quarts of 5 percent sodium hypochlorite bleach, and 15 quarts of warm water for every 5 gal. of solution required.
- D. Mildewcide: Commercial proprietary mildewcide or a job-mixed solution prepared by mixing 1/3 cup of household detergent that contains no ammonia, 1 quart of 5 percent sodium hypochlorite bleach, and 3 quarts of warm water.
- E. Abrasives for Ferrous Metal Cleaning: Aluminum oxide paper, emery paper, fine steel wool, steel scrapers, and steel-wire brushes of various sizes.
- F. Rust Remover: Manufacturer's standard phosphoric acid-based gel formulation, also called "naval jelly," for removing corrosion from iron and steel.

2.02 PAINT REMOVERS

- A. Alkaline Paste Paint Remover: Manufacturer's standard alkaline paste or gel formulation for removing paint from masonry, stone, wood, plaster, or metal as required to suit Project; and containing no methylene chloride.
 - 1. Products:
 - a. American Building Restoration Products, Inc.; 800 Brush Grade.
 - b. Diedrich Technologies, Inc.; a division of Sandell Construction Solutions; 606 Multi-Layer Paint Remover.
 - c. EaCo Chem, Inc.; Stripper Cream.
 - d. PROSOCO, Inc; Sure Klean Heavy-Duty Paint Stripper.
 - e. Shore Corporation; 2200 Alka Strip.

- B. Covered or Skin-Forming Alkaline Paint Remover: Manufacturer's standard covered or skin-forming alkaline paste or gel formulation for removing paint from masonry, stone, wood, plaster, or metal as required to suit Project; and containing no methylene chloride.
 - 1. Products:
 - a. American Building Restoration Products, Inc.; Grip 'N Strip 800 Fast Acting.
 - b. Diedrich Technologies, Inc.; a division of Sandell Construction Solutions; 404 Rip-Strip.
 - c. Dumond Chemicals, Inc.; Peel Away 1 System.
- C. Solvent-Type Paste Paint Remover: Manufacturer's standard water-rinsable, solvent-type paste or gel formulation for removing paint from masonry, stone, wood, plaster, or metal as required to suit Project.
 - 1. Products:
 - a. Diedrich Technologies, Inc.; a division of Sandell Construction Solutions; 505 Special Coatings Stripper.
 - b. PROSOCO, Inc.; Sure Klean Fast Acting Stripper.
 - c. Shore Corporation; 2210 SB Paint Remover.
- D. Low-Odor, Solvent-Type Paste Paint Remover: Manufacturer's standard low-odor, water-rinsable, solvent-type paste, gel, or foamed emulsion formulation for removing paint from masonry, stone, wood, plaster, or metal as required to suit Project; and containing no methanol or methylene chloride.
 - 1. Products:
 - a. American Building Restoration Products, Inc.; Super Bio Strip Gel.
 - b. Cathedral Stone Products, Inc.; S-301.
 - c. Dumond Chemicals, Inc.; Peel Away 7 without paper covering.
 - d. EaCo Chem, Inc.; InStrip.
 - e. PROSOCO, Inc..

2.03 PAINT, GENERAL

- A. Material Compatibility:
 - 1. Provide materials for use within each paint system that are 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, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.
- B. Color: As selected by Architect from manufacturer's full range.

2.04 PAINT MATERIALS, GENERAL

- A. Refer to Section 09 91 23 - Interior Painting for paint materials.
- B. Refer to Section 09 96 00 - High-Performance Coatings for coating materials.

- C. Transition Coat: Paint manufacturer's recommended coating for use where a residual existing coating is incompatible with the paint system.

2.05 PATCHING MATERIALS

- A. Wood-Patching Compound: Two-part, epoxy-resin, wood-patching compound; knife-grade formulation as recommended in writing by manufacturer for type of wood repair indicated, tooling time required for the detail of work, and site conditions. Compound shall be designed for filling voids in damaged wood materials that have deteriorated from weathering and decay. Compound shall be capable of filling deep holes and spreading to feather edge.
 - 1. Products:
 - a. Abatron, Inc.; LiquidWood with WoodEpoxy.
 - b. Advanced Repair Technology, Inc.; Primatrate with Flex-Tec HV.
 - c. ConServ Epoxy LLC; Flexible Epoxy Consolidant 100 with Flexible Epoxy Patch 200.
 - d. Gougeon Brothers, Inc.; West Systems thickened with filler.
 - e. Polymeric Systems, Inc.; QuickWood.
 - f. Protective Coating Company; PC-Woody.
 - g. System Three Resins, Inc.; Sculpwood.
- B. Metal-Patching Compound: Two-part, polyester-resin, metal-patching compound; knife-grade formulation as recommended in writing by manufacturer for type of metal repair indicated, tooling time required for the detail of work, and site conditions. Compound shall be produced for filling metal that has deteriorated from corrosion. Filler shall be capable of filling deep holes and spreading to feather edge.
- C. Cementitious Patching Compounds: Cementitious patching compounds and repair materials specifically manufactured for filling cementitious substrates and for sanding or tooling prior to repainting; formulation as recommended in writing by manufacturer for type of cementitious substrate indicated, exposure to weather and traffic, the detail of work, and site conditions.

PART 3 EXECUTION

3.01 PROTECTION

- A. Comply with each manufacturer's written instructions for protecting building and other surfaces against damage from exposure to its products. Prevent chemical solutions from coming into contact with people, motor vehicles, landscaping, buildings, and other surfaces that could be harmed by such contact.
 - 1. Cover adjacent surfaces with materials that are proven to resist chemical solutions being used unless the solutions will not damage adjacent surfaces. Use protective materials that are UV resistant and waterproof. Apply masking agents to comply with manufacturer's written instructions. Do not apply liquid masking agent to painted or

porous surfaces. When no longer needed, promptly remove masking to prevent adhesive staining.

2. Do not apply chemical solutions during winds of sufficient force to spread them to unprotected surfaces.
3. Neutralize and collect alkaline and acid wastes before disposal.
4. Dispose of runoff from operations by legal means and in a manner that prevents soil erosion, undermining of paving and foundations, damage to landscaping, and water penetration into building interiors.

3.02 MAINTENANCE REPAINTING, GENERAL

- A. Maintenance Repainting Appearance Standard: Completed work is to have a uniform appearance as viewed by Architect from building interior at 5 feet away from painted surface and from building exterior at 20 feet away from painted surface.
- B. Execution of the Work: In repainting surfaces, disturb them as minimally as possible and as follows:
 1. Remove failed coatings and corrosion and repaint.
 2. Verify that substrate surface conditions are suitable for repainting.
 3. Allow other trades to repair items in place before repainting.
- C. Mechanical Abrasion: Where mechanical abrasion is needed for the work, use gentle methods, such as scraping and lightly hand sanding, that will not abrade softer substrates, reducing clarity of detail.
- D. Heat Processes: Do not use torches, heat guns, or heat plates.

3.03 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of painting work. Comply with paint manufacturer's written instructions for inspection.
- B. Maximum Moisture Content of Substrates: Do not begin application of coatings unless moisture content of exposed surface is below the maximum value recommended in writing by paint manufacturer and not greater than the following maximum values when measured with an electronic moisture meter appropriate to the substrate material:
 1. Concrete: 12 percent.
 2. Gypsum Board: 12 percent.
 3. Masonry (Clay and CMU): 12 percent.
 4. Portland Cement Plaster: 12 percent.
- C. Alkalinity: Do not begin application of coatings unless surface alkalinity is within range recommended in writing by paint manufacturer. Conduct alkali testing with litmus paper on exposed plaster, cementitious, and masonry surfaces.
- D. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.

1. If existing surfaces cannot be prepared to an acceptable condition for proper finishing by using specified surface-preparation methods, notify Architect in writing.
- E. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry.
 1. Beginning coating application constitutes Contractor's acceptance of substrates and conditions.

3.04 PREPARATORY CLEANING

- A. General: Use the gentlest, appropriate method necessary to clean surfaces in preparation for painting. Clean all surfaces, corners, contours, and interstices.
- B. Detergent Cleaning: Wash surfaces by hand using clean rags, sponges, and bristle brushes. Scrub surface with detergent solution and bristle brush until soil is thoroughly dislodged and can be removed by rinsing. Use small brushes to remove soil from joints and crevices. Dip brush in solution often to ensure that adequate fresh detergent is used and that surface remains wet. Rinse with water applied by clean rags or sponges.
- C. Mildew: Clean off existing mildew, algae, moss, plant material, loose paint, grease, dirt, and other debris by scrubbing with bristle brush or sponge and detergent solution. Scrub mildewed areas with mildewcide. Rinse with water applied by clean rags or sponges.
- D. Chemical Rust Removal:
 1. Remove loose rust scale with specified abrasives for ferrous-metal cleaning.
 2. Apply rust remover with brushes or as recommended in writing by manufacturer.
 3. Allow rust remover to remain on surface for period recommended in writing by manufacturer or as determined by preconstruction testing. Do not allow extended dwell time.
 4. Wipe off residue with mineral spirits and either steel wool or soft rags, or clean with method recommended in writing by manufacturer to remove residue.
 5. Dry immediately with clean, soft cloths. Follow direction of grain in metal.
 6. Prime immediately to prevent rust. Do not touch cleaned metal surface until primed.
- E. Mechanical Rust Removal:
 1. Remove rust with specified abrasives for ferrous-metal cleaning. Clean to bright metal.
 2. Wipe off residue with mineral spirits and either steel wool or soft rags.
 3. Dry immediately with clean, soft cloths. Follow direction of grain in metal.
 4. Prime immediately to prevent rust. Do not touch cleaned metal surface until primed.

3.05 PAINT REMOVAL

- A. General: Remove paint where indicated. Where cleaning methods have been attempted and further removal of the paint is required because of incompatible or unsatisfactory surfaces for repainting, remove paint to extent required by conditions.

1. Application: Apply paint removers according to paint-remover manufacturer's written instructions. Do not allow paint removers to remain on surface for periods longer than those indicated or recommended in writing by manufacturer.
 - a. Apply materials to all surfaces, corners, contours, and interstices, to provide a uniform final appearance without streaks.
 - b. After work is complete, remove protection no longer required. Remove tape and adhesive marks.
 2. Brushes: Use brushes that are resistant to chemicals being used.
 - a. Metal Substrates: If using wire brushes on metal, use brushes of same metal composition as metal being treated.
 - b. Wood Substrates: Do not use wire brushes.
 3. Spray Equipment: Use spray equipment that provides controlled application at volume and pressure indicated, measured at nozzle. Adjust pressure and volume to ensure that spray methods do not damage surfaces.
 - a. Equip units with pressure gages.
 - b. Unless otherwise indicated, hold spray nozzle at least 6 inches (150 mm) from surface and apply material in horizontal, back-and-forth sweeping motion, overlapping previous strokes to produce uniform coverage.
 - c. For chemical spray application, use low-pressure tank or chemical pump suitable for chemical indicated, equipped with nozzle having a cone-shaped spray.
 - d. For water-spray application, use fan-shaped spray tip that disperses water at an angle of 25 to 50 degrees.
 - e. For heated water-spray application, use equipment capable of maintaining temperature between 140 and 160 deg F at flow rates indicated.
- B. Paint Removal with Hand Tools: Remove paint manually using hand-held scrapers, wire brushes, sandpaper, and metallic wool as appropriate for the substrate material.
- C. Paint Removal with Alkaline Paste Paint Remover:
1. Remove loose and peeling paint using[water, scrapers, stiff brushes, or a combination of these. Let surface dry thoroughly.
 2. Apply paint remover to dry, painted surface with brushes.
 3. Allow paint remover to remain on surface for period recommended in writing by manufacturer or as determined by preconstruction testing.
 4. Rinse with cold water applied by medium-pressure spray to remove chemicals and paint residue.
 5. Use mechanical methods recommended in writing by manufacturer to remove chemicals and paint residue.
 6. Repeat process if necessary to remove all paint.
- D. Paint Removal with Covered or Skin-Forming Alkaline Paint Remover:
1. Remove loose and peeling paint using water, scrapers, stiff brushes, or a combination of these. Let surface dry thoroughly.
 2. Apply paint remover to dry, painted surface with brushes or as recommended in writing by manufacturer.

3. Apply cover according to manufacturer's written instructions.
4. Allow paint remover to remain on surface for period recommended in writing by manufacturer or as determined by preconstruction testing.
5. Scrape off paint and remover.
6. Rinse with cold water applied by medium-pressure spray to remove chemicals and paint residue.
7. Use mechanical methods recommended in writing by manufacturer to remove chemicals and paint residue.
8. For spots of remaining paint, apply alkaline paste paint remover according to "Paint Removal with Alkaline Paste Paint Remover" Paragraph.

3.06 SUBSTRATE REPAIR

- A. General: Repair substrate surface defects that are inconsistent with the surface appearance of adjacent materials and finishes.
- B. Cementitious Material Substrate:
 1. General: Repair defects including dents and chips more than 1/4 inch in size and all holes and cracks by filling with cementitious patching compound and sanding smooth. Remove protruding fasteners.
 2. New and Bare Plaster: Neutralize surface of plaster with mild acid solution as recommended in writing by paint manufacturer. In lieu of acid neutralization, follow manufacturer's written instruction for primer or transition coat over alkaline plaster surfaces.
 3. Concrete, Cement Plaster, and Other Cementitious Products: Remove efflorescence, chalk, dust, dirt, grease, oils, and release agents. If surfaces are too alkaline to paint, correct this condition before painting.
- C. Gypsum-Plaster and Gypsum-Board Substrates:
 1. Repair defects including dents and chips more than 1/8 inch in size and all holes and cracks by filling with gypsum-plaster patching compound and sanding smooth. Remove protruding fasteners.
 2. Rout out surface cracks to remove loose, unsound material; fill with patching compound and sand smooth.
- D. Metal Substrate:
 1. Preparation: Treat repair locations by wire-brushing and solvent cleaning. Use chemical rust removal method to clean off rust.
 2. Defects in Metal Surfaces: Repair non-load-bearing defects in existing metal surfaces, including dents and gouges more than 1/16 inch deep or 1/2 inch across and all holes and cracks by filling with metal-patching compound and sanding smooth. Remove burrs and protruding fasteners.
 3. Priming: Prime iron and steel surfaces immediately after repair to prevent flash rusting. Stripe paint corners, crevices, bolts, welds, and sharp edges. Apply two coats to surfaces that are inaccessible after completion of the Work.

3.07 PAINT APPLICATION, GENERAL

- A. Comply with manufacturers' written instructions for application methods unless otherwise indicated in this Section.
- B. Prepare surfaces to be painted according to the Surface-Preparation Schedule and with manufacturer's written instructions for each substrate condition.
- C. Apply a transition coat over incompatible existing coatings.
- D. Metal Substrate: Stripe paint corners, crevices, bolts, welds, and sharp edges before applying full coat. Apply two coats to surfaces that are inaccessible after completion of the Work. Tint stripe coat different than the main coating and apply with brush.
- E. Blending Painted Surfaces: When painting new substrates patched into existing surfaces or touching up missing or damaged finishes, apply coating system specified for the specific substrate. Apply final finish coat over entire surface from edge to edge and corner to corner.

3.08 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Engage paint-remover manufacturer's factory-authorized service representative for consultation and Project-site inspection and to provide on-site assistance when requested by Architect.
- B. Paint Material Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test paint for composition and dry film thickness.
 - 1. Paint Composition: The following procedure may be performed at any time and as often as Owner deems necessary during the period when paints are being applied:
 - a. Testing agency will sample paint materials being used. Samples of material delivered to Project site will be taken, identified, sealed, and certified in presence of Contractor.
 - b. Testing agency will perform tests for compliance of paint materials with product requirements.
 - c. If test results show materials being used do not comply with product requirements, Contractor shall remove noncomplying-paint materials from Project site, pay for testing, and repaint surfaces painted with rejected materials. Remove rejected materials from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.
 - 2. Dry Film Thickness:
 - a. Contractor shall touch up and restore painted surfaces damaged by testing.
 - b. If test results show that dry film thickness of applied paint does not comply with paint manufacturer's written instructions, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with paint manufacturer's written instructions.

3.09 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.

3.10 SURFACE-PREPARATION SCHEDULE

- A. General: Before painting, prepare surfaces where indicated on Drawings for painting according to applicable requirements specified in this schedule.
 - 1. Examine surfaces to evaluate each surface condition according to paragraphs below.
 - 2. Where existing degree of soiling prevents examination, pre-clean surface and allow it to dry before making an evaluation.
 - 3. Repair substrate defects according to "Substrate Repair" Article.
- B. Surface Preparation for MPI DSD 0 Degree of Surface Degradation:
 - 1. Surface Condition: Existing paint film in good condition and tightly adhered.
 - 2. Paint Removal: Not required.
 - 3. Preparation for Painting: Wash surface by detergent cleaning; use solvent cleaning where needed. Roughen or degloss cleaned surfaces to ensure paint adhesion according to paint manufacturer's written instructions.
- C. Surface Preparation for MPI DSD 1 Degree of Surface Degradation:
 - 1. Surface Condition: Paint film cracked or broken but adhered.
 - 2. Paint Removal: Scrape by hand-tool cleaning methods to remove loose paint until only tightly adhered paint remains.
 - 3. Preparation for Painting: Wash surface by detergent cleaning; use other cleaning methods for small areas of bare substrate if required. Roughen, degloss, and sand the cleaned surfaces to ensure paint adhesion and a smooth finish according to paint manufacturer's written instructions.
- D. Surface Preparation for MPI DSD 2 Degree of Surface Degradation:
 - 1. Surface Condition: Paint film loose, flaking, or peeling.
 - 2. Paint Removal: Remove loose, flaking, or peeling paint film by hand-tool or chemical paint-removal methods.
 - 3. Preparation for Painting: Wash surface by detergent cleaning; use solvent cleaning where needed. Use other cleaning methods for small areas of bare substrate if

required. Sand surfaces to smooth remaining paint film edges. Prepare bare cleaned surface to be painted according to paint manufacturer's written instructions for substrate construction materials.

- E. Surface Preparation for MPI DSD 3 Degree of Surface Degradation:
 - 1. Surface Condition: Paint film severely deteriorated and surface indicated to have paint completely removed.
 - 2. Paint Removal: Completely remove paint film by hand-tool or chemical paint-removal methods. Remove rust.
 - 3. Preparation for Painting: Prepare bare cleaned surface according to paint manufacturer's written instructions for substrate construction materials.
- F. Surface Preparation for MPI DSD 4 Degree of Surface Degradation:
 - 1. Surface Condition: Missing material, small holes and openings, and deteriorated or corroded substrate.
 - 2. Substrate Preparation: Repair, replace, and treat substrate according to "Substrate Repair" Article and requirements in other Specification Sections.
 - 3. Preparation for Painting: Sand substrate surfaces to smooth remaining paint film edges and prepare according to paint manufacturer's written instructions for substrate construction materials. Remove rust.
 - 4. Painting: Paint as required for MPI DSD 2 degree of surface degradation.

END OF SECTION

SECTION 09 30 00 - TILING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Tile for floor applications.
- B. Tile for wall applications.
- C. Crack isolation membranes.
- D. Ceramic Tiling.

1.02 REFERENCE STANDARDS

- A. ANSI A108/A118/A136.1 - American National Standard Specifications for the Installation of Ceramic Tile (Compendium); 2013.1.
 - 1. ANSI A108.1a - American National Standard Specifications for Installation of Ceramic Tile in the Wet-Set Method, with Portland Cement Mortar; 2014.
 - 2. ANSI A108.4 - American National Standard Specifications for Installation of Ceramic Tile with Organic Adhesives or Water Cleanable Tile-Setting Epoxy Adhesive; 2009 (Revised).
 - 3. ANSI A118.3 - American National Standard Specifications for Chemical Resistant, Water Cleanable Tile-Setting and -Grouting Epoxy and Water Cleanable Tile-Setting Epoxy Adhesive; 2013 (Revised).
 - 4. ANSI A118.15 - American National Standard Specifications for Improved Modified Dry-Set Cement Mortar; 2012.
- B. ASTM C499 - Standard Test Method for Facial Dimensions and Thickness of Flat, Rectangular Ceramic Wall and Floor Tile; 2009.
- C. TCNA (HB) - Handbook for Ceramic, Glass, and Stone Tile Installation; 2016.

1.03 DEFINITIONS

- A. Module Size: Actual tile size, with minor facial dimension as measured by ASTM C499, plus joint width indicated.
- B. Facial Dimension: Actual tile size, with minor facial dimension as measured by ASTM C499.
- C. Large Format Tile: Any tile unit that maintains an edge of 15 inches or greater in any dimension.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Coordinate location of tiling movement joints on concrete floor substrates with locations of concrete floor expansion and control joints; align substrate joints and tiling system joints where required by specified reference standards.

- B. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this Section; require attendance by all affected installers.
 - 1. Review installation procedures and coordination requirements.
 - 2. Meeting Agenda includes but is not Limited to:
 - a. Acceptance of substrate.
 - b. Surface preparation.
 - c. Tile and installation material compatibility.
 - d. Elastomeric membrane.
 - e. Crack isolation techniques.
 - f. Review requirements in ANSI A108.01 for substrates and for preparation by other trades.

1.05 SUBMITTALS

- A. Product Data: Provide manufacturer's data sheets on tile, mortar, grout, and accessories. Include instructions for using grouts and adhesives.
- B. Shop Drawings: Indicate tile layout, patterns, color arrangement, perimeter conditions, junctions with dissimilar materials, control and expansion joints, thresholds, ceramic accessories, and setting details.
- C. Samples: Submit three 4 by 4 inch samples of each tile type, noting actual tile size.
 - 1. Include samples of specified accessories per Finish Schedule.
 - 2. Submit three samples of each grout color per Finish Schedule.
- D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- E. Master Grade Certificate: Submit for each type of tile, signed by the tile manufacturer and tile installer.
- F. Maintenance Data: Include recommended cleaning methods, cleaning materials, and stain removal methods.
- G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. Extra Tile: 2 percent of each size, color, and surface finish combination, but not less than 10 square feet of each type.

1.06 SUSTAINABILITY SUBMITTALS

- A. CAL-Green documentation and verification data as specified in Section 01 81 14 - Sustainable Design Requirements - CAL-Green, for the following measures:
 - 1. 4.504.2.1 and 5.504.4.1 Adhesives and sealants.

1.07 QUALITY ASSURANCE

- A. Maintain one copy of and ANSI A108/A118/A136.1 and TCNA (HB) on site.
- B. Manufacturer Qualifications: Company specializing in manufacturing the types of products specified in this Section, with minimum 5 years of documented experience.

- C. Installer Qualifications: Company specializing in performing tile installation, with minimum of five years of documented experience.
- D. Provide materials obtained from only one manufacturer for each type and color of tile, and for each type of mortar, grout, adhesive, and sealant.
- E. Floor Tile Slip Resistance: Comply with ANSI A137.1, 2012 edition Dynamic Coefficient of Friction AcuTest of 0.42 wet as tested with BOT-3000 Universal Walkway Tester.
- F. Certifications:
 - 1. Submit "Master Grade Certificate" for each type of ceramic and quarry tile in accordance with requirements of ANSI A137.1.
 - 2. Submit manufacturer's certifications that mortars, adhesives and grouts are suitable for intended use.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirements in ANSI A137.1 for labeling tile packages.
- B. Store tile and cementitious materials on elevated platforms, under cover, and in a dry location.
- C. Protect adhesives from freezing or overheating in accordance with manufacturer's instructions.

1.09 FIELD CONDITIONS

- A. Comply with referenced standards and manufacturer's recommendations for protection and maintenance of environmental conditions during and after installation.
- B. Do not install solvent-based products in an unventilated environment.
- C. Maintain ambient and substrate temperature of 50 degrees F during installation, and for at least seven days after installation. Maintain higher temperatures for proprietary mortars and grouts when recommended by manufacturer.
- D. Vent temporary heaters to the exterior to prevent damage to tile work due to carbon dioxide accumulation.

PART 2 PRODUCTS

2.01 TILING MATERIALS

- A. Refer to Finish Schedule for selected products and finishes.
- B. Ceramic tile flooring shall be stable, firm, and slip resistant.

2.02 SETTING MATERIALS

- A. Setting Materials - General:
 - 1. Use only the types of mortar bed materials to set the types of tile for which the mortar is labeled.
- B. Polymer Modified Thinset Dryset Mortar Bond Coat: ANSI A118.4 or ANSI A118.15.
 - 1. Applications: Use this type of bond coat where indicated .
 - a. Acceptable Products:
 - 1) Custom Building Products; MegaFlex Crack Prevention Mortar: www.custombuildingproducts.com.
 - 2) LATICRETE International, Inc.; Laticrete 4237 Mortar Admix with Laticrete 211 Crete Filler: www.laticrete.com.
 - 3) Mapei Corporation: Kerabond and Keralastic.
 - 4) Prior approved equal.
- C. Latex-Portland Cement Mortar Bond Coat: ANSI A118.4 or ANSI A118.15.
 - 1. Large and Heavy Tile Mortar: For floor and wall applications in new construction, provide high-bond Portland cement mortar for large format tile, medium bed. Provide product that is approved by manufacturer for application thickness up to 3/4 inch.
 - a. Acceptable Products:
 - 1) Custom Building Products; MegaLite RS Ultimate Crack Prevention Large Format, with Multi-Surface Bonding Primer: www.custombuildingproducts.com.
 - 2) LATICRETE International, Inc.; LATICRETE 254 Platinum: www.laticrete.com.
 - 3) Mapei Corporation; Grani/Rapid with Ker 318.
 - 2. Applications: For wall applications, provide non-sagging, latex Portland cement mortar complying with ANSI A118.4 for mortar of this type.
 - a. For wall applications with large and heavy tile.
 - b. For floor applications with large and heavy tile.

2.03 GROUTS

- A. Stain-Resistant High Performance Grout: ANSI A118.7 polymer modified cement grout.
 - 1. Applications: Showers, exterior locations, and as indicated on Drawings.
 - 2. Use sanded grout for joints 1/8 inch wide and larger; use unsanded grout for joints less than 1/8 inch wide.
 - 3. Polymer Type: As recommended by manufacturer in liquid-latex form for addition to prepackaged dry-grout mix.
 - 4. Color(s): As indicated on Finish Schedule.
 - 5. Acceptable Products:
 - a. Custom Building Products; Fusion Pro Single Component Grout: www.custombuildingproducts.com.
 - b. LATICRETE International, Inc; Spectralock: www.laticrete.com.
 - c. Mapei Corporation; Ultracolor Plus.

2.04 ACCESSORY MATERIALS

- A. Adhesives and Sealants (including grouts): Only use adhesives and sealants (grouts) in the interior of the building that meet or do not exceed the VOC limits of the CURRENT requirements of South Coast Air Quality Management District (SCAQMD) Rule No. 1168 on the interior of the building.
 - 1. Current requirement refers to the date on which the materials are installed in the building.
 - 2. SCAQMD Rule #1168 referenced in Section 018114 that was current as of the date of this specification. Refer to www.aqmd.gov/rules for the actual current version of the rule that will be applicable at the date of installation during construction.
 - 3. Interior refers to all building construction that is inside of the exterior weatherproofing material.
 - a. Adhesives shall meet or exceed the VOC and chemical component limits of CAL-Green Table 5.504.4.1 Adhesive VOC Limit requirements.
 - b. Sealants shall meet or exceed the VOC and chemical component limits of CAL-Green Table 5.504.4.2 Sealant VOC Limit requirements.
- B. Sealant: As specified in Section 07 92 00 - Joint Sealants.
 - 1. Color: Match grout.
 - 2. Ensure sealant is chemically compatible with tile, mortar, and grout.
 - 3. Ensure sealant can physically and chemically withstand environmental conditions normally expected at installation areas.
- C. Trowelable Underlayments and Patching Compounds: Latex-modified, portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.
- D. Tile Cleaner: A neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, specifically approved for materials and installations indicated by tile and grout manufacturers.
- E. Crack Isolation Sheet: Fabric-reinforced, modified-bituminous sheet, self-adhering, modified-bituminous sheet with fabric reinforcement facing; 40 mils nominal thickness.
 - 1. Acceptable Products:
 - a. Custom Building Products; Crack Buster Mat Underlayment .
 - b. Laticrete International, Inc.; Laticrete 150 Sound N Crack Isolation Mat.
 - c. MAPEI Corporation; Mapelastic SM.
- F. Waterproofing Membrane at Floors: Specifically designed for bonding to cementitious substrate under thick mortar bed or thin-set tile; complying with ANSI A118.10.
 - 1. Fluid or Trowel Applied Type:
 - a. Material: Synthetic rubber.
 - b. Thickness: 25 mils, minimum, dry film thickness.
 - c. Acceptable Products:
 - 1) Custom Building Products; RedGard Crack Prevention and Waterproofing Membrane: www.custombuildingproducts.com.

- 2) LATICRETE International, Inc; LATICRETE HYDRO BAN:
www.laticrete.com/#sle.
- 3) Mapei Corporation; Mapelastic AquaDefense.
- 4) Other Acceptable Manufacturers:
 - (a) LATICRETE International, Inc: www.laticrete.com.
 - (b) Mapei Corporation.
 - (c) Prior approved equal.

G. Backing Board: Specified in Section 09 21 16.

2.05 MIXING MORTARS AND GROUT

- A. Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.
- B. Add materials, water, and additives in accurate proportions.
- C. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that sub-floor surfaces are smooth and flat within the tolerances specified for that type of work and are ready to receive tile.
- B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive tile.
- C. Verify that sub-floor surfaces are dust-free and free of substances that could impair bonding of setting materials to sub-floor surfaces.
- D. Verify that concrete sub-floor surfaces are ready for tile installation by testing for moisture emission rate and alkalinity; obtain instructions if test results are not within limits recommended by tile manufacturer and setting materials manufacturer.
- F. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION

- A. Protect surrounding work from damage.
 1. Vacuum clean surfaces and damp clean.
 2. Seal substrate surface cracks with filler. Level existing substrate surfaces to acceptable flatness tolerances.
 3. Fill cracks, holes, and depressions in concrete substrates for tile floors installed with mortar with trowelable leveling and patching compound specifically recommended by tile-setting material manufacturer.

- B. Where indicated, prepare substrates to receive waterproofing by applying a reinforced mortar bed that complies with ANSI A108.1A and is sloped 1/4 inch per foot toward drains.
- C. Blending: For tile exhibiting color variations, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colors as those taken from other packages and match approved Samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.
- D. Install crack isolation membrane to comply with ANSI A118.10 and membrane manufacturer's written instructions for full floor coverage.

3.03 WATERPROOFING INSTALLATION

- A. Install waterproofing to comply with ANSI A108.10 and manufacturer's written instructions to produce waterproof membrane of uniform thickness that is bonded securely to substrate.
- B. Allow waterproofing to cure and verify by testing that it is watertight before installing tile or setting materials over it.
- C. Flash membrane up adjacent walls and restraining surfaces. Make shower pans watertight, including connection to drain.
- D. Apply waterproofing on wall surfaces in shower areas covered by tile.
- E. Allow membrane to cure prior to setting tile.
- F. Do not allow construction traffic on membrane.

3.04 CRACK ISOLATION MEMBRANE INSTALLATION

- A. Install crack isolation membrane to comply with ANSI A108.17 and manufacturer's written instructions to produce membrane of uniform thickness that is bonded securely to substrate.

3.05 INSTALLATION - GENERAL

- A. Architect to review tile layout prior to installation.
- B. Comply with TCNA's "Handbook for Ceramic, Glass, and Stone Tile Installation" for TCNA installation methods specified in tile installation schedules. Comply with parts of the ANSI A108 series "Specifications for Installation of Ceramic Tile" that are referenced in TCNA installation methods, specified in tile installation schedules, and apply to types of setting and grouting materials used.
 - 1. For the following installations, follow procedures in the ANSI A108 series of tile installation standards for providing 100 percent mortar coverage:
 - a. Tile floors consisting of tiles 8 by 8 inches or larger.
 - 2. Tolerances:
 - a. Lippage: Set top of tiles flush with each other. Exposed face offset between adjacent tiles (lippage); 3/64 inch maximum.

- b. Joint Width: 1/8 inch, +/- 1/32 inch, unless noted otherwise.
- C. Blending: For tile exhibiting color or pattern variations within the ranges of accepted submittals, verify that tile has been blended in the packages so that tile units taken from one package show same range in colors or patterns as those taken from other packages. If not blended in the packages, blend tile in the field before installation.
- D. Floor System Coverage: Where specified for individual setting methods, install floor tile units with 100 percent mortar coverage by complying with applicable special requirements for back buttering of tile units in referenced ANSI A108 specifications.
- E. Wall System Coverage: Where specified for individual setting methods, install wall tile units with 100 percent mortar coverage by complying with applicable special requirements for back buttering of tile units in referenced ANSI A108 specifications.
- F. Movement Joints: Comply with TCNA EJ171 requirements for locations, spacing, and installation of applicable movement joints, whether or not specifically indicated or detailed on Drawings, and as follows:
 - 1. Spacing - Interior: Maximum 24 feet on center in each direction; reduce spacing to maximum 10 feet on center in areas exposed to direct sunlight or moisture.
 - 2. Joint Width: Match adjacent grouted joint widths, unless TCNA EJ171 requires a specific joint width based on joint location or joint service conditions.
 - 3. Apply sealant joint to junction of tile and dissimilar materials and junction of dissimilar planes, including but not limited to floor to wall joints, corners, and metal trim and non-ceramic accessory items.
 - 4. Keep movement joints free of setting adhesive and grout.
 - 5. Form internal angles and corners square, not grouted, with sealant joint.
 - 6. Form external angles and corners square, not grouted, with sealant joint.
 - 7. Apply specified sealant to joints.
- G. Lay tile to pattern indicated. Do not interrupt tile pattern through openings.
- H. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.
- I. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.
- J. Provide manufacturer's standard trim shapes where necessary to eliminate exposed tile edges.
- K. Where accent tile differs in thickness from field tile, vary setting-bed thickness so that tiles are flush.
- L. Jointing Pattern: Lay tile in grid pattern unless otherwise indicated. Lay out tile work and center tile fields in both directions in each space or on each wall area. Lay out tile work

- to minimize the use of pieces that are less than half of a tile. Provide uniform joint widths unless otherwise indicated.
1. For tile mounted in sheets, make joints between tile sheets same width as joints within tile sheets so joints between sheets are not apparent in finished work.
 2. Where adjoining tiles on floor, base, walls, or trim are specified or indicated to be same size, align joints.
 3. Where tiles are specified or indicated to be whole integer multiples of adjoining tiles on floor, base, walls, or trim, align joints unless otherwise indicated.
- M. Joint Widths: Unless otherwise indicated, install tile with the following joint widths:
1. Joint widths in subparagraphs below are examples only and are based on widths recommended by American Olean for its products. Retain one width for each tile type below, or revise after verifying widths with tile manufacturers for products selected. Coordinate joint widths with grout selections and module sizes specified in "Tile Products" Article.
 2. Porcelain Mosaic Tile: 1/8 inch, or less.
 3. Wall Tile: 1/8 inch, or less.
 4. Porcelain Tile: 1/8 inch.
- N. Expansion Joints: Provide expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated. Form joints during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.
1. Where joints occur in concrete substrates, locate joints in tile surfaces directly above them.
- O. Stone Thresholds: Install stone thresholds in same type of setting bed as adjacent floor unless otherwise indicated.
1. Do not extend crack isolation membrane under thresholds set in dry-set portland cement mortar. Fill joints between such thresholds and adjoining tile set on cleavage membrane with elastomeric sealant.
- P. Metal Edge Strips: Install at locations indicated.
- Q. Grout Sealer: Apply grout sealer to cementitious grout joints in tile floors according to grout-sealer manufacturer's written instructions. As soon as grout sealer has penetrated grout joints, remove excess sealer and sealer from tile faces by wiping with soft cloth.
- R. Cut and fit tile to penetrations through tile, leaving sealant joint space. Form corners and bases neatly. Align floor joints.
- S. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make grout joints without voids, cracks, excess mortar or excess grout, or too little grout.
- T. Sound tile after setting. Replace hollow sounding units.
- U. Keep expansion joints free of adhesive or grout. Apply sealant to joints.
- V. Prior to grouting, allow installation to completely cure; minimum of 48 hours.

- W. Grout tile joints, except where movement joints are indicated or specified. Use standard grout unless otherwise indicated.
- X. At changes in plane and tile-to-tile control joints, use tile sealant instead of grout, with either bond breaker tape or backer rod as appropriate to prevent three-sided bonding.
- Y. Allow completed tiling assemblies to cure full 72 hours before allowing heavy foot or equipment traffic on final installations.

3.07 THIN-SET METHOD:

- A. Apply mortar with notched trowel using scraping motion to work material into good contact with surface to be covered.
- B. Apply only as much mortar as can be covered within 20 to 30 minutes or while surface is still tacky.
- C. Trowel small quantity of mortar onto back (back-butter) of each tile.
- D. Set tiles in place and rub or beat with small beating block.
- E. Beat or rap tile to ensure proper bond and also to level surface of tile.
- F. Align tile to show uniform joints and allow to set until firm.
- G. Clean excess mortar from surface of tile with wet cloth or sponge while mortar is fresh.
- H. Shower and Floor Drains: Coordinate installation of drains with Division 22.

3.08 GROUTING AND POINTING:

- A. After tile has set sufficiently, fill joints with grout until flush with surrounding tile.
- B. Point joints full and remove excess grout. Clean tile thoroughly.
- C. Install sealant in vertical wall joints at interior corners.
- D. Install tile with maximum 25 percent variation of specified grout joint width.

3.09 EXPANSION JOINTS:

- A. Keep expansion joints free of mortar and grout.
- B. Provide expansion joints directly over changes in material, over control and expansion joints in substrate, at juncture of floors and walls, at other restraining surfaces such as curbs, columns, bases, and wall corners, and where recommended by TCNA EJ171 Expansion Joint requirements.
- C. Install sealant in expansion joints.
- D. Provide sealant material at items penetrating tile work, unless otherwise indicated.
- E. Provide sealants and related materials in accordance with cited ANSI and TCNA requirements.

3.10 ADJUSTING

- A. Sound tile after setting. Replace hollow sounding units.

3.11 CLEANING

- A. Remove and replace tile that is damaged or that does not match adjoining tile. Provide new matching units, installed as specified and in a manner to eliminate evidence of replacement.
- B. Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.
 - 1. Remove grout residue from tile as soon as possible.
 - 2. Clean grout smears and haze from tile according to tile and grout manufacturer's written instructions but no sooner than 10 days after installation. Use only cleaners recommended by tile and grout manufacturers and only after determining that cleaners are safe to use by testing on samples of tile and other surfaces to be cleaned. Protect metal surfaces and plumbing fixtures from effects of cleaning. Flush surfaces with clean water before and after cleaning.
- C. Leave finished installation clean and free of cracked, chipped, broken, un-bonded, or otherwise defective tile work.

3.12 PROTECTION

- A. A. Protect installed tile work with masonite or other heavy covering during construction period to prevent staining, damage, and wear. If recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile walls and floors.
- B. Do not permit traffic over finished floor surface for 7 days after installation.
- C. Before final inspection, remove protective coverings and rinse neutral protective cleaner from tile surfaces.

3.13 SCHEDULES

- A. Floor Tile Installation Schedule:
 - 1. Thin Bed Floor Tile System:
 - a. Description: Thin set.
 - b. Tile: Porcelain
 - c. Mortar: Polymer Modified Thinset Dryset Mortar.
 - d. Grout: High-performance sanded.
 - e. TCNA system: F-113.
- B. Wall Tile Installation Schedule:
 - 1. Interior Wall Tile System:
 - a. Description: Interior partitions with large heavy tile (large format) using cementitious tile backing board.
 - b. Tile: Porcelain
 - c. Mortar: Large Heavy Tile Dryset Mortar.

- d. Grout: High-performance sanded.
- e. TCNA System: W244C.

END OF SECTION

SECTION 09 91 23 - INTERIOR PAINTING

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes surface preparation and the application of paint systems on interior substrates.
- B. Surface preparation and field painting of exposed items and surfaces.
 - 1. Surface preparation, priming, and finish coats specified in this Section are in addition to shop priming and surface treatment specified in other Sections.
 - 2. Field finish coating of shop or factory primed and prefinished items. Refer to individual Sections for priming requirements.
 - 3. Finish coatings schedule.
 - 4. Preparation work and coatings specified in this Section are in addition to shop and factory applied finishes and surface treatment specified in other Sections.
 - 5. Paint all other items unless specifically indicated not to be painted.
 - 6. Color schedule.
- C. Paint exposed surfaces, except where these Specifications indicate that the surface or material is not to be painted or is to remain natural. If an item or a surface is not specifically mentioned, paint the item or surface the same as similar adjacent materials or surfaces. If a color of finish is not indicated, Architect will select from standard colors and finishes available.
 - 1. Painting includes field painting of exposed bare and covered pipes and ducts (including color coding), hangers, exposed steel and iron supports, and surfaces of mechanical and electrical equipment that do not have a factory-applied final finish.

1.02 DEFINITIONS

- A. Conform to PDCA Glossary for interpretation of terms used in this Section except as modified below.
- B. Exposed Surfaces: Surfaces of products, assemblies, and components visible from any angle after final installation. Includes internal surfaces visible when operable doors, panels or drawers are open, and surfaces visible behind registers, grilles, or louvers.
- C. Concealed Surfaces: Surfaces permanently hidden from view in finished construction and which are only visible after removal or disassembly of part or all of product or assembly.
- D. Inaccessible Spaces: Spaces not intended for human use.
 - 1. Standard terms used by the coatings industry are defined in ASTM D 16.
- E. Gloss Levels
 - 1. Gloss Level 1: Not more than 5 units at 60 degrees and 10 units at 85 degrees, according to ASTM D 523.

2. Gloss Level 2: Not more than 10 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523.
3. Gloss Level 3: 10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523.
4. Gloss Level 4: 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, according to ASTM D 523.
5. Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D 523.
6. Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D 523.
7. Gloss Level 7: More than 85 units at 60 degrees, according to ASTM D 523.

F. System DFT: Dry film thickness of entire coating system unless otherwise noted.

1.03 SUBMITTALS

- A. Product Data: For each paint system indicated. Include block fillers and primers.
 1. Material List: An inclusive list of required coating materials. Indicate each material and cross-reference specific coating, finish system, and application. Identify each material by manufacturer's catalog number and general classification.
 2. Manufacturer's Information: Manufacturer's technical information, including label analysis and instructions for handling, storing, and applying each coating material.
- B. Samples for Initial Selection: For each type of topcoat product.
- C. 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 (200 mm) square.
 2. Step coats on Samples to show each coat required for system.
 3. Label each coat of each Sample.
 4. Label each Sample for location and application area.
- D. Product List: For each product indicated, include the following:
 1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.
 2. VOC content.
- E. Certifications specified in Quality Assurance article.
- F. Qualification Data: Applicator's qualification data.
- G. Manufacturer's instructions.
- H. 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.

1.04 SUSTAINABILITY SUBMITTALS

- A. CAL-Green documentation and verification data as specified in Section 01 81 14 Sustainable Design Requirements - CAL-Green, for the following measures:
 - 1. 4.504.2.2 and 5.504.4.3 Paints and coatings.
 - 2. 4.504.2.3 and 5.504.4.3.1 Aerosol paints and coatings.

1.05 QUALITY ASSURANCE

- A. Field Samples: Apply field samples of each paint system indicated and each color and finish selected to verify preliminary selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 - 1. Architect will select one surface to represent surfaces and conditions for application of each paint system specified in Part 3.
 - a. Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft..
 - b. Other Items: Architect will designate items or areas required.
 - 2. Final approval of color selections will be based on field samples.
 - a. If preliminary color selections are not approved, apply additional Mock-ups of additional colors selected by Architect at no added cost to Owner.
 - 3. Approval of field samples does not constitute approval of deviations from the Contract Documents contained in Mock-ups unless Architect specifically approves such deviations in writing.
 - 4. Subject to compliance with requirements, approved Mock-ups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to Project site in manufacturer's original, unopened packages and containers bearing manufacturer's name and label and the following information:
 - 1. Add other requirements to suit Project.
 - 2. Product name or title of material.
 - 3. Product description (generic classification or binder type).
 - 4. Manufacturer's stock number and date of manufacture.
 - 5. Contents by volume, for pigment and vehicle constituents.
 - 6. Thinning instructions.
 - 7. Application instructions.
 - 8. Color name and number.
 - 9. VOC content.
- B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg F. Maintain storage containers in a clean condition, free of foreign materials and residue.
 - 1. Protect from freezing. Keep storage area neat and orderly. Remove oily rags and waste daily.

1.07 FIELD CONDITIONS

- A. Environmental Conditions: Comply with more restrictive of following or manufacturer's requirements under which systems can be applied.
1. Provide continuous ventilation during application of coatings to exhaust hazardous fumes.
 2. Provide heating necessary to maintain surface and ambient temperatures within specified limits.
 3. Maintain temperature and humidity conditions for minimum 24 hours before, during, and 48 hours after application of finishes, unless longer times are required by manufacturer.
 4. Do not permit wide variations in ambient temperatures which might result in condensation on freshly coated surfaces.
 5. Provide illumination of not less than 80 footcandles measured mid-height at substrate surface during application of coatings.
 6. Apply water reducible coatings only when ambient and surface temperatures are between 50 degrees F and 90 degrees F.
 7. Apply solvent reducible coatings only when ambient and surface temperatures are between 45 degrees F and 90 degrees F.
 8. Do not apply coatings under any of following conditions:
 - a. When surfaces are damp or wet.
 - b. During snow, rain, fog, or mist.
 - c. When relative humidity is less than 20 percent or exceeds 85 percent.
 - d. When temperature is less than 5 degrees F above dew point.
 - e. When dust may be generated before coatings have dried.
 - f. In direct sunlight.
 - g. When wind velocity is above 20 mph.
 9. Application of coatings may continue during inclement weather provided work areas and surfaces to be coated are enclosed and specified environmental conditions are maintained.

1.08 WARRANTY

- A. Warrant installation to be free from defects in material and workmanship for 5 years.
- B. Repair or replace defects occurring during warranty period.
1. Defects include but are not limited to pinholes, crazing or cracking, loss of adhesion to substrate, deficient thickness, improper materials and workmanship.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Acceptable Manufacturers:
1. Benjamin Moore & Co.
 2. Dunn-Edwards Corporation.

3. Kelly-Moore Paint Company Inc.
4. PPG Paints.
5. Sherwin-Williams Company (The).

2.02 PAINT, GENERAL

- A. Material Compatibility:
1. Provide materials for use within each paint system that are 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, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.
- B. Material Quality: Provide manufacturer's best-quality paint material of the various coating types specified that are factory formulated and recommended by manufacturer for application indicated. Paint-material containers not displaying manufacturer's product identification will not be acceptable.
- C. Coatings:
1. Ready-mixed, factory tinted, best professional grade produced by manufacturer.
 2. Use manufacturer's appropriate base materials to achieve required colors.
 3. Fully grind pigments to maintain soft paste consistency in vehicle.
 4. Capable of being dispersed into uniform, homogeneous mixture.
 5. Possess good flowing and brushing properties.
 6. Capable of drying or curing free of streaks or sags, and yielding specified finish.
 7. VOC content of field applied coatings shall comply with local governing authorities.
- D. CAL-Green requirements for typical paint coatings:
1. Primers, Sealers, and Undercoaters: 100 grams per liter of product minus water
 2. Flats: 50 grams per liter of product minus water
 3. Non-flats: 100 grams per liter of product minus water
 4. Non-flat High Gloss: 150 grams per liter of product minus water
 5. Dry-Fog Coatings: 150 g/L.
 6. Anticorrosive and Antirust Paints Applied to Ferrous Metals: 250 g/L.
 7. Zinc-Rich Industrial Maintenance Primers: 340 g/L.
 8. Floor Coatings: 100 g/L.
 9. Shellacs, Clear: 730 g/L.
 10. Shellacs, Pigmented: 550 g/L.
- E. Colors: As selected by Architect from manufacturer's full range.
1. 10 percent of surface area will be painted with deep tones.

2.03 BLOCK FILLERS

- A. Interior Concrete Block Filler: Factory-formulated interior and exterior concrete block filler. PDCA Level 2.

1. Benjamin Moore and Company: Super Spec Masonry Int/Ext HI-Build Block Filler 206. Applied at a dry film thickness of not less than 8.5 mil.
2. Dunn-Edwards Corporation; SBSL00 Smooth Blocfil Select, Interior / Exterior Concrete Block Filler:
3. PPG Industries; Speedhide Interior Exterior Latex Block Filler 6-7
4. Sherwin-Williams: Prep-Rite Block Filler B25W25.

2.04 PRIMERS/SEALERS

- A. Interior Gypsum Board Primer: Factory-formulated latex-based primer for interior application.
1. Benjamin Moore and Company: Ultra Spec 500 Interior Latex Primer #N534. Applied at a dry film thickness of not less than 1.8 mil.
 2. Dunn-Edwards Corporation; VNSL00-1 Vinylastic Select Low Odor / Zero VOC Interior Wall Sealer: Applied at a dry film thickness of not less than 1.5 mils.
 3. Kelly-Moore; 971 Acry-Prime Interior Latex Primer/Sealer: Applied at a dry film thickness of not less than 1.6 mils.
 4. PPG Paints; Speedhide zero Interior Latex Primer/Sealer 6-4900XI. Applied at a dry film thickness of not less than 1.4 mils
 5. Sherwin-Williams; S-W ProMar 200 Zero VOC Primer, B28W02600. Applied at a dry film thickness of not less than 1.0 mil.
- B. Interior Ferrous-Metal Primer: Factory-formulated quick-drying rust-inhibitive alkyd-based metal primer.
1. Benjamin Moore and Company: Super Spec HP Alkyd Metal Primer #P06. Applied at a dry film thickness of not less than 1.7 mil.
 2. Dunn-Edwards Corporation; BRPR00-1 Bloc-Rust Premium, Ultra Low VOC, Interior / Exterior, Red Oxide or White, Waterborne Alkyd Rust Preventative Metal Primer: Applied at a dry film thickness of not less than 2.0 mils.
 3. Dunn-Edwards Corporation; ULDM00 Ultrashield, Low Odor / Zero VOC, Interior / Exterior DTM Gray Primer: Applied at a dry film thickness of not less than 2.0 mils.
 4. Kelly-Moore; 1711 Kel-Guard Alkyd White Rust Inhibitive Primer: Applied at a dry film thickness of not less than 2.0 mils.
 5. PPG Paints; Pitt Tech Plus DTM Acrylic Primer 90-912. Applied at a dry film thickness of not less than 2.0 mils.
 6. Sherwin-Williams; S-W Pro Industrial ProCryl Universal Acrylic Primer, B66W310. Applied at a dry film thickness of not less than 3.0 mils.
- C. Interior Zinc-Coated Metal Primer: Factory-formulated galvanized metal primer.
1. Benjamin Moore and Company: Super Spec HP Acrylic Metal Primer #P04. Applied at a dry film thickness of not less than 1.7 mils.
 2. Dunn-Edwards Corporation; UGSL00-1 Ultra-Grip Select, Low Odor / Zero VOC, Interior / Exterior Acrylic Multi-Surface Primer: Applied at a dry film thickness of not less than 1.5 mils.

3. Kelly-Moore; 1722 Kel-Guard Acrylic Galvanized Iron Primer: Applied at a dry film thickness of not less than 1.8 mils.
4. PPG Paints; Pitt Tech Plus DTM Acrylic Primer 90-912. Applied at a dry film thickness of not less than 2.0 mils
5. Sherwin-Williams: Pro-Cryl universal primer/finish, B66-310. Applied at a dry film thickness of not less than 3.0 mils.
6. Sherwin-Williams; DTM Wash Primer, B71Y1. Applied at a dry film thickness of not less than .7mils

2.05 FINISH COATS

- A. High-Performance Architectural Latex System - Flat Acrylic Paint: Factory-formulated flat acrylic-emulsion latex paint for interior application.
 1. Benjamin Moore and Company: Ultra Spec 500 Interior Flat Finish N536. Applied at a dry film thickness of not less than 1.8 mil.
 2. Dunn-Edwards Corporation; SZRO10 Spartazero Low Odor / Zero VOC Interior Flat Paint: Applied at a dry film thickness of not less than 1.5 mils.
 3. Kelly-Moore; 450 Pro-Wall Interior Flat Latex Wall Paint: Applied at a dry film thickness of not less than 1.8 mils.
 4. PPG Paints; Speedhide zero Interior Latex Flat 6-4110XI. Applied at a dry film thickness of not less than 1.3 mils
 5. Sherwin-Williams; S-W ProMar 200 Zero VOC Flat, B30W02651. Applied at a dry film thickness of not less than 1.6 mil.
- B. High-Performance Architectural Latex System - Flat Latex-Emulsion Size: Factory-formulated flat latex-based interior paint.
 1. Benjamin Moore and Company: Ultra Spec 500 Interior Flat Finish N536. Applied at a dry film thickness of not less than 1.8 mil.
 2. Dunn-Edwards Corporation; SZRO10 Spartazero Low Odor / Zero VOC Interior Flat Paint: Applied at a dry film thickness of not less than 1.5 mils.
 3. Kelly-Moore; 450 Pro-Wall Interior Flat Latex Wall Paint: Applied at a dry film thickness of not less than 1.8 mils.
 4. PPG Industries; Speedhide zero Interior Latex Flat 6-4110XI. Applied at a dry film thickness of not less than 1.3 mils
 5. Sherwin-Williams; S-W ProMar 200 Zero VOC Flat, B30W02651. Applied at a dry film thickness of not less than 1.6 mil.
- C. High-Performance Architectural Latex System - Low-Luster Acrylic Enamel: Factory-formulated eggshell acrylic-latex interior enamel.
 1. Benjamin Moore and Company: Ultra Spec 500 Interior Eggshell Finish N538. Applied at a dry film thickness of not less than 1.8 mil.
 2. Dunn-Edwards Corporation; SZRO20 Spartazero Low Odor / Zero VOC Interior Velvet Paint: Applied at a dry film thickness of not less than 1.5 mils.
 3. Dunn-Edwards Corporation; SZRO30 Spartazero Low Odor / Zero VOC Interior Eggshell Paint: Applied at a dry film thickness of not less than 1.5 mils.

4. Kelly-Moore; 1610 Sat-N-Sheen Interior Latex Low Sheen Wall and Trim Finish: Applied at a dry film thickness of not less than 1.6 mils.
 5. PPG Paints; Speedhide zero Interior Latex Eggshell 6-4310XI. Applied at a dry film thickness of not less than 1.5 mils
 6. Sherwin-Williams; S-W ProMar 200 Zero VOC EgShel, B20W02651. Applied at a dry film thickness of not less than 1.6 mil.
- D. High-Performance Architectural Latex System - Semigloss Acrylic Enamel: Factory-formulated semigloss acrylic-latex enamel for interior application.
1. Benjamin Moore and Company: Ultra Spec 500 Interior Semi-Gloss Finish N539. Applied at a dry film thickness of not less than 1.8 mil.
 2. Dunn-Edwards Corporation; SZRO50 Spartazero Low Odor / Zero VOC Interior Semi-Gloss Paint: Applied at a dry film thickness of not less than 1.5 mils.
 3. Kelly-Moore; 1649 Acrylic-Latex Semi-Gloss Enamel: Applied at a dry film thickness of not less than 1.7 mils.
 4. PPG Paints; Speedhide zero Interior Latex Semi-Gloss 6-4510XI. Applied at a dry film thickness of not less than 1.3 mils
 5. Sherwin-Williams; ProMar 200 Zero VOC Sem-Gloss, B31W02651. Applied at a dry film thickness of not less than 1.7 mil.

2.06 SOURCE QUALITY CONTROL

- A. Testing of Paint Materials: Owner reserves the right to invoke the following procedure:
1. Owner will engage the services of a qualified testing agency to sample paint materials. Contractor will be notified in advance and may be present when samples are taken. If paint materials have already been delivered to Project site, samples may be taken at Project site. Samples will be identified, sealed, and certified by testing agency.
 2. Testing agency will perform tests for compliance with product requirements.
 3. Owner may direct Contractor to stop applying coatings if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying paint materials from Project site, pay for testing, and repaint surfaces painted with rejected materials. Contractor will be required to remove rejected materials from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine substrates, areas, and conditions, with Applicator present, for compliance with requirements for paint application. Comply with procedures specified in PDCA P4.
1. Proceed with paint application only after unsatisfactory conditions have been corrected and surfaces receiving paint are thoroughly dry.
 2. Start of painting will be construed as Applicator's acceptance of surfaces and conditions within a particular area.

- B. Coordination of Work: Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.
 - 1. Notify Architect about anticipated problems when using the materials specified over substrates primed by others.
- C. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
 - 1. Concrete: 12 percent.
 - 2. Masonry (Clay and CMU): 12 percent.
 - 3. Gypsum Board: 12 percent.
 - 4. Plaster: 12 percent.
- D. Gypsum Board Substrates: Verify that finishing compound is sanded smooth.
- E. Plaster Substrates: Verify that plaster is fully cured.
- F. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
- G. 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 Manual" applicable to substrates 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. Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces or mortar joints exceed that permitted in manufacturer's written instructions.
- E. Steel Substrates: Remove rust, loose mill scale, and shop primer, if any. Clean using methods recommended in writing by paint manufacturer but not less than the following:
 - 1. SSPC-SP 2, "Hand Tool Cleaning."
 - 2. SSPC-SP 3, "Power Tool Cleaning."

3. SSPC-SP 7/NACE No. 4, "Brush-off Blast Cleaning."
 4. SSPC-SP 11, "Power Tool Cleaning to Bare Metal."
- F. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.
- G. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal fabricated from coil stock by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.
- H. Wood Substrates:
1. Scrape and clean knots, and apply coat of knot sealer before applying primer.
 2. Sand surfaces that will be exposed to view, and dust off.
 3. Prime edges, ends, faces, undersides, and backsides of wood.
 4. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.

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. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.
- C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.
- D. 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.
- E. Painting Fire Suppression, Plumbing, HVAC, Electrical, Communication, and Electronic Safety and Security Work:
1. Paint the following work where exposed in equipment rooms:
 - a. Equipment, including panelboards.

- b. Uninsulated metal piping.
 - c. Uninsulated plastic piping.
 - d. Pipe hangers and supports.
 - e. Metal conduit.
 - f. Plastic conduit.
 - g. Tanks that do not have factory-applied final finishes.
 - h. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.
2. Paint the following work where exposed in occupied spaces:
- 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.
3. Paint portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets that are visible from occupied spaces.

3.04 FIELD QUALITY CONTROL

- A. Dry Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry film thickness.
- 1. Contractor shall touch up and restore painted surfaces damaged by testing.
 - 2. If test results show that dry film thickness of applied paint does not comply with paint manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with paint manufacturer's written recommendations.

3.05 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. Provide "Wet Paint" signs and other methods to protect newly coated surfaces. Remove when directed or when no longer needed.

- E. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.06 INTERIOR PAINTING SCHEDULE

- A. Sheen: Sheen as indicated on Finish Schedule.
- B. Concrete Substrates, Nontraffic Surfaces:
 - 1. High-Performance Architectural Latex System: Two topcoats over a primer.
 - a. Prime Coat: Primer, alkali resistant, water based.
 - b. Intermediate Coat: Latex, interior, high performance architectural, matching topcoat.
 - c. Topcoat: Latex, interior, sheen as indicated on Finish Schedule.
- C. CMU Substrates:
 - 1. High-Performance Architectural Latex System:
 - a. Block Filler: Block filler, latex, interior/exterior.
 - b. Intermediate Coat: Latex, interior, high performance architectural, matching topcoat.
 - c. Topcoat: Latex, interior, sheen as indicated on Finish Schedule.
- D. Steel Substrates:
 - 1. High-Performance Architectural Latex System:
 - a. Prime Coat: Shop primer specified in Section where substrate is specified.
 - b. Intermediate Coat: Latex, interior, high performance architectural, matching topcoat.
 - c. Topcoat: Latex, interior, sheen as indicated on Finish Schedule.
- E. Galvanized-Metal Substrates:
 - 1. High-Performance Architectural Latex System:
 - a. Prime Coat: Primer, galvanized, water based.
 - b. Intermediate Coat: Latex, interior, high performance architectural, matching topcoat.
 - c. Topcoat: Latex, interior, sheen as indicated on Finish Schedule.
- F. Aluminum (Not Anodized or Otherwise Coated) Substrates:
 - 1. High-Performance Architectural Latex System:
 - a. Prime Coat: Primer, quick dry, for aluminum.
 - b. Intermediate Coat: Latex, interior, high performance architectural, matching topcoat.
 - c. Topcoat: Latex, interior, sheen as indicated on Finish Schedule.
- G. Gypsum Board and Plaster Substrates:
 - 1. High-Performance Architectural Latex System:
 - a. Prime Coat: Primer sealer, latex, interior.
 - b. Intermediate Coat: Latex, interior, high performance architectural, matching topcoat.

- c. Topcoat: Latex, interior, sheen as indicated on Finish Schedule.

END OF SECTION

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SECTION 09 96 00 - HIGH-PERFORMANCE COATINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. High performance coatings.
- B. Surface preparation.

1.02 REFERENCE STANDARDS

- A. ASTM D4258 - Standard Practice for Surface Cleaning Concrete for Coating; 2005 (Reapproved 2012).
- B. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition, www.paintinfo.com.
- C. SSPC V1 (PM1) - Good Painting Practice: Painting Manual, Volume 1; Fourth Edition.
- D. SSPC V2 (PM2) - Systems and Specifications: Steel Structures Painting Manual, Volume 2; Fourth Edition.
- E. SSPC-PA 1 - Shop, Field, and Maintenance Painting of Steel; 2004.
- F. SSPC-SP 1 - Solvent Cleaning; 2015.
- G. GreenSeal GS-11 - Paints; 2011.
- H. SSPC-SP 6 - Commercial Blast Cleaning; 2007.
- I. SSPC-SP 7 - Brush-Off Blast Cleaning; 2007.
- J. SSPC-SP 13 - Surface Preparation of Concrete; (Reaffirmed 2015); 2003.

1.03 SUBMITTALS

- A. Product Data: Provide complete list of all products to be used, with the following information for each:
 - 1. Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").
 - 2. Cross-reference to specified coating system(s) product is to be used in; include description of each system.
 - 3. Manufacturer's installation instructions.
- B. Product Data: Provide data indicating coating materials .
- C. Samples: Submit two samples 8 by 8 inch in size illustrating colors available for selection.
- D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

- E. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.
- F. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- G. Certification: By manufacturer that all paints and coatings comply with VOC limits specified.
- H. Certification: By manufacturer that all paints and coatings do not contain any of the prohibited chemicals specified; GreenSeal GS-11 certification is not required but if provided shall constitute acceptable certification.
- I. Maintenance Data: Include cleaning procedures and repair and patching techniques.
- J. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 60 00 - Product Requirements, for additional provisions.
 - 2. Extra Coating Materials: 1 gallon of each type and color.
 - 3. Label each container with manufacturer's name, product number, color number, and room names and numbers where used.

1.04 SUSTAINABILITY SUBMITTALS

- A. CAL-Green documentation and verification data for the following measures:
 - 1. 4.504.2.2 and 5.504.4.3 Paints and coatings.
 - 2. 4.504.2.3 and 5.504.4.3.1 Aerosol paints and coatings.

1.05 QUALITY ASSURANCE

- A. Maintain one copy of each referenced document that applies to application on site.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this Section with minimum three years documented experience.
- C. Applicator Qualifications: Company specializing in performing the work of this Section with minimum three years documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.
- B. Container Label: Include manufacturer's name, type of coating, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.
- C. Coating Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.07 FIELD CONDITIONS

- A. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.
- B. Do not apply coatings when relative humidity is outside the humidity ranges required by the coating product manufacturer.
- C. Do not install materials when temperature is below 55 degrees F or above 90 degrees F.
- D. Maintain this temperature range, 24 hours before, during, and 72 hours after installation of coating.
- E. Provide lighting level of 80 ft candles measured mid-height at substrate surface.
- F. Restrict traffic from area where coating is being applied or is curing.

1.08 WARRANTY

- A. Correct defective Work within a five year period after Date of Substantial Completion.
- B. Warranty: Include coverage for bond to substrate.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Provide high performance coating products from the same manufacturer to the greatest extent possible.
- B. Acceptable Manufacturers:
 - 1. Carboline Company: www.carboline.com.
 - 2. Sherwin-Williams Company: www.protective.sherwin-williams.com/industries.
 - 3. Tnemec Company, Inc.: www.tnemec.com.
 - 4. Prior approved equal.

2.02 PAINT, GENERAL

- A. Material Compatibility:
 - 1. Provide materials for use within each paint system that are 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, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.
- B. Material Quality: Provide manufacturer's best-quality coating material of the various coating types specified that are factory formulated and recommended by manufacturer for application indicated. Coating-material containers not displaying manufacturer's product identification will not be acceptable.

- C. Coatings:
1. Ready-mixed, factory tinted, best professional grade produced by manufacturer.
 2. Use manufacturer's appropriate base materials to achieve required colors.
 3. Fully grind pigments to maintain soft paste consistency in vehicle.
 4. Capable of being dispersed into uniform, homogeneous mixture.
 5. Possess good flowing and brushing properties.
 6. Capable of drying or curing free of streaks or sags, and yielding specified finish.
 7. VOC content of field applied coatings shall comply with local governing authorities.
- D. VOC Content: Products shall comply with VOC limits of authorities having jurisdiction[and, for interior paints and coatings applied at Project site, the following VOC limits, exclusive of colorants added to a tint base, when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
1. Flat Paints and Coatings: 50 g/L.
 2. Nonflat Paints and Coatings: 150 g/L.
 3. Dry-Fog Coatings: 400 g/L.
 4. Primers, Sealers, and Undercoaters: 200 g/L.
 5. Anticorrosive and Antirust Paints Applied to Ferrous Metals: 250 g/L.
 6. Zinc-Rich Industrial Maintenance Primers: 340 g/L.
 7. Pretreatment Wash Primers: 420 g/L.
 8. Floor Coatings: 100 g/L.
 9. Shellacs, Clear: 730 g/L.
 10. Shellacs, Pigmented: 550 g/L.
- E. Low-Emitting Materials: Interior paints and coatings shall comply with the testing and product 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."
- F. Paint Maximum Product Emissions Limits: Top coat and primer interior paints must meet or not exceed the VOC (Volatile Organic Compounds) limits of the current requirements of Green Seal Standards GS-11 - Paints in the building, and Cal-GREEN Table 5.504.4.3 for VOC Content Limits for Architectural Coatings.
1. CAL-GREEN Requirements for typical paint coatings:
 - a. Primers, Sealers, and Undercoaters: 100 grams per liter of product minus water
 - b. Flats: 50 grams per liter of product minus water
 - c. Non-flats: 100 grams per liter of product minus water
 - d. Non-flat High Gloss: 150 grams per liter of product minus water
 - e. Dry-Fog Coatings: 150 g/L.
 - f. Anticorrosive and Antirust Paints Applied to Ferrous Metals: 250 g/L.
 - g. Zinc-Rich Industrial Maintenance Primers: 340 g/L.
 - h. Floor Coatings: 100 g/L.
 - i. Shellacs, Clear: 730 g/L.
 - j. Shellacs, Pigmented: 550 g/L.

- G. Colors: As selected by Architect from manufacturer's full range.

2.03 TOP COAT MATERIALS

- A. Coatings - General: Provide complete multi-coat systems formulated and recommended by manufacturer for the applications indicated, in the thicknesses indicated; number of coats specified does not include primer or filler coat.
- B. Epoxy Coating: Two coats, water-based epoxy, gloss finish.
1. Acceptable Products:
 - a. Dunn-Edwards; Carboline, Sanitile 255 High Performance Water-Based Epoxy Acrylic Finish.
 - b. Sherwin Williams; Waterbased Catalyzed Epoxy B70W211/B60V25.
 - c. Tnemec; Series 27WB Typoxy.

2.04 PRIMERS

- A. Primers: Provide the following unless other primer is required or recommended by coating manufacturer:
1. Acrylic Primer/Sealer:
 - a. Acceptable Products:
 - 1) Dunn-Edwards; Carboline, Sanitile 120 Heavy Duty Bonding Primer.
 - 2) Sherwin Williams; Loxon Block Surfacer A42W200.
 - 3) Tnemec; Series 1224 Epoxoline WB.
 2. Gypsum Wall Board Primer:
 - a. Acceptable Products:
 - 1) Dunn-Edwards; Carboline, Sanitile 120 Heavy Duty Bonding Primer.
 - 2) Sherwin Williams; Prep Rite 200 Interior Latex Primer B28W200.
 - 3) Tnemec; Series 51 PVA Sealer.
 3. Rust-Inhibitive Acrylic Metal Primer:
 - a. Acceptable Products:
 - 1) Dunn-Edwards; Carboline, Carbocrylic 3358 Direct to Metal Primer.
 - 2) Sherwin-Williams; Pro Industrial Pro-Cyrl Universal Primer, B66-310 Series.
 - 3) Tnemec; Series 115 Uni-Bond DF.
 4. Block Fillers:
 - a. Acceptable Products:
 - 1) Sherwin Williams; Heavy Duty Block Filler B42W46.
 - 2) Tnemec Company, Inc.; Series 54 Masonry Filler.
 - 3) Dunn-Edwards; Carboline Company: Sanitile 600.

2.05 ACCESSORY MATERIALS

- A. Accessory Materials: Provide all primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of coated surfaces.

- B. Cleaners:
 - 1. General: Mildewcide, TSP (tri-sodium phosphate), acidic-detergent, zinc sulfate, sodium metasilicate, and solvents:
 - 2. Commercially available.
 - 3. Non-damaging to surface being cleaned
 - 4. Complying with PDCA Specification Manual.
 - 5. Acceptable to coating manufacturer.
- C. Metal Conditioner: Proprietary phosphoric acid based, etching type solution; acceptable to coating manufacturer.
- D. Rust Inhibitor:
 - 1. Water containing 0.32 percent by weight of sodium nitrite and 1.28 percent by weight of secondary ammonium phosphate (dibasic).
 - 2. Water containing 0.2 percent by weight of chromic acid, sodium chromate, sodium dichromate, or potassium dichromate.
- E. Spackling compound, putty, fillers, liquid de-glosser, patching plaster, thinners, and materials not indicated but required to achieve finishes. Compatible with coating system and acceptable to coating manufacturer.
- F. Do not use products of different manufacturers in combination, unless approved by each manufacturer of products involved.

2.06 MIXING

- A. Use factory prepared colors matching approved samples. Site tinting will not be permitted.
- B. Thoroughly mix and stir coating components before use to ensure homogeneous dispersion of ingredients. Prior to application, blend multiple containers of same material and color by pouring from one container to another several times to ensure uniform consistency, color, and smoothness.
- C. Mix in clean pails of material recommended by manufacturer to avoid contamination.
- D. Mix only enough of multi-part coatings to allow application within pot life of mixture.
- E. Remove film which may form on surface of material in containers and strain material before using. Stir frequently during use to maintain pigments in suspension. Do not stir film into material.
- F. Apply coatings of consistency instructed by manufacturer.
- G. Thinning:
 - 1. Provide thinners approved by coating manufacturer.
 - 2. Add thinners within manufacturer recommended limits.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Do not begin application of coatings until substrates have been properly prepared.
- C. Verify that substrate surfaces are ready to receive work as instructed by the coating manufacturer. Obtain and follow manufacturer's instructions for examination and testing of substrates.
- D. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.
- E. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- F. Test shop-applied primer for compatibility with subsequent cover materials.
- G. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
 - 1. Cementitious Substrates: Do not begin application until substrate has cured 28 days minimum and measured moisture content is not greater than 12 percent.
 - 2. Plaster and Stucco: 12 percent.
 - 3. Masonry, Concrete, and Concrete Unit Masonry: 12 percent.
- H. Proceed with coating application only after unacceptable conditions have been corrected.
 - 1. Commencing coating application constitutes Contractor's acceptance of substrates and conditions.

3.02 PREPARATION

- A. Protect completed construction from damage. Furnish drop cloths, shields, and protective methods to prevent spray, splatter or droppings from disfiguring other surfaces.
- B. Remove surface hardware, mechanical diffusers, escutcheons, registers, electrical plates, light fixture trim, fittings, fastenings and similar items prior to preparing surfaces for finishing. Provide surface-applied protective masking for non-removable items. Carefully store removed items for reinstallation.
- C. Remove mildew by scrubbing with mildewcide. Rinse thoroughly with clean water.
- D. Before beginning application of coatings, ensure surfaces are clean, dry, and free of dirt, dust, rust, and rust scale, oil, grease, mold, mildew, algae, efflorescence, release agents and other harmful materials which could adversely affect coating adhesion and finished appearance.
- E. Clean surfaces of loose foreign matter.

- F. Clean substrates of substances that could impair bond of coatings, including dirt, oil, grease, and incompatible paints and encapsulants.
 - 1. Remove incompatible primers and reprime substrate with compatible primers as required to produce coating systems indicated.
- G. Remove substances that would bleed through finished coatings. If unremovable, seal surface with shellac.
- H. Remove finish hardware, fixture covers, and accessories and store.
 - 1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection.
- I. Concrete:
 - 1. Remove release agents, curing compounds, efflorescence, and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.
 - a. If required by manufacturer, use one of the following methods for cleaning.
 - 1) Clean surfaces with pressurized water. Use pressure range of 1500 to 4000 psi at 6 to 12 inches. Allow to dry.
 - 2) Abrasive blast clean surfaces to comply with SSPC-SP 7/NACE No. 4, "Brush-Off Blast Cleaning."
 - 2. Prepare surface as recommended by coating manufacturer and according to SSPC-SP 13.
- J. Masonry:
 - 1. Remove efflorescence and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces or if alkalinity of mortar joints exceed that permitted in manufacturer's written instructions. Allow to dry.
 - 2. Prepare surface as recommended by coating manufacturer.
 - a. Clean surfaces with pressurized water. Use pressure range of 100 to 600 psi at 6 to 12 inches. Allow to dry.
- K. General:
 - 1. Correct minor defects.
 - 2. Remove temporary labels, wrappings, and protective coverings from surfaces to be coated.
 - 3. Seal stains, marks, and other imperfections which may bleed through surface finishes.
- L. Ferrous Metal:
 - 1. Solvent clean according to SSPC-SP1.
 - 2. Shop-Primed Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Re-prime entire shop-primed item.

3. Remove rust, loose mill scale, and other foreign substances using methods recommended in writing by paint manufacturer and blast cleaning according to SSPC-SP 6 "Commercial Blast Cleaning", and protect from corrosion until coated.
 - M. Steel - Unprimed:
 1. Remove weld spatter by chipping or grinding.
 2. Clean interior and weather protected steel in accordance with SSPC SP7, "Brush-Off Blast Cleaning".
 3. Clean exterior steel permanently exposed to elements in accordance with SSPC SP6 "Commercial Blast Cleaning".
 4. Apply primer, or metal conditioner to bare surfaces in accordance with coating schedule, paying particular attention to abrasions, welds, bolts, and nuts. Allow to set as recommended by manufacturer.
 - N. Steel - Shop Prime Coated:
 1. Remove loose shop primer and rust; sand to feather-edge at adjacent sound primer by cleaning in accordance with SSPC SP2 "Hand Tool Cleaning" and SP3 "Power Tool Cleaning".
 2. Apply primer or metal conditioner to abrasions, welds, bolts, and nuts in accordance with coating schedule. Allow to set as instructed by manufacturer. Rinse with clean water with rust inhibitor mixed-in or applied primer or metal conditioner immediately following rinse. Allow to dry.
 3. Prime coat bare areas immediately.
 4. Apply specified primer to bare steel and previously primed steel surfaces scheduled to receive high performance coatings.
 - O. Galvanized Steel: Remove soluble and insoluble contaminants and corrosion.
 1. Sweep (Abrasive) Blasting per ASTM D6386 to achieve a uniform anchor profile (1.0 - 2.0 mils).
 2. Remove grease and oil residue from galvanized sheet metal fabricated from coil stock by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied coatings.
 - P. Aluminum Substrates: Remove surface oxidation.
 - Q. Protect adjacent surfaces and materials not receiving coating from spatter and overspray; mask if necessary to provide adequate protection. Repair damage.
- 3.03 SURFACE PREPARATION OF PREVIOUSLY APPLIED COATED SURFACES
- A. Prepare surfaces in accordance with Section 09 01 90 - Maintenance Repainting.
- 3.04 PRIMING
- A. General:
 1. Coat surfaces specified, scheduled, illustrated, and otherwise identified unless specifically noted otherwise.
 2. Apply coatings of type, color, and sheen as scheduled.

3. Apply products in accordance with manufacturer's instructions. Use application materials, equipment, and techniques as instructed by coating manufacturer and best suited for substrate and type of material being applied.
 4. Do not apply finishes to surfaces that are improperly prepared.
 5. Quantify of coats specified are minimum quantify acceptable.
 6. Apply coating systems to achieve scheduled total dry film thickness.
 7. Apply material at not less than manufacturer's instructed spreading rate.
 8. Do not exceed maximum single coat thickness instructed by coating manufacturer.
 9. Ensure that edges, corners, crevices, welds, and exposed fasteners, receive dry film thickness equivalent of flat surfaces.
 10. Finish edges of coatings adjoining other materials and colors sharp and clean manner, without overlapping.
- B. Apply initial coat to surfaces as soon as practical after preparation and before subsequent surface deterioration.
- C. Apply primer to all surfaces, unless specifically not required by coating manufacturer. Apply in accordance with coating manufacturer's instructions.
- D. Concrete: Prior to priming, patch with masonry filler to produce smooth surface.
- E. Concrete Masonry: Apply masonry filler to thickness required to fill holes and produce smooth surface; minimum thickness of 30 mils.

3.05 COATING APPLICATION

- A. Apply coatings in accordance with manufacturer's written instructions, to thicknesses specified.
- B. Apply in uniform thickness coats, without runs, drips, pinholes, brush marks, or variations in color, texture, or finish. Finish edges, crevices, corners, and other changes in dimension with full coating thickness.
- C. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of the same material are to be applied. Tint undercoats to match color of finish coat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.
- D. If undercoats or other conditions show through final coat, apply additional coats until cured film has a uniform coating finish, color, and appearance.
- E. Allow previously applied coat to dry before next coat is applied.
- F. Sand and dust lightly between coats as recommended by coating manufacturer.
- G. Apply each coat to achieve uniform finish, color, appearance, and coverage free of brush and roller marks, runs, misses, visible laps and shadows, hazing, bubbles, pin holes, and other defects.
- H. Replace trim, fittings, and other items removed for finishing.

3.06 FIELD QUALITY CONTROL

- A. Owner will provide field inspection.
- B. Periodically test film thickness of each coat with wet film gage to ensure coatings are being applied to proper thickness.
- C. Request review of each applied coat by Architect and manufacturer's representative before application of successive coats. Only reviewed coats will be considered in determining number of coats applied.
- D. Immediately prior to Substantial Completion, perform detailed inspection of coated surfaces and repair or refinish abraded, stained, and otherwise disfigured surfaces.
- E. Dry Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test coatings for dry film thickness.
 - 1. Touch up and restore coated surfaces damaged by testing.
 - 2. If test results show that dry film thickness of applied coating does not comply with coating manufacturer's written recommendations, and specified thickness, Contractor shall pay for retesting and apply additional coats as needed to provide dry film thickness that complies with coating manufacturer's written recommendations, and specified thickness.

3.07 CLEANING

- A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.
- B. Clean surfaces immediately of overspray, splatter, and excess material.
- C. After coating has cured, clean and replace finish hardware, fixtures, and fittings previously removed.
- D. See Section 01 74 19 - Construction Waste Management and Disposal, for additional requirements.

3.08 PROTECTION

- A. Protect finished work from damage.
- B. Correct damage by cleaning, repairing, replacing, and recoating as acceptable to Architect.
- C. Provide "Wet Paint" signs and other methods to protect newly coated surfaces. Remove when directed or when no longer needed.

3.09 SCHEDULE

3.10 INTERIOR HIGH-PERFORMANCE COATING SCHEDULE

- A. Concrete Substrates, Vertical Surfaces:

1. Water-Based Epoxy Coating System:
 - a. Prime Coat: Water-based epoxy.
 - 1) Where required due to high alkalinity, apply coat of Acrylic Primer sealer to surface.
 - b. Intermediate Coat: Water-based epoxy (interior and exterior).
 - c. Topcoat: Water-based epoxy (interior and exterior).
 - B. CMU Substrates:
 1. Water-Based Epoxy Coating System:
 - a. Prime Coat: Interior/exterior acrylic block filler.
 - b. Intermediate Coat: Water-based epoxy (interior and exterior).
 - c. Topcoat: Water-based epoxy (interior and exterior).
 - C. Steel Substrates:
 1. Water-Based Epoxy Coating System:
 - a. Prime Coat: Rust-inhibitive acrylic primer.
 - b. Intermediate Coat: Water-based epoxy (interior and exterior).
 - c. Topcoat: Water-based epoxy (interior and exterior).
 - D. Galvanized-Metal Substrates:
 1. Water-Based Epoxy Coating System:
 - a. Prime Coat: Rust-inhibitive acrylic primer.
 - b. Intermediate Coat: Water-based epoxy (interior and exterior).
 - c. Topcoat: Water-based epoxy (interior and exterior).
- 3.11 INTERIOR HIGH PERFORMANCE COATINGS COLOR SCHEDULE
- A. Water-Based Epoxy Coating System.
 1. HPC-1: Typical interior wall and ceiling paint.
 2. Including cell module door frames and access doors in walls and ceiling surfaces.
 - a. New Construction: Match existing paint color.
 - 1) Existing/Remodel Construction: Match existing paint color.
 - b. HPC-2: Typical interior accent paint color at cell doors, frames, metal fabrications etc.
 - 1) New Construction: Match existing paint color.
 - 2) Existing/Remodel Construction: Match existing paint color.

END OF SECTION

SECTION 09 96 03 - SPECIAL COATINGS

PART 1 GENERAL

1.01 SUMMARY

- A. This Section includes surface preparation and application of special coating systems for inmate showers on the following substrates:
 - 1. Interior Substrates:
 - a. Concrete, vertical and horizontal surfaces.
 - b. Concrete masonry units (CMU).

1.02 SUBMITTALS

- A. Product Data: For each type of product indicated including generic description, technical data, surface preparation, and application instructions.
- B. Color Samples: Full range of manufacturer's standard colors.
- C. Samples for Verification: For each type of coating system and in each color and gloss of finish coat indicated.
 - 1. Submit Samples on rigid backing, 8 inches square.
 - 2. Step coats on Samples to show each coat required for system.
 - 3. Label each coat of each Sample.
 - 4. Label each Sample for location and application area.
- D. Qualification Data: For Installer and Manufacturer.

1.03 QUALITY ASSURANCE

- A. Single-source Responsibility: Coatings and coating application accessories to be products of a single manufacturer.
- B. Installer's Qualification: Furnish list of projects using materials specified for this project that applicator has furnished during the past five years. Include the following:
 - 1. Letter of training certification from the manufacturer/distributor stating that contractor is an approved installer of the products specified in this Section.
 - 2. Submit written description of the contractors' experience with the specified material over the last five (5) years. Include job size (in square feet) and complexity of projects. List a minimum of five (5) projects with different Owners giving contact names and phone numbers.
 - 3. Submit resume of the key person(s) who will be performing the actual work and list a minimum of five (5) projects with different Owners giving contact names and phone numbers that this key person has performed work for.
- C. Manufacturer's Qualifications: Specializing in manufacture of coatings with minimum of ten years successful in-service performance.

- D. Walkway Auditor: Certified by CPAA or NFSI to test bonded abrasive polished concrete floors for dynamic and static coefficient of friction according to ANSI B101.1 and B101.3.
- E. Coefficient of Friction: Achieve following coefficient of friction by field quality control testing in accordance to the following standards:
 - 1. ANSI B101.3 Wet Dynamic Coefficient of Friction - Achieve a minimum of 0.42 for floor surfaces.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained between 65 deg F and 90 deg F or as recommended by product manufacturer.
 - 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. Apply coatings only when temperature of surfaces to be coated and surrounding air temperatures are between 65 and 90 deg F and surface temperature is a minimum of 5 deg F above dew point.
- B. Do not apply coatings in areas where dust is being generated, to damp or wet surfaces, or where relative humidity is outside range per manufacturer's instructions.
- C. Provide ventilation during coating evaporation stage in confined or enclosed areas in accordance with manufacturer's instructions.
- D. Cover or otherwise protect finish work of other trades and surfaces not to be coated concurrently or not to be coated.

PART 2 PRODUCTS

2.01 SPECIAL COATINGS, GENERAL

- A. Material Compatibility:
 - 1. Provide materials for use within each coating system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.

2.02 MANUFACTURERS

- A. Basis of Design Manufacturer:
 - 1. Prime Coat Coating Systems; Seamless Shower System 5130.

2.03 PERFORMANCE REQUIREMENTS

- A. Cove Base: 2 inch cant.
- B. System
 - 1. Walls: 60 mils minimum.

- 2. Thickness: Floors: 1/8th inch minimum.
- C. VOC's: in compliance with EQ 4.2, less than 100 g/l.
- D. Compressive Strength Minimum: 11,700 p.s.i. (ASTM D-695)
- E. Tensile Strength Minimum: 3,900 p.s.i. (ASTM D-638)
- F. Hardness minimum: 83-88 (ASTM D-2240/Shore D Durometer)
- G. Abrasion Resistance Minimum: 0.03 gm/1000 revolutions (ASTM D-4060 Taber Abrader.)
- H. Integrated Anti-microbial shall be resistant to the following: FUNGI BACTERIA, Alternaria tenuis Aerobacter aerogenes, Alternaria brassiciola Bacillus cereus, Aspergillus clavatus Bacillus subtilis, flavus Desulfovibrio desulfuricans, niger Ecterobacter sp., oryzae Klebsiella pneumoniae, terreus Lactobacilli sp., ustus Micrococcus sp., versicolor Proteus sp. Aureobasidium (Pullularia) pullulans Pseudomonas aeruginosa, Candida guilliermondii S. typhimurium, lipolytica S. typhosa, pelliculosa, Salmonella choleraesuis, tropicalis Shigella sp., Chaetomium globosum Staphylococcus aureus, Cladosporium resinae Staphylococcus epidermidis, Epidermophyton sp. Streptococcus faecalis, Helminthosporium, gramineum Streptococcus pyogenes, Memnoniella echinata, Mucor racemosus. ACTINOMYCETES, Myrothecium verrucaria, Streptomyces rubr-reticuli, Penicillium citrinum, Streptoverticillium reticulum, Penicillium islandicum, Thermoactinomyces vulgaris, expansum, funiculosum, lilacinum, luteum, piscarium, variabile, Rhizopus nigricans, Scopulariopsis brevicaulis, Spicaria violacea, Trichophyton mentagrophytes.

2.04 MATERIALS

- A. Wall and Ceilings Coating:
 - 1. Spray applied chopped strand fiberglass and Kevlar reinforcement, 100% solids, accelerated aliphatic amine cured epoxy system.

2.05 COMPONENTS

- A. Moisture Mitigation Primer:
 - 1. Resin: 100% solids epoxy.
 - 2. Application Method: brush and roller applied.
 - 3. Minimum Installed Thickness: 8 mils per coat.
 - 4. Number of coats: 2.
 - 5. Product:
 - a. Prime Coat Coating Systems; PC 101 Barrier Coat.
- B. Floor Base Coat:
 - 1. Resin: 100% solids plural component Bisphenol A epoxy.
 - 2. Application method: Broadcast silica.
 - 3. Minimum Installed Thickness: 20 mils.
 - 4. Number of coats: 1.
 - 5. Product:

- a. Prime Coat Coating Systems; PC 310 with broadcasting aggregate PCA 322.
- C. Primer/Block Filler:
 - 1. Resin: 100% solids penetrating epoxy primer/filler.
 - 2. Application method: spray, roller, or brush.
 - 3. Minimum Installed Thickness: 8-10 mils over concrete and non-porous surfaces; 12-16 mils over CMU and other porous surfaces.
 - 4. Number of coats: 1.
 - 5. Product:
 - a. Prime Coat Coating Systems; PC 630.
- D. Fiberglass and Kevlar Reinforced Body Coat:
 - 1. Location: Shower surfaces, ceilings, walls, and floor and cove base.
 - 2. Resin: 100% solids Fiberglass and Kevlar reinforced epoxy.
 - 3. Application method: 45:1 air-powered airless spray w/gravity-fed hopper.
 - 4. Reinforcement: Chopped strands of fiberglass and Kevlar.
 - 5. Minimum Installed Thickness: 45 mils.
 - 6. Number of coats: 1.
 - 7. Product:
 - a. Prime Coat Coating Systems; PC 200.
- E. Top Coat:
 - 1. Location: Shower surfaces, ceilings, walls, and floor and cove base.
 - 2. Resin: 100% solids Bisphenol A chemically resistant epoxy.
 - 3. Application method: Roller or spray.
 - 4. Minimum Installed Thickness: 8-10 mils.
 - 5. Antimicrobial: Integrated into topcoat.
 - 6. Type: pigmented
 - 7. Floor Finish only: to meet ADA requirements by broadcasting PCA 337 into floor topcoat to achieve proper slip resistant texture.
 - 8. Product:
 - a. Prime Coat Coating Systems; PC 400 with PC 499 anti-microbial.

2.06 ACCESSORY MATERIALS

- A. Patching and Fill Material: Resinous product of resinous flooring manufacturer.
- B. Joint Sealants: Formulated by resinous flooring manufacturer for type of service and joint condition indicated.

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 work.

1. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
 - a. Concrete: 5 percent.
 - b. Masonry: 5 percent.
 - c. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
 - d. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry.
 - e. Coating application indicates acceptance of surfaces and conditions.
- B. Concrete Floor Slabs-on-Grade Substrates:
 1. Smooth troweled dense finish concrete that shall have been properly cured not less than 28 days after placement.
 2. Employ a radio frequency moisture meter to determine that residual uncombined moisture content of concrete slab is less than 5 percent by weight. Conduct ASTM F1869 to further record the Moisture Vapor Emission Rate. Do not apply high performance floor coatings to floor slabs that exceed 5 percent moisture content or 3 pounds per 1,000 square feet per 24 hours unless approved by the material manufacturer.
 3. Prepare all concrete floor surfaces per SSPC-SP13/NACE 6.
 4. Remove and legally dispose of all debris and contaminants produced by the surface preparation process.
- C. CMU Substrates: Remove efflorescence and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.
 1. Verify mortar joints are struck clean and filled tightly to avoid gaps or holes and provide a uniform appearance.
 2. Remove mortar spatter, protruding mortar edges and other excessive mortar.
 3. Grind rough edges smooth.
 4. Clean CMU as specified.
 5. Verify all surfaces are clean, dry and free of contaminants prior to installing coating system.

3.02 PREPARATION

- A. Comply with manufacturer's written instructions and recommendations applicable to substrates indicated.
- B. Remove plates, machined surfaces, and similar items already in place that are not to be coated. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and coating.
 1. After completing coating operations, reinstall items that were removed; use workers skilled in the trades involved.
- C. Clean substrates of substances that could impair bond of coatings, including dirt, oil, grease, and incompatible paints and encapsulants.

- D. Concrete Wall and Ceiling Substrates: Remove release agents, curing compounds, efflorescence, and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.
 - 1. Prepare surfaces in accordance with manufacturer's instructions, SSPC-SP13/NACE 6 and ICRI 03732.
 - 2. Surface to be clean, dry and free of contaminants prior to installing coating system.

3.03 APPLICATION

- A. Apply special coatings according to manufacturer's written instructions and approved submittals.
 - 1. Use applicators and techniques suited for coating and substrate indicated.
- B. Moisture Mitigation Primer: Apply to surfaces at grade in areas subject to high levels of hydrostatic pressure where an effective moisture vapor barrier is not in place to prevent excessive moisture vapor drive through the concrete slab.) Apply two full coats of primer at 8 mils per coat. After first coat, inspect to see if any areas were missed or skipped. Spot prime those areas and apply second full coat.
- C. Primer/Flexible Membrane: On surfaces at or below grade where moisture vapor transmission is not an issue, apply one full coat of primer at 6-8 mils wet film thickness being sure to pull material up wall the distance of the specified cove base. On surfaces above grade or over occupied spaces apply one full coat of flexible membrane in lieu of primer at 30 mils wet film thickness being sure to pull the material up the wall the distance of the specified cove base. Allow primer/membrane coat to cure.
- D. Cove Base: Trowel apply cove base and threshold by using a mixture of 100% solids epoxy PC 310 and aggregates PCA 322 to make mortar system, and allow to set.
- E. Floor Base Coat: Pour on floor in a bead, squeegee apply, backroll. Apply at 20 mils wet film thickness, or 80 square feet per mixed gallon. While Base Coat is wet, broadcast aggregate into base coat to rejection and allow to dry. Sweep off/vacuum up excess aggregate.
- F. Primer/Filler Coat: Apply one coat at 12-16 mils wet film thickness on CMU and 10-12 mils wet film thickness on non-porous surfaces. Allow to dry tack free.
- G. Fiberglass and Kevlar Reinforced Body Coat: Apply to previously primed floors, walls and ceilings with a 45:1 air-powered airless spray rig with gravity-fed hopper and cure. Minimum thickness of 45 mils required on walls and floors. Minimum of 15-20 mils on ceilings.
- H. Final Finish/Glaze Coat: After fiberglass and kevlar reinforced body coat is fully cured, abrade surfaces to remove exposed fiberglass and other imperfections. Mix PC 400 with PC 499 Additive and apply to all surfaces, walls, ceilings and floors at a minimum of 8 mils to wall and ceiling surfaces and 10-12 mils on floor surfaces. Broadcast and back-roll PCA 337 slip resistant additive into final floor finish encapsulating the slip resistant additive to achieve ADA requirements.

- I. Finished Work Requirements:
 - 1. Curtaining on face not permitted.
 - 2. Damage to finished surfaces caused by other than coating contractor shall be repaired to acceptable condition by coating contractor under cost reimbursement by Contractor.

3.04 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service:
 - 1. Manufacturer will send qualified technical representative to Project site for the following purposes:
 - a. Coordinate schedule, environmental requirements, and pre-installation work with other trades.
 - b. Advise Installer's personnel of procedures and precautions for use of flooring materials.
 - c. Attend moisture testing and other testing procedures with Architect, Owner's Representative, and Contractor.
 - d. Observe field mockups with Architect, Owner's Representative, and Contractor.
 - e. Ascertain that each component of resinous flooring system is being installed in accordance with manufacturer's directions.
 - f. Maintain log of environmental conditions, work procedures, testing procedures, and protection measures to be included in job site file submittal.
 - g. Manufacturer's representative shall be on site throughout entire product installation including all of the above, all surface preparation and product installation.
- B. Field Testing: Engage a qualified walkway auditor to perform field testing to determine if polished concrete floor finish complies with specified static coefficient of friction.
 - 1. ANSI B101.3 for dynamic coefficient of friction

3.05 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. After completing coating application, clean spattered surfaces. Remove spattered coatings by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from coating operation. Correct damage by cleaning, repairing, replacing, and recoating, 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 coated surfaces.

3.06 COLOR SCHEDULE

- A. SC-1:

1. As selected by Architect from manufacturer's complete line of standard colors.
- B. SC-2:
1. As selected by Architect from manufacturer's complete line of standard colors.

END OF SECTION

SECTION 10 14 00 - SIGNAGE

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following types of signs:

1. Interior panel signs (ADA compliant).
2. Signage for Fire compliance.
3. Toilet room signage (ADA compliant).

1.2 SUBMITTALS

A. Product Data: For each type of sign specified, including details of construction relative to materials, dimensions of individual components, profiles, and finishes.

B. Shop Drawings: Show fabrication and erection of signs. Include plans, elevations, and large-scale sections of typical members and other components. Show anchors, grounds, layout, reinforcement, accessories, and installation details.

1. Provide message list for each sign required, including large-scale details of wording and lettering layout.
2. For signs supported by or anchored to permanent construction, provide setting drawings, templates, and directions for installation of anchor bolts and other anchors to be installed as a unit of Work in other Sections.
3. Templates: Furnish full-size spacing templates for individually mounted dimensional letters and numbers.
4. Furnish full-size rubbings for metal plaques.

C. Samples: Provide the following samples of each sign component for initial selection of color, pattern and surface texture as required and for verification of compliance with requirements indicated.

1. Samples for verification of color, pattern, and texture:
 - a. Etched Zinc: Manufacturer's color samples consisting of actual sections of material including the specified background colors selected for panel signs.
 - b. Bronze Casting: Manufacturer's samples consisting of actual sections of material, minimum 6" x 6". Submit samples showing specified borders, background and letter style.

1.3 QUALITY ASSURANCE

A. Sign Fabricator Qualifications: Firm experienced in producing signs similar to those indicated for this Project, with a record of successful in-service performance, and

sufficient production capacity to produce sign units required without causing delay in the Work.

1. Signage shall be ADA compliant. California Grade 2 Braille is to be used at all signs requiring the use of Braille.
2. Signage shall be compliant with 2016 CBC.

- B. Single-Source Responsibility: For each separate sign type required, obtain signs from one source of a single manufacturer.
- C. Design Concept: The Drawings indicate sizes, profiles, and dimensional requirements of signs and are based on the specific types and models indicated. Sign units by other manufacturers may be considered provided deviations in dimensions and profiles do not change the design concept as judged by the Architect. The burden of proof of equality is on the proposer.

1.4 PROJECT CONDITIONS

- A. Field Measurements: Take field measurements prior to preparation of shop drawings and fabrication to ensure proper fitting. Show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delay.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers of Panel Signs: Products specified herein in Paragraph 2.4.A. are manufactured by VisionMark, Inc. and establish the appearance and quality desired by the Owner for this project. Subject to compliance with requirements, products of the following manufacturers are also acceptable:
 1. ASI Modulex, Inc.
 2. Best Sign Systems, Inc.
 3. Mohawk Sign Systems.
 4. Sign Source (cast aluminum signage with smooth background and custom border/logo).
 5. Vomar.

2.2 MATERIALS

- A. Zinc: Provide sign material of 99 percent zinc alloy, 0.125 inch thick. Material shall be as recommended by the sign manufacturer for the chemical etching process used and for the use and finish indicated.
- B. Plastic Laminate: Provide high-pressure plastic laminate engraving stock with face and core plies in contrasting colors, in finishes and color combinations indicated or, if not indicated, as selected from the manufacturer's standards.

- C. Fasteners: Use concealed fasteners fabricated from metals that are not corrosive to the sign material and mounting surface.
- D. Anchors and Inserts: Use nonferrous metal or hot-dipped galvanized anchors and inserts for exterior installations and elsewhere as required for corrosion resistance. Use toothed steel or lead expansion bolt devices for drilled-in-place anchors. Furnish inserts, as required, to be set into concrete or masonry work.

2.3 PANEL SIGNS

- A. Typical interior signs shall be 0.125 square corner, solid photo-etched zinc. Signage shall have background color, with natural stain zinc highlights. Cast sign shall meet all the requirements of ADA 101-336, Public Law of 1990, sections 4.30 through 4.30-5. Etched zinc signs shall incorporate raised graphics, symbols, and Braille. Sign panel background color shall be custom color to meet the 70 percent contrast with a non-glare finish requirement of ADA 101-336, Section 4.30-5. All restrooms identified as accessible shall be provided with correct gender sign, one each per type of restroom. Manufacturer shall submit detail drawings for approval showing layout of signs, mounting method, graphic applications and letter style.
 - 1. Nominal etching depth: 0.032 inch.
 - 2. Fasteners shall be copper studs flash-welded to back of plate for blind stud mounting.
 - 3. Panel sign characters and Braille shall comply with ADAAG and CBC Chapter 11B.
 - a. Characters on signs shall be raised 1/32-inch minimum and shall be sans serif uppercase characters accompanied by California Grade 2 Braille.
 - b. Raised characters shall be a minimum of 5/8-inch and a max. of 2-inches high.
 - c. Characters on signs shall comply with CBC Sect. 11B-703.2.
 - d. California Grade 2 Braille shall be used wherever Braille is required in other portions of these standards. Braille shall comply with CBC 11B-703.3, 11B-703.4 and table 11B-703.3.1.
- B. Signage for Fire compliance: Signs shall be plastic laminate with engraved copy. Refer to Detail. Machine-engrave letters, numbers, symbols, and other graphic devices into sign panel on the face indicated to produce precisely formed copy, incised to uniform depth. Use high-speed cutters mechanically linked to master templates in a pantographic system or equivalent process capable of producing characters of the style indicated with sharply formed edges. Size: 6" x 12".
 - 1. Engraved Plastic Laminate: Engrave through the exposed face ply of the plastic laminate sheet to expose the contrasting core ply.
- C. Toilet Room Signage: Signs shall be plastic laminate conforming to California Title 24 regulations for signs for toilet rooms. Provide with inset symbols and raised

Braille characters. Minimum total thickness of .25-inch, adhesive type as recommended by sign manufacturer for type of substrate to which sign will be applied.

1. Men's Room: 12-inch equilateral triangle, vertex pointing up.
2. Ladies' Room: 12-inch diameter circle.
3. Unisex Toilet: 12-inch diameter circle with equilateral triangle, vertex pointing up inscribed in circle. Circle and triangle each .25-inch thick.
4. Colors: As selected by Architect. Colors shall contrast with background color.

- D. Toilet Room Signs: Signs shall be plastic laminate conforming to CBC title 24 requirements for signs for permanent rooms. Comply with CBC Title 24 requirements for raised and Braille characters, pictorial symbols, finish and contrast requirements. Colors as selected by Architect from manufacturer's standards.

2.4 FINISHES

- A. Colors and Surface Textures: For exposed sign material that requires selection of materials with integral or applied colors, surface textures or other characteristics related to appearance, provide color matches indicated, or if not indicated, as selected by the Architect from the manufacturer's standards.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Locate sign units and accessories where indicated, using mounting methods of the type described and in compliance with the manufacturer's recommendations and instructions.
1. Install signs level, plumb, and at the height indicated, with sign surfaces free from distortion or other defects in appearance.
 2. Provide continuous clear silicone bead at perimeter of sign in all exterior signage locations.
- B. Toilet Room Signage: Install signs on doors after doors are painted and finished.
1. Mount signs 60" max to baseline of highest raised characters per CBC 11B-703.4.1. Install centered on door width and in-line with adjacent door-mounted signs.
 2. Install in accordance with manufacturer's recommendations for substrate involved.
- C. Toilet Room Signs: Install signs on walls after surfaces to which they are to be mounted are painted and finished.

1. Mount signs 60" max to baseline of highest raised characters per CBC 11B-703.4.1.
2. Install level and in-line with adjacent toilet room signage.
3. Install in accordance with ADAAG requirements to allow a person to approach within 3-inches of signs without being within a door swing.

3.2 CLEANING AND PROTECTION

- A. After installation, clean soiled sign surfaces according to the manufacturer's instructions. Protect units from damage until acceptance by the Owner.

END OF SECTION

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SECTION 10 28 00 - TOILET, BATH, AND LAUNDRY ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Commercial toilet accessories.
- B. Detention toilet accessories.

1.02 REFERENCE STANDARDS

- A. 36 CFR 1191 - Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines; current edition.
- B. ADA Standards – 2016 CBC Chapter 11B.C.
- D. ASTM A269/A269M - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service; 2015a.
- E. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2015.
- F. ASTM B456 - Standard Specification for Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium; 2011.
- G. ASTM C1036 - Standard Specification for Flat Glass; 2011.
- H. ASTM C1503 - Standard Specification for Silvered Flat Glass Mirror; 2008 (Reapproved 2013).
- I. ASTM F446 - Standard Consumer Safety Specification for Grab Bars and Accessories Installed in the Bathing Area; 1985 (Reapproved 2009).

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate locations of accessories with other work to avoid interference, and to assure proper operation and servicing of accessory units.
 - 2. Coordinate the work with the placement of internal wall reinforcement, concealed ceiling supports, and reinforcement of toilet partitions to receive anchor attachments.

1.04 SUBMITTALS

- A. Product Data: Submit data on accessories describing size, finish, details of function, and attachment methods.
- B. Manufacturer's Installation Instructions: Indicate special procedures and conditions requiring special attention.

1.05 QUALITY ASSURANCE

- A. Provide accessories by the same manufacturer for each type of accessory unit, and for units exposed in the same areas, to ensure matching of finishes.
- B. Comply with ASTM F446 for grab bars and accessories, anchorage, test methods, and performance.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Do not deliver accessories to site until rooms in which they are to be installed are ready to receive them.
- B. Pack accessories individually in a manner to protect accessory and its finish.

PART 2 PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

- A. Elements of Sanitary facilities shall be mounted at locations in compliance with 2016 CBC Sections 118B-602 through 11B-612.
- B. Grab bars in toilet facilities and bathing facilities shall comply with 2016 CBC Section 11B-609. Grab bars and any wall or other surfaces adjacent to grab bars shall be free of sharp or abrasive elements and shall have rounded edges. The space around the grab bars shall be as follows:
 - 1. 1-1/2 inches between the grab bar and the wall.
 - 2. 1-1/2 inches minimum between the grab bar and projecting objects below and at the ends. 12 inch minimum between the grab bar and projecting objects above.

2.02 MATERIALS

- A. Accessories - General: Shop assembled, free of dents and scratches and packaged complete with anchors and fittings, steel anchor plates, adapters, and anchor components for installation.
 - 1. Grind welded joints smooth.
 - 2. Fabricate units made of metal sheet of seamless sheets, with flat surfaces.
- B. Keys: Provide two keys for each accessory to Owner.
- C. Stainless Steel Sheet: ASTM A666, Type 304.
- D. Stainless Steel Tubing: ASTM A269/A269M, Grade TP304 or TP316.
- E. Fasteners, Screws, and Bolts: Stainless steel as specified in Section 05 05 55 - Security Fasteners.
- F. Expansion Shields: Fiber, lead, or rubber as recommended by accessory manufacturer for component and substrate.

2.03 FINISHES

- A. Stainless Steel: Satin finish, unless otherwise noted.
- B. Back paint components where contact is made with building finishes to prevent electrolysis.

2.04 TOILET ROOM ACCESSORIES

- A. Toilet Paper Dispenser (TPH): Double roll, surface mounted bracket type eccentric-shaped plastic spindle for 3/4 revolution delivery designed to prevent theft of tissue roll.
 - 1. Acceptable Products:
 - a. Bobrick B-2740.
 - b. Bobrick B-3588 (ADA).
- B. Paper Towel Dispenser (PTD): Folded paper type, stainless steel, surface-mounted, with viewing slots on sides as refill indicator.
 - 1. Products:
 - a. Bobrick; B-2620.
- D. Soap Dispenser (SD): Liquid soap dispenser, wall-mounted, surface, with stainless steel cover and working parts; push type soap valve, check valve, and window gage refill indicator.
 - 1. Minimum Capacity: 40 ounces.
 - 2. Products:
 - a. Bobrick; B2111.
- E. Mirrors (MR): Stainless steel framed, 1/4 inch thick annealed float glass; ASTM C1036.
 - 1. Annealed Float Glass: Silvering, protective and physical characteristics in compliance with ASTM C1503.
 - 2. Size: As indicated on Drawings.
 - 3. Frame: 0.05 inch channel shapes, with mitered and welded and ground corners, and tamperproof hanging system; satin finish.
 - 4. Backing: Full-mirror sized, minimum 0.03 inch galvanized steel sheet and non-absorptive filler material.
 - 5. Product:
 - a. Bobrick; B-165 Series Mirror with Stainless Steel Channel Frame.
- F. Seat Cover Dispenser (SCD): Stainless steel, surface-mounted, reloading by concealed opening at base.
 - 1. Minimum Capacity: 250 seat covers, each side.
 - 2. Product:
 - a. Bobrick; B-4221.
- F. Grab Bars: Stainless steel, nonslip grasping surface finish.
 - 1. Push/Pull Point Load: 250 pound-force, minimum.

2. Dimensions: 1-1/4 inch outside diameter, minimum 0.05 inch wall thickness, concealed flange mounting, with snap-flange cover, 1-1/2 inch clearance between wall and inside of grab bar.
3. Length and Configuration:
 - a. GB-1: 42-inches long.
 - b. GB-2: 36-inches long
4. Products:
 - a. Bobrick; B-5806.

2.05 SHOWER AND TUB ACCESSORIES

- A. Folding Tub Seat: Wall-mounted recessed; welded tubular seat frame, structural support members, hinges and mechanical fasteners of Type 304 stainless steel, right hand seat.
 1. Seat: Phenolic one-piece seat or seat slats, of white color.
 2. Size: ADA Standards compliant.
 3. Products:
 - a. American Specialties, Inc.; Model 8358.

2.06 DETENTION AREA TOILET ROOM ACCESSORIES

- A. Acceptable Manufacturers:
 1. Acorn Engineering Company.
 2. Cortech.
 3. Viking Products.
- B. Detention Soap Dish (DSSD): Soap dish, recessed, stainless steel.
 1. Mounting Screws: Pinned Torx head.
 2. Basis of Design Product:
 - a. Acorn Engineering Company; Series 1832.
- C. Detention Toilet Paper Dispenser (DTPH-1): Single roll, recessed, stainless steel, bead blasted unit.
 1. Mounting Screws: Pinned Torx head.
 2. Basis of Design Product:
 - a. Acorn Engineering Company; Penal-Ware 1840.
- D. Detention Toilet Paper Dispenser (DTPH-2): Single roll, ligature resistant, surface mounted, stainless steel, bead blasted unit.
 1. Mounting Screws: Pinned Torx head.
 2. Basis of Design Product:
 - a. Acorn Engineering Company; Penal-Ware 1073-1FA Paper Holder
- E. Detention Grab Bar, Fixed (DGB-1):
 1. Mounting: 1-1/2 inch diameter, 10 gage, 0.141 inch thick stainless steel flanges with exposed fasteners for installation into wall anchors.
 2. Material: Stainless steel, 18 gage, 0.0403 inch thick
 - a. Closure Plate: 14 gage, 0.078 stainless steel.
 3. Length: As indicated on Drawings.

4. Finish: Satin, stainless steel, safety-grip finish.
 5. Mounting Screws: Pinned Torx head.
 6. Basis of Design Product:
 - a. Viking Products; SB4200.
- F. Detention Grab Bar, Fixed (DGB-2):
1. Mounting: 18 gage, 0.0403 inch diameter, 10 gage, 0.141 inch stainless steel flanges with exposed fasteners for installation into wall anchors.
 2. Material: Stainless steel, 18 gage, 0.050 inch thick.
 - a. Closure Plate: 14 gage, 0.078 stainless steel.
 3. Length: As indicated on Drawings.
 4. Finish: Satin, stainless steel, safety-grip finish.
 5. Mounting Screws: Pinned Torx head.
 6. Basis of Design Product:
 - a. Viking Products; SB3600.
- G. Detention Grab Bar, Fixed (DGB-5):
1. Mounting: 1-1/2 inch diameter, 14 gage, 0.078 stainless steel flanges with exposed fasteners for installation into wall anchors.
 2. Material: Stainless steel, 18 gage, 0.0403 inch inch thick.
 - a. Closure Plate: 14 gage, 0.078 stainless steel.
 3. Length: As indicated on Drawings.
 4. Finish: Satin, stainless steel, safety-grip finish.
 5. Mounting Screws: Pinned Torx head.
 6. Basis of Design Product:
 - a. Viking Products; Model 1109-3-L.
- H. Detention Framed Mirrors (DMR): Type 400 Stainless steel framed, polished stainless steel with 1/2 inch thick fiberboard backing.
1. Size: As indicated on Drawings.
 2. Frame: 14 gage, 0.078 channel shapes, with mitered and welded and ground corners, and tamperproof hanging system; No.4 finish.
 3. Mounting Screws: Pinned Torx head.
 4. Basis of Design Product:
 - a. Acorn Engineering Company; Penal-Ware 1810.
- I. Detention Fixed Shower Seat (DFSS-1): Wall-mounted surface, welded crossed plate structural support member, Type 304 stainless steel.
1. Seat: One-piece, L-shaped, pan-type, 10 gage, stainless steel sheet, Type 304 with 1-1/2 inch front edge flange and tapered corbels.. Weld seams and grind smooth,
 3. Mounting Bolts: Pinned Torx head.
 4. Basis of Design Product:
 - a. Argyle Precision, SS-4000, L-shaped.
- J. Detention Fixed Shower Seat (DFSS-2): Wall-mounted surface, welded crossed plate structural support member, Type 304 stainless steel.

1. Seat: One-piece, rectangular, pan-type, 10 gage, stainless steel sheet, Type 304 with 1-1/2 inch front edge flange and tapered corbels.. Weld seams and grind smooth,
2. Mounting Bracket: 1/4 inch thick stainless steel plate.
3. Mounting Screws: Pinned Torx head.
4. Basis of Design Product:
 - a. Argyle Precision, SS-4000, rectangular.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify exact location of accessories for installation.
- C. For electrically-operated accessories, verify that electrical power connections are ready and in the correct locations.
- D. Verify that field measurements are as indicated on Drawings.

3.02 PREPARATION

- A. Deliver inserts and rough-in frames to site for timely installation.
- B. Provide templates and rough-in measurements as required.
- C. Before starting work notify Architect in writing of any conflicts detrimental to installation or operation of units.
- D. Verify with Architect exact locations of accessories.

3.03 INSTALLATION

- A. Install accessories in accordance with manufacturers' instructions in locations indicated on the drawings.
- B. Install plumb and level, securely and rigidly anchored to substrate.
- C. Mounting Heights: As required by accessibility regulations, unless otherwise indicated on Drawings.
- D. Use concealed fasteners wherever possible.
- E. Where exposed mounting devices and fasteners are necessary, provide such devices finished to match accessory; use security type fasteners for all exposed accessory mountings.
- F. Unless otherwise indicated, align accessory units with adjacent fixtures and other elements within the same area. Conform to ANSI/ICC A117.1 for positions and mounting heights.

3.04 PROTECTION

- A. Protect installed accessories from damage due to subsequent construction operations.
- B. Protect adjacent or adjoining finished surfaces and work from damage during installation of work of this Section.
- C. Protect exposed accessory finishes from damage until final acceptance of the Work.

3.05 CLEANING AND ADJUSTMENT

- A. Clean and polish all exposed surfaces after installation, and after removal of labels and protective coatings or coverings.
- B. Test and adjust accessories for proper and smooth operation.

END OF SECTION

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SECTION 11 19 15 - RESILIENT CELL PADDING

PART 1 GENERAL

1.01 SUMMARY

- A. This section includes resilient cell padding with all accessories as specified and shown on Drawings.
 - 1. Partial demo and repair of existing with new.

1.02 RELATED SECTIONS INCLUDE THE FOLLOWING:

- A. Section 03 30 00 - Cast-in-Place Concrete for concrete floor slab and
- B. Section 04 20 00 - Unit Masonry for CMU wall material.
- C. Section 08 34 63 - Detention Doors and Frames for doors and frames.
- D. Section 13 42 60 - Modular Metal Detention Wall Panel System for metal wall panels.
- E. Division 22000 Plumbing for in-floor toilet.

1.03 SUBMITTALS

- A. Product Data: Manufacturer's product data, literature and installation instructions.
- B. Shop Drawings showing fabrication and installation of resilient cell padding on floors and walls. Include details of installation on door and frames, around glazed openings, at floor drains and around other items located on wall or floor.
- C. Samples: Colors available.
- D. Maintenance Information: Provide instructions for care and maintenance of surfaces.

1.04 QUALITY ASSURANCE

- A. Fire Performance Characteristics: Provide resilient cell padding with the following surface burning characteristics as determined by testing identical products per ASTM E 84, 2007 edition by UL or other testing and inspecting organizations acceptable to authorities having jurisdiction.
 - 1. Flame Spread: 20 or less.
 - 2. Smoke Development: < 450.
 - 3. Fuel Contribution: 10.
 - 4. Class A fire rating.
- B. Padding to also conform to the following:
 - 1. Compression Deflection (ASTM D 1056): 4 psi @ 25% deflection.
 - 2. Moisture Absorption: Maximum 1.05% by weight.
 - 3. Fungus-Resistance (ASTM G 21-90): 0.
 - 4. Temperature Stability: Unaffected between 20 to 120 degrees F.
- C. Obtain approval from authority having jurisdiction to use resilient cell padding specified.

- D. Installer Qualifications: Engage an experienced installer with minimum five (5) years experience and approved by the manufacturer as having the necessary experience, staff and training to install product.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Transport and handle resilient cell padding panels to prevent damage.
- B. Store materials in building on platform above floor and cover with tarps. Store joint filler liquid padding material in original containers in a well ventilated area away from fire and flame.

1.06 PROJECT CONDITIONS

- A. Field Measurements: Take field measurements prior to preparation of shop drawings and fabrication to ensure proper fitting. Show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delay.
- B. Environmental Conditions: Maintain a minimum temperature of 65 deg F, 36 hours before installation, during installation and until materials have fully cured as mandated by manufacturer.
- C. Ventilation: Provide adequate ventilation during installation and curing time.
- D. Flammability: No smoking, open flames or sparking from electrical equipment shall be permitted in the area during storage and application of material.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Basis of Design Product:
 - 1. Marathon Engineering Corporation; Liquid Gold Medal Resilient Cell Padding.
 - 2. Other Acceptable Manufacturer:
 - a. B&E; Padded Surfaces.

2.02 MATERIALS

- A. Padding: Resilient polymeric composition containing fire-retardant additives intended for use as floor, door and wall padding and designed as a surfacing material that has no extraneous plasticizers or softening agents that are not integrally bonded in the internal chemical structure. Materials to self-adhere to subsurfaces when installed and cured on site.
 - 1. Thickness: Nominal 3/4 inch on walls, 1/2 inch on floors.
 - 2. Weight: Approximately 5 pounds per square foot at 1 inch thickness.
 - 3. Finish: Smooth texture, scuff resistant.
 - 4. Color: As selected.
- B. Accessory Materials:
 - 1. Minimum 7/16 inch fire retardant oriented strand board (OSB) or plywood panels.

2. Bond Coats and Adhesives: As recommended by manufacturer of padding to insure compatibility and bond with substrates.
3. Top Coating: Manufacturer's standard scuff-resistant coating.
4. Repair Kit: Provide manufacturer's standard repair kit for minor damage work.
5. Reinforcing Mesh: Manufacturer's standard product.

2.03 FABRICATION

- A. Padding applied to walls and doors shall be prefabricated sheets factory applied to oriented strand board panels for a nominal thickness of 1 inch or prefabricated pads nominal 3/4 inch thick.
- B. Floors shall be liquid-poured and self-leveling nominal 1/2 inch thick or nominal 1/2 inch thick pads with liquid covering.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Before installation of padding, examine all subsurfaces to assure surfaces are true, even, dry, clean and in proper condition to start installation. Notify Architect-Engineer in writing of any condition which will prevent satisfactory installation. Do not proceed with work until such defects are corrected. Application of padding constitutes acceptance of surfaces and responsibility thereof.

3.02 PREPARATION

- A. Provide adequate ventilation.
- B. Maintain minimum temperature of 65 deg F for duration of installation and curing time.
- C. Verify concrete has cured for a minimum of 60 days prior to application of materials. Do not use curing or bonding agents on concrete in these areas.
- D. Prepare substrates for padding by filling and leveling all grooves, cracks and other imperfections prior to installation of padding.

3.03 INSTALLATION

- A. Install resilient wall padding in accordance with approved Shop Drawings and manufacturer's written installation instructions.
- B. Remove doors to install premolded panel padding on them. Seal around glazing area as specified by the manufacturer. Re-install and test to verify that door operates properly after application of padding without bonding or scraping of padding, padding backer and pourable material.
- C. Apply bond coat to clean walls and adhere prefabricated wall panels from floor to ceiling with minimum 1/6 inch gap between panels. Fill all gaps with padding material in liquid form and sand prior to application of top coating.

D. Install floor in accordance with manufacturer's instruction. Take special precautions to form area around floor drains, to obtain proper contours. Avoid spillage of liquid material in to drain.

E. Apply finish coating in accordance with manufacturer's instructions.

3.04 CLEANING AND PROTECTION

A. Touch-up damaged surfaces per manufacturer's instruction.

B. Clean work area of debris associated with installation.

C. Clean surfaces per manufacturer's instructions.

D. Allow minimum 30 day cure time before use.

END OF SECTION

SECTION 12 55 00- DETENTION FURNISHINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Detention Furnishings.

1.02 REFERENCE STANDARDS

- A. 36 CFR 1191 - Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines; current edition.
- B. ADA Standards – 2016 CBC Chapter 11B.C.
- D. ASTM A269/A269M - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service; 2015a.
- E. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2015.

1.03 SUBMITTALS

- A. Product Data: Submit data on accessories describing size, finish, details of function, and attachment methods.
- B. Manufacturer's Installation Instructions: Indicate special procedures and conditions requiring special attention.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Do not deliver furnishings to site until location in which they are to be installed are ready to receive them.
- B. Pack accessories individually in a manner to protect its finish.

PART 2 PRODUCTS

2.01 MATERIALS

- A. General: Shop assembled, free of dents and scratches and packaged complete with anchors and fittings, steel anchor plates, adapters, and anchor components for installation.
 - 1. Grind welded joints smooth.
 - 2. Fabricate units made of metal sheet of seamless sheets, with flat surfaces.
- B. Fasteners, Screws, and Bolts: Stainless steel as specified in Section 05 05 55 - Security Fasteners.
- F. Chemical Set Anchors: Use 2 component epoxy set anchors for blind hole secuments.

2.03 DETENTION FLOOR MOUNTED BUNK

A. Custom Fabricated Detention Floor Mounted Bunk (DFB):

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. Argyle Security.
 - b. KLN Steel Products Company.
 - c. Norix Group, Inc.; Max-Master.
 - d. Norment Industries, Div. of Norment Security Group.
 - e. Viking Products (Basis of Design).
2. Bed Pan (DWD): Formed from minimum 10 gage -steel sheet; with minimum 2-inch flanged front edges.
3. Tube Frame: Constructed from minimum 2 inch by 2 inch by 10 gage steel.
4. Perforated Plate: Minimum 3/16-inch perforated plate with 3/16-inch holes at 9/32" staggered spacing.
5. Size and Configuration: As indicated on drawings.
6. Finish: Manufacturer's standard powder coat or baked enamel finish.

2.03 DETENTION DESKS

A. Wall-Mounted Desk (DWD):

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. Argyle Security.
 - b. KLN Steel Products Company.
 - c. Norix Group, Inc.; Max-Master.
 - d. Norment Industries, Div. of Norment Security Group.
 - e. Viking Products (Basis of Design).
2. Accessible Desk (DWDA): Formed from 10 gage stainless-steel sheet; with minimum 1-1/2-inch flanged front edges. Comply with requirements of 2013 CBC for knee space, height, and other factors.
 - a. Desk Size: Minimum 32 inches wide by 20 inches deep.
 - b. Accessible Desk Height: 28 inches minimum and 34 inches maximum high with 27 inches knee clearance per CBC 11B-902.3
3. Finish: Stainless steel No. 4 finish.

2.04 DETENTION FIXED STOOL

A. Floor Mounted Detention Fixed Stool (DFS)

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

- b. KLN Steel Products Company.
 - c. Norix Group, Inc.; Max-Master.
 - d. Norment Industries, Div. of Norment Security Group.
 - e. Viking Products (Basis of Design).
- 2. Description: Detention stainless steel floor mounted stool
 - 3. Seat: 12-inch diameter, formed from 14 gage stainless-steel sheet; with minimum 1-1/2-inch flanged edges.
 - 4. Pedestal Supports: Formed from 3.5-inch-square by 3/16-inch thick steel tubing welded to base and seat.
 - 5. Floor Anchor Plate: Concealed floor anchor, minimum 1/4-inch thick steel with tamper resistant fasteners.
 - a. Finish: Manufacturer's standard powder coat or baked enamel finish.

2.05 DETENTION SWING STOOLS

A. Detention Wall-mounted Swing Stool (DWSS):

- 1. Manufacturers: Subject to compliance with requirements, available manufacturers that may be incorporated into the Work include but are not limited to, the following:
 - a. Argyle Security.
 - b. KLN Steel Products Company.
 - c. Norix Group, Inc.; Max-Master.
 - d. Norment Industries, Div. of Norment Security Group.
 - e. Viking Products (Basis of Design).
- 2. Design Criteria: Meet BSCC requirements for anti-ligature swing arm stools.
- 3. Seats: 12-inch diameter, formed from minimum 14 gage stainless steel sheet; with minimum 1-1/2-inch flanged edges.
- 4. Wall Mount and Seat Support:
 - a. Wall Plate: 10 inch by 12 inch by 1/4 inch steel plate.
 - b. Seat Reinforcement: 9 inch x by 9 inch by 10 gage reinforcement plate reinforced with triangular steel gussets and. welded to swing arm.
 - c. Swing Arm: Minimum 1/2 inch by 4 inch mild steel plate formed to provide an angled swing arm at about 23 degrees from horizontal.
 - d. Pivot Pin: 3/4 inch diameter by 8-3/4" long mild steel rod.
 - e. Hinge Assembly with Swing Limiter: 3/16 inch mild steel plate with schedule 40 pipe ferrules. Limit swing so that seat does not hit the adjacent wall.
- 5. Finish:
 - a. Seats: #4 directional polish.
 - b. Legs and Support Framing: Manufacturer's standard powder coat or baked enamel finish.

2.06 DETENTION WALL MOUNTED BENCH

A. Detention Wall-mounted Bench (DWB):

1. Manufacturers: Subject to compliance with requirements, available manufacturers that may be incorporated into the Work include but are not limited to, the following:
 - a. Argyle Security.
 - b. KLN Steel Products Company.
 - c. Norix Group, Inc.; Max-Master.
 - d. Norment Industries, Div. of Norment Security Group.
 - e. Viking Products (Basis of Design).
3. Seats: 12-inch wide, formed from minimum 14 gage stainless steel sheet; with minimum 1-1/2-inch flanged edges.
4. Wall Brackets: minimum 10 gage steel.
5. Finish:
 - a. Seats: #4 directional polish.
 - b. Legs and Support Framing: Manufacturer's standard powder coat or baked enamel finish.

2.07 DETENTION GROUND MOUNTED BENCH

A. Detention In-Ground Mounted Bench (DGB):

1. Manufacturers: Subject to compliance with requirements, available manufacturers that may be incorporated into the Work include but are not limited to, the following:
 - a. Argyle Security.
 - b. KLN Steel Products Company.
 - c. Viking Products
 - d. Norment Industries, Div. of Norment Security Group.
 - e. Norix Group, Inc; Hilltop (Basis of Design).
2. Seats: 10-inch wide, formed from minimum 14 gage perforated steel sheet; with minimum 1-1/2-inch flanged edges.
3. Frame: Steel tubing with welded studs for mounting the seat and back.
4. Mounting: Surface mounting, 8" dia. x 1/4" thick steel plate with mounting holes, welded to the upright.
5. Height: 18-inches.
6. Finish:
 - a. Seat: Perforated steel sheet. An angle iron support is welded to the bottom of the seat for mounting and is then primed and dipped in U.V. stabilized PVC. 14 ga. perforated steel sheet. Perforated with 3/8" dia. holes on 3/4" centers.
 - b. Legs and Support Framing: Manufacturer's standard powder coat or baked enamel finish.

2.08 DETENTION WALL MOUNTED STORAGE SHELF

A. Detention Wall-mounted Shelf (DWS):

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

- a. Argyle Security.
 - b. KLN Steel Products Company.
 - c. Norix Group, Inc.; Max-Master.
 - d. Norment Industries, Div. of Norment Security Group.
 - e. Viking Products (Basis of Design).
2. Construction: Minimum 9 gage steel formed as indicated.
 3. Mounting: Drilled for bolted connection to wall.
 4. Size: As indicated.
 5. Finish: Manufacturer's standard powder coat or baked enamel finish.

PART 3 EXECUTION

3.01 PREPARATION

- A. Deliver inserts to site for timely installation.
- B. Provide templates and rough-in measurements as required.
- C. Before starting work notify Architect in writing of any conflicts detrimental to installation or operation of units.
- D. Verify with Architect exact locations of accessories.

3.02 INSTALLATION

- A. Install furnishings in accordance with manufacturers' instructions in locations indicated on the drawings.
- B. Install plumb and level, securely and rigidly anchored to substrate.
- C. Mounting Heights: As required by accessibility regulations, unless otherwise indicated on Drawings.
- D. Use concealed fasteners wherever possible.
- E. Where exposed mounting devices and fasteners are necessary, provide such devices finished to match accessory; use security type fasteners for all exposed accessory mountings.
- F. Unless otherwise indicated, align furnishings with other elements within the same area. Conform to ANSI/ICC A117.1 for positions and mounting heights.

3.03 PROTECTION

- A. Protect installed accessories from damage due to subsequent construction operations.
- B. Protect adjacent or adjoining finished surfaces and work from damage during installation of work of this Section.
- C. Protect exposed finishes from damage until final acceptance of the Work.

3.04 CLEANING AND ADJUSTMENT

- A. Test and adjust movable furnishings for proper and smooth operation.

END OF SECTION

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SECTION 13 42 60 - MODULAR METAL DETENTION WALL PANEL SYSTEM

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Modular metal detention wall panel system.

1.02 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 1 Specification Sections, apply to this Section.
- B. Section 01 35 13 Special Project Procedures for Detention Facilities.
- C. Section 03 30 00 - Cast-in-Place Concrete for concrete floor, mezzanine floor, and concrete for cell wall fill.
- D. Section 05 50 00 - Metal Fabrications.

1.03 SUMMARY

- A. Provide and install security hollow metal panel wall system as listed in Paragraph 2.1 below.

1.04 SUBMITTALS

- A. Manufacturer's Data:
 - 1. Submit manufacturer's product specifications and installation instructions for each type of detention equipment.
 - 2. Distribute one copy to the installer.
- B. Shop Drawings: Shop drawings shall show quantities, types, and locations. Construction shall be fully detailed, showing weights of materials, finish, framing, reinforcing, anchoring, and method of making joints, and must indicate conformance with all specified technical requirements, and shall conform with the physical configuration of the specified items. Submit for review by Architect prior to submitting to State Fire Marshal.
- C. Deferred Code Authority Submittal: The product under this section is an engineered system and as such must be submitted to the proper Authority Having Jurisdiction (AHJ).
 - 1. Submit appropriate copies of approved shop drawings, calculations, test reports and other data for review concurrent with A/E shop drawings submittals.
 - 2. Submit design calculations for required welding schedule for panels, floor channels, etc. and required ceiling design indicating compliance with design loads.
 - 3. Installer Certificates: Signed by the manufacturer certifying installers comply with requirements.
- D. Samples:
 - 1. Submit sample of panel 1'-0" X 1'-0" corner section showing internal construction.

- a. No work represented by the samples shall be fabricated until the samples are approved.
- E. Test Report: Manufacturer shall submit to the architect an independent testing laboratory reports certifying that products meet all test requirements as required by Article 1.06 Testing.
- F. Qualifications: Manufacturer qualifications as required by Article 1.07 Quality Assurance.

1.05 REFERENCES:

- A. American Society for Testing and Materials:
 - 1. ASTM A 1008-15, Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.
 - 2. ASTM A 1011-14, Specification for Steel, Sheet Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy and High Strength Low-Alloy with Improved Formability.
 - 3. ASTM A 653-15, Specification for Steel Sheet, Zinc-coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by Hot Dipped Process, (Commercial Steel).
 - 4. ASTM A 240-15a, Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate Sheet, and Strip for Pressure Vessels and for General Applications.
 - 5. ASTM B 117-11, Standard Practice for Operating Salt Spray (Fog) Apparatus.
 - 6. ASTM C 143-15, Standard Test Method for Slump of Hydraulic Cement Concrete.
 - 7. ASTM D 610-08 (2012), Standard Practice for Evaluating Degree of Rusting on Painting Steel Surfaces.
 - 8. ASTM D 714-02(2009), Standard Test Method for Evaluating Degree of Blistering of Paints.
 - 9. ASTM D 1735-14, Standard Practice for Testing Water Resistance of Coatings Using Water Fog Apparatus.
 - 10. ASTM-E119-15, Standard Methods of Fire Tests of Building Construction and Materials.
 - 11. NFPA-251-06, Fire Tests of Building Construction and Materials.
 - 12. ANSI A 250.10 - 2011, Standard Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames.
 - 13. ASTM F 1450-12a, Standard Test Methods for hollow Metal Swinging Door Assemblies for Detention and Correctional Facilities.
 - 14. ASTM F 1592-12, Standard Test Methods for Detention Hollow Metal Vision Systems.
 - 15. ASTM F 2322-12, Standard Test Methods for Physical Assault on Vertical Fixed Barriers for Detention and Correctional Facilities.
- B. NAAMM HMMA 803-08, Steel Tables.
- C. HMMA 820 TN01-03, Grouting Hollow Metal Frames.

- D. American National Standards Institute:

ALAMEDA COUNTY GSA

**MODULAR METAL DETENTION WALL
PANEL SYSTEM
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1. ANSI / NAAMM HMMA 866-12, Guide Specifications for Stainless Steel Hollow Metal Doors and Frames.
 2. ANSI / NFPA 80-2016, Fire Doors and Windows.
 3. ANSI / NFPA 252-2012, Standard Methods of Fire Tests of Door Assemblies.
 4. ANSI / NFPA 257-2012, Methods for Fire Test of Window Assemblies.
 5. ANSI / UL 9-2012, Fire Test of Window Assemblies.
 6. ANSI / UL 10B-2013, Fire Tests of Door Assemblies, 9th Edition.
 7. ANSI / UL 10C-2009, Standard for Positive Pressure Fire Tests of Door Assemblies, 1st Edition.
- E. Underwriters Laboratories:
1. UL 263-2011, Fire Tests of Building Construction and Materials, 14th Edition.
 2. UL 752-11, 11th Edition, Bullet Resisting Equipment.
- 1.06 TESTING AND PERFORMANCE:
- A. Wall Assembly Impact Test: Test in accordance with ASTM F2322-12
- B. Wall De-lamination Test:
1. The test specimen shall consist of a representative sample of the wall system under investigation with a minimum size of 4'-0" by 4'-0". No end closing pieces are to be used in this test.
 2. Using a steel I-beam table capable of withstanding a load of 10,000 pounds with no deflection, fix to the tabletop a steel I-beam enclosure to accommodate the sample.
 3. Mount the sample in the test fixture and weld the bottom face sheet at its center to the I-beam tabletop. Weld a 3 by 3 by 1/4 inch thick steel plate centered on the top face sheet. Center an eyelet on the 3 by 3 by 1/4 inch thick steel plate. Using a hydraulic porta-power and a calibrated load cell to measure pounds force, pull on the eyelet in an upward direction. Use a dial indicator to measure the deflection at the center of the test sample.
 4. The maximum allowable deflection when measure with a 3,000 pound load is 1/8 inch.
- C. Cell Furnishing Static Load Test:
1. Erect a wall or use the same wall as specified under the Wall Impact Test.
 2. Attach the inmate desk by welding to the wall panel system.
 3. Apply a load to the outer edge of the desk using a hydraulic porta-power and a calibrated load cell to measure pounds force. Apply a load of 1,500 pounds.
 4. No permanent visible disfigurement is allowed to the wall panel system.
- D. Acoustical Test:
1. Erect a wall or use the same wall as specified under Wall Impact Test.
 2. Conduct these tests in accordance to: ASTM E90-09 Standard Test Classification for Determination of Sound Transmission Class (Minimum STC class rating of 45-49), and ASTM E1332-10a Standard Test Classification for Determination of Outdoor-Indoor Transmission Class (Minimum OITC class rating is 41).

1.07 QUALITY ASSURANCE

- A. Single-Source Responsibility: All materials for security hollow metal panel wall system to be furnished by a single manufacturer.
- B. Manufacturer Qualifications: Firm with a minimum 5 years experience in manufacturing security hollow metal panel wall systems that are similar to those indicated for this project and that have a record of successful in-service performance.
- C. Mock-Up: Prior to production of wall panels and components, build a full-scale mock-up at the project site for the Architect-Engineer and Owner to review and approve.
 - 1. Mock-up to consist of a lower cell, upper cell, and mezzanine walkway.
 - 2. Mock-up to have a minimum one cell completely furnished and painted per this specification section and as shown on Drawings. One cell to be left unpainted and unfurnished.
 - 3. Mezzanine to have railings installed per details.
 - 4. Chases to have all connections and piping installed as provided by other subcontractors.
 - 5. Mock-up to be reviewed for finishes, installation of components and other like items.
 - 6. Approved mock-up to be used to establish quality and standard of workmanship for all component.
 - a. Approval to be in the form of a letter, produced by Architect/Engineer and signed by manufacturer, Owner and Architect/Engineer.
 - 7. Approved mock-up may be incorporated into the project and at contractor's discretion.

1.08 DELIVERY, STORAGE AND HANDLING

- A. Packing and Marking: Mark each piece according to the approved erection drawings.
- B. Deliver all components palletized or crated to provide protection during transit and job storage.
- C. Store all components at the building site under cover. Do not store any materials directly on the ground or concrete. Provide adequate ventilation and protection to insure materials are kept dry, clean and secure. Store all materials in the manner and order as prescribed by the manufacturer.

PART 2 PRODUCTS

2.01 SECURITY HOLLOW METAL PANEL WALL SYSTEM

- A. Security hollow metal panel system and accessories shall include, but are not necessarily limited to:
 - 1. Cell Walls - refer to schedule at the end of Part 3 for locations of security hollow metal panel wall systems.
 - a. Security hollow metal panel wall system No. 1: System must pass testing criteria as listed in Article 1.06 TESTING AND PERFORMANCE.

- b. Security hollow metal panel wall system No. 2: System must pass the following testing criteria as listed in Article 1.06 TESTING AND PERFORMANCE:
 - 1) Wall assembly impact test (ASTM F2322-12).
 - 2) Cell furnishing static load test.
 2. Mezzanine walkway, and support for railings.
 3. Security hollow metal doors, frames and chases for the cell modules only.
 4. Detention hardware, including cell door, chase door, for cell modules only, but excluding any control system elements that connect to hardware.
 5. All floor and ceiling channels and miscellaneous cell panel connection materials as required.
 6. Concrete filling of all cell wall panels.
 7. Installation of metal conduit for electrical connections as required.
 8. Supply and return grilles.
 9. Detention furnishings, including bunk, desk, stool, shelf, mirror for cell modules only.
 10. Detention lavatory commode combo units, for cell modules only.
 11. Electrical items, including cell light fixture, intercom, call button, for cell modules only.
 12. Security glazing, including cell door vision panels only.
 - B. Manufacturers: Unless pre-approved prior to bidding, provide modular metal detention wall panel systems by one of the following:
 1. Trussbilt, New Brighton, MN
 2. MaxWall by Norment Security Group, Montgomery, AL
- 2.02 FABRICATION
- A. Methods and product quality shall meet standards set by the Hollow Metal Manufacturers Association (HMMA), a Division of the National Association of Architectural Metal Manufacturers (NAAMM).
 1. Panel Face Sheets: Join at vertical edges by continuous rabbeted joint extending full height of panel.
 2. Panel Thickness: 2 inches minimum and furnished with provisions for grouting in field. After grouting, grout holes will be concealed by cover plate. Panels shall be neat in appearance and free from warpage or buckle. Edge bends shall be true and straight and of minimum radius for thickness of material used.
 3. Panels shall be stiffened by one of the following systems:
 - a. Continuous steel core materials, 0.015 inches minimum, having truncated triangular sections extending continuously from one panel face to the other, spot welded to each face sheet 2-3/4 inches on center horizontally and 3 inches on center vertically. Core materials shall extend full height and width of panel.
 - b. Rolled or formed 1/8 inch steel channels extending from top to bottom of panel and continuous from one face to the other, spaced not more than 4 inches on center and shall be spot welded to both panel faces not more than 3 inches on center vertically.
 4. Security Frames, Vents:

- a. Panels shall be provided with cutouts reinforced with steel moldings, not less than 12 gauge to secure access door frames and air venting grilles in accordance with sizes shown in Drawings. Coordinate size and location of air venting with mechanical.
- B. Filled and sand tool marks after fabrication as required to make face sheets, vertical edges, and weld joints free of irregularities with exception of minor spot welding marks.
 1. Wholesale grinding or pressure sanding of panel surface with resulting removal of zinc coating shall not be permitted.
 2. Apply rust inhibitive primer which meets or exceeds ASTM B117 Salt Spray for 150 hours with a rust grade of not less than 6 as defined in ASTM D610 and ASTM D1735 Water Fog Test, for organic coatings for 200 hours with any quantity of #8 blisters, but no more than "few" No. 6 blisters as illustrated in ASTM D714 after appropriate metal preparation.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Inspect floor slab for compliance with requirements for installation tolerances, embed placement and other conditions affecting installation of security hollow metal panel wall system.
- B. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.02 ERECTION

- A. Erection Tolerances: Install security hollow metal panel wall system level, plumb square, and true, without exceeding the tolerances and as indicated below.
 1. Plan Location From Building Grid Datum: 1/4 inch.
 2. Cell Fronts: 1/8 inch.
 3. Top Elevation From Nominal Elevation: 1/4 inch.
 4. Support Elevation From Nominal Elevation:
 - a. Maximum Low: 1/4 inch.
 - b. Maximum High: 1/4 inch.
 5. Plumb in Any 10 feet of Element Height: 1/4 inch.
 6. Maximum Jog in Alignment of Matching Edges: 1/8 inch.
 7. Differential Bowing or Camber, as Erected Between Adjacent Members of the Same Design: 1/4 inch.
 8. Cell Fronts: 1/8 inch.
- B. Place floor mounting channels on floor slab and wall channels on precast wall. Anchor according to approved shop drawings.
- C. Fit panels into floor and wall channels and weld to channel and adjacent panels per manufacturer's instructions.
 1. Provide 2 inch long fillet welds at 12 inches on center.
 2. Welds to be smooth with weld spatter and flue removed.

- D. Install access doorframes and security grilles into panel system and attach by welding.
- E. Fill panels with grout as specified prior to ceiling/floor installation.
- F. Install metal deck on top of panels. Weld deck to wall panels. Place concrete on deck to form floor or ceiling slab as detailed in Drawings.
- G. Install all wall hung items by welding to wall panels. Touch-up damaged primer coat as necessary.
- H. Fill vertical and horizontal joints and seams with security sealant.
- I. After installation of accessories and fixtures, paint metal wall panels, doors, frames, ceilings, etc. as specified in Section 09 96 00 - High-Performance Coatings.

3.03 REPAIR AND CLEANING

- A. Repair or replace damaged panels which do not meet specifications
 - 1. Repairs: Approved by Architect/Engineer.
 - 2. Removed and replace with new panels damaged panels which can not be repaired.
- B. Clean panels after erection and grouting procedures by removing excess grout and other rubbish. After work is complete, clean surfaces, re-seal and repaint as required for acceptance by Architect/Engineer.

END OF SECTION

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SECTION 22 05 17 - SLEEVES AND SLEEVE SEALS FOR PLUMBING PIPING

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. Sleeves.
 - 2. Stack-sleeve fittings.
 - 3. Sleeve-seal systems.
 - 4. Sleeve-seal fittings.
 - 5. Grout.

1.3 ACTION SUBMITTALS

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

PART 2 - PRODUCTS

2.1 SLEEVES

- A. Cast-Iron Wall Pipes: Cast or fabricated of cast or ductile iron and equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop unless otherwise indicated.
- B. Galvanized-Steel Wall Pipes: ASTM A 53/A 53M, Schedule 40, with plain ends and welded steel collar; zinc coated.
- C. Galvanized-Steel-Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, zinc coated, with plain ends.
- D. PVC-Pipe Sleeves: ASTM D 1785, Schedule 40.
- E. Galvanized-Steel-Sheet Sleeves: 0.0239-inch (0.6-mm) minimum thickness; round tube closed with welded longitudinal joint.
- F. Molded-PE or -PP Sleeves: Removable, tapered-cup shaped, and smooth outer surface with nailing flange for attaching to wooden forms.

- G. Molded-PVC Sleeves: With nailing flange for attaching to wooden forms.

2.2 STACK-SLEEVE FITTINGS

- A. Stack-sleeve fittings in this article can be used in concrete floor and roof slabs, but are without seepage holes; therefore, they cannot be used as replacements for floor drains. Using grout, fill the annular space between fitting and slab opening. These fittings are available in NPS 1-1/2 to NPS 12 (DN 40 to DN 300).
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Smith, Jay R. Mfg. Co.
 - 2. Zurn Industries, LLC.
- C. Description: Manufactured, cast-iron sleeve with integral clamping flange. Include clamping ring, bolts, and nuts for membrane flashing.
 - 1. Underdeck Clamp: Clamping ring with setscrews.

2.3 SLEEVE-SEAL SYSTEMS

- A. Sleeve-seal systems in this article are used for piping penetrations in slabs-on-grade and below grade in exterior walls. These systems are available for NPS 1/2 to NPS 48 (DN 15 to DN 1200) piping.
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Advance Products & Systems, Inc.
 - 2. CALPICO, Inc.
 - 3. Metraflex Company (The).
 - 4. Pipeline Seal and Insulator, Inc.
 - 5. Proco Products, Inc.
- C. Description: Modular sealing-element unit, designed for field assembly, for filling annular space between piping and sleeve.
 - 1. Sealing Elements: EPDM-rubber interlocking links shaped to fit surface of pipe. Include type and number required for pipe material and size of pipe.
 - 2. Pressure Plates: Carbon steel.
 - 3. Connecting Bolts and Nuts: Carbon steel, with corrosion-resistant coating, of length required to secure pressure plates to sealing elements.

2.4 SLEEVE-SEAL FITTINGS

- A. Sleeve-seal fittings in this article are used for piping penetrations in slabs-on-grade and in exterior walls. These fittings are made to match piping OD, so they must be selected to match the penetrating piping size. They are available for NPS 1/2 to NPS 6 (DN 15 to DN 150) piping.
- B. Manufacturers: Subject to compliance with requirements, provide products by the following:
 - 1. HOLDRITE.
- C. Description: Manufactured plastic, sleeve-type, waterstop assembly made for imbedding in concrete slab or wall. Unit has plastic or rubber waterstop collar with center opening to match piping OD.

2.5 GROUT

- A. Standard: ASTM C 1107/C 1107M, Grade B, post-hardening and volume-adjusting, dry, hydraulic-cement grout.
- B. Characteristics: Nonshrink; recommended for interior and exterior applications.
- C. Design Mix: 5000-psi (34.5-MPa), 28-day compressive strength.
- D. Packaging: Premixed and factory packaged.

PART 3 - EXECUTION

3.1 SLEEVE INSTALLATION

- A. Install sleeves for piping passing through penetrations in floors, partitions, roofs, and walls.
- B. For sleeves that will have sleeve-seal system installed, select sleeves of size large enough to provide 1-inch (25-mm) annular clear space between piping and concrete slabs and walls.
 - 1. Sleeves are not required for core-drilled holes.
- C. Install sleeves in concrete floors, concrete roof slabs, and concrete walls as new slabs and walls are constructed.
 - 1. Permanent sleeves are not required for holes in slabs formed by molded-PE or -PP sleeves.
 - 2. 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 (50 mm) above finished floor level.

3. Using grout, seal the space outside of sleeves in slabs and walls without sleeve-seal system.
- D. Install sleeves for pipes passing through interior partitions.
 1. Cut sleeves to length for mounting flush with both surfaces.
 2. Install sleeves that are large enough to provide 1/4-inch (6.4-mm) annular clear space between sleeve and pipe or pipe insulation.
 3. Seal annular space between sleeve and piping or piping insulation; use joint sealants appropriate for size, depth, and location of joint. Comply with requirements for sealants specified in Section 079200 "Joint Sealants."
- E. Fire-Barrier Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at pipe penetrations. Seal pipe penetrations with firestop materials. Comply with requirements for firestopping specified in Section 078400 "Penetration Firestopping."

3.2 STACK-SLEEVE-FITTING INSTALLATION

- A. Install stack-sleeve fittings in new slabs as slabs are constructed.
 1. Install fittings that are large enough to provide 1/4-inch (6.4-mm) annular clear space between sleeve and pipe or pipe insulation.
 2. Secure flashing between clamping flanges for pipes penetrating floors with membrane waterproofing. Comply with requirements for flashing specified in Section 076200 "Sheet Metal Flashing and Trim."
 3. Install section of cast-iron soil pipe to extend sleeve to 2 inches (50 mm) above finished floor level.
 4. Extend cast-iron sleeve fittings below floor slab as required to secure clamping ring if ring is specified.
 5. Using grout, seal the space around outside of stack-sleeve fittings.
- B. Fire-Barrier Penetrations: Maintain indicated fire rating of floors at pipe penetrations. Seal pipe penetrations with firestop materials. Comply with requirements for firestopping specified in Section 078400 "Penetration Firestopping."

3.3 SLEEVE-SEAL-SYSTEM INSTALLATION

- A. Install sleeve-seal systems in sleeves in exterior concrete walls and slabs-on-grade at service piping entries into building.
- B. Select type, size, and number of sealing elements required for piping material and size and for sleeve ID or hole size. Position piping in center of sleeve. Center piping in penetration, assemble sleeve-seal system components, and install in annular space between piping and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make a watertight seal.

3.4 SLEEVE-SEAL-FITTING INSTALLATION

- A. Install sleeve-seal fittings in new walls and slabs as they are constructed.
- B. Assemble fitting components of length to be flush with both surfaces of concrete slabs and walls. Position waterstop flange to be centered in concrete slab or wall.
- C. Secure nailing flanges to concrete forms.
- D. Using grout, seal the space around outside of sleeve-seal fittings.

3.5 SLEEVE AND SLEEVE-SEAL SCHEDULE

- A. Use sleeves and sleeve seals for the following piping-penetration applications:
 - 1. Exterior Concrete Walls above Grade:
 - a. Piping Smaller Than NPS 6 (DN 150): Cast-iron wall sleeves.
 - b. Piping NPS 6 (DN 150) and Larger: Cast-iron wall sleeves.
 - 2. Exterior Concrete Walls below Grade:
 - a. Piping Smaller Than NPS 6 (DN 150): Cast-iron wall sleeves with sleeve-seal system.
 - 1) Select sleeve size to allow for 1-inch (25-mm) annular clear space between piping and sleeve for installing sleeve-seal system.
 - b. Piping NPS 6 (DN 150) and Larger: Cast-iron wall sleeves with sleeve-seal system.
 - 1) Select sleeve size to allow for 1-inch (25-mm) annular clear space between piping and sleeve for installing sleeve-seal system.
 - 3. Concrete Slabs-on-Grade:
 - a. Piping Smaller Than NPS 6 (DN 150): Cast-iron wall sleeves with sleeve-seal system.
 - 1) Select sleeve size to allow for 1-inch (25-mm) annular clear space between piping and sleeve for installing sleeve-seal system.
 - b. Piping NPS 6 (DN 150) and Larger: Cast-iron wall sleeves with sleeve-seal system.
 - 1) Select sleeve size to allow for 1-inch (25-mm) annular clear space between piping and sleeve for installing sleeve-seal system.
 - 4. Concrete Slabs above Grade:

- a. Piping Smaller Than NPS 6 (DN 150): Galvanized-steel-pipe sleeves.
 - b. Piping NPS 6 (DN 150) and Larger: Galvanized-steel-pipe sleeves.
- 5. Interior Partitions:
 - a. Piping Smaller Than NPS 6 (DN 150): Galvanized-steel-pipe sleeves.
 - b. Piping NPS 6 (DN 150) and Larger: Galvanized-steel-sheet sleeves.

END OF SECTION 22 05 17

SECTION 22 05 18 - ESCUTCHEONS FOR PLUMBING PIPING

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. Escutcheons.
 - 2. Floor plates.

1.3 ACTION SUBMITTALS

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

PART 2 - PRODUCTS

2.1 ESCUTCHEONS

- A. One-Piece, Cast-Brass Type: With polished, chrome-plated and rough-brass finish and setscrew fastener.
- B. One-Piece, Deep-Pattern Type: Deep-drawn, box-shaped brass with chrome-plated finish and spring-clip fasteners.
- C. One-Piece, Stamped-Steel Type: With chrome-plated finish and spring-clip fasteners.
- D. Split-Casting Brass Type: With polished, chrome-plated and rough-brass finish and with concealed hinge and setscrew.
- E. Split-Plate, Stamped-Steel Type: With chrome-plated finish, concealed and exposed-rivet hinge, and spring-clip fasteners.

2.2 FLOOR PLATES

- A. One-Piece Floor Plates: Cast-iron flange with holes for fasteners.
- B. Split-Casting Floor Plates: Cast brass with concealed hinge.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install escutcheons for piping penetrations of walls, ceilings, and finished floors.
- B. Install escutcheons with ID to closely fit around pipe, tube, and insulation of insulated piping and with OD that completely covers opening.
 - 1. Escutcheons for New Piping:
 - a. Piping with Fitting or Sleeve Protruding from Wall: One-piece, deep-pattern type.
 - b. Chrome-Plated Piping: One-piece, cast-brass or split-casting brass type with polished, chrome-plated finish.
 - c. Insulated Piping: One-piece, stamped-steel type or split-plate, stamped-steel type with concealed hinge or split-plate, stamped-steel type with exposed-rivet hinge.
 - d. Bare Piping at Wall and Floor Penetrations in Finished Spaces: One-piece, cast-brass or split-casting brass type with polished, chrome-plated finish.
 - e. Bare Piping at Wall and Floor Penetrations in Finished Spaces: One-piece, stamped-steel type or split-plate, stamped-steel type with concealed hinge or split-plate, stamped-steel type with exposed-rivet hinge.
 - f. Bare Piping at Ceiling Penetrations in Finished Spaces: One-piece, cast-brass or split-casting brass type with polished, chrome-plated finish.
 - g. Bare Piping at Ceiling Penetrations in Finished Spaces: One-piece, stamped-steel type or split-plate, stamped-steel type with concealed hinge or split-plate, stamped-steel type with exposed-rivet hinge.
 - h. Bare Piping in Unfinished Service Spaces: One-piece, cast-brass or split-casting brass type with polished, chrome-plated rough-brass finish.
 - i. Bare Piping in Unfinished Service Spaces: One-piece, stamped-steel type or split-plate, stamped-steel type with concealed hinge or split-plate, stamped-steel type with exposed-rivet hinge.
 - j. Bare Piping in Equipment Rooms: One-piece, cast-brass or split-casting brass type with polished, chrome-plated rough-brass finish.
 - k. Bare Piping in Equipment Rooms: One-piece, stamped-steel type or split-plate, stamped-steel type with concealed hinge or split-plate, stamped-steel type with exposed-rivet hinge.
 - 2. Escutcheons for Existing Piping:
 - a. Chrome-Plated Piping: Split-casting brass type with polished, chrome-plated finish.
 - b. Insulated Piping: Split-plate, stamped-steel type with concealed or exposed-rivet hinge.
 - c. Bare Piping at Wall and Floor Penetrations in Finished Spaces: Split-casting brass type with polished, chrome-plated finish.
 - d. Bare Piping at Wall and Floor Penetrations in Finished Spaces: Split-plate, stamped-steel type with concealed or exposed-rivet hinge.
 - e. Bare Piping at Ceiling Penetrations in Finished Spaces: Split-casting brass type with polished, chrome-plated finish.
 - f. Bare Piping at Ceiling Penetrations in Finished Spaces: Split-plate, stamped-steel type with concealed or exposed-rivet hinge.
 - g. Bare Piping in Unfinished Service Spaces: Split-casting brass type with polished, chrome-plated rough-brass finish.

- h. Bare Piping in Unfinished Service Spaces: Split-plate, stamped-steel type with concealed or exposed-rivet hinge.
 - i. Bare Piping in Equipment Rooms: Split-casting brass type with polished, chrome-plated rough-brass finish.
 - j. Bare Piping in Equipment Rooms: Split-plate, stamped-steel type with concealed or exposed-rivet hinge.
 - C. Install floor plates for piping penetrations of equipment-room floors.
 - D. Install floor plates with ID to closely fit around pipe, tube, and insulation of piping and with OD that completely covers opening.
 - 1. New Piping: One-piece, floor-plate type.
 - 2. Existing Piping: Split-casting, floor-plate type.
- 3.2 FIELD QUALITY CONTROL
- A. Replace broken and damaged escutcheons and floor plates using new materials.

END OF SECTION 22 05 18

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SECTION 22 05 23.12 - BALL VALVES FOR PLUMBING PIPING

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. Brass ball valves.
 - 2. Bronze ball valves.
 - 3. Steel ball valves.

1.3 DEFINITIONS

- A. CWP: Cold working pressure.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of valve.
 - 1. Certification that products comply with NSF 61 Annex G and NSF 372.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Prepare valves for shipping as follows:
 - 1. Protect internal parts against rust and corrosion.
 - 2. Protect threads, flange faces, and soldered ends.
 - 3. Set ball valves open to minimize exposure of functional surfaces.
- B. Use the following precautions during storage:
 - 1. Maintain valve end protection.
 - 2. Store valves indoors and maintain at higher-than-ambient-dew-point temperature. If outdoor storage is necessary, store valves off the ground in watertight enclosures.
- C. Use sling to handle large valves; rig sling to avoid damage to exposed parts. Do not use operating handles or stems as lifting or rigging points.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR VALVES

- A. Source Limitations for Valves: Obtain each type of valve from single source from single manufacturer.
- B. ASME Compliance:
 - 1. ASME B1.20.1 for threads for threaded end valves.
 - 2. ASME B16.5 for flanges on steel valves.
 - 3. ASME B16.10 and ASME B16.34 for ferrous valve dimensions and design criteria.
 - 4. ASME B16.18 for solder-joint connections.
 - 5. ASME B31.9 for building services piping valves.
- C. NSF Compliance: NSF 61 Annex G and NSF 372 for valve materials for potable-water service.
- D. Bronze valves shall be made with dezincification-resistant materials. Bronze valves made with copper alloy (brass) containing more than 15 percent zinc are not permitted.
- E. Valve Pressure-Temperature Ratings: Not less than indicated and as required for system pressures and temperatures.
- F. Valve Sizes: Same as upstream piping unless otherwise indicated.
- G. Valve Actuator Types:
 - 1. Gear Actuator: For quarter-turn valves NPS 4 (DN 100) and larger.
 - 2. Handlever: For quarter-turn valves smaller than NPS 4 (DN 100).
- H. Valves in Insulated Piping:
 - 1. Include 2-inch (50-mm) stem extensions.
 - 2. Extended operating handles of nonthermal-conductive material and protective sleeves that allow operation of valves without breaking vapor seals or disturbing insulation.
 - 3. Memory stops that are fully adjustable after insulation is applied.

2.2 BRASS BALL VALVES

- A. One-Piece, Brass Ball Valves:
 - 1. Manufacturers: Subject to compliance with requirements, provide products by the following:
 - a. KITZ Corporation.
 - 2. Description:
 - a. Standard: MSS SP-110.
 - b. CWP Rating: 400 psig (2760 kPa).
 - c. Body Design: One piece.

- d. Body Material: Forged brass or bronze.
- e. Ends: Threaded and soldered.
- f. Seats: PTFE.
- g. Stem: Brass or stainless steel.
- h. Ball: Chrome-plated brass or stainless steel.
- i. Port: Reduced.

B. Two-Piece, Brass Ball Valves with Full Port and Brass Trim:

- 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. American Valve, Inc.
 - b. Crane; Crane Energy Flow Solutions.
 - c. Milwaukee Valve Company.
 - d. NIBCO INC.
 - e. Watts; a Watts Water Technologies company.
- 2. Description:
 - a. Standard: MSS SP-110.
 - b. CWP Rating: 600 psig (4140 kPa).
 - c. Body Design: Two piece.
 - d. Body Material: Forged brass.
 - e. Ends: Threaded and soldered.
 - f. Seats: PTFE.
 - g. Stem: Brass.
 - h. Ball: Chrome-plated brass.
 - i. Port: Full.

C. Three-Piece, Brass Ball Valves with Full Port and Brass Trim:

- 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Jomar Valve.
 - b. KITZ Corporation.
 - c. Watts; a Watts Water Technologies company.
- 2. Description:
 - a. Standard: MSS SP-110.
 - b. CWP Rating: 600 psig (4140 kPa).
 - c. Body Design: Three piece.
 - d. Body Material: Forged brass.
 - e. Ends: Threaded and soldered.
 - f. Seats: PTFE.
 - g. Stem: Brass.
 - h. Ball: Chrome-plated brass.
 - i. Port: Full.

2.3 BRONZE BALL VALVES

A. One-Piece, Bronze Ball Valves with Bronze Trim:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Conbraco Industries, Inc.
 - b. NIBCO INC.
 - c. Watts; a Watts Water Technologies company.
 2. Description:
 - a. Standard: MSS SP-110.
 - b. CWP Rating: 400 psig (2760 kPa).
 - c. Body Design: One piece.
 - d. Body Material: Bronze.
 - e. Ends: Threaded.
 - f. Seats: PTFE.
 - g. Stem: Bronze.
 - h. Ball: Chrome-plated brass.
 - i. Port: Reduced.
- B. Two-Piece, Bronze Ball Valves with Full Port, and Bronze or Brass Trim:
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Crane; Crane Energy Flow Solutions.
 - b. Milwaukee Valve Company.
 - c. NIBCO INC.
 - d. Watts; a Watts Water Technologies company.
 - e. Zurn Industries, LLC.
 2. Description:
 - a. Standard: MSS SP-110.
 - b. CWP Rating: 600 psig (4140 kPa).
 - c. Body Design: Two piece.
 - d. Body Material: Bronze.
 - e. Ends: Threaded and soldered.
 - f. Seats: PTFE.
 - g. Stem: Bronze or brass.
 - h. Ball: Chrome-plated brass.
 - i. Port: Full.
- C. Three-Piece, Bronze Ball Valves with Full Port and Bronze or Brass Trim:
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Milwaukee Valve Company.
 - b. NIBCO INC.
 - c. Watts; a Watts Water Technologies company.
 2. Description:
 - a. Standard: MSS SP-110.
 - b. CWP Rating: 600 psig (4140 kPa).
 - c. Body Design: Three piece.

- d. Body Material: Bronze.
- e. Ends: Threaded.
- f. Seats: PTFE.
- g. Stem: Bronze or brass.
- h. Ball: Chrome-plated brass.
- i. Port: Full.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine valve interior for cleanliness, freedom from foreign matter, and corrosion. Remove special packing materials, such as blocks, used to prevent disc movement during shipping and handling.
- B. Operate valves in positions from fully open to fully closed. Examine guides and seats made accessible by such operations.
- C. Examine threads on valve and mating pipe for form and cleanliness.
- D. Examine mating flange faces for conditions that might cause leakage. Check bolting for proper size, length, and material. Verify that gasket is of proper size, that its material composition is suitable for service, and that it is free from defects and damage.
- E. Do not attempt to repair defective valves; replace with new valves.

3.2 VALVE INSTALLATION

- A. Install valves with unions or flanges at each piece of equipment arranged to allow service, maintenance, and equipment removal without system shutdown.
- B. Locate valves for easy access and provide separate support where necessary.
- C. Install valves in horizontal piping with stem at or above center of pipe.
- D. Install valves in position to allow full stem movement.

3.3 GENERAL REQUIREMENTS FOR VALVE APPLICATIONS

- A. If valves with specified CWP ratings are unavailable, the same types of valves with higher CWP ratings may be substituted.
- B. Select valves with the following end connections:
 - 1. For Copper Tubing, NPS 2 (DN 50) and Smaller: Threaded ends except where solder-joint valve-end option is indicated in valve schedules below.
 - 2. For Copper Tubing, NPS 2-1/2 to NPS 4 (DN 65 to DN 100): Flanged ends except where threaded valve-end option is indicated in valve schedules below.

3. For Steel Piping, NPS 2 (DN 50) and Smaller: Threaded ends.
4. For Steel Piping, NPS 2-1/2 to NPS 4 (DN 65 to DN 100): Flanged ends except where threaded valve-end option is indicated in valve schedules below.

3.4 LOW-PRESSURE, COMPRESSED-AIR VALVE SCHEDULE (150 PSIG OR LESS)

A. Pipe NPS 2 (DN 50) and Smaller:

1. Bronze and Brass Valves: May be provided with solder-joint ends instead of threaded ends.
2. One piece, brass ball valve.
3. One piece, bronze ball valve with bronze trim.
4. Two-piece, brass ball valves with full port and brass trim.
5. Two-piece, bronze ball valves with full port and bronze or brass trim.
6. Three-piece, brass ball valves with full port and brass trim.
7. Three-piece, bronze ball valves with full port and bronze or brass trim.
8. Two-piece, bronze ball valves with regular port and bronze trim.

B. Pipe NPS 2-1/2 (DN 65) and Larger:

1. Steel Valves, NPS 2-1/2 to NPS 4 (DN 65 to DN 100): May be provided with threaded ends instead of flanged ends.
2. Class 150, steel ball valves with full port.

3.5 DOMESTIC HOT- AND COLD-WATER VALVE SCHEDULE

A. Pipe NPS 2 (DN 50) and Smaller:

1. Bronze and Brass Valves: May be provided with solder-joint ends instead of threaded ends.
2. One piece, bronze ball valve with bronze trim.
3. Two-piece, bronze ball valves with regular port and bronze trim.

B. Pipe NPS 2-1/2 (DN 65) and Larger:

1. Steel Valves, NPS 2-1/2 to NPS 4 (DN 65 to DN 100): May be provided with threaded ends instead of flanged ends.
2. Class 150, steel ball valves with full port.

END OF SECTION 22 05 23.12

SECTION 22 05 23.14 - CHECK VALVES FOR PLUMBING PIPING

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. Bronze lift check valves.
 - 2. Bronze swing check valves.

1.3 DEFINITIONS

- A. CWP: Cold working pressure.
- B. EPDM: Ethylene propylene-diene terpolymer rubber.
- C. NBR: Acrylonitrile-butadiene, Buna-N, or nitrile rubber.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of valve.
 - 1. Certification that products comply with NSF 61 Annex G and NSF 372.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Prepare valves for shipping as follows:
 - 1. Protect internal parts against rust and corrosion.
 - 2. Protect threads, flange faces, grooves, and weld ends.
 - 3. Set check valves in either closed or open position.
- B. Use the following precautions during storage:
 - 1. Maintain valve end protection.
 - 2. Store valves indoors and maintain at higher-than-ambient-dew-point temperature. If outdoor storage is necessary, store valves off the ground in watertight enclosures.

- C. Use sling to handle large valves; rig sling to avoid damage to exposed parts. Do not use handwheels or stems as lifting or rigging points.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR VALVES

- A. Source Limitations for Valves: Obtain each type of valve from single source from single manufacturer.
- B. ASME Compliance:
 - 1. ASME B1.20.1 for threads for threaded end valves.
 - 2. ASME B16.10 and ASME B16.34 for ferrous valve dimensions and design criteria.
 - 3. ASME B16.18 for solder joint.
 - 4. ASME B31.9 for building services piping valves.
- C. AWWA Compliance: Comply with AWWA C606 for grooved-end connections.
- D. NSF Compliance: NSF 61 Annex G and NSF 372 for valve materials for potable-water service.
- E. Bronze valves shall be made with dezincification-resistant materials. Bronze valves made with copper alloy (brass) containing more than 15 percent zinc are not permitted.
- F. Valve Pressure-Temperature Ratings: Not less than indicated and as required for system pressures and temperatures.
- G. Valve Sizes: Same as upstream piping unless otherwise indicated.
- H. Valve Bypass and Drain Connections: MSS SP-45.

2.2 BRONZE LIFT CHECK VALVES

- A. Class 125, Lift Check Valves with Bronze Disc:
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Crane; Crane Energy Flow Solutions.
 - b. Jenkins Valves; Crane Energy Flow Solutions.
 - c. Stockham; Crane Energy Flow Solutions.
 - 2. Description:
 - a. Standard: MSS SP-80, Type 1.
 - b. CWP Rating: 200 psig (1380 kPa).
 - c. Body Design: Vertical flow.
 - d. Body Material: ASTM B 61 or ASTM B 62, bronze.
 - e. Ends: Threaded or soldered. See valve schedule articles.
 - f. Disc: Bronze.

B. Class 125, Lift Check Valves with Nonmetallic Disc:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Flo Fab inc.
 - b. KITZ Corporation.
 - c. Milwaukee Valve Company.
 - d. NIBCO INC.
 - e. Watts; a Watts Water Technologies company.
2. Description:
 - a. Standard: MSS SP-80, Type 2.
 - b. CWP Rating: 200 psig (1380 kPa).
 - c. Body Design: Vertical flow.
 - d. Body Material: ASTM B 61 or ASTM B 62, bronze.
 - e. Ends: Threaded or soldered. See valve schedule articles.
 - f. Disc: NBR, PTFE.

2.3 BRONZE SWING CHECK VALVES

A. Class 125, Bronze, Swing Check Valves with Bronze Disc:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. American Valve, Inc.
 - b. Crane; Crane Energy Flow Solutions.
 - c. Jenkins Valves; Crane Energy Flow Solutions.
 - d. KITZ Corporation.
 - e. NIBCO INC.
 - f. Watts; a Watts Water Technologies company.
2. Description:
 - a. Standard: MSS SP-80, Type 3.
 - b. CWP Rating: 200 psig (1380 kPa).
 - c. Body Design: Horizontal flow.
 - d. Body Material: ASTM B 62, bronze.
 - e. Ends: Threaded or soldered. See valve schedule articles.
 - f. Disc: Bronze.
 - g. Disc: PTFE.

B. Class 150, Bronze Swing Check Valves with Bronze Disc:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. American Valve, Inc.
 - b. Crane; Crane Energy Flow Solutions.
 - c. Jenkins Valves; Crane Energy Flow Solutions.
 - d. KITZ Corporation.
 - e. Milwaukee Valve Company.

- f. NIBCO INC.
- 2. Description:
 - a. Standard: MSS SP-80, Type 3.
 - b. CWP Rating: 300 psig (2070 kPa).
 - c. Body Design: Horizontal flow.
 - d. Body Material: ASTM B 62, bronze.
 - e. Ends: Threaded or soldered. See valve schedule articles.
 - f. Disc: Bronze.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine valve interior for cleanliness, freedom from foreign matter, and corrosion. Remove special packing materials, such as blocks, used to prevent disc movement during shipping and handling.
- B. Operate valves in positions from fully open to fully closed. Examine guides and seats made accessible by such operations.
- C. Examine threads on valve and mating pipe for form and cleanliness.
- D. Examine mating flange faces for conditions that might cause leakage. Check bolting for proper size, length, and material. Verify that gasket is of proper size, that its material composition is suitable for service, and that it is free from defects and damage.
- E. Do not attempt to repair defective valves; replace with new valves.

3.2 VALVE INSTALLATION

- A. Install valves with unions or flanges at each piece of equipment arranged to allow service, maintenance, and equipment removal without system shutdown.
- B. Locate valves for easy access and provide separate support where necessary.
- C. Install valves in horizontal piping with stem at or above center of pipe.
- D. Install valves in position to allow full stem movement.
- E. Install check valves for proper direction of flow and as follows:
 - 1. Swing Check Valves: In horizontal position with hinge pin level.
 - 2. Center-Guided and Plate-Type Check Valves: In horizontal or vertical position, between flanges.
 - 3. Lift Check Valves: With stem upright and plumb.

3.3 ADJUSTING

- A. Adjust or replace valve packing after piping systems have been tested and put into service but before final adjusting and balancing. Replace valves if persistent leaking occurs.

3.4 GENERAL REQUIREMENTS FOR VALVE APPLICATIONS

- A. If valve applications are not indicated, use the following:
 - 1. Pump-Discharge Check Valves:
 - a. NPS 2 (DN 50) and Smaller: Bronze swing check valves with bronze disc.
 - b. NPS 2-1/2 (DN 65) and Larger for Domestic Water: Iron swing check valves with lever and weight or spring; or iron, center-guided, metal-seat check valves.
 - c. NPS 2-1/2 (DN 65) and Larger for Sanitary Waste and Storm Drainage: Iron swing check valves with lever and weight or spring.
- B. If valves with specified CWP ratings are unavailable, the same types of valves with higher CWP ratings may be substituted.
- C. End Connections:
 - 1. For Copper Tubing, NPS 2 (DN 50) and Smaller: Threaded or soldered.
 - 2. For Copper Tubing, NPS 2-1/2 to NPS 4 (DN 65 to DN 100): Flanged or threaded.
 - 3. For Copper Tubing, NPS 5 (DN 125) and Larger: Flanged.
 - 4. For Steel Piping, NPS 2 (DN 50) and Smaller: Threaded.
 - 5. For Steel Piping, NPS 2-1/2 to NPS 4 (DN 65 to DN 100): Flanged or threaded.
 - 6. For Steel Piping, NPS 5 (DN 125) and Larger: Flanged.
 - 7. For Grooved-End Copper Tubing and Steel Piping: Grooved.

3.5 DOMESTIC HOT- AND COLD-WATER VALVE SCHEDULE

- A. Pipe NPS 2 (DN 50) and Smaller: Bronze swing check valves, Class 125, bronze disc with soldered or threaded end connections.

END OF SECTION 22 05 23.14

SECTION 22 05 23.15 - GATE VALVES FOR PLUMBING PIPING

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. Bronze gate valves.

1.3 DEFINITIONS

- A. CWP: Cold working pressure.
- B. NRS: Nonrising stem.
- C. OS&Y: Outside screw and yoke.
- D. RS: Rising stem.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of valve.
 - 1. Certification that products comply with NSF 61 Annex G and NSF 372.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Prepare valves for shipping as follows:
 - 1. Protect internal parts against rust and corrosion.
 - 2. Protect threads, flange faces, grooves, and weld ends.
 - 3. Set gate valves closed to prevent rattling.
- B. Use the following precautions during storage:
 - 1. Maintain valve end protection.
 - 2. Store valves indoors and maintain at higher-than-ambient-dew-point temperature. If outdoor storage is necessary, store valves off the ground in watertight enclosures.

- C. Use sling to handle large valves; rig sling to avoid damage to exposed parts. Do not use handwheels or stems as lifting or rigging points.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR VALVES

- A. Source Limitations for Valves: Obtain each type of valve from single source from single manufacturer.
- B. ASME Compliance:
 - 1. ASME B1.20.1 for threads for threaded end valves.
 - 2. ASME B16.1 for flanges on iron valves.
 - 3. ASME B16.10 and ASME B16.34 for ferrous valve dimensions and design criteria.
 - 4. ASME B16.18 for solder joint.
 - 5. ASME B31.9 for building services piping valves.
- C. NSF Compliance: NSF 61 Annex G and NSF 372 for valve materials for potable-water service.
- D. Bronze valves shall be made with dezincification-resistant materials. Bronze valves made with copper alloy (brass) containing more than 15 percent zinc are not permitted.
- E. Valve Pressure-Temperature Ratings: Not less than indicated and as required for system pressures and temperatures.
- F. Valve Sizes: Same as upstream piping unless otherwise indicated.
- G. RS Valves in Insulated Piping: With 2-inch (50-mm) stem extensions.
- H. Valve Bypass and Drain Connections: MSS SP-45.

2.2 BRONZE GATE VALVES

- A. Class 125, NRS, Bronze Gate Valves:
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. American Valve, Inc.
 - b. Crane; Crane Energy Flow Solutions.
 - c. Jenkins Valves; Crane Energy Flow Solutions.
 - d. KITZ Corporation.
 - e. Milwaukee Valve Company.
 - f. NIBCO INC.
 - g. Watts; a Watts Water Technologies company.
 - 2. Description:
 - a. Standard: MSS SP-80, Type 1.

- b. CWP Rating: 200 psig (1380 kPa).
- c. Body Material: Bronze with integral seat and screw-in bonnet.
- d. Ends: Threaded or solder joint.
- e. Stem: Bronze.
- f. Disc: Solid wedge; bronze.
- g. Packing: Asbestos free.
- h. Handwheel: Malleable iron, bronze, or aluminum.

B. Class 125, RS, Bronze Gate Valves:

- 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. American Valve, Inc.
 - b. Crane; Crane Energy Flow Solutions.
 - c. KITZ Corporation.
 - d. Milwaukee Valve Company.
 - e. NIBCO INC.
 - f. Watts; a Watts Water Technologies company.
- 2. Description:
 - a. Standard: MSS SP-80, Type 2.
 - b. CWP Rating: 200 psig (1380 kPa).
 - c. Body Material: Bronze with integral seat and screw-in bonnet.
 - d. Ends: Threaded or solder joint.
 - e. Stem: Bronze.
 - f. Disc: Solid wedge; bronze.
 - g. Packing: Asbestos free.
 - h. Handwheel: Malleable iron, bronze, or aluminum.

C. Class 150, NRS, Bronze Gate Valves:

- 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. KITZ Corporation.
 - b. Milwaukee Valve Company.
 - c. NIBCO INC.
 - d. Watts; a Watts Water Technologies company.
- 2. Description:
 - a. Standard: MSS SP-80, Type 1.
 - b. CWP Rating: 300 psig (2070 kPa).
 - c. Body Material: Bronze with integral seat and union-ring bonnet.
 - d. Ends: Threaded.
 - e. Stem: Bronze.
 - f. Disc: Solid wedge; bronze.
 - g. Packing: Asbestos free.
 - h. Handwheel: Malleable iron, bronze, or aluminum.

D. Class 150, RS, Bronze Gate Valves:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Crane; Crane Energy Flow Solutions.
 - b. KITZ Corporation.
 - c. Milwaukee Valve Company.
 - d. NIBCO INC.
 - e. Watts; a Watts Water Technologies company.
2. Description:
 - a. Standard: MSS SP-80, Type 2.
 - b. CWP Rating: 300 psig (2070 kPa).
 - c. Body Material: Bronze with integral seat and union-ring bonnet.
 - d. Ends: Threaded.
 - e. Stem: Bronze.
 - f. Disc: Solid wedge; bronze.
 - g. Packing: Asbestos free.
 - h. Handwheel: Malleable iron, bronze, or aluminum.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine valve interior for cleanliness, freedom from foreign matter, and corrosion. Remove special packing materials, such as blocks, used to prevent disc movement during shipping and handling.
- B. Operate valves in positions from fully open to fully closed. Examine guides and seats made accessible by such operations.
- C. Examine threads on valve and mating pipe for form and cleanliness.
- D. Examine mating flange faces for conditions that might cause leakage. Check bolting for proper size, length, and material. Verify that gasket is of proper size, that its material composition is suitable for service, and that it is free from defects and damage.
- E. Do not attempt to repair defective valves; replace with new valves.

3.2 VALVE INSTALLATION

- A. Install valves with unions or flanges at each piece of equipment arranged to allow service, maintenance, and equipment removal without system shutdown.
- B. Locate valves for easy access and provide separate support where necessary.
- C. Install valves in horizontal piping with stem at or above center of pipe.
- D. Install valves in position to allow full stem movement.

- E. Install chainwheels on operators for gate valves NPS 4 (DN 100) and larger and more than 96 inches (2400 mm) above floor. Extend chains to 60 inches (1520 mm) above finished floor.

3.3 ADJUSTING

- A. Adjust or replace valve packing after piping systems have been tested and put into service but before final adjusting and balancing. Replace valves if persistent leaking occurs.

3.4 GENERAL REQUIREMENTS FOR VALVE APPLICATIONS

- A. Use gate valves for shutoff service only.
- B. If valves with specified CWP ratings are unavailable, the same types of valves with higher CWP ratings may be substituted.
- C. For Grooved-End Copper Tubing and Steel Piping: Valve ends may be grooved.

3.5 LOW-PRESSURE, COMPRESSED-AIR VALVE SCHEDULE (150 PSIG (1035 kPa) OR LESS)

- A. Pipe NPS 2 (DN 50) and Smaller: Bronze gate valves, Class 125, with soldered ends.
- B. Pipe NPS 2-1/2 (DN 65) and Larger: Iron gate valves, Class 125, with flanged ends.

3.6 DOMESTIC HOT- AND COLD-WATER VALVE SCHEDULE

- A. Pipe NPS 2 (DN 50) and Smaller: Bronze gate valves, Class 125, with soldered ends.
- B. Pipe NPS 2-1/2 (DN 65) and Larger: Iron gate valves, Class 125, with flanged ends.

END OF SECTION 22 05 23.15

SECTION 22 05 29 - HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT

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. Metal pipe hangers and supports.
2. Fiberglass pipe hangers.
3. Metal framing systems.
4. Fiberglass strut systems.
5. Thermal-hanger shield inserts.
6. Fastener systems.
7. Pipe positioning systems.
8. Equipment supports.

- B. Related Sections:

1. Section 055000 "Metal Fabrications" for structural-steel shapes and plates for trapeze hangers for pipe and equipment supports.

1.3 DEFINITIONS

- A. MSS: Manufacturers Standardization Society of The Valve and Fittings Industry Inc.

1.4 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Design trapeze pipe hangers and equipment supports, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- B. Structural Performance: Hangers and supports for plumbing piping and equipment shall withstand the effects of gravity loads and stresses within limits and under conditions indicated according to ASCE/SEI 7.
 1. Design supports for multiple pipes, including pipe stands, capable of supporting combined weight of supported systems, system contents, and test water.
 2. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.

3. Design seismic-restraint hangers and supports for piping and equipment and obtain approval from authorities having jurisdiction.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: Signed and sealed by a qualified professional engineer. Show fabrication and installation details and include calculations for the following; include Product Data for components:
 1. Trapeze pipe hangers.
 2. Metal framing systems.
 3. Fiberglass strut systems.
 4. Pipe stands.
 5. Equipment supports.
- C. Delegated-Design Submittal: For trapeze hangers indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
 1. Detail fabrication and assembly of trapeze hangers.
 2. Design Calculations: Calculate requirements for designing trapeze hangers.

1.6 INFORMATIONAL SUBMITTALS

- A. Welding certificates.

1.7 QUALITY ASSURANCE

- A. Structural Steel Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
- B. Pipe Welding Qualifications: Qualify procedures and operators according to ASME Boiler and Pressure Vessel Code.

PART 2 - PRODUCTS

2.1 METAL PIPE HANGERS AND SUPPORTS

- A. Carbon-Steel Pipe Hangers and Supports:
 1. Description: MSS SP-58, Types 1 through 58, factory-fabricated components.
 2. Galvanized Metallic Coatings: Pregalvanized or hot dipped.
 3. Nonmetallic Coatings: Plastic coating, jacket, or liner.

4. Padded Hangers: Hanger with fiberglass or other pipe insulation pad or cushion to support bearing surface of piping.
5. Hanger Rods: Continuous-thread rod, nuts, and washer made of carbon steel.

B. Stainless-Steel Pipe Hangers and Supports:

1. Description: MSS SP-58, Types 1 through 58, factory-fabricated components.
2. Padded Hangers: Hanger with fiberglass or other pipe insulation pad or cushion to support bearing surface of piping.
3. Hanger Rods: Continuous-thread rod, nuts, and washer made of stainless steel.

C. Copper Pipe Hangers:

1. Description: MSS SP-58, Types 1 through 58, copper-coated-steel, factory-fabricated components.
2. Hanger Rods: Continuous-thread rod, nuts, and washer made of copper-coated steel.

2.2 METAL FRAMING SYSTEMS

A. MFMA Manufacturer Metal Framing Systems:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Allied Tube & Conduit; a part of Atkore International.
 - b. B-line, an Eaton business.
 - c. Flex-Strut Inc.
 - d. Thomas & Betts Corporation, A Member of the ABB Group.
 - e. Unistrut; Part of Atkore International.
 - f. Wesanco, Inc.
2. Description: Shop- or field-fabricated pipe-support assembly for supporting multiple parallel pipes.
3. Standard: MFMA-4.
4. Channels: Continuous slotted steel channel with inturred lips.
5. Channel Nuts: Formed or stamped steel nuts or other devices designed to fit into channel slot and, when tightened, prevent slipping along channel.
6. Hanger Rods: Continuous-thread rod, nuts, and washer made of carbon steel.
7. Metallic Coating: Electroplated zinc.
8. Paint Coating: Vinyl.
9. Plastic Coating: PVC.

B. Non-MFMA Manufacturer Metal Framing Systems:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Anvil International.
 - b. Empire Industries, Inc.
 - c. ERICO International Corporation.
 - d. Haydon Corporation.

- e. NIBCO INC.
- f. PHD Manufacturing, Inc.
- g. PHS Industries, Inc.
- 2. Description: Shop- or field-fabricated pipe-support assembly made of steel channels, accessories, fittings, and other components for supporting multiple parallel pipes.
- 3. Standard: Comply with MFMA-4.
- 4. Channels: Continuous slotted steel channel with inturned lips.
- 5. Channel Nuts: Formed or stamped steel nuts or other devices designed to fit into channel slot and, when tightened, prevent slipping along channel.
- 6. Hanger Rods: Continuous-thread rod, nuts, and washer made of carbon steel.
- 7. Coating: Zinc.

2.3 FASTENER SYSTEMS

- A. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.
- B. Mechanical-Expansion Anchors: Insert-wedge-type, zinc-coated steel anchors, for use in hardened portland cement concrete; with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

2.4 PIPE POSITIONING SYSTEMS

- A. Description: IAPMO PS 42, positioning system of metal brackets, clips, and straps for positioning piping in pipe spaces; for plumbing fixtures in commercial applications.

2.5 EQUIPMENT SUPPORTS

- A. Description: Welded, shop- or field-fabricated equipment support made from structural carbon-steel shapes.

2.6 MISCELLANEOUS MATERIALS

- A. Structural Steel: ASTM A 36/A 36M, carbon-steel plates, shapes, and bars; black and galvanized.
- B. Grout: ASTM C 1107, factory-mixed and -packaged, dry, hydraulic-cement, nonshrink and nonmetallic grout; suitable for interior and exterior applications.
 - 1. Properties: Nonstaining, noncorrosive, and nongaseous.
 - 2. Design Mix: 5000-psi (34.5-MPa), 28-day compressive strength.

PART 3 - EXECUTION

3.1 HANGER AND SUPPORT INSTALLATION

- A. Metal Pipe-Hanger Installation: Comply with MSS SP-69 and MSS SP-89. Install hangers, supports, clamps, and attachments as required to properly support piping from the building structure.
- B. Fiberglass Pipe-Hanger Installation: Comply with applicable portions of MSS SP-69 and MSS SP-89. Install hangers and attachments as required to properly support piping from building structure.
- C. Metal Framing System Installation: Arrange for grouping of parallel runs of piping, and support together on field-assembled metal framing systems.
- D. Fiberglass Strut System Installation: Arrange for grouping of parallel runs of piping, and support together on field-assembled fiberglass struts.
- E. Thermal-Hanger Shield Installation: Install in pipe hanger or shield for insulated piping.
- F. Fastener System Installation:
 - 1. Install powder-actuated fasteners for use in lightweight concrete or concrete slabs less than 4 inches (100 mm) thick in concrete after concrete is placed and completely cured. Use operators that are licensed by powder-actuated tool manufacturer. Install fasteners according to powder-actuated tool manufacturer's operating manual.
 - 2. Install mechanical-expansion anchors in concrete after concrete is placed and completely cured. Install fasteners according to manufacturer's written instructions.
- G. Pipe Positioning-System Installation: Install support devices to make rigid supply and waste piping connections to each plumbing fixture.
- H. Install hangers and supports complete with necessary attachments, inserts, bolts, rods, nuts, washers, and other accessories.
- I. Equipment Support Installation: Fabricate from welded-structural-steel shapes.
- J. Install hangers and supports to allow controlled thermal and seismic movement of piping systems, to permit freedom of movement between pipe anchors, and to facilitate action of expansion joints, expansion loops, expansion bends, and similar units.
- K. Install lateral bracing with pipe hangers and supports to prevent swaying.
- L. Install building attachments within concrete slabs or attach to structural steel. Install additional attachments at concentrated loads, including valves, flanges, and strainers, NPS 2-1/2 (DN 65) and larger and at changes in direction of piping. Install concrete inserts before concrete is placed; fasten inserts to forms and install reinforcing bars through openings at top of inserts.
- M. Load Distribution: Install hangers and supports so that piping live and dead loads and stresses from movement will not be transmitted to connected equipment.

- N. Pipe Slopes: Install hangers and supports to provide indicated pipe slopes and to not exceed maximum pipe deflections allowed by ASME B31.9 for building services piping.
- O. Insulated Piping:
 - 1. Attach clamps and spacers to piping.
 - a. Piping Operating above Ambient Air Temperature: Clamp may project through insulation.
 - b. Piping Operating below Ambient Air Temperature: Use thermal-hanger shield insert with clamp sized to match OD of insert.
 - c. Do not exceed pipe stress limits allowed by ASME B31.9 for building services piping.
 - 2. Install MSS SP-58, Type 39, protection saddles if insulation without vapor barrier is indicated. Fill interior voids with insulation that matches adjoining insulation.
 - a. Option: Thermal-hanger shield inserts may be used. Include steel weight-distribution plate for pipe NPS 4 (DN 100) and larger if pipe is installed on rollers.
 - 3. Install MSS SP-58, Type 40, protective shields on cold piping with vapor barrier. Shields shall span an arc of 180 degrees.
 - a. Option: Thermal-hanger shield inserts may be used. Include steel weight-distribution plate for pipe NPS 4 (DN 100) and larger if pipe is installed on rollers.
 - 4. Shield Dimensions for Pipe: Not less than the following:
 - a. NPS 1/4 to NPS 3-1/2 (DN 8 to DN 90): 12 inches (305 mm) long and 0.048 inch (1.22 mm) thick.
 - b. NPS 4 (DN 100): 12 inches (305 mm) long and 0.06 inch (1.52 mm) thick.
 - c. NPS 5 and NPS 6 (DN 125 and DN 150): 18 inches (457 mm) long and 0.06 inch (1.52 mm) thick.
 - d. NPS 8 to NPS 14 (DN 200 to DN 350): 24 inches (610 mm) long and 0.075 inch (1.91 mm) thick.
 - e. NPS 16 to NPS 24 (DN 400 to DN 600): 24 inches (610 mm) long and 0.105 inch (2.67 mm) thick.
 - 5. Pipes NPS 8 (DN 200) and Larger: Include wood or reinforced calcium-silicate-insulation inserts of length at least as long as protective shield.
 - 6. Thermal-Hanger Shields: Install with insulation same thickness as piping insulation.

3.2 EQUIPMENT SUPPORTS

- A. Fabricate structural-steel stands to suspend equipment from structure overhead or to support equipment above floor.
- B. Grouting: Place grout under supports for equipment and make bearing surface smooth.
- C. Provide lateral bracing, to prevent swaying, for equipment supports.

3.3 METAL FABRICATIONS

- A. Cut, drill, and fit miscellaneous metal fabrications for trapeze pipe hangers and equipment supports.
- B. Fit exposed connections together to form hairline joints. Field weld connections that cannot be shop welded because of shipping size limitations.
- C. Field Welding: Comply with AWS D1.1/D1.1M procedures for shielded, metal arc welding; appearance and quality of welds; and methods used in correcting welding work; and with 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. Finish welds at exposed connections so no roughness shows after finishing and so contours of welded surfaces match adjacent contours.

3.4 ADJUSTING

- A. Hanger Adjustments: Adjust hangers to distribute loads equally on attachments and to achieve indicated slope of pipe.
- B. Trim excess length of continuous-thread hanger and support rods to 1-1/2 inches (40 mm).

3.5 PAINTING

- A. Touchup: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.
 - 1. Apply paint by brush or spray to provide a minimum dry film thickness of 2.0 mils (0.05 mm).
- B. Touchup: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint on miscellaneous metal are specified in Section 099113 "Exterior Painting."
- C. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

3.6 HANGER AND SUPPORT SCHEDULE

- A. Specific hanger and support requirements are in Sections specifying piping systems and equipment.
- B. Comply with MSS SP-69 for pipe-hanger selections and applications that are not specified in piping system Sections.

- C. Use hangers and supports with galvanized metallic coatings for piping and equipment that will not have field-applied finish.
- D. Use nonmetallic coatings on attachments for electrolytic protection where attachments are in direct contact with copper tubing.
- E. Use carbon-steel pipe hangers and supports and metal framing systems and attachments for general service applications.
- F. Use stainless-steel pipe hangers and or corrosion-resistant attachments for hostile environment applications.
- G. Use copper-plated pipe hangers and copper attachments for copper piping and tubing.
- H. Use padded hangers for piping that is subject to scratching.
- I. Use thermal-hanger shield inserts for insulated piping and tubing.
- J. Horizontal-Piping Hangers and Supports: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
 - 1. Adjustable, Steel Clevis Hangers (MSS Type 1): For suspension of noninsulated or insulated, stationary pipes NPS 1/2 to NPS 30 (DN 15 to DN 750).
 - 2. Yoke-Type Pipe Clamps (MSS Type 2): For suspension of up to 1050 deg F (566 deg C), pipes NPS 4 to NPS 24 (DN 100 to DN 600), requiring up to 4 inches (100 mm) of insulation.
 - 3. Carbon- or Alloy-Steel, Double-Bolt Pipe Clamps (MSS Type 3): For suspension of pipes NPS 3/4 to NPS 36 (DN 20 to DN 900), requiring clamp flexibility and up to 4 inches (100 mm) of insulation.
 - 4. Steel Pipe Clamps (MSS Type 4): For suspension of cold and hot pipes NPS 1/2 to NPS 24 (DN 15 to DN 600) if little or no insulation is required.
 - 5. Pipe Hangers (MSS Type 5): For suspension of pipes NPS 1/2 to NPS 4 (DN 15 to DN 100), to allow off-center closure for hanger installation before pipe erection.
 - 6. Adjustable, Swivel Split- or Solid-Ring Hangers (MSS Type 6): For suspension of noninsulated, stationary pipes NPS 3/4 to NPS 8 (DN 20 to DN 200).
 - 7. Adjustable, Steel Band Hangers (MSS Type 7): For suspension of noninsulated, stationary pipes NPS 1/2 to NPS 8 (DN 15 to DN 200).
 - 8. Adjustable Band Hangers (MSS Type 9): For suspension of noninsulated, stationary pipes NPS 1/2 to NPS 8 (DN 15 to DN 200).
 - 9. Adjustable, Swivel-Ring Band Hangers (MSS Type 10): For suspension of noninsulated, stationary pipes NPS 1/2 to NPS 8 (DN 15 to DN 200).
 - 10. Split Pipe Ring with or without Turnbuckle Hangers (MSS Type 11): For suspension of noninsulated, stationary pipes NPS 3/8 to NPS 8 (DN 10 to DN 200).
 - 11. Extension Hinged or Two-Bolt Split Pipe Clamps (MSS Type 12): For suspension of noninsulated, stationary pipes NPS 3/8 to NPS 3 (DN 10 to DN 80).
 - 12. U-Bolts (MSS Type 24): For support of heavy pipes NPS 1/2 to NPS 30 (DN 15 to DN 750).
 - 13. Clips (MSS Type 26): For support of insulated pipes not subject to expansion or contraction.
 - 14. Pipe Saddle Supports (MSS Type 36): For support of pipes NPS 4 to NPS 36 (DN 100 to DN 900), with steel-pipe base stanchion support and cast-iron floor flange or carbon-steel plate.

15. Pipe Stanchion Saddles (MSS Type 37): For support of pipes NPS 4 to NPS 36 (DN 100 to DN 900), with steel-pipe base stanchion support and cast-iron floor flange or carbon-steel plate, and with U-bolt to retain pipe.
 16. Adjustable Pipe Saddle Supports (MSS Type 38): For stanchion-type support for pipes NPS 2-1/2 to NPS 36 (DN 65 to DN 900) if vertical adjustment is required, with steel-pipe base stanchion support and cast-iron floor flange.
 17. Single-Pipe Rolls (MSS Type 41): For suspension of pipes NPS 1 to NPS 30 (DN 25 to DN 750), from two rods if longitudinal movement caused by expansion and contraction might occur.
 18. Adjustable Roller Hangers (MSS Type 43): For suspension of pipes NPS 2-1/2 to NPS 24 (DN 65 to DN 600), from single rod if horizontal movement caused by expansion and contraction might occur.
 19. Complete Pipe Rolls (MSS Type 44): For support of pipes NPS 2 to NPS 42 (DN 50 to DN 1050) if longitudinal movement caused by expansion and contraction might occur but vertical adjustment is not necessary.
 20. Pipe Roll and Plate Units (MSS Type 45): For support of pipes NPS 2 to NPS 24 (DN 50 to DN 600) if small horizontal movement caused by expansion and contraction might occur and vertical adjustment is not necessary.
 21. Adjustable Pipe Roll and Base Units (MSS Type 46): For support of pipes NPS 2 to NPS 30 (DN 50 to DN 750) if vertical and lateral adjustment during installation might be required in addition to expansion and contraction.
- K. Vertical-Piping Clamps: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Extension Pipe or Riser Clamps (MSS Type 8): For support of pipe risers NPS 3/4 to NPS 24 (DN 24 to DN 600).
 2. Carbon- or Alloy-Steel Riser Clamps (MSS Type 42): For support of pipe risers NPS 3/4 to NPS 24 (DN 20 to DN 600) if longer ends are required for riser clamps.
- L. Hanger-Rod Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Steel Turnbuckles (MSS Type 13): For adjustment up to 6 inches (150 mm) for heavy loads.
 2. Steel Clevises (MSS Type 14): For 120 to 450 deg F (49 to 232 deg C) piping installations.
 3. Swivel Turnbuckles (MSS Type 15): For use with MSS Type 11, split pipe rings.
 4. Malleable-Iron Sockets (MSS Type 16): For attaching hanger rods to various types of building attachments.
 5. Steel Weldless Eye Nuts (MSS Type 17): For 120 to 450 deg F (49 to 232 deg C) piping installations.
- M. Building Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Steel or Malleable Concrete Inserts (MSS Type 18): For upper attachment to suspend pipe hangers from concrete ceiling.
 2. Top-Beam C-Clamps (MSS Type 19): For use under roof installations with bar-joist construction, to attach to top flange of structural shape.
 3. Side-Beam or Channel Clamps (MSS Type 20): For attaching to bottom flange of beams, channels, or angles.

4. Center-Beam Clamps (MSS Type 21): For attaching to center of bottom flange of beams.
 5. Welded Beam Attachments (MSS Type 22): For attaching to bottom of beams if loads are considerable and rod sizes are large.
 6. C-Clamps (MSS Type 23): For structural shapes.
 7. Top-Beam Clamps (MSS Type 25): For top of beams if hanger rod is required tangent to flange edge.
 8. Side-Beam Clamps (MSS Type 27): For bottom of steel I-beams.
 9. Steel-Beam Clamps with Eye Nuts (MSS Type 28): For attaching to bottom of steel I-beams for heavy loads.
 10. Linked-Steel Clamps with Eye Nuts (MSS Type 29): For attaching to bottom of steel I-beams for heavy loads, with link extensions.
 11. Malleable-Beam Clamps with Extension Pieces (MSS Type 30): For attaching to structural steel.
 12. Welded-Steel Brackets: For support of pipes from below or for suspending from above by using clip and rod. Use one of the following for indicated loads:
 - a. Light (MSS Type 31): 750 lb (340 kg).
 - b. Medium (MSS Type 32): 1500 lb (680 kg).
 - c. Heavy (MSS Type 33): 3000 lb (1360 kg).
 13. Side-Beam Brackets (MSS Type 34): For sides of steel or wooden beams.
 14. Plate Lugs (MSS Type 57): For attaching to steel beams if flexibility at beam is required.
 15. Horizontal Travelers (MSS Type 58): For supporting piping systems subject to linear horizontal movement where headroom is limited.
- N. Saddles and Shields: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Steel-Pipe-Covering Protection Saddles (MSS Type 39): To fill interior voids with insulation that matches adjoining insulation.
 2. Protection Shields (MSS Type 40): Of length recommended in writing by manufacturer to prevent crushing insulation.
 3. Thermal-Hanger Shield Inserts: For supporting insulated pipe.
- O. Spring Hangers and Supports: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Restraint-Control Devices (MSS Type 47): Where indicated to control piping movement.
 2. Spring Cushions (MSS Type 48): For light loads if vertical movement does not exceed 1-1/4 inches (32 mm).
 3. Spring-Cushion Roll Hangers (MSS Type 49): For equipping Type 41, roll hanger with springs.
 4. Spring Sway Braces (MSS Type 50): To retard sway, shock, vibration, or thermal expansion in piping systems.
 5. Variable-Spring Hangers (MSS Type 51): Preset to indicated load and limit variability factor to 25 percent to allow expansion and contraction of piping system from hanger.
 6. Variable-Spring Base Supports (MSS Type 52): Preset to indicated load and limit variability factor to 25 percent to allow expansion and contraction of piping system from base support.
 7. Variable-Spring Trapeze Hangers (MSS Type 53): Preset to indicated load and limit variability factor to 25 percent to allow expansion and contraction of piping system from trapeze support.

8. Constant Supports: For critical piping stress and if necessary to avoid transfer of stress from one support to another support, critical terminal, or connected equipment. Include auxiliary stops for erection, hydrostatic test, and load-adjustment capability. These supports include the following types:
 - a. Horizontal (MSS Type 54): Mounted horizontally.
 - b. Vertical (MSS Type 55): Mounted vertically.
- P. Comply with MSS SP-69 for trapeze pipe-hanger selections and applications that are not specified in piping system Sections.
- Q. Comply with MFMA-103 for metal framing system selections and applications that are not specified in piping system Sections.
- R. Use powder-actuated fasteners or mechanical-expansion anchors instead of building attachments where required in concrete construction.
- S. Use pipe positioning systems in pipe spaces behind plumbing fixtures to support supply and waste piping for plumbing fixtures.

END OF SECTION 22 05 29

SECTION 22 05 48 – VIBRATION AND SEISMIC CONTROLS FOR PLUMBING PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section is applicable to the following secondary structural system elements, non-structural components, and/or equipment:
 - 1. Mechanical, electrical, and plumbing equipment and appurtenances
 - 2. Filters
 - 3. Conduit, piping, and similar systems
 - 4. Storage racks, suspended ceilings, light fixtures, louvers, architectural features, and other non-structural components
- B. This Section does not apply to the following primary structures:
 - 1. Control Building - See structural drawings
 - 2. Welded Steel Tank - See Section 33 16 13

1.2 REFERENCES

- A. American Society of Civil Engineers Standard ASCE 7-05, Minimum Design Loads for Buildings and Other Structures, Chapters 11, 13, 15.
- B. California Building Code, 2007 Edition. Section 43 21 39: Deep Well Turbine Pump

1.3 DEFINITIONS

- A. Engineer - The Engineer responsible for the preparation of Contract Documents.
- B. Specialty Engineer - Structural or Civil Engineer provided by the contractor licensed in the State of California responsible for specific elements of the primary structural system, the secondary structural system, non-structural elements and/or equipment supported by structures

1.4 GENERAL DESIGN REQUIREMENTS

- A. The Contractor is responsible for producing designs that resist the total seismic forces in accordance with the seismic design criteria. The Contractor is responsible for coordinating between the Engineer and the Specialty Engineer.
- B. The seismic design for non-structural components and equipment shall be in accordance with the IBC Chapter 16, and the required coefficients and factors for determining the total design seismic forces are provided for in the geotechnical report that is in Appendices.

- C. Coordinate the layout so that adequate space is provided between items for relative motion. Provide additional supports and restraints between items of different systems when necessary to prevent seismic impacts or interaction.
- D. Design anchorages of all elements of structures, non-structural components, equipment supported by structures, and non-building structures to resist static and dynamic operational loads, plus total seismic loads specified in the IBC, ASCE 7-05 Section 13.3.1. For anchorage uplift, multiply dead load by 0.9 and subtract 0.2SDS if used to reduce vertical seismic effects.
- E. Design anchorages utilizing a Component Coefficient, $R_p = 1.5$, unless supporting documentation for embedment length, showing compliance with section 13.4.2 of ASCE 7, is provided for expansion anchor bolts, chemical anchors, or cast-in-place anchors.

1.5 DESIGN REQUIREMENTS FOR PIPING AND CONDUITS

- A. The Contractor is responsible for producing designs for support of piping, conduit, duct, or other systems to resist total seismic forces based on the seismic design criteria coefficients specified above unless shown on the Contract Documents. Except where the technical specifications give specific exemption from resistance of seismic forces, all supports shall be designed to meet seismic criteria.
- B. Where possible, pipes, conduit, and their connections shall be constructed of ductile materials (e.g., copper, ductile iron, steel or aluminum and brazed, welded or screwed connections). Pipes, conduits, and their connections, constructed of non-ductile materials (e.g., cast iron, no-hub pipe and plastic), shall have the brace spacing reduced to one-half of the spacing allowed for ductile material.
- C. Seismic restraints may be omitted for the following conditions where flexible connections are provided between components and the associated piping and conduit:
 - 1. Fuel piping less than 1 inch inside diameter.
 - 2. All other exposed piping less than 2.5 inches inside diameter or electrical conduit less than 2.5 inches trade size.
- D. As an alternative to designing the supports and anchorage where an approved national standard provides a basis for the earthquake-resistant design, submit standard, data, and details for piping, conduit, duct, or other systems:
 - 1. For mechanical piping, process piping, and electrical conduits, follow Guidelines for Seismic Restraints of Mechanical Systems by SMACNA modified as follows:
 - a. Seismically brace piping regardless of size or location. Provide transverse braces at all changes in direction and at the end of all pipe runs. Space transverse braces not more than 20 feet apart. Provide longitudinal braces at 40-foot centers.

1.6 SUBMITTALS

- A. Submit in accordance with Section 01 33 00.
- B. Submit certification for equipment not listed in this specification but included in the contract documents that the equipment itself is designed to resist all internal seismic forces based on the seismic design criteria for the project.

- C. Structural calculations and detailed drawings shall be prepared by a Specialty Engineer.
- D. E. Structural calculations and detailed drawings shall clearly show the total design seismic forces which will be transferred from the elements of the structural system, non-structural components, and/or equipment and their attachments to the prime structure.

1.7 QUALITY ASSURANCE

- A. The Contractor is responsible for submitting signed and sealed structural calculations and detailed drawings from a Specialty Engineer
- B. Comply with the California adopted and amended versions of the International Building Code (IBC) Section 1613, the referenced sections of ASCE 7.

END OF SECTION 22 05 48

SECTION 22 07 19 - PLUMBING PIPING INSULATION

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 insulating the following plumbing piping services:
 - 1. Domestic cold-water piping.
 - 2. Domestic hot-water piping.
 - 3. Domestic recirculating hot-water piping.
 - 4. Sanitary waste piping exposed to freezing conditions.
 - 5. Supplies and drains for ADA compliant lavatories and sinks.

- B. Related Sections:

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include thermal conductivity, water-vapor permeance thickness, and jackets (both factory- and field-applied, if any).
- B. LEED Submittals:
 - 1. Product Data for Credit IEQ 4.1: For adhesives and sealants, documentation including printed statement of VOC content and chemical components.
 - 2. Laboratory Test Reports for Credit IEQ 4: For adhesives and sealants, documentation indicating that product complies with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- C. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
 - 1. Detail application of protective shields, saddles, and inserts at hangers for each type of insulation and hanger.
 - 2. Detail attachment and covering of heat tracing inside insulation.
 - 3. Detail insulation application at pipe expansion joints for each type of insulation.
 - 4. Detail insulation application at elbows, fittings, flanges, valves, and specialties for each type of insulation.
 - 5. Detail removable insulation at piping specialties, equipment connections, and access panels.
 - 6. Detail application of field-applied jackets.
 - 7. Detail application at linkages of control devices.

8. Shop drawings shall document that insulation will be compliant with toe-and-knee clearance per CBC and ADA.
- D. Samples: For each type of insulation and jacket indicated. Identify each Sample, describing product and intended use. Sample sizes are as follows:
 1. Preformed Pipe Insulation Materials: 12 inches (300 mm) long by NPS 2 (DN 50).
 2. Jacket Materials for Pipe: 12 inches (300 mm) long by NPS 2 (DN 50).
 3. Sheet Jacket Materials: 12 inches (300 mm) square.
 4. Manufacturer's Color Charts: For products where color is specified, show the full range of colors available for each type of finish material.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified Installer.
- B. Material Test Reports: From a qualified testing agency acceptable to authorities having jurisdiction indicating, interpreting, and certifying test results for compliance of insulation materials, sealers, attachments, cements, and jackets, with requirements indicated. Include dates of tests and test methods employed.
- C. Field quality-control reports.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Skilled mechanics who have successfully completed an apprenticeship program or another craft training program certified by the Department of Labor, Bureau of Apprenticeship and Training.
- B. Surface-Burning Characteristics: For insulation and related materials, as determined by testing identical products according to ASTM E 84 by a testing agency acceptable to authorities having jurisdiction. Factory label insulation and jacket materials and adhesive, mastic, tapes, and cement material containers, with appropriate markings of applicable testing agency.
 1. Insulation Installed Indoors: Flame-spread index of 25 or less, and smoke-developed index of 50 or less.
 2. Insulation Installed Outdoors: Flame-spread index of 75 or less, and smoke-developed index of 150 or less.
- C. Mockups: Before installing insulation, build mockups for each type of insulation and finish listed below to demonstrate quality of insulation application and finishes. Build mockups in the location indicated or, if not indicated, as directed by Architect. Use materials indicated for the completed Work.
 1. Piping Mockups:
 - a. One 10-foot (3-m) section of NPS 2 (DN 50) straight pipe.
 - b. One each of a 90-degree threaded, welded, and flanged elbow.
 - c. One each of a threaded, welded, and flanged tee fitting.
 - d. One NPS 2 (DN 50) or smaller valve, and one NPS 2-1/2 (DN 65) or larger valve.
 - e. Four support hangers including hanger shield and insert.

- f. One threaded strainer and one flanged strainer with removable portion of insulation.
 - g. One threaded reducer and one welded reducer.
 - h. One pressure temperature tap.
 - i. One mechanical coupling.
 - 2. For each mockup, fabricate cutaway sections to allow observation of application details for insulation materials, adhesives, mastics, attachments, and jackets.
 - 3. Notify Architect seven days in advance of dates and times when mockups will be constructed.
 - 4. Obtain Architect's approval of mockups before starting insulation application.
 - 5. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 - 6. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
 - 7. Demolish and remove mockups when directed.
- D. Comply with the following applicable standards and other requirements specified for miscellaneous components:
- 1. Supply and Drain Protective Shielding Guards: ICC A117.1.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Packaging: Insulation material containers shall be marked by manufacturer with appropriate ASTM standard designation, type and grade, and maximum use temperature.

1.7 COORDINATION

- A. Coordinate sizes and locations of supports, hangers, and insulation shields specified in Section 220529 "Hangers and Supports for Plumbing Piping and Equipment."
- B. Coordinate clearance requirements with piping Installer for piping insulation application. Before preparing piping Shop Drawings, establish and maintain clearance requirements for installation of insulation and field-applied jackets and finishes and for space required for maintenance.
- C. Coordinate installation and testing of heat tracing.

1.8 SCHEDULING

- A. Schedule insulation application after pressure testing systems and, where required, after installing and testing heat tracing. Insulation application may begin on segments that have satisfactory test results.
- B. Complete installation and concealment of plastic materials as rapidly as possible in each area of construction.

PART 2 - PRODUCTS

2.1 INSULATION MATERIALS

- A. Comply with requirements in "Piping Insulation Schedule, General," "Indoor Piping Insulation Schedule," "Outdoor, Aboveground Piping Insulation Schedule," and "Outdoor, Underground Piping Insulation Schedule" articles for where insulating materials shall be applied.
- B. Products shall not contain asbestos, lead, mercury, or mercury compounds.
- C. Products that come in contact with stainless steel shall have a leachable chloride content of less than 50 ppm when tested according to ASTM C 871.
- D. Insulation materials for use on austenitic stainless steel shall be qualified as acceptable according to ASTM C 795.
- E. Foam insulation materials shall not use CFC or HCFC blowing agents in the manufacturing process.
- F. Cellular Glass: Inorganic, incombustible, foamed or cellulated glass with annealed, rigid, hermetically sealed cells. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by the following:
 - a. Pittsburgh Corning Corporation.
 - 2. Block Insulation: ASTM C 552, Type I.
 - 3. Special-Shaped Insulation: ASTM C 552, Type III.
 - 4. Preformed Pipe Insulation without Jacket: Comply with ASTM C 552, Type II, Class 1.
 - 5. Preformed Pipe Insulation with Factory-Applied ASJ ASJ-SSL: Comply with ASTM C 552, Type II, Class 2.
 - 6. Factory fabricate shapes according to ASTM C 450 and ASTM C 585.
- G. Flexible Elastomeric Insulation: Closed-cell, sponge- or expanded-rubber materials. Comply with ASTM C 534, Type I for tubular materials.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Aeroflex USA, Inc.
 - b. Armacell LLC.
 - c. K-Flex USA.
- H. Mineral-Fiber Blanket Insulation: Mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C 553, Type II and ASTM C 1290, Type I. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. CertainTeed Corporation.
 - b. Johns Manville; a Berkshire Hathaway company.
 - c. Knauf Insulation.
 - d. Manson Insulation Inc.
 - e. Owens Corning.

I. Phenolic:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Kingspan Tarec Industrial Insulation NV.
 - b. Resolco International BV.
2. Preformed pipe insulation of rigid, expanded, closed-cell structure. Comply with ASTM C 1126, Type III, Grade 1.
3. Block insulation of rigid, expanded, closed-cell structure. Comply with ASTM C 1126, Type II, Grade 1.
4. Factory fabricate shapes according to ASTM C 450 and ASTM C 585.
5. Factory-Applied Jacket: ASJ. Requirements are specified in "Factory-Applied Jackets" Article.

- J. Polyolefin: Unicellular, polyethylene thermal plastic insulation. Comply with ASTM C 534 or ASTM C 1427, Type I, Grade 1 for tubular materials.
- a. Ramco Insulation, Inc.
 - b. Or approved equal

2.2 INSULATING CEMENTS

- A. Mineral-Fiber Insulating Cement: Comply with ASTM C 195.
- a. Ramco Insulation, Inc.
 - b. Or approved equal
- B. Expanded or Exfoliated Vermiculite Insulating Cement: Comply with ASTM C 196.
- a. Ramco Insulation, Inc.
 - b. Or approved equal
 - c.
- C. Mineral-Fiber, Hydraulic-Setting Insulating and Finishing Cement: Comply with ASTM C 449.
- a. Ramco Insulation, Inc.
 - b. Or approved equal

2.3 ADHESIVES

- A. Materials shall be compatible with insulation materials, jackets, and substrates and for bonding insulation to itself and to surfaces to be insulated, unless otherwise indicated.
- B. Cellular-Glass Adhesive: Two-component, thermosetting urethane adhesive containing no flammable solvents, with a service temperature range of minus 100 to plus 200 deg F (minus 73 to plus 93 deg C).
 - 1. For indoor applications, adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
 - 2. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- C. Flexible Elastomeric and Polyolefin Adhesive: Comply with MIL-A-24179A, Type II, Class I.
 - 1. For indoor applications, adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
 - 2. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- D. Mineral-Fiber Adhesive: Comply with MIL-A-3316C, Class 2, Grade A.
 - 1. For indoor applications, adhesive shall have a VOC content of 80 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
 - 2. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- E. Phenolic Adhesive: Solvent-based resin adhesive, with a service temperature range of minus 75 to plus 300 deg F (minus 59 to plus 149 deg C).
 - 1. For indoor applications, adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
 - 2. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- F. ASJ Adhesive, and FSK Jacket Adhesive: Comply with MIL-A-3316C, Class 2, Grade A for bonding insulation jacket lap seams and joints.
 - 1. For indoor applications, adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
 - 2. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- G. PVC Jacket Adhesive: Compatible with PVC jacket.
 - 1. For indoor applications, adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

2. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.4 MASTICS

- A. Materials shall be compatible with insulation materials, jackets, and substrates; comply with MIL-PRF-19565C, Type II.
 1. For indoor applications, use mastics that have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- B. Vapor-Barrier Mastic: Water based; suitable for indoor use on below-ambient services.
 1. Water-Vapor Permeance: ASTM E 96/E 96M, Procedure B, 0.013 perm (0.009 metric perm) at 43-mil (1.09-mm) dry film thickness.
 2. Service Temperature Range: Minus 20 to plus 180 deg F (Minus 29 to plus 82 deg C).
 3. Solids Content: ASTM D 1644, 58 percent by volume and 70 percent by weight.
 4. Color: White.
- C. Vapor-Barrier Mastic: Solvent based; suitable for indoor use on below-ambient services.
 1. Water-Vapor Permeance: ASTM F 1249, 0.05 perm (0.03 metric perm) at 35-mil (0.9-mm) dry film thickness.
 2. Service Temperature Range: 0 to 180 deg F (Minus 18 to plus 82 deg C).
 3. Solids Content: ASTM D 1644, 44 percent by volume and 62 percent by weight.
 4. Color: White.
- D. Vapor-Barrier Mastic: Solvent based; suitable for outdoor use on below-ambient services.
 1. Water-Vapor Permeance: ASTM F 1249, 0.05 perm (0.033 metric perm) at 30-mil (0.8-mm) dry film thickness.
 2. Service Temperature Range: Minus 50 to plus 220 deg F (Minus 46 to plus 104 deg C).
 3. Solids Content: ASTM D 1644, 33 percent by volume and 46 percent by weight.
 4. Color: White.
- E. Breather Mastic: Water based; suitable for indoor and outdoor use on above-ambient services.
 1. <Double click here to find, evaluate, and insert list of manufacturers and products.>
 2. Water-Vapor Permeance: ASTM F 1249, 1.8 perms (1.2 metric perms) at 0.0625-inch (1.6-mm) dry film thickness.
 3. Service Temperature Range: Minus 20 to plus 180 deg F (Minus 29 to plus 82 deg C).
 4. Solids Content: 60 percent by volume and 66 percent by weight.
 5. Color: White.

2.5 LAGGING ADHESIVES

- A. Description: Comply with MIL-A-3316C, Class I, Grade A, and shall be compatible with insulation materials, jackets, and substrates.

1. For indoor applications, use lagging adhesives that have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
2. Fire-resistant, water-based lagging adhesive and coating for use indoors to adhere fire-resistant lagging cloths over pipe insulation.
3. Service Temperature Range: 0 to plus 180 deg F (Minus 18 to plus 82 deg C).
4. Color: White.

2.6 SEALANTS

A. Joint Sealants:

1. Materials shall be compatible with insulation materials, jackets, and substrates.
2. Permanently flexible, elastomeric sealant.
3. Service Temperature Range: Minus 100 to plus 300 deg F (Minus 73 to plus 149 deg C).
4. Color: White or gray.
5. For indoor applications, sealants shall have a VOC content of 420 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
6. Sealants shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

B. FSK and Metal Jacket Flashing Sealants:

1. Materials shall be compatible with insulation materials, jackets, and substrates.
2. Fire- and water-resistant, flexible, elastomeric sealant.
3. Service Temperature Range: Minus 40 to plus 250 deg F (Minus 40 to plus 121 deg C).
4. Color: Aluminum.
5. For indoor applications, sealants shall have a VOC content of 420 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
6. Sealants shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

C. ASJ Flashing Sealants, and Vinyl, PVDC, and PVC Jacket Flashing Sealants:

1. Materials shall be compatible with insulation materials, jackets, and substrates.
2. Fire- and water-resistant, flexible, elastomeric sealant.
3. Service Temperature Range: Minus 40 to plus 250 deg F (Minus 40 to plus 121 deg C).
4. Color: White.
5. For indoor applications, sealants shall have a VOC content of 420 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
6. Sealants shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.7 FACTORY-APPLIED JACKETS

- A. Insulation system schedules indicate factory-applied jackets on various applications. When factory-applied jackets are indicated, comply with the following:

1. ASJ: White, kraft-paper, fiberglass-reinforced scrim with aluminum-foil backing; complying with ASTM C 1136, Type I.
2. ASJ-SSL: ASJ with self-sealing, pressure-sensitive, acrylic-based adhesive covered by a removable protective strip; complying with ASTM C 1136, Type I.
3. FSK Jacket: Aluminum-foil, fiberglass-reinforced scrim with kraft-paper backing; complying with ASTM C 1136, Type II.

2.8 FIELD-APPLIED FABRIC-REINFORCING MESH

- A. Woven Glass-Fiber Fabric: Approximately 2 oz./sq. yd. (68 g/sq. m) with a thread count of 10 strands by 10 strands/sq. in. (4 strands by 4 strands/sq. mm) for covering pipe and pipe fittings.
 1. Manufacturers: Subject to compliance with requirements, provide products by the following:
 - a. Childers Brand; H. B. Fuller Construction Products.
- B. Woven Polyester Fabric: Approximately 1 oz./sq. yd. (34 g/sq. m) with a thread count of 10 strands by 10 strands/sq. in. (4 strands by 4 strands/sq. mm), in a Leno weave, for pipe.
 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Foster Brand; H. B. Fuller Construction Products.
 - b. Vimasco Corporation.

2.9 FIELD-APPLIED CLOTHS

- A. Woven Glass-Fiber Fabric: Comply with MIL-C-20079H, Type I, plain weave, and presized a minimum of 8 oz./sq. yd. (271 g/sq. m).
 1. Manufacturers: Subject to compliance with requirements, provide products by the following:
 - a. Alpha Associates, Inc.

2.10 FIELD-APPLIED JACKETS

- A. Field-applied jackets shall comply with ASTM C 921, Type I, unless otherwise indicated.
- B. PVC Jacket: High-impact-resistant, UV-resistant PVC complying with ASTM D 1784, Class 16354-C; thickness as scheduled; roll stock ready for shop or field cutting and forming. Thickness is indicated in field-applied jacket schedules.
 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Johns Manville; a Berkshire Hathaway company.
 - b. P.I.C. Plastics, Inc.

- c. Proto Corporation.
- d. Speedline Corporation.
- 2. Adhesive: As recommended by jacket material manufacturer.
- 3. Color: Color-code jackets based on system. Color as selected by Architect.
- 4. Factory-fabricated fitting covers to match jacket if available; otherwise, field fabricate.
 - a. Shapes: 45- and 90-degree, short- and long-radius elbows, tees, valves, flanges, unions, reducers, end caps, soil-pipe hubs, traps, mechanical joints, and P-trap and supply covers for lavatories.

C. Metal Jacket:

- 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Childers Brand; H. B. Fuller Construction Products.
 - b. ITW Insulation Systems; Illinois Tool Works, Inc.
 - c. RPR Products, Inc.
- 2. Aluminum Jacket: Comply with ASTM B 209 (ASTM B 209M), Alloy 3003, 3005, 3105, or 5005, Temper H-14.
 - a. Sheet and roll stock ready for shop or field sizing.
 - b. Finish and thickness are indicated in field-applied jacket schedules.
 - c. Moisture Barrier for Indoor Applications: 1-mil- (0.025-mm-) thick, heat-bonded polyethylene and kraft paper 3-mil- (0.075-mm-) thick, heat-bonded polyethylene and kraft paper 2.5-mil- (0.063-mm-) thick polysurlyn.
 - d. Moisture Barrier for Outdoor Applications: 3-mil- (0.075-mm-) thick, heat-bonded polyethylene and kraft paper 2.5-mil- (0.063-mm-) thick polysurlyn.
 - e. Factory-Fabricated Fitting Covers:
 - 1) Same material, finish, and thickness as jacket.
 - 2) Preformed 2-piece or gore, 45- and 90-degree, short- and long-radius elbows.
 - 3) Tee covers.
 - 4) Flange and union covers.
 - 5) End caps.
 - 6) Beveled collars.
 - 7) Valve covers.
- 3. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Pittsburgh Corning Corporation.
 - b. Polyguard Products, Inc.

2.11 TAPES

- A. ASJ Tape: White vapor-retarder tape matching factory-applied jacket with acrylic adhesive, complying with ASTM C 1136.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Avery Dennison Corporation, Specialty Tapes Division.
 - b. Compac Corporation.
 - c. Ideal Tape Co., Inc., an American Biltrite Company.
 - d. Knauf Insulation.
 - e. Venture Tape.
 2. Width: 3 inches (75 mm).
 3. Thickness: 11.5 mils (0.29 mm).
 4. Adhesion: 90 ounces force/inch (1.0 N/mm) in width.
 5. Elongation: 2 percent.
 6. Tensile Strength: 40 lbf/inch (7.2 N/mm) in width.
 7. ASJ Tape Disks and Squares: Precut disks or squares of ASJ tape.
- B. FSK Tape: Foil-face, vapor-retarder tape matching factory-applied jacket with acrylic adhesive; complying with ASTM C 1136.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Avery Dennison Corporation, Specialty Tapes Division.
 - b. Compac Corporation.
 - c. Ideal Tape Co., Inc., an American Biltrite Company.
 - d. Knauf Insulation.
 - e. Venture Tape.
 2. Width: 3 inches (75 mm).
 3. Thickness: 6.5 mils (0.16 mm).
 4. Adhesion: 90 ounces force/inch (1.0 N/mm) in width.
 5. Elongation: 2 percent.
 6. Tensile Strength: 40 lbf/inch (7.2 N/mm) in width.
 7. FSK Tape Disks and Squares: Precut disks or squares of FSK tape.
- C. PVC Tape: White vapor-retarder tape matching field-applied PVC jacket with acrylic adhesive; suitable for indoor and outdoor applications.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Compac Corporation.
 - b. Ideal Tape Co., Inc., an American Biltrite Company.
 - c. Venture Tape.
 2. Width: 2 inches (50 mm).
 3. Thickness: 6 mils (0.15 mm).
 4. Adhesion: 64 ounces force/inch (0.7 N/mm) in width.
 5. Elongation: 500 percent.
 6. Tensile Strength: 18 lbf/inch (3.3 N/mm) in width.

D. Aluminum-Foil Tape: Vapor-retarder tape with acrylic adhesive.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Avery Dennison Corporation, Specialty Tapes Division.
 - b. Compac Corporation.
 - c. Ideal Tape Co., Inc., an American Biltrite Company.
 - d. Knauf Insulation.
 - e. Venture Tape.
2. Width: 2 inches (50 mm).
3. Thickness: 3.7 mils (0.093 mm).
4. Adhesion: 100 ounces force/inch (1.1 N/mm) in width.
5. Elongation: 5 percent.
6. Tensile Strength: 34 lbf/inch (6.2 N/mm) in width.

2.12 SECUREMENTS

A. Bands:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. ITW Insulation Systems; Illinois Tool Works, Inc.
 - b. RPR Products, Inc.
2. Stainless Steel: ASTM A 167 or ASTM A 240/A 240M, Type 304 or Type 316; 0.015 inch (0.38 mm) thick, 1/2 inch (13 mm) 3/4 inch (19 mm) wide with wing seal or closed seal.
3. Aluminum: ASTM B 209 (ASTM B 209M), Alloy 3003, 3005, 3105, or 5005; Temper H-14, 0.020 inch (0.51 mm) thick, 1/2 inch (13 mm) 3/4 inch (19 mm) wide with wing seal or closed seal.

B. Staples: Outward-clinching insulation staples, nominal 3/4-inch- (19-mm-) wide, stainless steel or Monel.

C. Wire: 0.080-inch (2.0-mm) nickel-copper alloy 0.062-inch (1.6-mm) soft-annealed, stainless steel 0.062-inch (1.6-mm) soft-annealed, galvanized steel.

1. Manufacturers: Subject to compliance with requirements, provide products by the following:
 - a. C & F Wire.

2.13 PROTECTIVE SHIELDING GUARDS

A. Protective Shielding Pipe Covers,

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Engineered Brass Company.
 - b. Insul-Tect Products Co.
 - c. McGuire Manufacturing.
 - d. Plumberex Specialty Products, Inc.
 - e. Truebro.
 - f. Zurn Industries, LLC.
 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 and California Building Code (CBC) 2016.
- B. Protective Shielding Piping Enclosures,:
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Truebro.
 - b. Zurn Industries, LLC.
 2. Description: Manufactured plastic enclosure for covering plumbing fixture hot- and cold-water supplies and trap and drain piping. Comply with ADA requirements and California Building Code (CBC) 2016.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions for compliance with requirements for installation tolerances and other conditions affecting performance of insulation application.
 1. Verify that systems to be insulated have been tested and are free of defects.
 2. Verify that surfaces to be insulated are clean and dry.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Preparation: Clean and dry surfaces to receive insulation. Remove materials that will adversely affect insulation application.
- B. Surface Preparation: Clean and prepare surfaces to be insulated. Before insulating, apply a corrosion coating to insulated surfaces as follows:
 1. Stainless Steel: Coat 300 series stainless steel with an epoxy primer 5 mils (0.127 mm) thick and an epoxy finish 5 mils (0.127 mm) thick if operating in a temperature range

- between 140 and 300 deg F (60 and 149 deg C). Consult coating manufacturer for appropriate coating materials and application methods for operating temperature range.
2. Carbon Steel: Coat carbon steel operating at a service temperature between 32 and 300 deg F (0 and 149 deg C) with an epoxy coating. Consult coating manufacturer for appropriate coating materials and application methods for operating temperature range.
- C. Coordinate insulation installation with the trade installing heat tracing. Comply with requirements for heat tracing that apply to insulation.
- D. Mix insulating cements with clean potable water; if insulating cements are to be in contact with stainless-steel surfaces, use demineralized water.

3.3 GENERAL INSTALLATION REQUIREMENTS

- A. Install insulation materials, accessories, and finishes with smooth, straight, and even surfaces; free of voids throughout the length of piping including fittings, valves, and specialties.
- B. Install insulation materials, forms, vapor barriers or retarders, jackets, and thicknesses required for each item of pipe system as specified in insulation system schedules.
- C. Install accessories compatible with insulation materials and suitable for the service. Install accessories that do not corrode, soften, or otherwise attack insulation or jacket in either wet or dry state.
- D. Install insulation with longitudinal seams at top and bottom of horizontal runs.
- E. Install multiple layers of insulation with longitudinal and end seams staggered.
- F. Do not weld brackets, clips, or other attachment devices to piping, fittings, and specialties.
- G. Keep insulation materials dry during application and finishing.
- H. Install insulation with tight longitudinal seams and end joints. Bond seams and joints with adhesive recommended by insulation material manufacturer.
- I. Install insulation with least number of joints practical.
- J. Where vapor barrier is indicated, seal joints, seams, and penetrations in insulation at hangers, supports, anchors, and other projections with vapor-barrier mastic.
1. Install insulation continuously through hangers and around anchor attachments.
 2. For insulation application where vapor barriers are indicated, extend insulation on anchor legs from point of attachment to supported item to point of attachment to structure. Taper and seal ends at attachment to structure with vapor-barrier mastic.
 3. Install insert materials and install insulation to tightly join the insert. Seal insulation to insulation inserts with adhesive or sealing compound recommended by insulation material manufacturer.
 4. Cover inserts with jacket material matching adjacent pipe insulation. Install shields over jacket, arranged to protect jacket from tear or puncture by hanger, support, and shield.
- K. Apply adhesives, mastics, and sealants at manufacturer's recommended coverage rate and wet and dry film thicknesses.

- L. Install insulation with factory-applied jackets as follows:
 - 1. Draw jacket tight and smooth.
 - 2. Cover circumferential joints with 3-inch- (75-mm-) wide strips, of same material as insulation jacket. Secure strips with adhesive and outward clinching staples along both edges of strip, spaced 4 inches (100 mm) o.c.
 - 3. Overlap jacket longitudinal seams at least 1-1/2 inches (38 mm). Install insulation with longitudinal seams at bottom of pipe. Clean and dry surface to receive self-sealing lap. Staple laps with outward clinching staples along edge at 2 inches (50 mm) o.c.
 - a. For below-ambient services, apply vapor-barrier mastic over staples.
 - 4. Cover joints and seams with tape, according to insulation material manufacturer's written instructions, to maintain vapor seal.
 - 5. Where vapor barriers are indicated, apply vapor-barrier mastic on seams and joints and at ends adjacent to pipe flanges and fittings.
- M. Cut insulation in a manner to avoid compressing insulation more than 75 percent of its nominal thickness.
- N. Finish installation with systems at operating conditions. Repair joint separations and cracking due to thermal movement.
- O. Repair damaged insulation facings by applying same facing material over damaged areas. Extend patches at least 4 inches (100 mm) beyond damaged areas. Adhere, staple, and seal patches similar to butt joints.
- P. For above-ambient services, do not install insulation to the following:
 - 1. Vibration-control devices.
 - 2. Testing agency labels and stamps.
 - 3. Nameplates and data plates.
 - 4. Cleanouts.

3.4 PENETRATIONS

- A. Insulation Installation at Roof Penetrations: Install insulation continuously through roof penetrations.
 - 1. Seal penetrations with flashing sealant.
 - 2. For applications requiring only indoor insulation, terminate insulation above roof surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.
 - 3. Extend jacket of outdoor insulation outside roof flashing at least 2 inches (50 mm) below top of roof flashing.
 - 4. Seal jacket to roof flashing with flashing sealant.
- B. Insulation Installation at Underground Exterior Wall Penetrations: Terminate insulation flush with sleeve seal. Seal terminations with flashing sealant.

- C. Insulation Installation at Aboveground Exterior Wall Penetrations: Install insulation continuously through wall penetrations.
 - 1. Seal penetrations with flashing sealant.
 - 2. For applications requiring only indoor insulation, terminate insulation inside wall surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.
 - 3. Extend jacket of outdoor insulation outside wall flashing and overlap wall flashing at least 2 inches (50 mm).
 - 4. Seal jacket to wall flashing with flashing sealant.
- D. Insulation Installation at Interior Wall and Partition Penetrations (That Are Not Fire Rated): Install insulation continuously through walls and partitions.
- E. Insulation Installation at Fire-Rated Wall and Partition Penetrations: Install insulation continuously through penetrations of fire-rated walls and partitions.
 - 1. Comply with requirements in Section 078400 "Penetration Firestopping" for firestopping and fire-resistive joint sealers.
- F. Insulation Installation at Floor Penetrations:
 - 1. Pipe: Install insulation continuously through floor penetrations.
 - 2. Seal penetrations through fire-rated assemblies. Comply with requirements in Section 078413 "Penetration Firestopping."

3.5 GENERAL PIPE INSULATION INSTALLATION

- A. Requirements in this article generally apply to all insulation materials except where more specific requirements are specified in various pipe insulation material installation articles.
- B. Insulation Installation on Fittings, Valves, Strainers, Flanges, and Unions:
 - 1. Install insulation over fittings, valves, strainers, flanges, unions, and other specialties with continuous thermal and vapor-retarder integrity unless otherwise indicated.
 - 2. Insulate pipe elbows using preformed fitting insulation or mitered fittings made from same material and density as adjacent pipe insulation. Each piece shall be butted tightly against adjoining piece and bonded with adhesive. Fill joints, seams, voids, and irregular surfaces with insulating cement finished to a smooth, hard, and uniform contour that is uniform with adjoining pipe insulation.
 - 3. Insulate tee fittings with preformed fitting insulation or sectional pipe insulation of same material and thickness as used for adjacent pipe. Cut sectional pipe insulation to fit. Butt each section closely to the next and hold in place with tie wire. Bond pieces with adhesive.
 - 4. Insulate valves using preformed fitting insulation or sectional pipe insulation of same material, density, and thickness as used for adjacent pipe. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. For valves, insulate up to and including the bonnets, valve stuffing-box studs, bolts, and nuts. Fill joints, seams, and irregular surfaces with insulating cement.

5. Insulate strainers using preformed fitting insulation or sectional pipe insulation of same material, density, and thickness as used for adjacent pipe. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. Fill joints, seams, and irregular surfaces with insulating cement. Insulate strainers so strainer basket flange or plug can be easily removed and replaced without damaging the insulation and jacket. Provide a removable reusable insulation cover. For below-ambient services, provide a design that maintains vapor barrier.
 6. Insulate flanges and unions using a section of oversized preformed pipe insulation. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker.
 7. Cover segmented insulated surfaces with a layer of finishing cement and coat with a mastic. Install vapor-barrier mastic for below-ambient services and a breather mastic for above-ambient services. Reinforce the mastic with fabric-reinforcing mesh. Trowel the mastic to a smooth and well-shaped contour.
 8. For services not specified to receive a field-applied jacket except for flexible elastomeric and polyolefin, install fitted PVC cover over elbows, tees, strainers, valves, flanges, and unions. Terminate ends with PVC end caps. Tape PVC covers to adjoining insulation facing using PVC tape.
 9. Stencil or label the outside insulation jacket of each union with the word "union." Match size and color of pipe labels.
- C. Insulate instrument connections for thermometers, pressure gages, pressure temperature taps, test connections, flow meters, sensors, switches, and transmitters on insulated pipes. Shape insulation at these connections by tapering it to and around the connection with insulating cement and finish with finishing cement, mastic, and flashing sealant.
- D. Install removable insulation covers at locations indicated. Installation shall conform to the following:
1. Make removable flange and union insulation from sectional pipe insulation of same thickness as that on adjoining pipe. Install same insulation jacket as adjoining pipe insulation.
 2. When flange and union covers are made from sectional pipe insulation, extend insulation from flanges or union long at least two times the insulation thickness over adjacent pipe insulation on each side of flange or union. Secure flange cover in place with stainless-steel or aluminum bands. Select band material compatible with insulation and jacket.
 3. Construct removable valve insulation covers in same manner as for flanges, except divide the two-part section on the vertical center line of valve body.
 4. When covers are made from block insulation, make two halves, each consisting of mitered blocks wired to stainless-steel fabric. Secure this wire frame, with its attached insulation, to flanges with tie wire. Extend insulation at least 2 inches (50 mm) over adjacent pipe insulation on each side of valve. Fill space between flange or union cover and pipe insulation with insulating cement. Finish cover assembly with insulating cement applied in two coats. After first coat is dry, apply and trowel second coat to a smooth finish.
 5. Unless a PVC jacket is indicated in field-applied jacket schedules, finish exposed surfaces with a metal jacket.

3.6 INSTALLATION OF CELLULAR-GLASS INSULATION

- A. Insulation Installation on Straight Pipes and Tubes:

1. Secure each layer of insulation to pipe with wire or bands and tighten bands without deforming insulation materials.
2. Where vapor barriers are indicated, seal longitudinal seams, end joints, and protrusions with vapor-barrier mastic and joint sealant.
3. For insulation with factory-applied jackets on above-ambient services, secure laps with outward clinched staples at 6 inches (150 mm) o.c.
4. For insulation with factory-applied jackets on below-ambient services, do not staple longitudinal tabs. Instead, secure tabs with additional adhesive as recommended by insulation material manufacturer and seal with vapor-barrier mastic and flashing sealant.

B. Insulation Installation on Pipe Flanges:

1. Install preformed pipe insulation to outer diameter of pipe flange.
2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.
3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with cut sections of cellular-glass block insulation of same thickness as pipe insulation.
4. Install jacket material with manufacturer's recommended adhesive, overlap seams at least 1 inch (25 mm), and seal joints with flashing sealant.

C. Insulation Installation on Pipe Fittings and Elbows:

1. Install preformed sections of same material as straight segments of pipe insulation when available. Secure according to manufacturer's written instructions.
2. When preformed sections of insulation are not available, install mitered sections of cellular-glass insulation. Secure insulation materials with wire or bands.

D. Insulation Installation on Valves and Pipe Specialties:

1. Install preformed sections of cellular-glass insulation to valve body.
2. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
3. Install insulation to flanges as specified for flange insulation application.

3.7 INSTALLATION OF FLEXIBLE ELASTOMERIC INSULATION

- A.** Seal longitudinal seams and end joints with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

B. Insulation Installation on Pipe Flanges:

1. Install pipe insulation to outer diameter of pipe flange.
2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.
3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with cut sections of sheet insulation of same thickness as pipe insulation.
4. Secure insulation to flanges and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

C. Insulation Installation on Pipe Fittings and Elbows:

1. Install mitered sections of pipe insulation.
2. Secure insulation materials and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

D. Insulation Installation on Valves and Pipe Specialties:

1. Install preformed valve covers manufactured of same material as pipe insulation when available.
2. When preformed valve covers are not available, install cut sections of pipe and sheet insulation to valve body. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
3. Install insulation to flanges as specified for flange insulation application.
4. Secure insulation to valves and specialties and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

3.8 INSTALLATION OF MINERAL-FIBER INSULATION

A. Insulation Installation on Straight Pipes and Tubes:

1. Secure each layer of preformed pipe insulation to pipe with wire or bands and tighten bands without deforming insulation materials.
2. Where vapor barriers are indicated, seal longitudinal seams, end joints, and protrusions with vapor-barrier mastic and joint sealant.
3. For insulation with factory-applied jackets on above-ambient surfaces, secure laps with outward clinched staples at 6 inches (150 mm) o.c.
4. For insulation with factory-applied jackets on below-ambient surfaces, do not staple longitudinal tabs. Instead, secure tabs with additional adhesive as recommended by insulation material manufacturer and seal with vapor-barrier mastic and flashing sealant.

B. Insulation Installation on Pipe Flanges:

1. Install preformed pipe insulation to outer diameter of pipe flange.
2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.
3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with mineral-fiber blanket insulation.
4. Install jacket material with manufacturer's recommended adhesive, overlap seams at least 1 inch (25 mm), and seal joints with flashing sealant.

C. Insulation Installation on Pipe Fittings and Elbows:

1. Install preformed sections of same material as straight segments of pipe insulation when available.
2. When preformed insulation elbows and fittings are not available, install mitered sections of pipe insulation, to a thickness equal to adjoining pipe insulation. Secure insulation materials with wire or bands.

D. Insulation Installation on Valves and Pipe Specialties:

1. Install preformed sections of same material as straight segments of pipe insulation when available.

2. When preformed sections are not available, install mitered sections of pipe insulation to valve body.
3. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
4. Install insulation to flanges as specified for flange insulation application.

3.9 INSTALLATION OF PHENOLIC INSULATION

A. General Installation Requirements:

1. Secure single-layer insulation with stainless-steel bands at 12-inch (300-mm) intervals and tighten bands without deforming insulation materials.
2. Install 2-layer insulation with joints tightly butted and staggered at least 3 inches (75 mm). Secure inner layer with 0.062-inch (1.6-mm) wire spaced at 12-inch (300-mm) intervals. Secure outer layer with stainless-steel bands at 12-inch (300-mm) intervals.

B. Insulation Installation on Straight Pipes and Tubes:

1. Secure each layer of insulation to pipe with wire or bands and tighten bands without deforming insulation materials.
2. Where vapor barriers are indicated, seal longitudinal seams, end joints, and protrusions with vapor-barrier mastic and joint sealant.
3. For insulation with factory-applied jackets on above-ambient services, secure laps with outward clinched staples at 6 inches (150 mm) o.c.
4. For insulation with factory-applied jackets with vapor retarders on below-ambient services, do not staple longitudinal tabs. Instead, secure tabs with additional adhesive as recommended by insulation material manufacturer and seal with vapor-barrier mastic and flashing sealant.

C. Insulation Installation on Pipe Flanges:

1. Install preformed pipe insulation to outer diameter of pipe flange.
2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.
3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with cut sections of block insulation of same material and thickness as pipe insulation.

D. Insulation Installation on Pipe Fittings and Elbows:

1. Install preformed insulation sections of same material as straight segments of pipe insulation. Secure according to manufacturer's written instructions.

E. Insulation Installation on Valves and Pipe Specialties:

1. Install preformed insulation sections of same material as straight segments of pipe insulation. Secure according to manufacturer's written instructions.
2. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
3. Install insulation to flanges as specified for flange insulation application.

3.10 INSTALLATION OF POLYOLEFIN INSULATION

A. Insulation Installation on Straight Pipes and Tubes:

1. Seal split-tube longitudinal seams and end joints with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

B. Insulation Installation on Pipe Flanges:

1. Install pipe insulation to outer diameter of pipe flange.
2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.
3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with cut sections of polyolefin sheet insulation of same thickness as pipe insulation.
4. Secure insulation to flanges and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

C. Insulation Installation on Pipe Fittings and Elbows:

1. Install mitered sections of polyolefin pipe insulation.
2. Secure insulation materials and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

D. Insulation Installation on Valves and Pipe Specialties:

1. Install cut sections of polyolefin pipe and sheet insulation to valve body.
2. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
3. Install insulation to flanges as specified for flange insulation application.
4. Secure insulation to valves and specialties, and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

3.11 FIELD-APPLIED JACKET INSTALLATION

A. Where glass-cloth jackets are indicated, install directly over bare insulation or insulation with factory-applied jackets.

1. Draw jacket smooth and tight to surface with 2-inch (50-mm) overlap at seams and joints.
2. Embed glass cloth between two 0.062-inch- (1.6-mm-) thick coats of lagging adhesive.
3. Completely encapsulate insulation with coating, leaving no exposed insulation.

B. Where FSK jackets are indicated, install as follows:

1. Draw jacket material smooth and tight.
2. Install lap or joint strips with same material as jacket.
3. Secure jacket to insulation with manufacturer's recommended adhesive.
4. Install jacket with 1-1/2-inch (38-mm) laps at longitudinal seams and 3-inch- (75-mm-) wide joint strips at end joints.

5. Seal openings, punctures, and breaks in vapor-retarder jackets and exposed insulation with vapor-barrier mastic.
- C. Where PVC jackets are indicated, install with 1-inch (25-mm) overlap at longitudinal seams and end joints. Seal with manufacturer's recommended adhesive.
 1. Apply two continuous beads of adhesive to seams and joints, one bead under lap and the finish bead along seam and joint edge.
- D. Where metal jackets are indicated, install with 2-inch (50-mm) overlap at longitudinal seams and end joints. Overlap longitudinal seams arranged to shed water. Seal end joints with weatherproof sealant recommended by insulation manufacturer. Secure jacket with stainless-steel bands 12 inches (300 mm) o.c. and at end joints.

3.12 FINISHES

- A. Insulation with ASJ, Glass-Cloth, or Other Paintable Jacket Material: Paint jacket with paint system identified below and as specified in Section 099113 "Exterior Painting" and Section 099123 "Interior Painting."
 1. Flat Acrylic Finish: Two finish coats over a primer that is compatible with jacket material and finish coat paint. Add fungicidal agent to render fabric mildew proof.
 - a. Finish Coat Material: Interior, flat, latex-emulsion size.
- B. Flexible Elastomeric Thermal Insulation: After adhesive has fully cured, apply two coats of insulation manufacturer's recommended protective coating.
- C. Color: Final color as selected by Architect. Vary first and second coats to allow visual inspection of the completed Work.
- D. Do not field paint aluminum or stainless-steel jackets.

3.13 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
- B. Perform tests and inspections.
- C. Tests and Inspections:
 1. Inspect pipe, fittings, strainers, and valves, randomly selected by Architect, by removing field-applied jacket and insulation in layers in reverse order of their installation. Extent of inspection shall be limited to three locations of straight pipe, three locations of threaded fittings, three locations of welded fittings, two locations of threaded strainers, two locations of welded strainers, three locations of threaded valves, and three locations of flanged valves for each pipe service defined in the "Piping Insulation Schedule, General" Article.

- D. All insulation applications will be considered defective Work if sample inspection reveals noncompliance with requirements.

3.14 PIPING INSULATION SCHEDULE, GENERAL

- A. Acceptable preformed pipe and tubular insulation materials and thicknesses are identified for each piping system and pipe size range. If more than one material is listed for a piping system, selection from materials listed is Contractor's option.
- B. Items Not Insulated: Unless otherwise indicated, do not install insulation on the following:
 - 1. Drainage piping located in crawl spaces.
 - 2. Underground piping.
 - 3. Chrome-plated pipes and fittings unless there is a potential for personnel injury.

3.15 INDOOR PIPING INSULATION SCHEDULE

- A. Domestic Cold Water:
 - 1. NPS 1 (DN 25) and Smaller: Insulation shall be one of the the following:
 - a. Cellular Glass: 1-1/2 inches (38 mm) thick.
 - b. Flexible Elastomeric: 3/4 inch (19 mm) thick.
 - c. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1/2 inch (13 mm) thick.
 - 2. NPS 1-1/4 (DN 32) and Larger: Insulation shall be one of the following:
 - a. Cellular Glass: 1-1/2 inches (38 mm) thick.
 - b. Flexible Elastomeric: 1 inch (25 mm) thick.
 - c. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1 inch (25 mm) thick.
- B. Domestic Hot and Recirculated Hot Water:
 - 1. NPS 1-1/4 (DN 32) and Smaller: Insulation shall be one of the following:
 - a. Cellular Glass: 1-1/2 inches (38 mm) thick.
 - b. Flexible Elastomeric: 1 inch (25 mm) thick.
 - c. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1 inch (25 mm) thick.
 - 2. NPS 1-1/2 (DN 40) and Larger: Insulation shall be one of the following:
 - a. Cellular Glass: 1-1/2 inches (38 mm) thick.
 - b. Flexible Elastomeric: 1 inch (25 mm) thick.
 - c. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1 inch (25 mm) thick.
- C. Exposed Sanitary Drains, Domestic Water, Domestic Hot Water, and Stops for Plumbing Fixtures for People with Disabilities:
 - 1. All Pipe Sizes: Insulation shall be one of the following:

- a. Flexible Elastomeric: 3/4 inch (19 mm)
 - b. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1 inch thick.
 - D. Sanitary Waste Piping Where Heat Tracing Is Installed:
 - 1. All Pipe Sizes: Insulation shall be one of the following:
 - a. Cellular Glass: 2 inches (50 mm) thick.
 - b. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1-1/2 inches (38 mm) thick.
 - E. Floor Drains, Traps, and Sanitary Drain Piping within 10 Feet (3 m) of Drain Receiving Condensate and Equipment Drain Water below 60 Deg F (16 Deg C):
 - 1. All Pipe Sizes: Insulation shall be one of the following:
 - a. Cellular Glass: 1-1/2 inches (38 mm) thick.
 - b. Flexible Elastomeric: 1 inch (25 mm) thick.
 - c. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1 inch (25 mm) thick.
 - F. Hot Service Drains:
 - 1. All Pipe Sizes: Insulation shall be one of the following:
 - a. Cellular Glass: 1-1/2 inches (38 mm) thick.
 - b. Mineral-Fiber, Preformed Pipe, Type I or II: 1 inch (25 mm) thick.
 - G. Hot Service Vents:
 - 1. All Pipe Sizes: Insulation shall be one of the following:
 - a. Cellular Glass: 1-1/2 inches (38 mm) thick.
 - b. Mineral-Fiber, Preformed Pipe, Type I or II: 1 inch (25 mm) thick.
- 3.16 OUTDOOR, ABOVEGROUND PIPING INSULATION SCHEDULE
- A. Domestic Water Piping:
 - 1. All Pipe Sizes: Insulation shall be one of the following:
 - a. Cellular Glass: 2 inches (50 mm) thick.
 - b. Flexible Elastomeric: 2 inches (50 mm) thick.
 - c. Mineral-Fiber, Preformed Pipe Insulation, Type I: 2 inches (50 mm) thick.
 - B. Domestic Hot and Recirculated Hot Water:
 - 1. All Pipe Sizes: Insulation shall be one of the following:
 - a. Cellular Glass: 2 inches (50 mm) thick.
 - b. Flexible Elastomeric: 2 inches (50 mm) thick.
 - c. Mineral-Fiber, Preformed Pipe Insulation, Type I: 2 inches (50 mm) thick.

C. Sanitary Waste Piping Where Heat Tracing Is Installed:

1. All Pipe Sizes: Insulation shall be one of the following:
 - a. Cellular Glass: 2 inches (50 mm) thick.
 - b. Mineral-Fiber, Preformed Pipe Insulation, Type I: 2 inches (50 mm) thick.

D. Hot Service Drains:

1. All Pipe Sizes: Insulation shall be one of the following:
 - a. Cellular Glass: 1-1/2 inches (38 mm) thick.
 - b. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1 inch (25 mm) thick.

E. Hot Service Vents:

1. All Pipe Sizes: Insulation shall be one of the following:
 - a. Cellular Glass: 1-1/2 inches (38 mm) thick.
 - b. Mineral-Fiber, Preformed Pipe Insulation, Type II: 1 inch (25 mm) thick.

3.17 INDOOR, FIELD-APPLIED JACKET SCHEDULE

A. Install jacket over insulation material. For insulation with factory-applied jacket, install the field-applied jacket over the factory-applied jacket.

B. If more than one material is listed, selection from materials listed is Contractor's option.

C. Piping, Concealed:

1. None.
2. PVC, Color-Coded by System: 30 mils (0.8 mm) thick.
3. Aluminum, Smooth: 0.032 inch (0.81 mm) thick.
4. Painted Aluminum, Smooth: 0.032 inch (0.81 mm) thick.
5. Stainless Steel, Type 304 or Type 316, Smooth 2B Finish Corrugated: 0.020 inch (0.51 mm) thick.

D. Piping, Exposed:

1. None.
2. PVC, Color-Coded by System: 30 mils (0.8 mm) thick.
3. Aluminum, Smooth: 0.032 inch (0.81 mm) thick.
4. Painted Aluminum, Smooth: 0.024 inch (0.61 mm) thick.
5. Stainless Steel, Type 304 or Type 316, Smooth 2B Finish Corrugated: 0.020 inch (0.51 mm) thick.

3.18 OUTDOOR, FIELD-APPLIED JACKET SCHEDULE

- A. Install jacket over insulation material. For insulation with factory-applied jacket, install the field-applied jacket over the factory-applied jacket.
- B. If more than one material is listed, selection from materials listed is Contractor's option.
- C. Piping, Concealed:
 - 1. None.
 - 2. PVC, Color-Coded by System: 30 mils (0.8 mm) thick.
 - 3. Aluminum, Smooth: 0.032 inch (0.81 mm) thick.
 - 4. Painted Aluminum, Smooth: 0.024 inch (0.61 mm) thick.
 - 5. Stainless Steel, Type 304 or Type 316, Smooth 2B Finish Corrugated: 0.020 inch (0.51 mm) thick.
- D. Piping, Exposed:
 - 1. PVC: 30 mils (0.8 mm) thick.
 - 2. Painted Aluminum, Smooth with Z-Shaped Locking Seam: 0.032 inch (0.81 mm) thick.
 - 3. Stainless Steel, Type 304 or Type 316, Smooth 2B Finish Corrugated with Z-Shaped Locking Seam: 0.020 inch (0.51 mm) thick.

3.19 UNDERGROUND, FIELD-INSTALLED INSULATION JACKET

- A. For underground direct-buried piping applications, install underground direct-buried jacket over insulation material.

END OF SECTION 22 07 19

SECTION 22 11 16 - DOMESTIC WATER PIPING

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. Under-building-slab and aboveground domestic water pipes, tubes, and fittings inside buildings.
 - 2. Encasement for piping.

1.3 ACTION SUBMITTALS

- A. Product Data: For transition fittings and dielectric fittings.
- B. LEED Submittals:
 - 1. Product Data for Credit IEQ 4.1: For solvent cements and adhesive primers, documentation including printed statement of VOC content.
 - 2. Laboratory Test Reports for Credit IEQ 4: For solvent cements and adhesive primers, documentation indicating that products comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

1.4 INFORMATIONAL SUBMITTALS

- A. System purging and disinfecting activities report.
- B. Field quality-control reports.

1.5 FIELD CONDITIONS

- A. Interruption of Existing Water Service: Do not interrupt water service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary water service according to requirements indicated:
 - 1. Notify Owner no fewer than two days in advance of proposed interruption of water service.

2. Do not interrupt water service without Owner's written permission.

PART 2 - PRODUCTS

2.1 PIPING MATERIALS

- A. Comply with requirements in "Piping Schedule" Article for applications of pipe, tube, fitting materials, and joining methods for specific services, service locations, and pipe sizes.
- B. Potable-water piping and components shall comply with NSF 14 and NSF 61 Annex G. Plastic piping components shall be marked with "NSF-pw."

2.2 COPPER TUBE AND FITTINGS

- A. Hard Copper Tube: ASTM B 88, Type L (ASTM B 88M, Type B) and ASTM B 88, Type M (ASTM B 88M, Type C) water tube, drawn temper.
- B. Soft Copper Tube: ASTM B 88, Type K (ASTM B 88M, Type A) and ASTM B 88, Type L (ASTM B 88M, Type B) water tube, annealed temper.
- C. Cast-Copper, Solder-Joint Fittings: ASME B16.18, pressure fittings.
- D. Wrought-Copper, Solder-Joint Fittings: ASME B16.22, wrought-copper pressure fittings.
- E. Bronze Flanges: ASME B16.24, Class 150, with solder-joint ends.
- F. Copper Unions:
 1. MSS SP-123.
 2. Cast-copper-alloy, hexagonal-stock body.
 3. Ball-and-socket, metal-to-metal seating surfaces.
 4. Solder-joint or threaded ends.
- G. Copper Pressure-Seal-Joint Fittings:
 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Elkhart Products Corporation.
 - b. NIBCO INC.
 - c. Viega LLC.
 2. Fittings for NPS 2 (DN 50) and Smaller: Wrought-copper fitting with EPDM-rubber, O-ring seal in each end.
 3. Fittings for NPS 2-1/2 to NPS 4 (DN 65 to DN 100): Cast-bronze or wrought-copper fitting with EPDM-rubber, O-ring seal in each end.
- H. Appurtenances for Grooved-End Copper Tubing:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Anvil International.
 - b. Shurjoint Piping Products.
 - c. Victaulic Company.
2. Bronze Fittings for Grooved-End, Copper Tubing: ASTM B 75 (ASTM B 75M) copper tube or ASTM B 584 bronze castings.
3. Mechanical Couplings for Grooved-End Copper Tubing:
 - a. Copper-tube dimensions and design similar to AWWA C606.
 - b. Ferrous housing sections.
 - c. EPDM-rubber gaskets suitable for hot and cold water.
 - d. Bolts and nuts.
 - e. Minimum Pressure Rating: 300 psig (2070 kPa).

2.3 ENCASEMENT FOR PIPING

- A. Standard: ASTM A 674 or AWWA C105/A21.5.
- B. Form: Sheet or tube.
- C. Color: Black or natural.

2.4 TRANSITION FITTINGS

- A. General Requirements:
 1. Same size as pipes to be joined.
 2. Pressure rating at least equal to pipes to be joined.
 3. End connections compatible with pipes to be joined.
- B. Fitting-Type Transition Couplings: Manufactured piping coupling or specified piping system fitting.
- C. Sleeve-Type Transition Coupling: AWWA C219.
 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Cascade Waterworks Mfg. Co.
 - b. Ford Meter Box Company, Inc. (The).
 - c. Smith, Jay R. Mfg. Co.
 - d. Viking Johnson.
- D. Plastic-to-Metal Transition Fittings:
 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

- a. Charlotte Pipe and Foundry Company.
- b. Harvel Plastics, Inc.
- c. Spears Manufacturing Company.
- 2. Description:
 - a. CPVC or PVC one-piece fitting with manufacturer's Schedule 80 equivalent dimensions.
 - b. One end with threaded brass insert and one solvent-cement-socket end.

E. Plastic-to-Metal Transition Unions:

- 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Colonial Engineering, Inc.
 - b. NIBCO INC.
 - c. Spears Manufacturing Company.
- 2. Description:
 - a. CPVC or PVC four-part union.
 - b. Brass threaded end.
 - c. Solvent-cement-joint plastic end.
 - d. Rubber O-ring.
 - e. Union nut.

2.5 DIELECTRIC FITTINGS

- A. General Requirements:** Assembly of copper alloy and ferrous materials with separating nonconductive insulating material. Include end connections compatible with pipes to be joined.

B. Dielectric Unions:

- 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Central Plastics Company.
 - b. Watts; a Watts Water Technologies company.
 - c. Wilkins.
 - d. Zurn Industries, LLC.
- 2. Standard: ASSE 1079.
- 3. Pressure Rating: 125 psig (860 kPa) minimum at 180 deg F (82 deg C).
- 4. End Connections: Solder-joint copper alloy and threaded ferrous.

C. Dielectric Flanges:

- 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Capitol Manufacturing Company.
 - b. Central Plastics Company.
 - c. Watts; a Watts Water Technologies company.
 - d. Zurn Industries, LLC.

2. Standard: ASSE 1079.
3. Factory-fabricated, bolted, companion-flange assembly.
4. Pressure Rating: 125 psig (860 kPa) minimum at 180 deg F (82 deg C).
5. End Connections: Solder-joint copper alloy and threaded ferrous; threaded solder-joint copper alloy and threaded ferrous.

D. Dielectric-Flange Insulating Kits:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Advance Products & Systems, Inc.
 - b. Calpico, Inc.
 - c. Central Plastics Company.
 - d. Pipeline Seal and Insulator, Inc.
2. Nonconducting materials for field assembly of companion flanges.
3. Pressure Rating: 150 psig (1035 kPa).
4. Gasket: Neoprene or phenolic.
5. Bolt Sleeves: Phenolic or polyethylene.
6. Washers: Phenolic with steel backing washers.

E. Dielectric Nipples:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Grinnell Mechanical Products.
 - b. Precision Plumbing Products.
 - c. Victaulic Company.
2. Standard: IAPMO PS 66.
3. Electroplated steel nipple complying with ASTM F 1545.
4. Pressure Rating and Temperature: 300 psig (2070 kPa) at 225 deg F (107 deg C).
5. End Connections: Male threaded or grooved.
6. Lining: Inert and noncorrosive, propylene.

PART 3 - EXECUTION

3.1 PIPING INSTALLATION

- A. Drawing plans, schematics, and diagrams indicate general location and arrangement of domestic water piping. Indicated locations and arrangements are used to size pipe and calculate friction loss, expansion, and other design considerations. Install piping as indicated unless deviations to layout are approved on coordination drawings.
- B. Install copper tubing under building slab according to CDA's "Copper Tube Handbook."
- C. Install underground copper tube in PE encasement according to ASTM A 674 or AWWA C105/A21.5.

- D. Install shutoff valve, hose-end drain valve, strainer, pressure gage, and test tee with valve inside the building at each domestic water-service entrance. Comply with requirements for pressure gages in in Section 221119 "Domestic Water Piping Specialties."
- E. Install shutoff valve immediately upstream of each dielectric fitting.
- F. Install water-pressure-reducing valves downstream from shutoff valves. Comply with requirements for pressure-reducing valves in Section 221119 "Domestic Water Piping Specialties."
- G. Install domestic water piping level with 0.25 percent slope downward toward drain and plumb.
- H. Rough-in domestic water piping for water-meter installation according to utility company's requirements.
- I. Install seismic restraints on piping. Comply with requirements for seismic-restraint devices in Section 220548 "Vibration and Seismic Controls for Plumbing Piping and Equipment."
- J. Install piping concealed from view and protected from physical contact by building occupants unless otherwise indicated and except in equipment rooms and service areas.
- K. 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.
- L. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal, and coordinate with other services occupying that space.
- M. Install piping to permit valve servicing.
- N. Install nipples, unions, special fittings, and valves with pressure ratings the same as or higher than the system pressure rating used in applications below unless otherwise indicated.
- O. Install piping free of sags and bends.
- P. Install fittings for changes in direction and branch connections.
- Q. Install unions in copper tubing at final connection to each piece of equipment, machine, and specialty.
- R. Install sleeves for piping penetrations of walls, ceilings, and floors. Comply with requirements for sleeves specified in Section 220517 "Sleeves and Sleeve Seals for Plumbing Piping."
- S. Install sleeve seals for piping penetrations of concrete walls and slabs. Comply with requirements for sleeve seals specified in Section 220517 "Sleeves and Sleeve Seals for Plumbing Piping."
- T. Install escutcheons for piping penetrations of walls, ceilings, and floors. Comply with requirements for escutcheons specified in Section 220518 "Escutcheons for Plumbing Piping."

3.2 JOINT CONSTRUCTION

- A. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.
- B. Remove scale, slag, dirt, and debris from inside and outside of pipes, tubes, and fittings before assembly.
- C. 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.
 - 2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged.
- D. Brazed Joints for Copper Tubing: Comply with CDA's "Copper Tube Handbook," "Brazed Joints" chapter.
- E. Soldered Joints for Copper Tubing: Apply ASTM B 813, water-flushable flux to end of tube. Join copper tube and fittings according to ASTM B 828 or CDA's "Copper Tube Handbook."
- F. Pressure-Sealed Joints for Copper Tubing: Join copper tube and pressure-seal fittings with tools recommended by fitting manufacturer.
- G. Push-on Joints for Copper Tubing: Clean end of tube. Measure insertion depth with manufacturer's depth gage. Join copper tube and push-on-joint fittings by inserting tube to measured depth.
- H. Extruded-Tee Connections: Form tee in copper tube according to ASTM F 2014. Use tool designed for copper tube; drill pilot hole, form collar for outlet, dimple tube to form seating stop, and braze branch tube into collar.
- I. Joint Construction for Grooved-End Copper Tubing: Make joints according to AWWA C606. Roll groove ends of tubes. Lubricate and install gasket over ends of tubes or tube and fitting. Install coupling housing sections over gasket with keys seated in tubing grooves. Install and tighten housing bolts.
- J. Joint Construction for Grooved-End, Ductile-Iron Piping: Make joints according to AWWA C606. Cut round-bottom grooves in ends of pipe at gasket-seat dimension required for specified (flexible or rigid) joint. Lubricate and install gasket over ends of pipes or pipe and fitting. Install coupling housing sections over gasket with keys seated in piping grooves. Install and tighten housing bolts.
- K. Joint Construction for Grooved-End Steel Piping: Make joints according to AWWA C606. Square cut groove ends of pipe as specified. Lubricate and install gasket over ends of pipes or pipe and fitting. Install coupling housing sections over gasket with keys seated in piping grooves. Install and tighten housing bolts.
- L. Flanged Joints: Select appropriate asbestos-free, nonmetallic gasket material in size, type, and thickness suitable for domestic water service. Join flanges with gasket and bolts according to ASME B31.9.

- M. Joint Construction for Solvent-Cemented Plastic Piping: 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. Apply primer.
 - 2. CPVC Piping: Join according to ASTM D 2846/D 2846M Appendix.
 - 3. PVC Piping: Join according to ASTM D 2855.
- N. Joints for Dissimilar-Material Piping: Make joints using adapters compatible with materials of both piping systems.

3.3 TRANSITION FITTING INSTALLATION

- A. Install transition couplings at joints of dissimilar piping.
- B. Transition Fittings in Underground Domestic Water Piping:
 - 1. Fittings for NPS 1-1/2 (DN 40) and Smaller: Fitting-type coupling.
 - 2. Fittings for NPS 2 (DN 50) and Larger: Sleeve-type coupling.
- C. Transition Fittings in Aboveground Domestic Water Piping NPS 2 (DN 50) and Smaller: Plastic-to-metal transition fittings or unions.

3.4 DIELECTRIC FITTING INSTALLATION

- A. Install dielectric fittings in piping at connections of dissimilar metal piping and tubing.
- B. Dielectric Fittings for NPS 2 (DN 50) and Smaller: Use dielectric couplings.
- C. Dielectric Fittings for NPS 2-1/2 to NPS 4 (DN 65 to DN 100): Use dielectric flanges.
- D. Dielectric Fittings for NPS 5 (DN 125) and Larger: Use dielectric flange kits.

3.5 HANGER AND SUPPORT INSTALLATION

- A. Comply with requirements for seismic-restraint devices in Section 220548 "Vibration and Seismic Controls for Plumbing Piping and Equipment."
- B. Comply with requirements for pipe hanger, support products, and installation in Section 220529 "Hangers and Supports for Plumbing Piping and Equipment."
 - 1. Vertical Piping: MSS Type 8 or 42, clamps.
 - 2. Individual, Straight, Horizontal Piping Runs:
 - a. 100 Feet (30 m) and Less: MSS Type 1, adjustable, steel clevis hangers.
 - b. Longer Than 100 Feet (30 m): MSS Type 43, adjustable roller hangers.
 - c. Longer Than 100 Feet (30 m) if Indicated: MSS Type 49, spring cushion rolls.

3. Multiple, Straight, Horizontal Piping Runs 100 Feet (30 m) or Longer: MSS Type 44, pipe rolls. Support pipe rolls on trapeze.
 4. Base of Vertical Piping: MSS Type 52, spring hangers.
- C. Support vertical piping and tubing at base and at each floor.
- D. Rod diameter may be reduced one size for double-rod hangers, to a minimum of 3/8 inch (10 mm).
- E. Install hangers for copper tubing with the following maximum horizontal spacing and minimum rod diameters:
1. NPS 3/4 (DN 20) and Smaller: 60 inches (1500 mm) with 3/8-inch (10-mm) rod.
 2. NPS 1 and NPS 1-1/4 (DN 25 and DN 32): 72 inches (1800 mm) with 3/8-inch (10-mm) rod.
 3. NPS 1-1/2 and NPS 2 (DN 40 and DN 50): 96 inches (2400 mm) with 3/8-inch (10-mm) rod.
 4. NPS 2-1/2 (DN 65): 108 inches (2700 mm) with 1/2-inch (13-mm) rod.
- F. Install supports for vertical copper tubing every 10 feet (3 m).
- G. Install hangers for steel piping with the following maximum horizontal spacing and minimum rod diameters:
1. NPS 1-1/4 (DN 32) and Smaller: 84 inches (2100 mm) with 3/8-inch (10-mm) rod.
 2. NPS 1-1/2 (DN 40): 108 inches (2700 mm) with 3/8-inch (10-mm) rod.
 3. NPS 2 (DN 50): 10 feet (3 m) with 3/8-inch (10-mm) rod.
 4. NPS 2-1/2 (DN 65): 11 feet (3.4 m) with 1/2-inch (13-mm) rod.
- H. Install supports for vertical steel piping every 15 feet (4.5 m).
- I. Install hangers for stainless-steel piping with the following maximum horizontal spacing and minimum rod diameters:
1. NPS 1-1/4 (DN 32) and Smaller: 84 inches (2100 mm) with 3/8-inch (10-mm) rod.
 2. NPS 1-1/2 (DN 40): 108 inches (2700 mm) with 3/8-inch (10-mm) rod.
 3. NPS 2 (DN 50): 10 feet (3 m) with 3/8-inch (10-mm) rod.
 4. NPS 2-1/2 (DN 65): 11 feet (3.4 m) with 1/2-inch (13-mm) rod.
- J. Install supports for vertical stainless-steel piping every 15 feet (4.5 m).
- K. Install vinyl-coated hangers for CPVC piping with the following maximum horizontal spacing and minimum rod diameters:
1. NPS 1 (DN 25) and Smaller: 36 inches (900 mm) with 3/8-inch (10-mm) rod.
 2. NPS 1-1/4 to NPS 2 (DN 32 to DN 50): 48 inches (1200 mm) with 3/8-inch (10-mm) rod.
 3. NPS 2-1/2 to NPS 3-1/2 (DN 65 to DN 90): 48 inches (1200 mm) with 1/2-inch (13-mm) rod.
- L. Install supports for vertical CPVC piping every 60 inches (1500 mm) for NPS 1 (DN 25) and smaller, and every 72 inches (1800 mm) for NPS 1-1/4 (DN 32) and larger.

- M. Install vinyl-coated hangers for PVC piping with the following maximum horizontal spacing and minimum rod diameters:
 - 1. NPS 2 (DN 50) and Smaller: 48 inches (1200 mm) with 3/8-inch (10-mm) rod.
 - 2. NPS 2-1/2 to NPS 3-1/2 (DN 65 to DN 90): 48 inches (1200 mm) with 1/2-inch (13-mm) rod.
- N. Install supports for vertical PVC piping every 48 inches (1200 mm).
- O. Install vinyl-coated hangers for PP piping with the following maximum horizontal spacing and minimum rod diameters:
 - 1. NPS 1 (DN 25) and Smaller: 36 inches (900 mm) with 3/8-inch (10-mm) rod.
 - 2. NPS 1-1/4 to NPS 2 (DN 32 to DN 50): 48 inches (1200 mm) with 3/8-inch (10-mm) rod.
 - 3. NPS 2-1/2 to NPS 3-1/2 (DN 65 to DN 90): 48 inches (1200 mm) with 1/2-inch (13-mm) rod.
- P. Support piping and tubing not listed in this article according to MSS SP-69 and manufacturer's written instructions.

3.6 CONNECTIONS

- A. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. When installing piping adjacent to equipment and machines, allow space for service and maintenance.
- C. Connect domestic water piping to exterior water-service piping. Use transition fitting to join dissimilar piping materials.
- D. Connect domestic water piping to water-service piping with shutoff valve; extend and connect to the following:
 - 1. Plumbing Fixtures: Cold- and hot-water-supply piping in sizes indicated, but not smaller than that required by plumbing code.
 - 2. Equipment: Cold- and hot-water-supply piping as indicated, but not smaller than equipment connections. Provide shutoff valve and union for each connection. Use flanges instead of unions for NPS 2-1/2 (DN 65) and larger.

3.7 IDENTIFICATION

- A. Label pressure piping with system operating pressure.

3.8 FIELD QUALITY CONTROL

- A. Perform the following tests and inspections:
 - 1. Piping Inspections:

- a. Do not enclose, cover, or put piping into operation until it has been inspected and approved by authorities having jurisdiction.
 - b. During installation, notify authorities having jurisdiction at least one day before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction:
 - 1) Roughing-in Inspection: Arrange for inspection of piping before concealing or closing in after roughing in and before setting fixtures.
 - 2) Final Inspection: Arrange for authorities having jurisdiction to observe tests specified in "Piping Tests" Subparagraph below and to ensure compliance with requirements.
 - c. Reinspection: If authorities having jurisdiction find that piping will not pass tests or inspections, make required corrections and arrange for reinspection.
 - d. Reports: Prepare inspection reports and have them signed by authorities having jurisdiction.
2. Piping Tests:
- a. Fill domestic water piping. Check components to determine that they are not air bound and that piping is full of water.
 - b. Test for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired. If testing is performed in segments, submit a separate report for each test, complete with diagram of portion of piping tested.
 - c. Leave new, altered, extended, or replaced domestic water piping uncovered and unconcealed until it has been tested and approved. Expose work that was covered or concealed before it was tested.
 - d. Cap and subject piping to static water pressure of 50 psig (345 kPa) above operating pressure, without exceeding pressure rating of piping system materials. Isolate test source and allow it to stand for four hours. Leaks and loss in test pressure constitute defects that must be repaired.
 - e. Repair leaks and defects with new materials, and retest piping or portion thereof until satisfactory results are obtained.
 - f. Prepare reports for tests and for corrective action required.
- B. Domestic water piping will be considered defective if it does not pass tests and inspections.
- C. Prepare test and inspection reports.

3.9 ADJUSTING

- A. Perform the following adjustments before operation:
- 1. Close drain valves, hydrants, and hose bibbs.
 - 2. Open shutoff valves to fully open position.
 - 3. Open throttling valves to proper setting.
 - 4. Adjust balancing valves in hot-water-circulation return piping to provide adequate flow.
 - a. Manually adjust ball-type balancing valves in hot-water-circulation return piping to provide hot-water flow in each branch.
 - b. Adjust calibrated balancing valves to flows indicated.

5. Remove plugs used during testing of piping and for temporary sealing of piping during installation.
6. Remove and clean strainer screens. Close drain valves and replace drain plugs.
7. Remove filter cartridges from housings and verify that cartridges are as specified for application where used and are clean and ready for use.
8. Check plumbing specialties and verify proper settings, adjustments, and operation.

3.10 CLEANING

A. Clean and disinfect potable domestic water piping as follows:

1. Purge new piping and parts of existing piping that have been altered, extended, or repaired before using.
2. Use purging and disinfecting procedures prescribed by authorities having jurisdiction; if methods are not prescribed, use procedures described in either AWWA C651 or AWWA C652 or follow procedures described below:
 - a. Flush piping system with clean, potable water until dirty water does not appear at outlets.
 - b. Fill and isolate system according to either of the following:
 - 1) Fill system or part thereof with water/chlorine solution with at least 50 ppm (50 mg/L) of chlorine. Isolate with valves and allow to stand for 24 hours.
 - 2) Fill system or part thereof with water/chlorine solution with at least 200 ppm (200 mg/L) of chlorine. Isolate and allow to stand for three hours.
 - c. Flush system with clean, potable water until no chlorine is in water coming from system after the standing time.
 - d. Repeat procedures if biological examination shows contamination.
 - e. Submit water samples in sterile bottles to authorities having jurisdiction.

B. Clean non-potable domestic water piping as follows:

1. Purge new piping and parts of existing piping that have been altered, extended, or repaired before using.
2. Use purging procedures prescribed by authorities having jurisdiction or; if methods are not prescribed, follow procedures described below:
 - a. Flush piping system with clean, potable water until dirty water does not appear at outlets.
 - b. Submit water samples in sterile bottles to authorities having jurisdiction. Repeat procedures if biological examination shows contamination.

C. Prepare and submit reports of purging and disinfecting activities. Include copies of water-sample approvals from authorities having jurisdiction.

D. Clean interior of domestic water piping system. Remove dirt and debris as work progresses.

3.11 PIPING SCHEDULE

- A. Transition and special fittings with pressure ratings at least equal to piping rating may be used in applications below unless otherwise indicated.
- B. Flanges and unions may be used for aboveground piping joints unless otherwise indicated.
- C. Fitting Option: Extruded-tee connections and brazed joints may be used on aboveground copper tubing.
- D. Under-building-slab, domestic water, building-service piping, NPS 3 (DN 80) and smaller, shall be one of the following:
 - 1. Soft copper tube, ASTM B 88, Type K (ASTM B 88M, Type A); wrought-copper, solder-joint fittings; and brazed joints.
- E. Under-building-slab, domestic water piping, NPS 2 (DN 50) and smaller, shall be one of the following:
 - 1. Hard or soft copper tube, ASTM B 88, Type L (ASTM B 88M, Type B); wrought-copper, solder-joint fittings; and brazed joints.
- F. Aboveground domestic water piping, NPS 2 (DN 50) and smaller, shall be one of the following:
 - 1. Hard copper tube, ASTM B 88, Type L (ASTM B 88M, Type B); cast-copper, solder-joint fittings; and brazed joints.
 - 2. Hard copper tube, ASTM B 88, Type L (ASTM B 88M, Type B); copper pressure-seal-joint fittings; and pressure-sealed joints.
 - 3. Hard copper tube, ASTM B 88, Type L (ASTM B 88M, Type B); copper push-on-joint fittings; and push-on joints.
- G. Aboveground domestic water piping, NPS 2-1/2 to NPS 4 (DN 65 to DN 100), shall be one of the following:
 - 1. Hard copper tube, ASTM B 88, Type L (ASTM B 88M, Type B); cast-copper, solder-joint fittings; and brazed joints.
 - 2. Hard copper tube, ASTM B 88, Type L (ASTM B 88M, Type B); copper pressure-seal-joint fittings; and pressure-sealed joints.
 - 3. Hard copper tube, ASTM B 88, Type L (ASTM B 88M, Type B); grooved-joint, copper-tube appurtenances; and grooved joints.

3.12 VALVE SCHEDULE

- A. Drawings indicate valve types to be used. Where specific valve types are not indicated, the following requirements apply:
 - 1. Shutoff Duty: Use ball or gate valves for piping NPS 2 (DN 50) and smaller. Use butterfly, ball, or gate valves with flanged ends for piping NPS 2-1/2 (DN 65) and larger.
 - 2. Throttling Duty: Use ball or globe valves for piping NPS 2 (DN 50) and smaller. Use butterfly or ball valves with flanged ends for piping NPS 2-1/2 (DN 65) and larger.
 - 3. Hot-Water Circulation Piping, Balancing Duty: Calibrated balancing valves.
 - 4. Drain Duty: Hose-end drain valves.

- B. Use check valves to maintain correct direction of domestic water flow to and from equipment.
- C. Iron grooved-end valves may be used with grooved-end piping.

END OF SECTION 22 11 16

SECTION 22 11 19 - DOMESTIC WATER PIPING SPECIALTIES

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. Vacuum breakers.
 - 2. Water-hammer arresters.
 - 3. Air vents.
 - 4. Trap-seal primer valves.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For domestic water piping specialties.
 - 1. Include diagrams for power, signal, and control wiring.

1.4 INFORMATIONAL SUBMITTALS

- A. Field quality-control reports.

1.5 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For domestic water piping specialties to include in emergency, operation, and maintenance manuals.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR PIPING SPECIALTIES

- A. Potable-water piping and components shall comply with NSF 61 Annex G and NSF 14. Mark "NSF-pw" on plastic piping components.

2.2 PERFORMANCE REQUIREMENTS

- A. Minimum Working Pressure for Domestic Water Piping Specialties: 125 psig (860 kPa) unless otherwise indicated.

2.3 VACUUM BREAKERS

- A. Pipe-Applied, Atmospheric-Type Vacuum Breakers:
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. FEBCO.
 - b. Watts; a Watts Water Technologies company.
 - c. Zurn Industries, LLC.
 2. Standard: ASSE 1001.
 3. Size: NPS 1/4 to NPS 3 (DN 8 to DN 80), as required to match connected piping.
 4. Body: Bronze.
 5. Inlet and Outlet Connections: Threaded.
 6. Finish: Rough bronze.

2.4 WATER-HAMMER ARRESTERS

- A. Water-Hammer Arresters:
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. MIFAB, Inc.
 - b. Precision Plumbing Products.
 - c. Watts; a Watts Water Technologies company.
 - d. Zurn Industries, LLC.
 2. Standard: ASSE 1010 or PDI-WH 201.
 3. Type: Metal bellows Copper tube with piston.
 4. Size: ASSE 1010, Sizes AA and A through F, or PDI-WH 201, Sizes A through F.

2.5 AIR VENTS

- A. Welded-Construction Automatic Air Vents:
1. Body: Stainless steel.
 2. Pressure Rating: 150-psig (1035-kPa) minimum pressure rating.
 3. Float: Replaceable, corrosion-resistant metal.
 4. Mechanism and Seat: Stainless steel.

5. Size: NPS 3/8 (DN 10) minimum inlet.
6. Inlet and Vent Outlet End Connections: Threaded.

2.6 TRAP-SEAL PRIMER DEVICE

A. Supply-Type, Trap-Seal Primer Device:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Precision Plumbing Products.
 - b. Smith, Jay R. Mfg. Co.
 - c. Watts; a Watts Water Technologies company.
 - d. Zurn Industries, LLC.
2. Standard: ASSE 1018.
3. Pressure Rating: 125 psig (860 kPa) minimum.
4. Body: Bronze.
5. Inlet and Outlet Connections: NPS 1/2 (DN 15) threaded, union, or solder joint.
6. Gravity Drain Outlet Connection: NPS 1/2 (DN 15) threaded or solder joint.
7. Finish: Chrome plated, or rough bronze for units used with pipe or tube that is not chrome finished.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install backflow preventers in each water supply to mechanical equipment and systems and to other equipment and water systems that may be sources of contamination. Comply with authorities having jurisdiction.
- B. Install water-control valves with inlet and outlet shutoff valves and bypass with globe valve. Install pressure gages on inlet and outlet.
- C. Install water-hammer arresters in water piping according to PDI-WH 201.
- D. Install air vents at high points of water piping. Install drain piping and discharge onto floor drain.
- E. Install supply-type, trap-seal primer valves with outlet piping pitched down toward drain trap a minimum of 1 percent, and connect to floor-drain body, trap, or inlet fitting. Adjust valve for proper flow.
- F. Install drainage-type, trap-seal primer valves as lavatory trap with outlet piping pitched down toward drain trap a minimum of 1 percent, and connect to floor-drain body, trap, or inlet fitting.

3.2 LABELING AND IDENTIFYING

- A. Equipment Nameplates and Signs: Install engraved plastic-laminate equipment nameplate or sign on or near each of the following:
 - 1. Supply-type, trap-seal primer valves.
- 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.

3.3 FIELD QUALITY CONTROL

- A. Perform the following tests and inspections:
 - 1. Test each pressure vacuum breaker reduced-pressure-principle backflow preventer double-check, backflow-prevention assembly and double-check, detector-assembly backflow preventer according to authorities having jurisdiction and the device's reference standard.
- B. Domestic water piping specialties will be considered defective if they do not pass tests and inspections.
- C. Prepare test and inspection reports.

END OF SECTION 22 11 19

SECTION 22 13 16 - SANITARY WASTE AND VENT PIPING

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. Pipe, tube, and fittings.
 - 2. Specialty pipe fittings.
 - 3. Encasement for underground metal piping.

1.3 PERFORMANCE REQUIREMENTS

- A. Components and installation shall be capable of withstanding the following minimum working pressure unless otherwise indicated:
 - 1. Soil, Waste, and Vent Piping: 10-foot head of water (30 kPa).
- B. Seismic Performance: Soil, waste, and vent piping and support and installation shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For sovent drainage system. Include plans, elevations, sections, and details.

1.5 INFORMATIONAL SUBMITTALS

- A. Seismic Qualification Certificates: For waste and vent piping, accessories, and components, from manufacturer.
 - 1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
 - 2. Detailed description of piping anchorage devices on which the certification is based and their installation requirements.
- B. Field quality-control reports.

1.6 QUALITY ASSURANCE

- A. Piping materials shall bear label, stamp, or other markings of specified testing agency.
- B. Comply with NSF/ANSI 14, "Plastics Piping Systems Components and Related Materials," for plastic piping components. Include marking with "NSF-dwv" for plastic drain, waste, and vent piping and "NSF-sewer" for plastic sewer piping.

1.7 PROJECT CONDITIONS

- A. Interruption of Existing Sanitary Waste Service: Do not interrupt service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary service according to requirements indicated:
 - 1. Notify Owner no fewer than two days in advance of proposed interruption of sanitary waste service.
 - 2. Do not proceed with interruption of sanitary waste service without Owner's written permission.

PART 2 - PRODUCTS

2.1 PIPING MATERIALS

- A. Comply with requirements in "Piping Schedule" Article for applications of pipe, tube, fitting materials, and joining methods for specific services, service locations, and pipe sizes.

2.2 HUB-AND-SPIGOT, CAST-IRON SOIL PIPE AND FITTINGS

- A. Pipe and Fittings: ASTM A 74, Service and Extra Heavy class(es).
- B. Gaskets: ASTM C 564, rubber.
- C. Calking Materials: ASTM B 29, pure lead and oakum or hemp fiber.

2.3 HUBLESS, CAST-IRON SOIL PIPE AND FITTINGS

- A. Pipe and Fittings: ASTM A 888 or CISPI 301.
- B. Heavy-Duty, Hubless-Piping Couplings:
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. ANACO-Husky.
 - b. MIFAB, Inc.
 - c. Tyler Pipe; a subsidiary of McWane Inc.
 - 2. Standards: ASTM C 1277 and ASTM C 1540.

3. Description: Stainless-steel shield with stainless-steel bands and tightening devices; and ASTM C 564, rubber sleeve with integral, center pipe stop.

2.4 DUCTILE-IRON PIPE AND FITTINGS

A. Ductile-Iron, Mechanical-Joint Piping:

1. Ductile-Iron Pipe: AWWA C151/A21.51, with mechanical-joint bell and plain spigot end unless grooved or flanged ends are indicated.
2. Ductile-Iron Fittings: AWWA C110/A21.10, mechanical-joint, ductile- or gray-iron standard pattern or AWWA C153/A21.53, ductile-iron compact pattern.
3. Glands, Gaskets, and Bolts: AWWA C111/A21.11, ductile- or gray-iron glands, rubber gaskets, and steel bolts.

B. Ductile-Iron, Push-on-Joint Piping:

1. Ductile-Iron Pipe: AWWA C151/A21.51, with push-on-joint bell and plain spigot end unless grooved or flanged ends are indicated.
2. Ductile-Iron Fittings: AWWA C110/A21.10, push-on-joint ductile- or gray-iron standard pattern or AWWA C153/A21.53, ductile-iron compact pattern.
3. Gaskets: AWWA C111/A21.11, rubber.

C. Ductile-Iron, Grooved-Joint Piping:

1. Ductile-Iron Pipe: AWWA C151/A21.51 with round-cut-grooved ends according to AWWA C606.
2. Ductile-Iron-Pipe Appurtenances:
 - a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1) Anvil International.
 - 2) Smith-Cooper International.
 - 3) Victaulic Company.
 - b. Grooved-End, Ductile-Iron Fittings: ASTM A 536 ductile-iron castings with dimensions matching AWWA C110/A 21.10 ductile-iron pipe or AWWA C153/A 21.53 ductile-iron fittings and complying with AWWA C606 for grooved ends.
 - c. Grooved Mechanical Couplings for Ductile-Iron Pipe: ASTM F 1476, Type I. Include ferrous housing sections with continuous curved keys; EPDM-rubber center-leg gasket suitable for hot and cold water; and bolts and nuts.

2.5 SPECIALTY PIPE FITTINGS

A. Transition Couplings:

1. General Requirements: Fitting or device for joining piping with small differences in OD's or of different materials. Include end connections same size as and compatible with pipes to be joined.
2. Fitting-Type Transition Couplings: Manufactured piping coupling or specified piping system fitting.

3. Unshielded, Nonpressure Transition Couplings:
 - a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1) Dallas Specialty & Mfg. Co.
 - 2) Fernco Inc.
 - 3) Froet Industries LLC.
 - 4) Mission Rubber Company, LLC; a division of MCP Industries.
 - b. Standard: ASTM C 1173.
 - c. Description: Elastomeric, sleeve-type, reducing or transition pattern. Include shear ring and corrosion-resistant-metal tension band and tightening mechanism on each end.
 - d. Sleeve Materials:
 - 1) For Cast-Iron Soil Pipes: ASTM C 564, rubber.
4. Shielded, Nonpressure Transition Couplings:
 - a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1) Cascade Waterworks Mfg. Co.
 - 2) Mission Rubber Company, LLC; a division of MCP Industries.
 - b. Standard: ASTM C 1460.
 - c. Description: Elastomeric or rubber sleeve with full-length, corrosion-resistant outer shield and corrosion-resistant-metal tension band and tightening mechanism on each end.
5. Pressure Transition Couplings:
 - a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1) Cascade Waterworks Mfg. Co.
 - 2) Ford Meter Box Company, Inc. (The).
 - 3) JCM Industries, Inc.
 - 4) Smith, Jay R. Mfg. Co.
 - 5) Viking Johnson.
 - b. Standard: AWWA C219.
 - c. Description: Metal, sleeve-type same size as, with pressure rating at least equal to, and ends compatible with, pipes to be joined.
 - d. Center-Sleeve Material: Manufacturer's standard.
 - e. Gasket Material: Natural or synthetic rubber.
 - f. Metal Component Finish: Corrosion-resistant coating or material.

2.6 ENCASEMENT FOR UNDERGROUND METAL PIPING

- A. Standard: ASTM A 674 or AWWA C105/A 21.5.
- B. Material: Linear low-density polyethylene film of 0.008-inch (0.20-mm) or high-density, cross-laminated polyethylene film of 0.004-inch (0.10-mm) minimum thickness.

- C. Form: Sheet or tube.
- D. Color: Black or natural.

PART 3 - EXECUTION

3.1 PIPING INSTALLATION

- A. 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.
- B. Install piping in concealed locations unless otherwise indicated and except in equipment rooms and service areas.
- C. 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.
- D. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.
- E. Install piping to permit valve servicing.
- F. Install piping at indicated slopes.
- G. Install piping free of sags and bends.
- H. Install fittings for changes in direction and branch connections.
- I. Install piping to allow application of insulation.
- J. Install seismic restraints on piping. Comply with requirements for seismic-restraint devices specified in Section 220548 "Vibration and Seismic Controls for Plumbing Piping and Equipment."
- K. Make changes in direction for soil and waste drainage and vent piping using appropriate branches, bends, and long-sweep bends. Sanitary tees and short-sweep 1/4 bends may be used on vertical stacks if change in direction of flow is from horizontal to vertical. Use long-turn, double Y-branch and 1/8-bend fittings if two fixtures are installed back to back or side by side with common drain pipe. Straight tees, elbows, and crosses may be used on vent lines. Do not change direction of flow more than 90 degrees. Use proper size of standard increasers and reducers if pipes of different sizes are connected. Reducing size of drainage piping in direction of flow is prohibited.
- L. Lay buried building drainage piping beginning at low point of each system. Install true to grades and alignment indicated, with unbroken continuity of invert. Place hub ends of piping upstream. Install required gaskets according to manufacturer's written instructions for use of lubricants, cements, and other installation requirements. Maintain swab in piping and pull past each joint as completed.

- M. Install soil and waste drainage and vent piping at the following minimum slopes unless otherwise indicated:
 - 1. Building Sanitary Drain: 2 percent downward in direction of flow for piping NPS 3 (DN 80) and smaller; 2 percent downward in direction of flow for piping NPS 4 (DN 100) and larger.
 - 2. Horizontal Sanitary Drainage Piping: 2 percent downward in direction of flow.
 - 3. Vent Piping: 1 percent down toward vertical fixture vent or toward vent stack.
- N. Install cast-iron soil piping according to CISPI's "Cast Iron Soil Pipe and Fittings Handbook," Chapter IV, "Installation of Cast Iron Soil Pipe and Fittings."
 - 1. Install encasement on underground piping according to ASTM A 674 or AWWA C105/A 21.5.
- O. Install steel piping according to applicable plumbing code.
- P. Install stainless-steel piping according to ASME A112.3.1 and applicable plumbing code.
- Q. Install aboveground copper tubing according to CDA's "Copper Tube Handbook."
- R. Install engineered soil and waste drainage and vent piping systems as follows:
 - 1. Combination Waste and Vent: Comply with standards of authorities having jurisdiction.
 - 2. Reduced-Size Venting: Comply with standards of authorities having jurisdiction.
- S. Install underground, ductile-iron, force-main piping according to AWWA C600. Install buried piping inside building between wall and floor penetrations and connection to sanitary sewer piping outside building with restrained joints. Anchor pipe to wall or floor. Install thrust-block supports at vertical and horizontal offsets.
 - 1. Install encasement on piping according to ASTM A 674 or AWWA C105/A 21.5.
- T. Install underground, copper, force-main tubing according to CDA's "Copper Tube Handbook."
 - 1. Install encasement on piping according to ASTM A 674 or AWWA C105/A 21.5.
- U. Install force mains at elevations indicated.
- V. Plumbing Specialties:
 - 1. Install backwater valves in sanitary waster gravity-flow piping. Comply with requirements for backwater valves specified in Section 221319 "Sanitary Waste Piping Specialties."
 - 2. Install cleanouts at grade and extend to where building sanitary drains connect to building sanitary sewers in sanitary drainage gravity-flow piping. Install cleanout fitting with closure plug inside the building in sanitary drainage force-main piping. Comply with requirements for cleanouts specified in Section 221319 "Sanitary Waste Piping Specialties."
 - 3. Install drains in sanitary drainage gravity-flow piping. Comply with requirements for drains specified in Section 221319 "Sanitary Waste Piping Specialties."
- W. Do not enclose, cover, or put piping into operation until it is inspected and approved by authorities having jurisdiction.

- X. Install sleeves for piping penetrations of walls, ceilings, and floors. Comply with requirements for sleeves specified in Section 220517 "Sleeves and Sleeve Seals for Plumbing Piping."
- Y. Install sleeve seals for piping penetrations of concrete walls and slabs. Comply with requirements for sleeve seals specified in Section 220517 "Sleeves and Sleeve Seals for Plumbing Piping."
- Z. Install escutcheons for piping penetrations of walls, ceilings, and floors. Comply with requirements for escutcheons specified in Section 220518 "Escutcheons for Plumbing Piping."

3.2 JOINT CONSTRUCTION

- A. Join hub-and-spigot, cast-iron soil piping with gasket joints according to CISPI's "Cast Iron Soil Pipe and Fittings Handbook" for compression joints.
- B. Join hub-and-spigot, cast-iron soil piping with calked joints according to CISPI's "Cast Iron Soil Pipe and Fittings Handbook" for lead-and-oakum calked joints.
- C. Join hubless, cast-iron soil piping according to CISPI 310 and CISPI's "Cast Iron Soil Pipe and Fittings Handbook" for hubless-piping coupling joints.
- D. 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.
- E. Join stainless-steel pipe and fittings with gaskets according to ASME A112.3.1.
- F. Join copper tube and fittings with soldered joints according to ASTM B 828. Use ASTM B 813, water-flushable, lead-free flux and ASTM B 32, lead-free-alloy solder.
- G. Grooved Joints: Cut groove ends of pipe according to AWWA C606. Lubricate and install gasket over ends of pipes or pipe and fitting. Install coupling housing sections, over gasket, with keys seated in piping grooves. Install and tighten housing bolts.
- H. Flanged Joints: Align bolt holes. Select appropriate gasket material, size, type, and thickness. Install gasket concentrically positioned. Use suitable lubricants on bolt threads. Torque bolts in cross pattern.

3.3 SPECIALTY PIPE FITTING INSTALLATION

- A. Transition Couplings:
 - 1. Install transition couplings at joints of piping with small differences in OD's.
 - 2. In Drainage Piping: Unshielded, nonpressure transition couplings.
 - 3. In Aboveground Force Main Piping: Fitting-type transition couplings.

4. In Underground Force Main Piping:
 - a. NPS 1-1/2 (DN 40) and Smaller: Fitting-type transition couplings.
 - b. NPS 2 (DN 50) and Larger: Pressure transition couplings.

B. Dielectric Fittings:

1. Install dielectric fittings in piping at connections of dissimilar metal piping and tubing.
2. Dielectric Fittings for NPS 2 (DN 50) and Smaller: Use dielectric unions.
3. Dielectric Fittings for NPS 2-1/2 to NPS 4 (DN 65 to DN 100): Use dielectric flanges.
4. Dielectric Fittings for NPS 5 (DN 125) and Larger: Use dielectric flange kits.

3.4 HANGER AND SUPPORT INSTALLATION

- A. Comply with requirements for seismic-restraint devices specified in Section 220548 "Vibration and Seismic Controls for Plumbing Piping and Equipment."
- B. Comply with requirements for pipe hanger and support devices and installation specified in Section 220529 "Hangers and Supports for Plumbing Piping and Equipment."
 1. Install carbon-steel pipe hangers for horizontal piping in noncorrosive environments.
 2. Install stainless-steel pipe hangers for horizontal piping in corrosive environments.
 3. Install carbon-steel pipe support clamps for vertical piping in noncorrosive environments.
 4. Install stainless-steel pipe support clamps for vertical piping in corrosive environments.
 5. Vertical Piping: MSS Type 8 or Type 42, clamps.
 6. Install individual, straight, horizontal piping runs:
 - a. 100 Feet (30 m) and Less: MSS Type 1, adjustable, steel clevis hangers.
 - b. Longer Than 100 Feet (30 m): MSS Type 43, adjustable roller hangers.
 - c. Longer Than 100 Feet (30 m) if Indicated: MSS Type 49, spring cushion rolls.
 7. Multiple, Straight, Horizontal Piping Runs 100 Feet (30 m) or Longer: MSS Type 44, pipe rolls. Support pipe rolls on trapeze.
 8. Base of Vertical Piping: MSS Type 52, spring hangers.
- C. Support horizontal piping and tubing within 12 inches (300 mm) of each fitting, valve, and coupling.
- D. Support vertical piping and tubing at base and at each floor.
- E. Rod diameter may be reduced one size for double-rod hangers, with 3/8-inch (10-mm) minimum rods.
- F. Install hangers for cast-iron soil piping with the following maximum horizontal spacing and minimum rod diameters:
 1. NPS 1-1/2 and NPS 2 (DN 40 and DN 50): 60 inches (1500 mm) with 3/8-inch (10-mm) rod.
 2. NPS 3 (DN 80): 60 inches (1500 mm) with 1/2-inch (13-mm) rod.
 3. NPS 4 and NPS 5 (DN 100 and DN 125): 60 inches (1500 mm) with 5/8-inch (16-mm) rod.
 4. NPS 6 and NPS 8 (DN 150 and DN 200): 60 inches (1500 mm) with 3/4-inch (19-mm)

- G. Install supports for vertical cast-iron soil piping every 15 feet (4.5 m).
- H. Install hangers for steel piping with the following maximum horizontal spacing and minimum rod diameters:
 - 1. NPS 1-1/4 (DN 32): 84 inches (2100 mm) with 3/8-inch (10-mm) rod.
 - 2. NPS 1-1/2 (DN 40): 108 inches (2700 mm) with 3/8-inch (10-mm) rod.
 - 3. NPS 2 (DN 50): 10 feet (3 m) with 3/8-inch (10-mm) rod.
 - 4. NPS 2-1/2 (DN 65): 11 feet (3.4 m) with 1/2-inch (13-mm) rod.
 - 5. NPS 3 (DN 80): 12 feet (3.7 m) with 1/2-inch (13-mm) rod.
 - 6. NPS 4 and NPS 5 (DN 100 and DN 125): 12 feet (3.7 m) with 5/8-inch (16-mm) rod.
 - 7. NPS 6 and NPS 8 (DN 150 and DN 200): 12 feet (3.7 m) with 3/4-inch (19-mm) rod.
- I. Install supports for vertical steel piping every 15 feet (4.5 m).
- J. Install hangers for stainless-steel piping with the following maximum horizontal spacing and minimum rod diameters:
 - 1. NPS 2 (DN 50): 84 inches (2100 mm) with 3/8-inch (10-mm) rod.
 - 2. NPS 3 (DN 80): 96 inches (2400 mm) with 1/2-inch (13-mm) rod.
 - 3. NPS 4 (DN 100): 108 inches (2700 mm) with 1/2-inch (13-mm) rod.
 - 4. NPS 6 (DN 150): 10 feet (3 m) with 5/8-inch (16-mm) rod.
- K. Install supports for vertical stainless-steel piping every 10 feet (3 m).
- L. Install hangers for copper tubing with the following maximum horizontal spacing and minimum rod diameters:
 - 1. NPS 1-1/4 (DN 32): 72 inches (1800 mm) with 3/8-inch (10-mm) rod.
 - 2. NPS 1-1/2 and NPS 2 (DN 40 and DN 50): 96 inches (2400 mm) with 3/8-inch (10-mm) rod.
 - 3. NPS 2-1/2 (DN 65): 108 inches (2700 mm) with 1/2-inch (13-mm) rod.
 - 4. NPS 3 and NPS 5 (DN 80 and DN 125): 10 feet (3 m) with 1/2-inch (13-mm) rod.
 - 5. NPS 6 (DN 150): 10 feet (3 m) with 5/8-inch (16-mm) rod.
- M. Install supports for vertical copper tubing every 10 feet (3 m).
- N. Support piping and tubing not listed above according to MSS SP-69 and manufacturer's written instructions.

3.5 CONNECTIONS

- A. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Connect soil and waste piping to exterior sanitary sewerage piping. Use transition fitting to join dissimilar piping materials.
- C. Connect drainage and vent piping to the following:
 - 1. Plumbing Fixtures: Connect drainage piping in sizes indicated, but not smaller than required by plumbing code.

2. Plumbing Fixtures and Equipment: Connect atmospheric vent piping in sizes indicated, but not smaller than required by authorities having jurisdiction.
 3. Plumbing Specialties: Connect drainage and vent piping in sizes indicated, but not smaller than required by plumbing code.
 4. Install test tees (wall cleanouts) in conductors near floor and floor cleanouts with cover flush with floor.
 5. Install horizontal backwater valves with cleanout cover flush with floor.
 6. Comply with requirements for backwater valves cleanouts and drains specified in Section 221319 "Sanitary Waste Piping Specialties."
 7. Equipment: Connect drainage piping as indicated. Provide shutoff valve if indicated and union for each connection. Use flanges instead of unions for connections NPS 2-1/2 (DN 65) and larger.
- D. Where installing piping adjacent to equipment, allow space for service and maintenance of equipment.
- E. Make connections according to the following unless otherwise indicated:
1. Install unions, in piping NPS 2 (DN 50) and smaller, adjacent to each valve and at final connection to each piece of equipment.
 2. 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.

3.6 FIELD QUALITY CONTROL

- A. During installation, notify authorities having jurisdiction at least 24 hours before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction.
1. Roughing-in Inspection: Arrange for inspection of piping before concealing or closing-in after roughing-in and before setting fixtures.
 2. Final Inspection: Arrange for final inspection by authorities having jurisdiction to observe tests specified below and to ensure compliance with requirements.
- B. Reinspection: If authorities having jurisdiction find that piping will not pass test or inspection, make required corrections and arrange for reinspection.
- C. Reports: Prepare inspection reports and have them signed by authorities having jurisdiction.
- D. Test sanitary drainage and vent piping according to procedures of authorities having jurisdiction or, in absence of published procedures, as follows:
1. Test for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired. If testing is performed in segments, submit separate report for each test, complete with diagram of portion of piping tested.
 2. Leave uncovered and unconcealed new, altered, extended, or replaced drainage and vent piping until it has been tested and approved. Expose work that was covered or concealed before it was tested.
 3. Roughing-in Plumbing Test Procedure: Test drainage and vent piping except outside leaders on completion of roughing-in. Close openings in piping system and fill with water to point of overflow, but not less than 10-foot head of water (30 kPa). From 15 minutes before inspection starts to completion of inspection, water level must not drop. Inspect joints for leaks.

4. Finished Plumbing Test Procedure: After plumbing fixtures have been set and traps filled with water, test connections and prove they are gastight and watertight. Plug vent-stack openings on roof and building drains where they leave building. Introduce air into piping system equal to pressure of 1-inch wg (250 Pa). Use U-tube or manometer inserted in trap of water closet to measure this pressure. Air pressure must remain constant without introducing additional air throughout period of inspection. Inspect plumbing fixture connections for gas and water leaks.
 5. Repair leaks and defects with new materials and retest piping, or portion thereof, until satisfactory results are obtained.
 6. Prepare reports for tests and required corrective action.
- E. Test force-main piping according to procedures of authorities having jurisdiction or, in absence of published procedures, as follows:
1. Leave uncovered and unconcealed new, altered, extended, or replaced force-main piping until it has been tested and approved. Expose work that was covered or concealed before it was tested.
 2. Cap and subject piping to static-water pressure of 50 psig (345 kPa) above operating pressure, without exceeding pressure rating of piping system materials. Isolate test source and allow to stand for four hours. Leaks and loss in test pressure constitute defects that must be repaired.
 3. Repair leaks and defects with new materials and retest piping, or portion thereof, until satisfactory results are obtained.
 4. Prepare reports for tests and required corrective action.

3.7 CLEANING AND PROTECTION

- A. Clean interior of piping. Remove dirt and debris as work progresses.
- B. Protect drains during remainder of construction period to avoid clogging with dirt and debris and to prevent damage from traffic and construction work.
- C. Place plugs in ends of uncompleted piping at end of day and when work stops.

3.8 PIPING SCHEDULE

- A. Flanges and unions may be used on aboveground pressure piping unless otherwise indicated.
- B. Aboveground, soil and waste piping NPS 4 (DN 100) and smaller shall be any of the following:
 1. Service class, cast-iron soil pipe and fittings; gaskets; and gasketed joints.
 2. Hubless, cast-iron soil pipe and fittings and solvent stack fittings; CISPI heavy-duty hubless-piping couplings; and coupled joints.
 3. Copper DWV tube, copper drainage fittings, and soldered joints.
 4. Dissimilar Pipe-Material Couplings: Unshielded, nonpressure transition couplings.
- C. Aboveground, soil and waste piping NPS 5 (DN 125) and larger shall be any of the following:
 1. Service class, cast-iron soil pipe and fittings; gaskets; and gasketed joints.
 2. Hubless, cast-iron soil pipe and fittings and solvent stack fittings; CISPI heavy-duty hubless-piping couplings; and coupled joints.

3. Dissimilar Pipe-Material Couplings: Unshielded, nonpressure transition couplings.
- D. Underground, soil, waste, and vent piping NPS 4 (DN 100) and smaller shall be any of the following:
1. Extra Heavy Service class, cast-iron soil piping; gaskets; and gasketed joints.
 2. Hubless, cast-iron soil pipe and fittings; CISPI heavy-duty cast-iron hubless-piping couplings; and coupled joints.
 3. Dissimilar Pipe-Material Couplings: Unshielded, nonpressure transition couplings.
- E. Underground, soil and waste piping NPS 5 (DN 125) and larger shall be any of the following:
1. Extra Heavy Service class, cast-iron soil piping; gaskets; and gasketed joints.
 2. Hubless, cast-iron soil pipe and fittings; CISPI heavy-duty cast-iron hubless-piping couplings; coupled joints.
 3. Dissimilar Pipe-Material Couplings: Unshielded, nonpressure transition couplings.

END OF SECTION 22 13 16

SECTION 22 13 19 - SANITARY WASTE PIPING SPECIALTIES

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. Cleanouts.
 - 2. Floor drains.
 - 3. Air-admittance valves.
 - 4. Through-penetration firestop assemblies.
 - 5. Miscellaneous sanitary drainage piping specialties.
 - 6. Flashing materials.

1.3 DEFINITIONS

- A. ABS: Acrylonitrile-butadiene-styrene plastic.
- B. FOG: Fats, oils, and greases.
- C. FRP: Fiberglass-reinforced plastic.
- D. HDPE: High-density polyethylene plastic.
- E. PE: Polyethylene plastic.
- F. PP: Polypropylene plastic.
- G. PVC: Polyvinyl chloride plastic.

1.4 INFORMATIONAL SUBMITTALS

- A. Manufacturer Seismic Qualification Certification: Submit certification that grease interceptors, accessories, and components will withstand seismic forces defined in Section 220548 "Vibration and Seismic Controls for Plumbing Piping and Equipment." Include the following:
 - 1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.

- a. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified."
 - b. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified and the unit will be fully operational after the seismic event."
 - 2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
 - 3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.
- B. Field quality-control reports.
- 1.5 CLOSEOUT SUBMITTALS
- A. Operation and Maintenance Data: For drainage piping specialties to include in emergency, operation, and maintenance manuals.
- 1.6 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.
- 1.7 COORDINATION
- A. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Section 033000 "Cast-in-Place Concrete."
- B. Coordinate size and location of roof penetrations.

PART 2 - PRODUCTS

2.1 CLEANOUTS

- A. Exposed Metal Cleanouts:
 - 1. ASME A112.36.2M, Cast-Iron Cleanouts:

- 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) Josam Company.
 - 2) Smith, Jay R. Mfg. Co.
 - 3) Watts; a Watts Water Technologies company.
 - 4) Zurn Industries, LLC.
 2. Standard: ASME A112.36.2M for cast iron ASME A112.3.1 for stainless steel for cleanout test tee.
 3. Size: Same as connected drainage piping
 4. Body Material: Hub-and-spigot, cast-iron soil pipe T-branch Hubless, cast-iron soil pipe test tee as required to match connected piping.
 5. Closure: Countersunk Countersunk or raised-head Raised-head, brass cast-iron plug.
 6. Closure Plug Size: Same as or not more than one size smaller than cleanout size.
 7. Closure: Stainless-steel plug with seal.
- B. Metal Floor Cleanouts:
1. ASME A112.36.2M, Cast-Iron Cleanouts:
 - a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1) Josam Company.
 - 2) Smith, Jay R. Mfg. Co.
 - 3) Watts; a Watts Water Technologies company.
 - 4) Zurn Industries, LLC.
 2. Standard: ASME A112.36.2M for adjustable housing cast-iron soil pipe with cast-iron ferrule heavy-duty, adjustable housing threaded, adjustable housing cleanout.
 3. Size: Same as connected branch.
 4. Type: Adjustable housing Cast-iron soil pipe with cast-iron ferrule Heavy-duty, adjustable housing Threaded, adjustable housing.
 5. Body or Ferrule: Cast iron Stainless steel.
 6. Clamping Device: Required.
 7. Outlet Connection: Inside call Spigot Threaded.
 8. Closure: Brass plug with straight threads and gasket Brass plug with tapered threads Cast-iron plug.
 9. Adjustable Housing Material: Cast iron with threads set-screws or other device.
 10. Frame and Cover Material and Finish: Nickel-bronze, copper alloy Painted cast iron Polished bronze Stainless steel.
 11. Frame and Cover Shape: Round.
 12. Top Loading Classification: Heavy Medium Duty.
 13. Riser: ASTM A 74, Service class, cast-iron drainage pipe fitting and riser to cleanout.
 14. Standard: ASME A112.3.1.
 15. Size: Same as connected branch.
 16. Housing: Stainless steel.
 17. Closure: Stainless steel with seal.
 18. Riser: Stainless-steel drainage pipe fitting to cleanout.

C. Cast-Iron Wall Cleanouts:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Josam Company.
 - b. Smith, Jay R. Mfg. Co.
 - c. Watts; a Watts Water Technologies company.
 - d. Zurn Industries, LLC.
2. Standard: ASME A112.36.2M. Include wall access.
3. Size: Same as connected drainage piping.
4. Body: Hub-and-spigot, cast-iron soil pipe T-branch Hubless, cast-iron soil pipe test tee as required to match connected piping.
5. Closure: Countersunk Countersunk or raised-head Raised-head, drilled-and-threaded brass cast-iron plug.
6. Closure Plug Size: Same as or not more than one size smaller than cleanout size.
7. Wall Access: Round, deep, chrome-plated bronze flat, chrome-plated brass or stainless-steel cover plate with screw.
8. Wall Access: Round, nickel-bronze, copper-alloy, or stainless-steel wall-installation frame and cover.

2.2 FLOOR DRAINS

A. Cast-Iron Floor Drains:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Smith, Jay R. Mfg. Co.
 - b. Watts; a Watts Water Technologies company.
 - c. Zurn Industries, LLC.
2. Standard: ASME A112.6.3.
3. Pattern: Floor Sanitary drain.
4. Body Material: Gray iron.
5. Seepage Flange: Required.
6. Anchor Flange: Required.
7. Clamping Device: Required.
8. Outlet: Bottom.
9. Backwater Valve: Drain-outlet type Integral, ASME A112.14.1, swing-check type.
10. Coating on Interior and Exposed Exterior Surfaces: Not required.
11. Top or Strainer Material: Bronze.
12. Top of Body and Strainer Finish: Polished bronze.
13. Top Shape: Round Square.
14. Dimensions of Top or Strainer: See floor plans.
15. Top Loading Classification: Medium Duty.
16. Funnel: Not required.

17. Inlet Fitting: Gray iron, with threaded inlet and threaded or spigot outlet, and trap-seal primer valve connection.
18. Trap Material: Cast iron.
19. Trap Pattern: Standard P-trap.
20. Trap Features: Not required.

2.3 THROUGH-PENETRATION FIRESTOP ASSEMBLIES

- A. Through-Penetration Firestop Assemblies:
- a. ProSet Systems Inc.
 2. Standard: UL 1479 assembly of sleeve and stack fitting with firestopping 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.

2.4 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 (DN 15) side inlet.
- B. Air-Gap Fittings:
1. Standard: ASME A112.1.2, for fitting designed to ensure fixed, positive air gap between installed inlet and outlet piping.
 2. Body: Bronze or cast iron.
 3. Inlet: Opening in top of body.
 4. Outlet: Larger than inlet.
 5. Size: Same as connected waste piping and with inlet large enough for associated indirect waste piping.
- C. 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 (25 mm) 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.
- D. Vent Caps:
1. Description: Cast-iron body with threaded or hub inlet and vandal-proof design. Include vented hood and setscrews to secure to vent pipe.

2. Size: Same as connected stack vent or vent stack.

E. Frost-Resistant Vent Terminals:

1. Description: Manufactured or shop-fabricated assembly constructed of copper, lead-coated copper, or galvanized steel.
2. Design: To provide 1-inch (25-mm) enclosed air space between outside of pipe and inside of flashing collar extension, with counterflashing.

F. Expansion Joints:

1. Standard: ASME A112.21.2M.
2. Body: Cast iron with bronze sleeve, packing, and gland.
3. End Connections: Matching connected piping.
4. Size: Same as connected soil, waste, or vent piping.

2.5 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. (20-kg/sq. m), 0.0625-inch (1.6-mm) thickness.
2. Vent Pipe Flashing: 3.0-lb/sq. ft. (15-kg/sq. m), 0.0469-inch (1.2-mm) thickness.
3. Burning: 6-lb/sq. ft. (30-kg/sq. m), 0.0938-inch (2.4-mm) 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. (3.7 kg/sq. m or 0.41-mm thickness).
2. Vent Pipe Flashing: 8 oz./sq. ft. (2.5 kg/sq. m or 0.27-mm thickness).

C. Zinc-Coated Steel Sheet: ASTM A 653/A 653M, with 0.20 percent copper content and 0.04-inch (1.01-mm) minimum thickness, unless otherwise indicated. Include G90 (Z275) hot-dip galvanized, mill-phosphatized finish for painting if indicated.

D. Elastic Membrane Sheet: ASTM D 4068, flexible, chlorinated polyethylene, 40-mil (1.01-mm) 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

3.1 INSTALLATION

- A. 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 (DN 100). Use NPS 4 (DN 100) for larger drainage piping unless larger cleanout is indicated.
 - 2. Locate at each change in direction of piping greater than 45 degrees.
 - 3. Locate at minimum intervals of 50 feet (15 m) for piping NPS 4 (DN 100) and smaller and 100 feet (30 m) for larger piping.
 - 4. Locate at base of each vertical soil and waste stack.
- B. For floor cleanouts for piping below floors, install cleanout deck plates with top flush with finished floor.
- C. For cleanouts located in concealed piping, install cleanout wall access covers, of types indicated, with frame and cover flush with finished wall.
- D. 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 (750 mm) or Less: Equivalent to 1 percent slope, but not less than 1/4-inch (6.35-mm) total depression.
 - b. Radius, 30 to 60 Inches (750 to 1500 mm): Equivalent to 1 percent slope.
 - c. Radius, 60 Inches (1500 mm) or Larger: Equivalent to 1 percent slope, but not greater than 1-inch (25-mm) 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.
- E. Assemble and install ASME A112.3.1, stainless-steel channel drainage systems according to ASME A112.3.1. Install on support devices so that top will be flush with surface.
- F. Assemble non-ASME A112.3.1, stainless-steel channel drainage system components according to manufacturer's written instructions. Install on support devices so that top will be flush with adjacent surface.
- G. Assemble plastic channel drainage system components according to manufacturer's written instructions. Install on support devices so that top will be flush with adjacent surface.
- H. Install fixture air-admittance valves on fixture drain piping.
- I. Install air-admittance-valve wall boxes recessed in wall.

- J. Assemble open drain fittings and install with top of hub 1 inch (25 mm) above floor.
- K. Install deep-seal traps on floor drains and other waste outlets, if indicated.
- L. Install floor-drain, trap-seal primer fittings on inlet to floor drains that require trap-seal primer connection.
 - 1. Exception: Fitting may be omitted if trap has trap-seal primer connection.
 - 2. Size: Same as floor drain inlet.
- M. Install air-gap fittings on draining-type backflow preventers and on indirect-waste piping discharge into sanitary drainage system.
- N. Install sleeve flashing device with each riser and stack passing through floors with waterproof membrane.
- O. Install expansion joints on vertical stacks and conductors. Position expansion joints for easy access and maintenance.
- P. Install wood-blocking reinforcement for wall-mounting-type specialties.
- Q. Install traps on plumbing specialty drain outlets. Omit traps on indirect wastes unless trap is indicated.

3.2 CONNECTIONS

- A. Comply with requirements in Section 221316 "Sanitary Waste and Vent Piping" for piping installation requirements. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Install piping adjacent to equipment to allow service and maintenance.

3.3 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. (30-kg/sq. m), 0.0938-inch (2.4-mm) thickness or thicker. Solder joints of lead sheets 4.0-lb/sq. ft. (20-kg/sq. m), 0.0625-inch (1.6-mm) 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 (250 mm), and skirt or flange extending at least 8 inches (200 mm) around pipe.
 - 2. Sleeve Flashing: Flat sheet, with skirt or flange extending at least 8 inches (200 mm) around sleeve.

- 3. Embedded Specialty Flashing: Flat sheet, with skirt or flange extending at least 8 inches (200 mm) 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. Extend flashing up vent pipe passing through roofs and turn down into pipe, or secure flashing into cast-iron sleeve having calking recess.

3.4 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 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.

3.5 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.

END OF SECTION 22 13 19

SECTION 22 4213.13 - COMMERCIAL WATER CLOSETS

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. Water closets.
 - 2. Flushometer valves.
 - 3. Toilet seats.
 - 4. Supports.
- B. Related Requirements:
 - 1. Section 224600 "Security Plumbing Fixtures" for security water closets.

1.3 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 water closets.
 - 2. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.
- B. Shop Drawings: Include diagrams for power, signal, and control wiring.

1.4 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For flushometer valves and electronic sensors to include in operation and maintenance manuals.

1.5 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Flushometer-Valve Repair Kits: Equal to 10 percent of amount of each type installed, but no fewer than one of each type.

PART 2 - PRODUCTS

2.1 WALL-MOUNTED WATER CLOSETS- WC-1

A. Water Closets: Wall mounted, top spud.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide or comparable product by one of the following:
 - a. American Standard America.
 - b. Kohler Co.
 - c. TOTO USA, INC.
 - d. Zurn Industries, LLC; Commercial Brass and Fixtures.
3. Bowl:
 - a. Standards: ASME A112.19.2/CSA B45.1 and ASME A112.19.5.
 - b. Material: Vitreous china.
 - c. Type: Siphon jet.
 - d. Style: Flushometer valve.
 - e. Height: ADA Compliant, refer to drawings for height requirements.
 - f. Rim Contour: Elongated.
 - g. Water Consumption: 1.28 gal. (4.8 L) per flush.
 - h. Spud Size and Location: NPS 1-1/2 (DN 40); top.
4. Flushometer Valve:
5. Toilet Seat:
6. Support:
 - a. Description: Waste-fitting assembly as required to match drainage piping material and arrangement with faceplates, couplings gaskets, and feet; bolts and hardware matching fixture. Include additional extension coupling, faceplate, and feet for installation in wide pipe space.
 - b. Water-Closet Mounting Height: ADA Compliant according to ICC/ANSI A117.1 as applicable.
 - c. Refer to ADA and 2016 CBC chapter 11B for support requirements.

2.2 FLUSHOMETER VALVES

A. Solenoid-Actuator, Diaphragm Flushometer Valves:

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. Sloan Valve Company.
 - b. Zurn Industries, LLC.

2. Standard: ASSE 1037.
3. Minimum Pressure Rating: 125 psig (860 kPa).
4. Features: Include integral check stop and backflow-prevention device.
5. Material: Brass body with corrosion-resistant components.
6. Exposed Flushometer-Valve Finish: Chrome plated.
7. Panel Finish: Chrome plated or stainless steel.
8. Style: Exposed.
9. Actuator: Solenoid complying with UL 1951, and listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
10. Trip Mechanism: Hard-wired electronic sensor complying with UL 1951, and listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
11. Consumption: 1.28 gal. (4.8 L) per flush.
12. Minimum Inlet: NPS 1 (DN 25).
13. Minimum Outlet: NPS 1-1/4 (DN 32).

2.3 TOILET SEATS

A. Toilet Seats:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. American Standard America.
 - b. Bemis Manufacturing Company.
 - c. Kohler Co.
 - d. Olsonite Seat Co.
2. Standard: IAPMO/ANSI Z124.5.
3. Material: Plastic.
4. Type: Commercial (Standard).
5. Shape: Elongated rim, open front.
6. Hinge: Check Self-sustaining, check.
7. Hinge Material: Noncorroding metal.
8. Seat Cover: Not required.
9. Color: White.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine roughing-in of water supply and sanitary drainage and vent piping systems to verify actual locations of piping connections before water-closet installation.
- B. Examine walls and floors for suitable conditions where water closets will be installed.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Water-Closet Installation:

1. Install level and plumb according to roughing-in drawings.
2. Install floor-mounted water closets on bowl-to-drain connecting fitting attachments to piping or building substrate.
3. Install accessible, wall-mounted water closets at mounting height for ADA Compliance, according to ICC/ANSI A117.1.

B. Support Installation:

1. Install supports, affixed to building substrate, for floor-mounted, back-outlet water closets.
2. Use carrier supports with waste-fitting assembly and seal.
3. Install floor-mounted, back-outlet water closets attached to building floor substrate, onto waste-fitting seals; and attach to support.

C. Flushometer-Valve Installation:

1. Install flushometer-valve, water-supply fitting on each supply to each water closet.
2. Attach supply piping to supports or substrate within pipe spaces behind fixtures.
3. Install lever-handle flushometer valves for accessible water closets with handle mounted on open side of water closet.
4. Install actuators in locations that are easy for people with disabilities to reach.
5. Install fresh batteries in battery-powered, electronic-sensor mechanisms.

D. Install toilet seats on water closets.

E. Wall Flange and Escutcheon Installation:

1. Install wall flanges or escutcheons at piping wall penetrations in exposed, finished locations and within cabinets and millwork.
2. Install deep-pattern escutcheons if required to conceal protruding fittings.
3. Comply with escutcheon requirements specified in Section 220518 "Escutcheons for Plumbing Piping."

F. Joint Sealing:

1. Seal joints between water closets and walls and floors using sanitary-type, one-part, mildew-resistant silicone sealant.
2. Match sealant color to water-closet color.
3. Comply with sealant requirements specified in Section 079200 "Joint Sealants."

3.3 CONNECTIONS

- A. Connect water closets with water supplies and soil, waste, and vent piping. Use size fittings required to match water closets.
- B. Comply with water piping requirements specified in Section 221116 "Domestic Water Piping."
- C. Comply with soil and waste piping requirements specified in Section 221316 "Sanitary Waste and Vent Piping."

- D. Where installing piping adjacent to water closets, allow space for service and maintenance.

3.4 ADJUSTING

- A. Operate and adjust water closets and controls. Replace damaged and malfunctioning water closets, fittings, and controls.
- B. Adjust water pressure at flushometer valves to produce proper flow.
- C. Install fresh batteries in battery-powered, electronic-sensor mechanisms.

3.5 CLEANING AND PROTECTION

- A. Clean water closets and fittings with manufacturers' recommended cleaning methods and materials.
- B. Install protective covering for installed water closets and fittings.
- C. Do not allow use of water closets for temporary facilities unless approved in writing by Owner.

END OF SECTION 22 42 13.13

END OF SECTION 22 42 13.13

SECTION 22 42 16.13 - COMMERCIAL LAVATORIES

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. Lavatories.
 - 2. Faucets.
- B. Related Requirements:
 - 1. Section 224600 "Security Plumbing Fixtures" for security lavatories.

1.3 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 lavatories.
 - 2. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.
- B. Shop Drawings: Include diagrams for power, signal, and control wiring of automatic faucets.

1.4 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Counter cutout templates for mounting of counter-mounted lavatories.

1.5 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For lavatories and faucets to include in operation and maintenance manuals.
 - 1. In addition to items specified in Section 017823 "Operation and Maintenance Data," include the following:
 - a. Servicing and adjustments of automatic faucets.

1.6 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. 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.

PART 2 - PRODUCTS

2.1 VITREOUS-CHINA, WALL-MOUNTED LAVATORIES – L-1

- A. Lavatory: Ledge back, vitreous china, wall mounted.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. American Standard America.
 - b. Kohler Co.
 - 2. Fixture:
 - a. Standard: ASME A112.19.2/CSA B45.1.
 - b. Type: For wall hanging.
 - c. Nominal Size: 21-3/4" x 18-1/4".
 - d. Faucet-Hole Punching: Three hole.
 - e. Faucet-Hole Location: Top.
 - f. Color: White.
 - g. Mounting Material: Chair carrier.
 - 3. Faucet: Solid-Brass, Automatically Operated Lavatory Faucets.
 - 4. Support: ASME A112.6.1M, Type I, exposed-arm lavatory carrier, Type II, concealed-arm lavatory carrier, Type II, concealed-arm lavatory carrier with escutcheons.

2.2 SOLID-BRASS, AUTOMATICALLY OPERATED LAVATORY FAUCETS

- A. NSF Standard: Comply with NSF/ANSI 61 Annex G, "Drinking Water System Components - Health Effects," for faucet materials that will be in contact with potable water.
- B. Lavatory Faucets: Automatic-type, battery-operated, electronic-sensor-operated, mixing, solid-brass valve.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Chicago Faucets; Geberit Company.
 - b. Kohler Co.

- c. Sloan Valve Company.
- 2. Standards: ASME A112.18.1/CSA B125.1 and UL 1951.
- 3. 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.
- 4. General: Include hot- and cold-water indicators; coordinate faucet inlets with supplies and fixture hole punchings; coordinate outlet with spout and fixture receptor.
- 5. Body Type: Single hole.
- 6. Body Material: Commercial, solid brass.
- 7. Finish: Polished chrome plate.
- 8. Maximum Flow Rate: 0.5 gpm (1.5 L/min.).
- 9. Mounting Type: Deck, concealed.
- 10. Spout: Rigid type.
- 11. Spout Outlet: Aerator.
- 12. Drain: Not part of faucet.

2.3 SUPPLY FITTINGS

- A. NSF Standard: Comply with NSF/ANSI 61 Annex G, "Drinking Water System Components - Health Effects," for supply-fitting materials that will be in contact with potable water.
- B. Standard: ASME A112.18.1/CSA B125.1.
- C. Supply Piping: Chrome-plated-brass pipe or chrome-plated copper tube matching water-supply piping size. Include chrome-plated-brass or stainless-steel wall flange.
- D. Supply Stops: Chrome-plated-brass, one-quarter-turn, ball-type or compression valve with inlet connection matching supply piping.
- E. Operation: Loose key.
- F. Risers:
 - 1. NPS 3/8 (DN 10).
 - 2. Chrome-plated, rigid-copper-pipe and brass straight or offset tailpieces ASME A112.18.6, braided- or corrugated-stainless-steel, flexible hose riser.

2.4 WASTE FITTINGS

- A. Standard: ASME A112.18.2/CSA B125.2.
- B. Drain: Grid type with NPS 1-1/4 (DN 32) offset and straight tailpiece.
- C. Trap:
 - 1. Size: NPS 1-1/2 by NPS 1-1/4 (DN 40 by DN 32).
 - 2. Material: Chrome-plated, two-piece, cast-brass trap and swivel elbow with 0.032-inch- (0.83-mm-) thick brass tube to wall two-piece, cast-brass trap and ground-joint swivel

- elbow with 0.032-inch- (0.83-mm-) thick brass tube to wall one-piece, cast-brass trap with swivel 0.029-inch- (73-mm-) thick tubular brass wall bend; and chrome-plated, brass or steel wall flange.
3. Material: Stainless-steel, two-piece trap and swivel elbow with 0.012-inch- (0.30-mm-) thick stainless-steel tube to wall; and stainless-steel wall flange.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine roughing-in of water supply and sanitary drainage and vent piping systems to verify actual locations of piping connections before lavatory installation.
- B. Examine counters and walls for suitable conditions where lavatories will be installed.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install lavatories level and plumb according to roughing-in drawings.
- B. Install supports, affixed to building substrate, for wall-mounted lavatories.
- C. Install accessible wall-mounted lavatories at ADA compliant mounting height for people with disabilities or the elderly, according to ICC/ANSI A117.1.
- D. Install wall flanges or escutcheons at piping wall penetrations in exposed, finished locations. Use deep-pattern escutcheons if required to conceal protruding fittings. Comply with escutcheon requirements specified in Section 220518 "Escutcheons for Plumbing Piping."
- E. Seal joints between lavatories, counters, and walls using sanitary-type, one-part, mildew-resistant silicone sealant. Match sealant color to fixture color. Comply with sealant requirements specified in Section 079200 "Joint Sealants."
- F. Install protective shielding pipe covers and enclosures on exposed supplies and waste piping of accessible lavatories. Comply with requirements in Section 220719 "Plumbing Piping Insulation."

3.3 CONNECTIONS

- A. Connect fixtures with water supplies, stops, and risers, and with traps, soil, waste, and vent piping. Use size fittings required to match fixtures.
- B. Comply with water piping requirements specified in Section 221116 "Domestic Water Piping."
- C. Comply with soil and waste piping requirements specified in Section 221316 "Sanitary Waste and Vent Piping."

3.4 ADJUSTING

- A. Operate and adjust lavatories and controls. Replace damaged and malfunctioning lavatories, fittings, and controls.
- B. Adjust water pressure at faucets to produce proper flow.
- C. Install fresh batteries in battery-powered, electronic-sensor mechanisms.

3.5 CLEANING AND PROTECTION

- A. After completing installation of lavatories, inspect and repair damaged finishes.
- B. Clean lavatories, faucets, and other fittings with manufacturers' recommended cleaning methods and materials.
- C. Provide protective covering for installed lavatories and fittings.
- D. Do not allow use of lavatories for temporary facilities unless approved in writing by Owner.

END OF SECTION 22 42 16.13

SECTION 22 46 00 - SECURITY PLUMBING FIXTURES

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. Combination units.
 - 2. Water closets.
 - 3. Lavatories.
 - 4. Drinking fountains.
 - 5. Showers.
 - 6. Supports.
- B. Related Requirements:
 - 1. Section 224713 "Drinking Fountains" for standard drinking fountains.

1.3 DEFINITIONS

- A. Accessible Service Space: Service area in secure space behind wall-mounted fixtures.
- B. Back-Access Fixture: Security plumbing fixture designed to mount on wall sleeve built into wall or on wall, so installation and removal of fixture, piping, and other components are accessible only from service space behind wall.
- C. Front-Access Fixture: Security plumbing fixture designed to mount on wall with installation and removal from fixture side of wall, and with piping and other components accessible only from access panel in fixture.

1.4 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 security plumbing fixtures.
 - 2. Include rated capacities, operating characteristics, and furnished specialties and accessories.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For security plumbing fixtures and components to include in maintenance manuals.

1.6 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. Flushometer-Valve Repair Kits: Equal to 10 percent of quantity of each type installed, but no fewer than 5 of each type.
 - 2. Toilet Seats: Equal to five percent of quantity of each type installed.

PART 2 - PRODUCTS

2.1 COMBINATION UNITS- C-1 & C-2

- A. Combination Units: Back access, on floor, cabinet, with water closet and lavatory.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by the following:
 - a. Acorn Engineering Company.
 - 1) C-1: 1432ALAR – to be modified to match the angle of precast walls. Refer to Architecture drawings for precast wall angles. ALAR is AL=Align/left AR=Align right option.
 - 2) C-2: 1449
 - 2. Material: 0.078-inch- (2.0-mm-) minimum-thick stainless steel; corrosion-resistant metal for internal piping and bracing.
 - 3. Finish: ASTM A 480/A 480M, No. 4 polished finish on exposed surfaces.
 - 4. Cabinet: Multi-sided apron with backsplash.
 - a. Water-Closet Bowl Location: Per contract drawings.
 - b. Toilet-Paper Holder: Recessed; stainless steel located left of center in front of apron.
 - 5. Accessories:
 - a. Toothbrush Holders: None.
 - b. Towel Hooks: None.
 - c. Bubbler: On deck.
 - 6. Mounting: Bolts through wall sleeve into accessible service space.
 - 7. Water Closet:
 - a. Standard: IAPMO PS 61.

- b. Bowl:
 - 1) Type: Elongated, with back inlet, integral trap, and blowout design with back outlet and contoured seat.
 - a) C-2: See Plumbing and Architectural drawings where a customized shroud conceals domestic water piping, vent and flushometer only. For these locations, the waste piping is to extend straight down into the floor and connect to existing waste piping in area.
 - 2) Seat Surface: ASTM A 480/A 480M, No. 7 polished finish.
 - 3) Punching: Two holes for installation of separate toilet seat.
 - 4) Outlet Connection: NPS 4 (DN 100), horizontal with cleanout and slip joint.
- 8. Flushometer Valve: Concealed high efficiency.
 - a. C-1: Concealed behind wall in chase.
 - b. C-2: See Plumbing and Architecture plans for locations where flushometer is concealed within a customized shroud.
- 9. Toilet Seat: High polished seat.
- 10. Lavatory:
 - a. Standard: ASME A 112.19.3/CSA B45.4.
 - b. Location: In top of cabinet.
 - c. Receptor: Oval bowl with integral soap depression.
 - d. Hot- and Cold-Water and Bubbler Supply Valves: Mechanical-metering type with push-button actuation and individual check stops complying with ASME A112.18.1/CSA B125.1.
 - e. Filler Spout: deck mounted.
 - f. Drain: Integral punched grid with NPS 1-1/4 (DN 32) minimum waste and trap complying with ASME A112.18.2/CSA B125.2.
- 11. Wall Sleeve: Galvanized-steel frame of dimensions required to match fixture. Include steel bars or other design to prevent escape if fixture is removed.

2.2 STAINLESS-STEEL WATER CLOSETS- C-3

- A. Water Closets: Back access, on floor, back outlet, cabinet.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by the following:
 - a. Acorn Engineering Company.
 - b. Model: Penal-Ware 1695 series with options: W-1.28GPH-HPS-FVT-ADA-SW. See Plumbing drawings for complete fixture schedules.
 - 2. Material: 0.078-inch- (2.0-mm-) minimum-thick stainless steel; corrosion-resistant metal for internal piping and bracing.
 - 3. Finish: ASTM A 480/A 480M, No. 4 polished finish on exposed surfaces.
 - 4. Cabinet Per contract drawings with backsplash.
 - a. Water-Closet Bowl Location: Centered on front of apron.
 - b. Toilet-Paper Holder: Per contract drawings.
 - c. Toilet seat: Per contract drawings.

5. Mounting: Bolts through wall sleeve into accessible service space.
6. Water Closet:
 - a. Standard: IAPMO PS 61.
 - b. Bowl:
 - 1) Type: Elongated, with back inlet, integral trap, and blowout design with back outlet and contoured seat.
 - 2) Back-Outlet Connection: NPS 4 (DN 100), horizontal with cleanout and slip joint.
 - 3) Seat Surface: ASTM A 480/A 480M, No. 7 polished finish.
 - 4) Punching not required. Seat is integral.
7. Flushometer Valve: Concealed high efficiency.
8. Toilet Seat: High polished integral seat.
9. Wall Sleeve: Galvanized-steel frame of dimensions required to match fixture. Include steel bars or other design to prevent escape if fixture is removed.
 - a. Configuration: Modify wall sleeve for water-closet mounting height according to ICC A117.1.

2.3 FLUSHOMETER VALVES

A. Flushometer Valves: Concealed diaphragm with Push button.

1. Manufacturers: Subject to compliance with requirements, provide products by the following:
 - a. Sloan Valve Company.
2. Standard: ASSE 1037.
3. Minimum Pressure Rating: 125 psig (860 kPa).
4. Features: Integral check stops and backflow-prevention device.
5. Material: Brass body with corrosion-resistant components.
6. Panel Finish: Chrome plated or stainless steel.
7. Style: Concealed.
8. Consumption: 1.28 gpf for water closets and 0.125 gpf for urinals.
9. Minimum Inlet: NPS 1 (DN 25).
10. Minimum Outlet: NPS 1-1/4 (DN 32).

2.4 STAINLESS-STEEL LAVATORIES- SL-1

A. Lavatories: Back access, back outlet, single.

1. Manufacturers: Subject to compliance with requirements, provide products by the following:
 - a. Acorn Engineering Company.
 - b. Model: Penal-Ware 1652 Series.

2. Fixture:
 - a. Standard: IAPMO PS 61.
 - b. Material: 0.078-inch- (2.0-mm-) minimum-thick stainless steel; corrosion-resistant metal for internal piping and bracing.
 - c. Finish: ASTM A 480/A 480M, No. 4 polished finish on exposed surfaces.
 - d. Receptor: rectangular bowl with integral soap depression, backsplash, and access panel.
 - e. Hot- and Cold-Water and Bubbler Supply Valves: Mechanical-metering type with push-button actuation, individual check stops, and backsplash-mounted filler spouts complying with ASME A112.18.1/CSA B125.1.
 - f. Drain: Integral punched grid with NPS 1-1/4 (DN 32) minimum horizontal waste and trap complying with ASME A112.18.2/CSA B125.2.
3. Mounting: Bolts from fixture-mounted flanges into wall.
4. Faucet: Integral, H & C metering, 4" centered.

2.5 SHOWERS- SH-1 & SH-2

- A. Showers: SH-1 - Front access, recessed. SH-2 – Rear access, recessed.

1. Manufacturers: Subject to compliance with requirements, provide products by the following:
 - a. Acorn Engineering Company.
 - b. Models:
 - 1) SH-1: Penal-Ware 1741ADAF Series.
 - 2) SH-2: Penal-Ware 1741 ADA Series
2. Fixture:
 - a. Standard: ASME A112.19.3/CSA B45.4.
 - b. Material: 0.078-inch- (2.0-mm-) minimum-thick stainless steel; corrosion-resistant metal for internal piping and bracing.
 - c. Finish: ASTM A 480/A 480M, No. 4 polished finish on exposed surfaces.
 - d. Type and Configuration: Wall, with showerhead and soap dish.
 - e. Hot- and Cold-Water Supply Valves: Mechanical-metering type with individual check stops complying with ASME A112.18.1/CSA B125.1.
 - f. Shower: Hose with vandal-resistant, hand-held Vandal-resistant, fixed-type head.
 - g. Soap Dish: Recessed, stainless steel.
 - h. Access to Internal Components: Vandal-resistant access panels.
3. Mounting: Bolts from fixture-mounted flanges into wall.

2.6 SUPPORTS

A. Type III Lavatory Carrier:

1. Manufacturers: Subject to compliance with requirements, provide products by the following:
 - a. Zurn Industries, LLC.
2. ASME A112.6.1M.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine roughing-in for water supply and sanitary drainage and vent piping systems to verify actual locations of piping connections before fixture installation.
- B. Examine walls and floors for suitable conditions where fixtures will be installed.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install security plumbing fixtures level and plumb according to roughing-in drawings.
- B. Install back-access, stainless-steel fixtures as follows:
 1. Install wall sleeve in wall if indicated.
 2. Install fixture on wall sleeve or wall, as indicated, with access from accessible service space.
 3. Extend supply piping from service space to fixture.
 4. Install soil and waste piping from fixture and extend into service space.
 5. Install fixture trap in service space instead of below fixture drain.
- C. Install front-access, stainless-steel fixtures as follows:
 1. Install fixture support or mounting bracket.
 2. Install fixture on support; mount components inside of or attached to fixture.
 3. Extend supply piping from pipe space to fixture.
 4. Install trap below fixture and extend soil and waste piping into pipe space.
- D. Install fixture outlets with gasket seals.
- E. Install fixtures designated "accessible" according to ICC A117.1 for heights, dimensions, and clearances.
- F. Install toilet seats on water closets and combination units if seats are indicated.
- G. Install protective shielding pipe covers and enclosures on exposed supplies and waste piping of accessible fixtures. Comply with requirements in Section 220719 "Plumbing Piping Insulation."

- H. Seal joints between fixtures, floors, and walls using sanitary-type, one-part, mildew-resistant silicone sealant. Match sealant color to fixture color. Comply with sealant requirements specified in Section 079200 "Joint Sealants."
- I. Install wall flanges or escutcheons at piping wall penetrations in exposed, finished locations. Use deep-pattern escutcheons if required to conceal protruding fittings. Comply with escutcheon requirements specified in Section 220518 "Escutcheons for Plumbing Piping."

3.3 CONNECTIONS

- A. Connect fixtures with water supplies, stops, and risers, and with traps, soil, waste, and vent piping. Use size fittings required to match fixtures.
- B. Comply with requirements for water piping specified in Section 221116 "Domestic Water Piping."
- C. Comply with requirements for soil and waste drainage piping specified in Section 221316 "Sanitary Waste and Vent Piping."

3.4 ADJUSTING

- A. Operate and adjust flushometer valves and flow-control valves on fixtures.

3.5 CLEANING AND PROTECTION

- A. After installing fixtures, inspect and repair damaged finishes.
- B. Clean fixtures, faucets, and other fittings with manufacturers' recommended cleaning methods and materials.
- C. Provide protective covering for installed fixtures and fittings.
- D. Do not allow use of fixtures for temporary facilities unless approved in writing by Owner.

END OF SECTION 22 46 00

SECTION 22 47 13 - DRINKING FOUNTAINS

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 drinking fountains and related components.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of drinking fountain.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
 - 2. Include operating characteristics, and furnished specialties and accessories.

1.4 CLOSEOUT SUBMITTALS

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

PART 2 - PRODUCTS

2.1 DRINKING FOUNTAINS- DF-1

- A. Drinking Fountains: Stainless steel, two level, wall mounted.
 - 1. Stainless-Steel Drinking Fountains:
 - a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1) Acorn LR1672-1-BPH-3-PBH.
 - 2) Two units to be installed in a Hi-Low configuration, (1) unit at ADA required height.
 - 3) No refrigeration.
 - 2. Standards:
 - a. Comply with ASME A112.19.3/CSA B45.4.

- b. Comply with NSF 61 Annex G.
- 3. Type Receptor: With back.
- 4. Receptor Shape: Rectangular.
- 5. Back Panel: None.
- 6. Bubblers: Two, with adjustable stream regulator, located on deck.
- 7. Control: Push button.
- 8. Drain: Grid type with NPS 1-1/4 (DN 32) tailpiece.
- 9. Supply: NPS 3/8 (DN 10) with shutoff valve.
- 10. Waste Fitting: ASME A112.18.2/CSA B125.2, NPS 1-1/4 (DN 32) chrome-plated brass P-trap and waste.
- 11. Support: ASME A112.6.1M, Type III lavatory carrier.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine roughing-in for water-supply and sanitary drainage and vent piping systems to verify actual locations of piping connections before fixture installation.
- B. Examine walls and floors for suitable conditions where fixtures will be installed.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install fixtures level and plumb according to roughing-in drawings. For fixtures indicated for children, install at height required by authorities having jurisdiction.
- B. Set pedestal drinking fountains on floor.
- C. Install recessed drinking fountains secured to wood blocking in wall construction.
- D. Install off-the-floor carrier supports, affixed to building substrate, for wall-mounted fixtures.
- E. Install water-supply piping with shutoff valve on supply to each fixture to be connected to domestic-water distribution piping. Use ball or gate valve. Install valves in locations where they can be easily reached for operation. Valves are specified in Section 220523.12 "Ball Valves for Plumbing Piping" and Section 220523.15 "Gate Valves for Plumbing Piping."
- F. Install trap and waste piping on drain outlet of each fixture to be connected to sanitary drainage system.
- G. Install wall flanges or escutcheons at piping wall penetrations in exposed, finished locations. Use deep-pattern escutcheons where required to conceal protruding fittings. Comply with escutcheon requirements specified in Section 220518 "Escutcheons for Plumbing Piping."
- H. Seal joints between fixtures and walls using sanitary-type, one-part, mildew-resistant, silicone sealant. Match sealant color to fixture color. Comply with sealant requirements specified in Section 079200 "Joint Sealants."

3.3 CONNECTIONS

- A. Connect fixtures with water supplies, stops, and risers, and with traps, soil, waste, and vent piping. Use size fittings required to match fixtures.
- B. Comply with water piping requirements specified in Section 221116 "Domestic Water Piping."
- C. Install ball or gate shutoff valve on water supply to each fixture. Comply with valve requirements specified in Section 220523.12 "Ball Valves for Plumbing Piping" and Section 220523.15 "Gate Valves for Plumbing Piping."
- D. Comply with soil and waste piping requirements specified in Section 221316 "Sanitary Waste and Vent Piping."

3.4 ADJUSTING

- A. Adjust fixture flow regulators for proper flow and stream height.

3.5 CLEANING

- A. After installing fixtures, inspect unit. Remove paint splatters and other spots, dirt, and debris. Repair damaged finish to match original finish.
- B. Clean fixtures, on completion of installation, according to manufacturer's written instructions.
- C. Provide protective covering for installed fixtures.
- D. Do not allow use of fixtures for temporary facilities unless approved in writing by Owner.

END OF SECTION 22 47 13

END OF SECTION 22 47 13

SECTION 23 05 93 - TESTING, ADJUSTING, AND BALANCING FOR HVAC

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Balancing Air Systems:
 - a. Constant-volume air systems.

1.2 DEFINITIONS

- A. AABC: Associated Air Balance Council.
- B. NEBB: National Environmental Balancing Bureau.
- C. TAB: Testing, adjusting, and balancing.
- D. TABB: Testing, Adjusting, and Balancing Bureau.
- E. TAB Specialist: An entity engaged to perform TAB Work.

1.3 INFORMATIONAL SUBMITTALS

- A. Qualification Data: Within 30 days of Contractor's Notice to Proceed, submit documentation that the TAB contractor and this Project's TAB team members meet the qualifications specified in "Quality Assurance" Article.
- B. Contract Documents Examination Report: Within 30 days of Contractor's Notice to Proceed, submit the Contract Documents review report as specified in Part 3.
- C. Strategies and Procedures Plan: Within 60 days of Contractor's Notice to Proceed, submit TAB strategies and step-by-step procedures as specified in "Preparation" Article.
- D. Certified TAB reports.
- E. Sample report forms.
- F. Instrument calibration reports, to include the following:
 - 1. Instrument type and make.
 - 2. Serial number.

3. Application.
4. Dates of use.
5. Dates of calibration.

1.4 QUALITY ASSURANCE

- A. TAB Contractor Qualifications: Engage a TAB entity certified by AABC or NEBB.
 1. TAB Field Supervisor: Employee of the TAB contractor and certified by AABC or NEBB.
 2. TAB Technician: Employee of the TAB contractor and who is certified by AABC or NEBB as a TAB technician.
- B. TAB Conference: Meet with Architect, Owner, Construction Manager, and Commissioning Authority on approval of the TAB strategies and procedures plan to develop a mutual understanding of the details. Require the participation of the TAB field supervisor and technicians. Provide seven days' advance notice of scheduled meeting time and location.
 1. Agenda Items:
 - a. The Contract Documents examination report.
 - b. The TAB plan.
 - c. Coordination and cooperation of trades and subcontractors.
 - d. Coordination of documentation and communication flow.
- C. Certify TAB field data reports and perform the following:
 1. Review field data reports to validate accuracy of data and to prepare certified TAB reports.
 2. Certify that the TAB team complied with the approved TAB plan and the procedures specified and referenced in this Specification.
- D. TAB Report Forms: Use standard TAB contractor's forms approved by Architect, Owner, Construction Manager, and Commissioning Authority.
- E. Instrumentation Type, Quantity, Accuracy, and Calibration: As described in ASHRAE 111, Section 5, "Instrumentation."
- F. ASHRAE Compliance: Applicable requirements in ASHRAE 62.1, Section 7.2.2 - "Air Balancing."
- G. ASHRAE/IESNA Compliance: Applicable requirements in ASHRAE/IESNA 90.1, Section 6.7.2.3 - "System Balancing."

1.5 PROJECT CONDITIONS

- A. 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.

1.6 COORDINATION

- A. Notice: Provide seven days' advance notice for each test. Include scheduled test dates and times.
- B. Perform TAB after leakage and pressure tests on air and water distribution systems have been satisfactorily completed.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. 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.
- B. 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.
- C. Examine the approved submittals for HVAC systems and equipment.
- D. 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.
- E. 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 233113 "Metal Ducts" and are properly separated from adjacent areas. Verify that penetrations in plenum walls are sealed and fire-stopped if required.
- F. Examine equipment performance data including fan and pump curves.
 - 1. 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.

2. 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.
- G. Examine system and equipment installations and verify that field quality-control testing, cleaning, and adjusting specified in individual Sections have been performed.
- H. Examine test reports specified in individual system and equipment Sections.
- I. 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.
- J. Examine terminal units, such as variable-air-volume boxes, and verify that they are accessible and their controls are connected and functioning.
- K. Examine strainers. Verify that startup screens are replaced by permanent screens with indicated perforations.
- L. Examine three-way valves for proper installation for their intended function of diverting or mixing fluid flows.
- M. Examine heat-transfer coils for correct piping connections and for clean and straight fins.
- N. Examine system pumps to ensure absence of entrained air in the suction piping.
- O. Examine operating safety interlocks and controls on HVAC equipment.
- P. 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.

3.2 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 and smoke/fire dampers are open.

6. Ceilings are installed in critical areas where air-pattern adjustments are required and access to balancing devices is provided.
7. Windows and doors can be closed so indicated conditions for system operations can be met.

3.3 GENERAL PROCEDURES FOR TESTING AND BALANCING

- A. Perform testing and balancing procedures on each system according to the procedures contained in AABC's "National Standards for Total System Balance," ASHRAE 111, NEBB's "Procedural Standards for Testing, Adjusting, and Balancing of Environmental Systems," SMACNA's "HVAC Systems - Testing, Adjusting, and Balancing" and in this Section.
 1. Comply with requirements in ASHRAE 62.1, Section 7.2.2 - "Air Balancing."
- B. Cut insulation, ducts and equipment cabinets for installation of test probes to the minimum extent necessary for TAB procedures.
 1. After testing and balancing, install test ports and duct access doors that comply with requirements in Section 233300 "Air Duct Accessories."
 2. Install and join new insulation that matches removed materials. Restore insulation, coverings, vapor barrier, and finish according to Section 230713 "Duct Insulation" and Section 230719 "HVAC Piping Insulation."
- C. Mark equipment and balancing devices, including damper-control positions, fan-speed-control levers, and similar controls and devices, with paint or other suitable, permanent identification material to show final settings.
- D. Take and report testing and balancing measurements in inch-pound (IP) units.

3.4 GENERAL PROCEDURES FOR BALANCING AIR SYSTEMS

- 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. Determine the best locations in main and branch ducts for accurate duct-airflow measurements.
- D. 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.
- E. Locate start-stop and disconnect switches, electrical interlocks, and motor starters.

- F. Verify that motor starters are equipped with properly sized thermal protection.
- G. Check dampers for proper position to achieve desired airflow path.
- H. Check for airflow blockages.
- I. Check condensate drains for proper connections and functioning.
- J. Check for proper sealing of air-handling-unit components.
- K. Verify that air duct system is sealed as specified in Section 233113 "Metal Ducts."

3.5 PROCEDURES FOR CONSTANT-VOLUME AIR SYSTEMS

- A. Adjust fans to deliver total indicated airflows within the maximum allowable fan speed listed by fan manufacturer.
 - 1. Measure total airflow.
 - a. Where sufficient space in ducts is unavailable for Pitot-tube traverse measurements, measure airflow at terminal outlets and inlets and calculate the total airflow.
 - 2. Measure fan static pressures as follows to determine actual static pressure:
 - a. Measure outlet static pressure as far downstream from the fan as practical and upstream from restrictions in ducts such as elbows and transitions.
 - b. Measure static pressure directly at the fan outlet or through the flexible connection.
 - c. 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.
 - d. Measure inlet static pressure of double-inlet fans through the wall of the plenum that houses the fan.
 - 3. Measure static pressure across each component that makes up an air-handling unit, rooftop unit, and other air-handling and -treating equipment.
 - a. Report the cleanliness status of filters and the time static pressures are measured.
 - 4. Review Record Documents to determine variations in design static pressures versus actual static pressures. Calculate actual system-effect factors. Recommend adjustments to accommodate actual conditions.
 - 5. Obtain approval from Architect, Owner, Construction Manager and Commissioning Authority for adjustment of fan speed higher or lower than indicated speed. Comply with requirements in HVAC Sections for air-handling

- units for adjustment of fans, belts, and pulley sizes to achieve indicated air-handling-unit performance.
6. 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.
- B. Adjust volume dampers for main duct, submain ducts, and major branch ducts to indicated airflows within specified tolerances.
1. Measure airflow of submain and branch ducts.
 - a. 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.
 2. Measure static pressure at a point downstream from the balancing damper, and adjust volume dampers until the proper static pressure is achieved.
 3. Remeasure each submain and branch duct after all have been adjusted. Continue to adjust submain and branch ducts to indicated airflows within specified tolerances.
- C. Measure air outlets and inlets without making adjustments.
1. Measure terminal outlets using a direct-reading hood or outlet manufacturer's written instructions and calculating factors.
- D. 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.
1. 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.
 2. Adjust patterns of adjustable outlets for proper distribution without drafts.

3.6 TOLERANCES

- A. Set HVAC system's air flow rates and water flow rates within the following tolerances:
1. Supply, Return, and Exhaust Fans and Equipment with Fans: Plus 10 percent or minus 5 percent.
 2. Air Outlets and Inlets: Plus 10 percent or minus 5 percent.

3.7 REPORTING

- A. Initial Construction-Phase Report: 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. Status Reports: Prepare biweekly progress reports to describe completed procedures, procedures in progress, and scheduled procedures. Include a list of deficiencies and problems found in systems being tested and balanced. Prepare a separate report for each system and each building floor for systems serving multiple floors.

3.8 FINAL REPORT

- A. General: Prepare a certified written report; tabulate and divide the report into separate sections for tested systems and balanced systems.
 - 1. Include a certification sheet at the front of the report's binder, signed and sealed by the certified testing and balancing engineer.
 - 2. Include a list of instruments used for procedures, along with proof of calibration.
- B. Final Report Contents: In addition to certified field-report data, include the following:
 - 1. Fan curves.
 - 2. Manufacturers' test data.
 - 3. Field test reports prepared by system and equipment installers.
 - 4. Other information relative to equipment performance; do not include Shop Drawings and product data.
- C. General Report Data: In addition to form titles and entries, include the following data:
 - 1. Title page.
 - 2. Name and address of the TAB contractor.
 - 3. Project name.
 - 4. Project location.
 - 5. Architect's name and address.
 - 6. Engineer's name and address.
 - 7. Contractor's name and address.
 - 8. Report date.
 - 9. Signature of TAB supervisor who certifies the report.
 - 10. Table of Contents with the total number of pages defined for each section of the report. Number each page in the report.
 - 11. Summary of contents including the following:
 - a. Indicated versus final performance.
 - b. Notable characteristics of systems.

- c. Description of system operation sequence if it varies from the Contract Documents.
- 12. Nomenclature sheets for each item of equipment.
- 13. Data for terminal units, including manufacturer's name, type, size, and fittings.
- 14. Notes to explain why certain final data in the body of reports vary from indicated values.
- 15. Test conditions for fans and pump performance forms including the following:
 - a. Settings for outdoor-, return-, and exhaust-air dampers.
 - b. Conditions of filters.
 - c. Cooling coil, wet- and dry-bulb conditions.
 - d. Face and bypass damper settings at coils.
 - e. Fan drive settings including settings and percentage of maximum pitch diameter.
 - f. Inlet vane settings for variable-air-volume systems.
 - g. Settings for supply-air, static-pressure controller.
 - h. Other system operating conditions that affect performance.
- D. System Diagrams: Include schematic layouts of air distribution systems. Present each system with single-line diagram and include the following:
 - 1. Quantities of outdoor, supply, return, and exhaust airflows.
 - 2. Duct, outlet, and inlet sizes.
 - 3. Terminal units.
 - 4. Balancing stations.
 - 5. Position of balancing devices.
- E. Air-Conditioning-Unit Test Reports: For air-handling units with coils, include the following:
 - 1. Unit Data:
 - a. Unit identification.
 - b. Location.
 - c. Make and type.
 - d. Model number and unit size.
 - e. Manufacturer's serial number.
 - f. Unit arrangement and class.
 - g. Discharge arrangement.
 - h. Sheave make, size in inches, and bore.
 - i. Center-to-center dimensions of sheave, and amount of adjustments in inches.
 - j. Number, make, and size of belts.
 - k. Number, type, and size of filters.
 - 2. Supply and Exhaust Fan Motor Data:
 - a. Motor make, and frame type and size.

- b. Horsepower and rpm.
 - c. Volts, phase, and hertz.
 - d. Full-load amperage and service factor.
 - e. Sheave make, size in inches, and bore.
 - f. Center-to-center dimensions of sheave, and amount of adjustments in inches.
 - 3. Test Data (Indicated and Actual Values):
 - a. Total air flow rate in cfm.
 - b. Total system static pressure in inches wg.
 - c. Fan rpm.
 - d. Discharge static pressure in inches wg.
 - e. Filter static-pressure differential in inches wg.
 - f. Gas Furnace static-pressure differential in inches wg.
 - g. DX cooling coil static-pressure differential in inches wg.
 - h. Outdoor airflow in cfm.
 - i. Return airflow in cfm.
 - j. Outdoor-air damper position.
 - k. Return-air damper position.
 - l. Exhaust fan minimum and maximum air flow.
- F. Round, Flat-Oval, and Rectangular Duct Traverse Reports: Include a diagram with a grid representing the duct cross-section and record the following:
- 1. Report Data:
 - a. System and air-conditioning-unit number.
 - b. Location and zone.
 - c. Traverse air temperature in deg F.
 - d. Duct static pressure in inches wg.
 - e. Duct size in inches.
 - f. Duct area in sq. ft..
 - g. Indicated air flow rate in cfm.
 - h. Indicated velocity in fpm.
 - i. Actual air flow rate in cfm.
 - j. Actual average velocity in fpm.
 - k. Barometric pressure in psig.
- G. Instrument Calibration Reports:
- 1. Report Data:
 - a. Instrument type and make.
 - b. Serial number.
 - c. Application.
 - d. Dates of use.
 - e. Dates of calibration.

3.9 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.
2. Check the following for each system:
 - a. Measure airflow of at least 10 percent of air outlets.
 - b. Measure room temperature at each thermostat/temperature sensor. Compare the reading to the set point.
 - c. Verify that balancing devices are marked with final balance position.
 - d. Note deviations from the Contract Documents 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 by Architect, Owner, Construction Manager, and Commissioning Authority.
2. The TAB contractor's test and balance engineer shall conduct the inspection in the presence of Architect, Owner, Construction Manager, and Commissioning Authority.
3. Architect, Owner, Construction Manager, and Commissioning Authority 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.

3.10 ADDITIONAL TESTS

- A. Within 90 days of completing TAB, perform additional TAB to verify that balanced conditions are being maintained throughout and to correct unusual conditions.
- B. Seasonal Periods: If initial TAB procedures were not performed during near-peak summer and winter conditions, perform additional TAB during near-peak summer and winter conditions.

END OF SECTION 23 05 93

SECTION 23 07 13 - DUCT INSULATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes insulating the following duct services:
 - 1. Indoor, concealed supply.
- B. Related Sections:
 - 1. Section 233113 "Metal Ducts".

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include thermal conductivity, water-vapor permeance thickness, and jackets (both factory- and field-applied if any).
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
 - 1. Detail application of protective shields, saddles, and inserts at hangers for each type of insulation and hanger.
 - 2. Detail insulation application at elbows, fittings, dampers, specialties and flanges for each type of insulation.

1.3 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified Installer.
- B. Material Test Reports: From a qualified testing agency acceptable to authorities having jurisdiction indicating, interpreting, and certifying test results for compliance of insulation materials, sealers, attachments, cements, and jackets, with requirements indicated. Include dates of tests and test methods employed.
- C. Field quality-control reports.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Skilled mechanics who have successfully completed an apprenticeship program or another craft training program certified by the Department of Labor, Bureau of Apprenticeship and Training.

- B. Surface-Burning Characteristics: For insulation and related materials, as determined by testing identical products according to ASTM E 84, by a testing agency acceptable to authorities having jurisdiction. Factory label insulation and jacket materials and adhesive, mastic, tapes, and cement material containers, with appropriate markings of applicable testing agency.

- 1. Insulation Installed Indoors: Flame-spread index of 25 or less, and smoke-developed index of 50 or less.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Packaging: Insulation material containers shall be marked by manufacturer with appropriate ASTM standard designation, type and grade, and maximum use temperature.

1.6 COORDINATION

- A. Coordinate sizes and locations of supports, hangers, and insulation shields specified in Section 230529 "Hangers and Supports for HVAC Piping and Equipment."
- B. Coordinate clearance requirements with duct Installer for duct insulation application. Before preparing ductwork Shop Drawings, establish and maintain clearance requirements for installation of insulation and field-applied jackets and finishes and for space required for maintenance.
- C. Coordinate installation and testing of heat tracing.

1.7 SCHEDULING

- A. Schedule insulation application after pressure testing systems and, where required, after installing and testing heat tracing. Insulation application may begin on segments that have satisfactory test results.
- B. Complete installation and concealment of plastic materials as rapidly as possible in each area of construction.

PART 2 - PRODUCTS

2.1 INSULATION MATERIALS

- A. Comply with requirements in "Duct Insulation Schedule, General," "Indoor Duct and Plenum Insulation Schedule," and "Aboveground, Outdoor Duct and Plenum Insulation Schedule" articles for where insulating materials shall be applied.

- B. Products shall not contain asbestos, lead, mercury, or mercury compounds.
- C. Mineral-Fiber Blanket Insulation: Mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C 553, Type II and ASTM C 1290, Type III with factory-applied FSK jacket. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.
 - 1. Products: Subject to compliance with requirements, provide the following:
 - a. Basis of Design: CertainTeed Corp.; SoftTouch Duct Wrap.

2.2 ADHESIVES

- A. Materials shall be compatible with insulation materials, jackets, and substrates and for bonding insulation to it and to surfaces to be insulated unless otherwise indicated.
- B. Mineral-Fiber Adhesive: Comply with MIL-A-3316C, Class 2, Grade A.
 - 1. Products: Subject to compliance with requirements, provide the following:
 - a. Basis of Design: Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; CP-127.Eagle Bridges - Marathon Industries; 225.
 - 2. For indoor applications, adhesive shall have a VOC content of 80 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
 - 3. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- C. ASJ Adhesive, and FSK Jacket Adhesive: Comply with MIL-A-3316C, Class 2, Grade A for bonding insulation jacket lap seams and joints.
 - 1. Products: Subject to compliance with requirements, provide the following:
 - a. Basis of Design: Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; CP-82.
 - 2. For indoor applications, adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
 - 3. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.3 MASTICS

- A. Materials shall be compatible with insulation materials, jackets, and substrates; comply with MIL-PRF-19565C, Type II.
 - 1. For indoor applications, use mastics that have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- B. Vapor-Barrier Mastic: Water based; suitable for indoor use on below ambient services.
 - 1. Products: Subject to compliance with requirements, provide the following:
 - a. Basis of Design: Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; 30-80/30-90.
 - 2. Water-Vapor Permeance: ASTM E 96/E 96M, Procedure B, 0.013 perm at 43-mil dry film thickness.
 - 3. Service Temperature Range: Minus 20 to plus 180 deg F.
 - 4. Solids Content: ASTM D 1644, 58 percent by volume and 70 percent by weight.
 - 5. Color: White.
- C. Vapor-Barrier Mastic: Solvent based; suitable for indoor use on below ambient services.
 - 1. Products: Subject to compliance with requirements, provide the following:
 - a. Basis of Design: Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; CP-30.
 - 2. Water-Vapor Permeance: ASTM F 1249, 0.05 perm at 35-mil dry film thickness.
 - 3. Service Temperature Range: 0 to 180 deg F.
 - 4. Solids Content: ASTM D 1644, 44 percent by volume and 62 percent by weight.
 - 5. Color: White.

2.4 SEALANTS

- A. ASJ Flashing Sealants, and Vinyl and PVC Jacket Flashing Sealants:
 - 1. Products: Subject to compliance with requirements, provide the following:
 - a. Basis of Design: Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; CP-76.
 - 2. Materials shall be compatible with insulation materials, jackets, and substrates.
 - 3. Service Temperature Range: Minus 40 to plus 250 deg F.
 - 4. Color: White.
 - 5. For indoor applications, sealants shall have a VOC content of 420 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

6. Sealants shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.5 FACTORY-APPLIED JACKETS

- A. Insulation system schedules indicate factory-applied jackets on various applications. When factory-applied jackets are indicated, comply with the following:
 1. ASJ: White, kraft-paper, fiberglass-reinforced scrim with aluminum-foil backing; complying with ASTM C 1136, Type I.
 2. ASJ-SSL: ASJ with self-sealing, pressure-sensitive, acrylic-based adhesive covered by a removable protective strip; complying with ASTM C 1136, Type I.
 3. FSK Jacket: Aluminum-foil, fiberglass-reinforced scrim with kraft-paper backing; complying with ASTM C 1136, Type II.

2.6 TAPES

- A. ASJ Tape: White vapor-retarder tape matching factory-applied jacket with acrylic adhesive, complying with ASTM C 1136.
 1. Products: Subject to compliance with requirements, provide the following:
 - a. Basis of Design: ABI, Ideal Tape Division; 428 AWF ASJ.
 2. Width: 3 inches.
 3. Thickness: 11.5 mils.
 4. Adhesion: 90 ounces force/inch in width.
 5. Elongation: 2 percent.
 6. Tensile Strength: 40 lbf/inch in width.
 7. ASJ Tape Disks and Squares: Precut disks or squares of ASJ tape.
- B. FSK Tape: Foil-face, vapor-retarder tape matching factory-applied jacket with acrylic adhesive; complying with ASTM C 1136.
 1. Products: Subject to compliance with requirements, provide the following:
 - a. Basis of Design: ABI, Ideal Tape Division; 491 AWF FSK.
 2. Width: 3 inches.
 3. Thickness: 6.5 mils.
 4. Adhesion: 90 ounces force/inch in width.
 5. Elongation: 2 percent.
 6. Tensile Strength: 40 lbf/inch in width.
 7. FSK Tape Disks and Squares: Precut disks or squares of FSK tape.

C. Aluminum-Foil Tape: Vapor-retarder tape with acrylic adhesive.

1. Products: Subject to compliance with requirements, provide the following:
 - a. Basis of Design: ABI, Ideal Tape Division; 488 AWF.
2. Width: 2 inches.
3. Thickness: 3.7 mils.
4. Adhesion: 100 ounces force/inch in width.
5. Elongation: 5 percent.
6. Tensile Strength: 34 lbf/inch in width.

2.7 SECUREMENTS

A. Bands:

1. Products: Subject to compliance with requirements, provide the following:
 - a. Basis of Design: ITW Insulation Systems; Gerrard Strapping and Seals.
2. Stainless Steel: ASTM A 167 or ASTM A 240/A 240M, Type 304 or Type 316; 0.015 inch thick, 1/2 inch or 3/4 inch wide with wing seal or closed seal.
3. Aluminum: ASTM B 209, Alloy 3003, 3005, 3105, or 5005; Temper H-14, 0.020 inch thick, 1/2 inch or 3/4 inch wide with wing seal or closed seal.
4. Springs: Twin spring set constructed of stainless steel with ends flat and slotted to accept metal bands. Spring size determined by manufacturer for application.

B. Insulation Pins and Hangers:

1. Capacitor-Discharge-Weld Pins: Copper- or zinc-coated steel pin, fully annealed for capacitor-discharge welding, 0.106-inch-or 0.135-inch-diameter shank, length to suit depth of insulation indicated.
 - a. Products: Subject to compliance with requirements, provide the following:
 - 1) Basis of Design: AGM Industries, Inc.; CWP-1.
2. Cupped-Head, Capacitor-Discharge-Weld Pins: Copper- or zinc-coated steel pin, fully annealed for capacitor-discharge welding, 0.106-inch-or 0.135-inch-diameter shank, length to suit depth of insulation indicated with integral 1-1/2-inch galvanized carbon-steel washer.
 - a. Products: Subject to compliance with requirements, provide the following:
 - 1) Basis of Design: AGM Industries, Inc.; CHP-1.
3. Metal, Adhesively Attached, Perforated-Base Insulation Hangers: Baseplate welded to projecting spindle that is capable of holding insulation, of thickness

indicated, securely in position indicated when self-locking washer is in place. Comply with the following requirements:

- a. Products: Subject to compliance with requirements, provide the following:
 - 1) Basis of Design: AGM Industries, Inc.; Tactoo Perforated Base Insul-Hangers.
 - b. Baseplate: Perforated, galvanized carbon-steel sheet, 0.030 inch thick by 2 inches square.
 - c. Spindle: Copper- or zinc-coated, low-carbon steel, fully annealed, 0.106-inch-diameter shank, length to suit depth of insulation indicated.
 - d. Adhesive: Recommended by hanger manufacturer. Product with demonstrated capability to bond insulation hanger securely to substrates indicated without damaging insulation, hangers, and substrates.
4. Self-Sticking-Base Insulation Hangers: Baseplate welded to projecting spindle that is capable of holding insulation, of thickness indicated, securely in position indicated when self-locking washer is in place. Comply with the following requirements:
- a. Products: Subject to compliance with requirements, provide the following:
 - 1) Basis of Design: AGM Industries, Inc.; Tactoo Self-Adhering Insul-Hangers.
 - b. Baseplate: Galvanized carbon-steel sheet, 0.030 inch thick by 2 inches square.
 - c. Spindle: Copper- or zinc-coated, low-carbon steel, fully annealed, 0.106-inch-diameter shank, length to suit depth of insulation indicated.
 - d. Adhesive-backed base with a peel-off protective cover.
5. Insulation-Retaining Washers: Self-locking washers formed from 0.016-inch-thick, galvanized-steel sheet, with beveled edge sized as required to hold insulation securely in place but not less than 1-1/2 inches in diameter.
- a. Products: Subject to compliance with requirements, provide the following:
 - 1) Basis of Design: AGM Industries, Inc.; RC-150.
 - b. Protect ends with capped self-locking washers incorporating a spring steel insert to ensure permanent retention of cap in exposed locations.

2.8 CORNER ANGLES

- A. PVC Corner Angles: 30 mils thick, minimum 1 by 1 inch, PVC according to ASTM D 1784, Class 16354-C. White or color-coded to match adjacent surface.

- B. Aluminum Corner Angles: 0.040 inch thick, minimum 1 by 1 inch, aluminum according to ASTM B 209, Alloy 3003, 3005, 3105, or 5005; Temper H-14.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions for compliance with requirements for installation tolerances and other conditions affecting performance of insulation application.
 - 1. Verify that systems to be insulated have been tested and are free of defects.
 - 2. Verify that surfaces to be insulated are clean and dry.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Preparation: Clean and dry surfaces to receive insulation. Remove materials that will adversely affect insulation application.

3.3 GENERAL INSTALLATION REQUIREMENTS

- A. Install insulation materials, accessories, and finishes with smooth, straight, and even surfaces; free of voids throughout the length of ducts and fittings.
- B. Install insulation materials, vapor barriers or retarders, jackets, and thicknesses required for each item of duct system as specified in insulation system schedules.
- C. Install accessories compatible with insulation materials and suitable for the service. Install accessories that do not corrode, soften, or otherwise attack insulation or jacket in either wet or dry state.
- D. Install insulation with longitudinal seams at top and bottom of horizontal runs.
- E. Install multiple layers of insulation with longitudinal and end seams staggered.
- F. Keep insulation materials dry during application and finishing.
- G. Install insulation with tight longitudinal seams and end joints. Bond seams and joints with adhesive recommended by insulation material manufacturer.
- H. Install insulation with least number of joints practical.

- I. Where vapor barrier is indicated, seal joints, seams, and penetrations in insulation at hangers, supports, and other projections with vapor-barrier mastic. Install insulation continuously through hangers and around anchor attachments.
 - 1. For insulation application where vapor barriers are indicated, extend insulation on anchor legs from point of attachment to supported item to point of attachment to structure. Taper and seal ends at attachment to structure with vapor-barrier mastic.
 - 2. Install insert materials and install insulation to tightly join the insert. Seal insulation to insulation inserts with adhesive or sealing compound recommended by insulation material manufacturer.
- J. Apply adhesives, mastics, and sealants at manufacturer's recommended coverage rate and wet and dry film thicknesses.
- K. Install insulation with factory-applied jackets as follows:
 - 1. Draw jacket tight and smooth.
 - 2. Cover circumferential joints with 3-inch-wide strips, of same material as insulation jacket. Secure strips with adhesive and outward clinching staples along both edges of strip, spaced 4 inches o.c.
 - 3. Overlap jacket longitudinal seams at least 1-1/2 inches. Clean and dry surface to receive self-sealing lap. Staple laps with outward clinching staples along edge at 2 inches o.c.
 - a. For below ambient services, apply vapor-barrier mastic over staples.
 - 4. Cover joints and seams with tape, according to insulation material manufacturer's written instructions, to maintain vapor seal.
 - 5. Where vapor barriers are indicated, apply vapor-barrier mastic on seams and joints and at ends adjacent to duct flanges and fittings.
- L. Cut insulation in a manner to avoid compressing insulation more than 75 percent of its nominal thickness.
- M. Finish installation with systems at operating conditions. Repair joint separations and cracking due to thermal movement.
- N. Repair damaged insulation facings by applying same facing material over damaged areas. Extend patches at least 4 inches beyond damaged areas. Adhere, staple, and seal patches similar to butt joints.

3.4 PENETRATIONS

3.5 INSTALLATION OF MINERAL-FIBER INSULATION

- A. Blanket Insulation Installation on Ducts and Plenums: Secure with adhesive and insulation pins.
1. Apply adhesives according to manufacturer's recommended coverage rates per unit area of duct and plenum surfaces.
 2. Apply adhesive to entire circumference of ducts and to all surfaces of fittings and transitions.
 3. Install either capacitor-discharge-weld pins and speed washers or cupped-head, capacitor-discharge-weld pins on sides and bottom of horizontal ducts and sides of vertical ducts as follows:
 - a. On duct sides with dimensions 18 inches and smaller, place pins along longitudinal centerline of duct. Space 3 inches maximum from insulation end joints, and 16 inches o.c.
 - b. On duct sides with dimensions larger than 18 inches, place pins 16 inches o.c. each way and 3 inches maximum from insulation joints. Install additional pins to hold insulation tightly against surface at cross bracing.
 - c. Pins may be omitted from top surface of horizontal, rectangular ducts and plenums.
 - d. Do not overcompress insulation during installation.
 - e. Impale insulation over pins and attach speed washers.
 - f. Cut excess portion of pins extending beyond speed washers or bend parallel with insulation surface. Cover exposed pins and washers with tape matching insulation facing.
 4. For ducts and plenums with surface temperatures below ambient, install a continuous unbroken vapor barrier. Create a facing lap for longitudinal seams and end joints with insulation by removing 2 inches from one edge and one end of insulation segment. Secure laps to adjacent insulation section with 1/2-inch outward-clinching staples, 1 inch o.c. Install vapor barrier consisting of factory- or field-applied jacket, adhesive, vapor-barrier mastic, and sealant at joints, seams, and protrusions.
 - a. Repair punctures, tears, and penetrations with tape or mastic to maintain vapor-barrier seal.
 - b. Install vapor stops for ductwork and plenums operating below 50 deg F at 18-foot intervals. Vapor stops shall consist of vapor-barrier mastic applied in a Z-shaped pattern over insulation face, along butt end of insulation, and over the surface. Cover insulation face and surface to be insulated a width equal to two times the insulation thickness, but not less than 3 inches.

5. Overlap unfaced blankets a minimum of 2 inches on longitudinal seams and end joints. At end joints, secure with steel bands spaced a maximum of 18 inches o.c.
6. Install insulation on rectangular duct elbows and transitions with a full insulation section for each surface. Install insulation on round and flat-oval duct elbows with individually mitered gores cut to fit the elbow.
7. Insulate duct stiffeners, hangers, and flanges that protrude beyond insulation surface with 6-inch-wide strips of same material used to insulate duct. Secure on alternating sides of stiffener, hanger, and flange with pins spaced 6 inches o.c.
8. For ducts and plenums with surface temperatures below ambient, install a continuous unbroken vapor barrier. Create a facing lap for longitudinal seams and end joints with insulation by removing 2 inches from one edge and one end of insulation segment. Secure laps to adjacent insulation section with 1/2-inch outward-clinching staples, 1 inch o.c. Install vapor barrier consisting of factory- or field-applied jacket, adhesive, vapor-barrier mastic, and sealant at joints, seams, and protrusions.
 - a. Repair punctures, tears, and penetrations with tape or mastic to maintain vapor-barrier seal.
 - b. Install vapor stops for ductwork and plenums operating below 50 deg F at 18-foot intervals. Vapor stops shall consist of vapor-barrier mastic applied in a Z-shaped pattern over insulation face, along butt end of insulation, and over the surface. Cover insulation face and surface to be insulated a width equal to two times the insulation thickness, but not less than 3 inches.
9. Install insulation on rectangular duct elbows and transitions with a full insulation section for each surface. Groove and score insulation to fit as closely as possible to outside and inside radius of elbows. Install insulation on round and flat-oval duct elbows with individually mitered gores cut to fit the elbow.
10. Insulate duct stiffeners, hangers, and flanges that protrude beyond insulation surface with 6-inch-wide strips of same material used to insulate duct. Secure on alternating sides of stiffener, hanger, and flange with pins spaced 6 inches o.c.

3.6 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
- B. Perform tests and inspections.
- C. Tests and Inspections:
 1. Inspect ductwork, randomly selected by Architect, by removing field-applied jacket and insulation in layers in reverse order of their installation. Extent of inspection shall be limited to one location(s) for each duct system defined in the "Duct Insulation Schedule, General" Article.

- D. All insulation applications will be considered defective Work if sample inspection reveals noncompliance with requirements.

3.7 DUCT INSULATION SCHEDULE, GENERAL

A. Ducts Requiring Insulation:

- 1. Indoor, concealed supply air.
- 2. Indoor, concealed return air.

3.8 INDOOR DUCT AND PLENUM INSULATION SCHEDULE

A. Concealed, round supply-air duct insulation shall be:

- 1. Mineral-Fiber Blanket: 1-1/2 inches thick and 1.5-lb/cu. ft. nominal density.

B. Concealed, rectangular, supply-air duct insulation shall be:

- 1. Mineral-Fiber Blanket: 1-1/2 inches thick and 1.5-lb/cu. ft. nominal density.

END OF SECTION 23 07 13

SECTION 23 31 13 - METAL DUCTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Single-wall rectangular ducts and fittings.
2. Single-wall round and fittings.
3. Sheet metal materials.
4. Sealants and gaskets.
5. Hangers and supports.

B. Related Sections:

1. Section 233300 "Air Duct Accessories" for dampers, duct-mounting access doors and panels, turning vanes, and flexible ducts.

1.2 PERFORMANCE REQUIREMENTS

- A. Delegated Duct Design: Duct construction, including sheet metal thicknesses, seam and joint construction, reinforcements, and hangers and supports, shall comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" and performance requirements and design criteria indicated in "Duct Schedule" Article.
- B. Structural Performance: Duct hangers and supports and seismic restraints shall withstand the effects of gravity and seismic loads and stresses within limits and under conditions described in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," ASCE/SEI 7 and SMACNA's "Seismic Restraint Manual: Guidelines for Mechanical Systems."
- C. Airstream Surfaces: Surfaces in contact with the airstream shall comply with requirements in ASHRAE 62.1.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of the following products:

1. Sealants and gaskets.

B. Shop Drawings:

1. Fabrication, assembly, and installation, including plans, elevations, sections, components, and attachments to other work.
2. Factory- and shop-fabricated ducts and fittings.

3. Duct layout indicating sizes, configuration, liner material, and static-pressure classes.
4. Elevation of top of ducts.
5. Fittings.
6. Reinforcement and spacing.
7. Seam and joint construction.
8. Penetrations through partitions.
9. Equipment installation based on equipment being used on Project.
10. Locations for duct accessories, including dampers and turning vanes.

C. Delegated-Design Submittal:

1. Sheet metal thicknesses.
2. Joint and seam construction and sealing.
3. Reinforcement details and spacing.
4. Materials, fabrication, assembly, and spacing of hangers and supports.

1.4 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:

1. Duct installation in congested spaces, indicating coordination with general construction, building components, and other building services. Indicate proposed changes to duct layout.
2. Structural members to which duct will be attached.
3. Size and location of initial access modules for acoustical tile.

B. Welding certificates.

C. Field quality-control reports.

1.5 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel," for hangers and supports, AWS D1.2/D1.2M, "Structural Welding Code - Aluminum," for aluminum supports, and AWS D9.1M/D9.1, "Sheet Metal Welding Code," for duct joint and seam welding.

B. Welding Qualifications: Qualify procedures and personnel according to the following:

1. AWS D1.1/D1.1M, "Structural Welding Code - Steel," for hangers and supports.
2. AWS D9.1M/D9.1, "Sheet Metal Welding Code," for duct joint and seam welding.

- C. ASHRAE Compliance: Applicable requirements in ASHRAE 62.1, Section 5 - "Systems and Equipment" and Section 7 - "Construction and System Start-up."
- D. ASHRAE/IESNA Compliance: Applicable requirements in ASHRAE/IESNA 90.1, Section 6.4.4 - "HVAC System Construction and Insulation."

PART 2 - PRODUCTS

2.1 SINGLE-WALL RECTANGULAR DUCTS AND FITTINGS

- A. General Fabrication Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" based on indicated static-pressure class unless otherwise indicated.
- B. Transverse Joints: Select joint types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 2-1, "Rectangular Duct/Transverse Joints," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."
- C. Longitudinal Seams: Select seam types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 2-2, "Rectangular Duct/Longitudinal Seams," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."
- D. Elbows, Transitions, Offsets, Branch Connections, and Other Duct Construction: Select types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Chapter 4, "Fittings and Other Construction," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

2.2 SINGLE-WALL ROUND DUCTS AND FITTINGS

- A. General Fabrication Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Chapter 3, "Round, Oval, and Flexible Duct," based on indicated static-pressure class unless otherwise indicated.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by the following:
 - a. Basis of Design: Lindab Inc.

- B. Transverse Joints: Select joint types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-1, "Round Duct Transverse Joints," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."
 - 1. Transverse Joints in Ducts Larger Than 60 Inches in Diameter: Flanged.
- C. Longitudinal Seams: Select seam types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-2, "Round Duct Longitudinal Seams," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."
 - 1. Fabricate round ducts larger than 90 inches in diameter with butt-welded longitudinal seams.
 - 2. Fabricate flat-oval ducts larger than 72 inches in width (major dimension) with butt-welded longitudinal seams.
- D. Tees and Laterals: Select types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-5, "90 Degree Tees and Laterals," and Figure 3-6, "Conical Tees," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

2.3 SHEET METAL MATERIALS

- A. General Material Requirements: 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: Comply with ASTM A 653/A 653M.
 - 1. Galvanized Coating Designation: G90.
 - 2. Finishes for Surfaces Exposed to View: Mill phosphatized.
- C. Reinforcement Shapes and Plates: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.
 - 1. Where black- and galvanized-steel shapes and plates are used to reinforce aluminum ducts, isolate the different metals with butyl rubber, neoprene, or EPDM gasket materials.
- D. Tie Rods: Galvanized steel, 1/4-inch minimum diameter for lengths 36 inches or less; 3/8-inch minimum diameter for lengths longer than 36 inches.

1. Cupped-Head, Capacitor-Discharge-Weld Pins: Copper- or zinc-coated steel pin, fully annealed for capacitor-discharge welding, 0.106-inch-diameter shank, length to suit depth of insulation indicated with integral 1-1/2-inch galvanized carbon-steel washer.
2. Insulation-Retaining Washers: Self-locking washers formed from 0.016-inch-thick galvanized steel; with beveled edge sized as required to hold insulation securely in place but not less than 1-1/2 inches in diameter.

2.4 SEALANT AND GASKETS

- A. General Sealant and Gasket Requirements: Surface-burning characteristics for sealants and gaskets shall be a maximum flame-spread index of 25 and a maximum smoke-developed index of 50 when tested according to UL 723; certified by an NRTL.
- B. Water-Based Joint and Seam Sealant:
 1. Application Method: Brush on.
 2. Solids Content: Minimum 65 percent.
 3. Shore A Hardness: Minimum 20.
 4. Water resistant.
 5. Mold and mildew resistant.
 6. VOC: Maximum 75 g/L (less water).
 7. Maximum Static-Pressure Class: 10-inch wg, positive and negative.
 8. Service: Indoor or outdoor.
 9. Substrate: Compatible with galvanized sheet steel (both PVC coated and bare), stainless steel, or aluminum sheets.
- C. Flanged Joint Sealant: Comply with ASTM C 920.
 1. General: Single-component, acid-curing, silicone, elastomeric.
 2. Type: S.
 3. Grade: NS.
 4. Class: 25.
 5. Use: O.
 6. For indoor applications, sealant shall have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
 7. Sealant shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- D. Flange Gaskets: Butyl rubber, neoprene, or EPDM polymer with polyisobutylene plasticizer.
- E. Round Duct Joint O-Ring Seals:

1. Seal shall provide maximum leakage class of 3 cfm/100 sq. ft. at 1-inch wg and shall be rated for 10-inch wg static-pressure class, positive or negative.
2. EPDM O-ring to seal in concave bead in coupling or fitting spigot.
3. Double-lipped, EPDM O-ring seal, mechanically fastened to factory-fabricated couplings and fitting spigots.

2.5 HANGERS AND SUPPORTS

- A. Hanger Rods for Noncorrosive Environments: Cadmium-plated steel rods and nuts.
- B. Hanger Rods for Corrosive Environments: Electrogalvanized, all-thread rods or galvanized rods with threads painted with zinc-chromate primer after installation.
- C. Strap and Rod Sizes: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Table 5-1, "Rectangular Duct Hangers Minimum Size," and Table 5-2, "Minimum Hanger Sizes for Round Duct."
- D. Steel Cables for Galvanized-Steel Ducts: Galvanized steel complying with ASTM A 603.
- E. Steel Cables for Stainless-Steel Ducts: Stainless steel complying with ASTM A 492.
- F. Steel Cable End Connections: Cadmium-plated steel assemblies with brackets, swivel, and bolts designed for duct hanger service; with an automatic-locking and clamping device.
- G. Duct Attachments: Sheet metal screws, blind rivets, or self-tapping metal screws; compatible with duct materials.
- H. Trapeze and Riser Supports:
 1. Supports for Galvanized-Steel Ducts: Galvanized-steel shapes and plates.
 2. Supports for Stainless-Steel Ducts: Stainless-steel shapes and plates.
 3. Supports for Aluminum Ducts: Aluminum or galvanized steel coated with zinc chromate.

PART 3 - EXECUTION

3.1 DUCT INSTALLATION

- A. Drawing plans, schematics, and diagrams indicate general location and arrangement of duct system. Indicated duct locations, configurations, and arrangements were used to size ducts and calculate friction loss for air-handling equipment sizing and for other design considerations. Install duct systems as indicated unless deviations to layout are approved on Shop Drawings and Coordination Drawings.

- B. Install ducts according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" unless otherwise indicated.
- C. Install round ducts in maximum practical lengths.
- D. Install ducts with fewest possible joints.
- E. Install factory- or shop-fabricated fittings for changes in direction, size, and shape and for branch connections.
- F. Unless otherwise indicated, install ducts vertically and horizontally, and parallel and perpendicular to building lines.
- 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, plus allowance for insulation thickness.
- I. Route ducts to avoid passing through transformer vaults and electrical equipment rooms and enclosures.
- J. Where ducts pass through non-fire-rated interior partitions and exterior walls and are exposed to view, cover the opening between the partition and duct or duct insulation with sheet metal flanges of same metal thickness as the duct. Overlap openings on four sides by at least 1-1/2 inches.
- K. Where ducts pass through fire-rated interior partitions and exterior walls, install fire dampers. Comply with requirements in Section 233300 "Air Duct Accessories" for fire and smoke dampers.
- L. Protect duct interiors from moisture, construction debris and dust, and other foreign materials. Comply with SMACNA's "IAQ Guidelines for Occupied Buildings Under Construction," Appendix G, "Duct Cleanliness for New Construction Guidelines."

3.2 DUCT SEALING

- A. Seal ducts for duct static-pressure, seal classes, and leakage classes specified in "Duct Schedule" Article according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."
- B. Seal ducts to the following seal classes according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible":
 - 1. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."
 - 2. Outdoor, Supply-Air Ducts: Seal Class A.
 - 3. Outdoor, Exhaust Ducts: Seal Class C.

4. Supply-Air Ducts in Pressure Classes Higher Than 2-Inch wg: Seal Class B.
5. Exhaust Ducts: Seal Class B.
6. Return-Air Ducts: Seal Class C.

3.3 HANGER AND SUPPORT INSTALLATION

- A. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Chapter 5, "Hangers and Supports."
- B. Building Attachments: Concrete inserts, powder-actuated fasteners, or structural-steel fasteners appropriate for construction materials to which hangers are being attached.
 1. Where practical, install concrete inserts before placing concrete.
 2. Do not use powder-actuated concrete fasteners for lightweight-aggregate concretes or for slabs less than 4 inches thick.
 3. Do not use powder-actuated concrete fasteners for seismic restraints.
- C. Hanger Spacing: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Table 5-1, "Rectangular Duct Hangers Minimum Size," and Table 5-2, "Minimum Hanger Sizes for Round Duct," for maximum hanger spacing; install hangers and supports within 24 inches of each elbow and within 48 inches of each branch intersection.
- D. Hangers Exposed to View: Threaded rod and angle or channel supports.
- E. Install upper attachments to structures. Select and size upper attachments with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

3.4 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
- B. Perform tests and inspections.
- C. Leakage Tests:
 1. Comply with SMACNA's "HVAC Air Duct Leakage Test Manual." Submit a test report for each test.
 2. Test the following systems:
 - a. Supply Ducts with a Pressure Class of 2-Inch wg or lower: Test representative duct sections, selected by Architect from sections installed, totaling no less than 5 percent of total installed duct area.

- b. Exhaust Ducts with a Pressure Class of 2-Inch wg or lower: Test representative duct sections, selected by Architect from sections installed, totaling no less than 5 percent of total installed duct area.
 3. Disassemble, reassemble, and seal segments of systems to accommodate leakage testing and for compliance with test requirements.
 4. Test for leaks before applying external insulation.
 5. Conduct tests at static pressures equal to maximum design pressure of system or section being tested. If static-pressure classes are not indicated, test system at maximum system design pressure. Do not pressurize systems above maximum design operating pressure.
 6. Give seven days' advance notice for testing.
- D. Duct System Cleanliness Tests:
1. Visually inspect duct system to ensure that no visible contaminants are present.
 2. Test sections of metal duct system, chosen randomly by Owner, for cleanliness according to "Vacuum Test" in NADCA ACR, "Assessment, Cleaning and Restoration of HVAC Systems."
 - a. Acceptable Cleanliness Level: Net weight of debris collected on the filter media shall not exceed 0.75 mg/100 sq. cm.
- E. Duct system will be considered defective if it does not pass tests and inspections.
- F. Prepare test and inspection reports.

3.5 DUCT CLEANING

- A. Clean new duct system(s) before testing, adjusting, and balancing.
- B. Clean the following components by removing surface contaminants and deposits:
 1. Air outlets and inlets (registers, grilles, and diffusers) affected by the remodeling.
 2. Supply-air ducts, dampers, actuators, and turning vanes located within 5 ft from the point where the remodeling has taken place.
- C. 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.

3.6 DUCT SCHEDULE

- A. Fabricate ducts with galvanized sheet steel.
 - 1. See the following Duct Schedule for additional information.
- B. Supply Ducts:
 - 1. Ducts Connected to Constant-Volume Air Conditioning Units:
 - a. Pressure Class: Positive 2-inch wg.
 - b. Minimum SMACNA Seal Class: A
 - c. SMACNA Leakage Class for Rectangular: 6.
 - d. SMACNA Leakage Class for Round : 3.
- C. Exhaust Ducts:
 - 1. Ducts Connected to Fans Exhausting Air:
 - a. Pressure Class: Negative 2-inch wg.
 - b. Minimum SMACNA Seal Class: A if negative pressure, and A if positive pressure.
 - c. SMACNA Leakage Class for Rectangular: 6.
 - d. SMACNA Leakage Class for Round : 3.
 - e. Duct Liner: None.
- D. Intermediate Reinforcement:
 - 1. Galvanized-Steel Ducts: Galvanized steel or carbon steel coated with zinc-chromate primer.
 - 2. Stainless-Steel Ducts:
 - a. Exposed to wet airstream:
- E. Elbow Configuration:
 - 1. Rectangular Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-2, "Rectangular Elbows."
 - a. Velocity 1000 fpm or Lower:
 - 1) Radius Type RE 1 with minimum 0.5 radius-to-diameter ratio.
 - 2) Mitered Type RE 4 without vanes.
 - b. Velocity 1000 to 1500 fpm:
 - 1) Radius Type RE 1 with minimum 1.0 radius-to-diameter ratio.
 - 2) Radius Type RE 3 with minimum 0.5 radius-to-diameter ratio and two vanes.

- 3) Mitered Type RE 2 with vanes complying with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-3, "Vanes and Vane Runners," and Figure 4-4, "Vane Support in Elbows."
- c. Velocity 1500 fpm or Higher:
 - 1) Radius Type RE 1 with minimum 1.5 radius-to-diameter ratio.
 - 2) Radius Type RE 3 with minimum 1.0 radius-to-diameter ratio and two vanes.
 - 3) Mitered Type RE 2 with vanes complying with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-3, "Vanes and Vane Runners," and Figure 4-4, "Vane Support in Elbows."
2. Rectangular Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-2, "Rectangular Elbows."
 - a. Radius Type RE 1 with minimum 1.5 radius-to-diameter ratio.
 - b. Radius Type RE 3 with minimum 1.0 radius-to-diameter ratio and two vanes.
 - c. Mitered Type RE 2 with vanes complying with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-3, "Vanes and Vane Runners," and Figure 4-4, "Vane Support in Elbows."
3. Round Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-4, "Round Duct Elbows."
 - a. Minimum Radius-to-Diameter Ratio and Elbow Segments: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Table 3-1, "Mitered Elbows." Elbows with less than 90-degree change of direction have proportionately fewer segments.
 - 1) Velocity 1000 fpm or Lower: 0.5 radius-to-diameter ratio and three segments for 90-degree elbow.
 - 2) Velocity 1000 to 1500 fpm: 1.0 radius-to-diameter ratio and four segments for 90-degree elbow.
 - 3) Velocity 1500 fpm or Higher: 1.5 radius-to-diameter ratio and five segments for 90-degree elbow.
 - b. Round Elbows, 12 Inches and Smaller in Diameter: Stamped or pleated.
 - c. Round Elbows, 14 Inches and Larger in Diameter: Welded.

F. Branch Configuration:

1. Rectangular Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-6, "Branch Connection."

- a. Rectangular Main to Rectangular Branch: 45-degree entry.
 - b. Rectangular Main to Round Branch: Spin in.
2. Round : Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-5, "90 Degree Tees and Laterals," and Figure 3-6, "Conical Tees." Saddle taps are permitted in existing duct.
- a. Velocity 1000 fpm or Lower: 90-degree tap.
 - b. Velocity 1000 to 1500 fpm: Conical tap.
 - c. Velocity 1500 fpm or Higher: 45-degree lateral.

END OF SECTION 23 31 13

SECTION 23 33 00 - AIR DUCT ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Manual volume dampers.
 - 2. Flange connectors.
 - 3. Turning vanes.
 - 4. Remote damper operators.
 - 5. Duct-mounted access doors.
 - 6. Duct security grilles.
 - 7. Duct accessory hardware.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. For each type of product, include pressure drop data. Include breakout noise calculations for high transmission loss casings.
- B. Shop Drawings: For duct accessories. Include plans, elevations, sections, details and attachments to other work.
 - 1. Detail duct accessories fabrication and installation in ducts and other construction. Include dimensions, weights, loads, and required clearances; and method of field assembly into duct systems and other construction. Include the following:
 - a. Special fittings.
 - b. Manual volume damper installations.
 - c. Duct security bars.

1.3 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Reflected ceiling plans, drawn to scale, on which ceiling-mounted access panels and access doors required for access to duct accessories are shown and coordinated with each other, using input from Installers of the items involved.
- B. Source quality-control reports.

1.4 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For air duct accessories to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 ASSEMBLY DESCRIPTION

- A. Comply with NFPA 90A, "Installation of Air Conditioning and Ventilating Systems," and with NFPA 90B, "Installation of Warm Air Heating and Air Conditioning Systems."
- B. 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.

2.2 MATERIALS

- A. Galvanized Sheet Steel: Comply with ASTM A 653/A 653M.
 - 1. Galvanized Coating Designation: G90.
 - 2. Exposed-Surface Finish: Mill phosphatized.
- B. Reinforcement Shapes and Plates: Galvanized-steel reinforcement where installed on galvanized sheet metal ducts; compatible materials for aluminum and stainless-steel ducts.
- C. Tie Rods: Galvanized steel, 1/4-inch minimum diameter for lengths 36 inches or less; 3/8-inch minimum diameter for lengths longer than 36 inches.

2.3 MANUAL VOLUME DAMPERS

- A. Standard, Steel, Manual Volume Dampers:
 - 1. Manufacturers: Subject to compliance with requirements, provide products by the following:
 - a. Basis of Design: Ruskin Company.
 - 2. Standard leakage rating, with linkage outside airstream.
 - 3. Suitable for horizontal or vertical applications.
 - 4. Frames:
 - a. Frame: Hat-shaped, 0.094-inch-thick, galvanized sheet steel.

- b. Mitered and welded corners.
 - c. Flanges for attaching to walls and flangeless frames for installing in ducts.
- 5. Blades:
 - a. Multiple or single blade.
 - b. Parallel- or opposed-blade design.
 - c. Stiffen damper blades for stability.
 - d. Galvanized-steel, 0.064 inch thick.
- 6. Blade Axles: Galvanized steel.
- 7. Bearings:
 - a. Oil-impregnated bronze.
 - b. Dampers in ducts with pressure classes of 3-inch wg or less shall have axles full length of damper blades and bearings at both ends of operating shaft.
- 8. Tie Bars and Brackets: Galvanized steel.

B. Jackshaft:

- 1. Size: 1-inch diameter.
- 2. Material: Galvanized-steel pipe rotating within pipe-bearing assembly mounted on supports at each mullion and at each end of multiple-damper assemblies.
- 3. Length and Number of Mountings: As required to connect linkage of each damper in multiple-damper assembly.

C. Damper Hardware:

- 1. Zinc-plated, die-cast core with dial and handle made of 3/32-inch-thick zinc-plated steel, and a 3/4-inch hexagon locking nut.
- 2. Include center hole to suit damper operating-rod size.
- 3. Include elevated platform for insulated duct mounting.

2.4 FLANGE CONNECTORS

- A. Manufacturers: Subject to compliance with requirements, provide products by the following:
 - 1. Basis of Design: Ductmate Industries, Inc.
- B. Description: Add-on or roll-formed, factory-fabricated, slide-on transverse flange connectors, gaskets, and components.
- C. Material: Galvanized steel.
- D. Gage and Shape: Match connecting ductwork.

2.5 TURNING VANES

- A. Manufacturers: Subject to compliance with requirements, provide products by the following:
 - 1. Basis of Design: Ductmate Industries, Inc.
- B. Manufactured Turning Vanes for Metal Ducts: Curved blades of galvanized sheet steel; support with bars perpendicular to blades set; set into vane runners suitable for duct mounting.
 - 1. Acoustic Turning Vanes: Fabricate airfoil-shaped aluminum extrusions with perforated faces and fibrous-glass fill.
- C. Manufactured Turning Vanes for Nonmetal Ducts: Fabricate curved blades of resin-bonded fiberglass with acrylic polymer coating; support with bars perpendicular to blades set; set into vane runners suitable for duct mounting.
- D. General Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible"; Figures 4-3, "Vanes and Vane Runners," and 4-4, "Vane Support in Elbows."
- E. Vane Construction: Single wall for ducts up to 48 inches wide and double wall for larger dimensions.

2.6 REMOTE DAMPER OPERATORS

- A. Manufacturers: Subject to compliance with requirements, provide products by the following:
 - 1. Basis of Design: Pottorff.
- B. Description: Cable system designed for remote manual damper adjustment.
- C. Tubing: Aluminum.
- D. Cable: Stainless steel.
- E. Wall-Box Mounting: Recessed.
- F. Wall-Box Cover-Plate Material: Steel.

2.7 DUCT-MOUNTED ACCESS DOORS

- A. Manufacturers: Subject to compliance with requirements, provide products by the following:
 - 1. Basis of Design: Ductmate Industries, Inc.

- B. Duct-Mounted Access Doors: Fabricate access panels according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible"; Figures 7-2, "Duct Access Doors and Panels," and 7-3, "Access Doors - Round Duct."

1. Door:
 - a. Double wall, rectangular.
 - b. Galvanized sheet metal with insulation fill and thickness as indicated for duct pressure class.
 - c. Vision panel.
 - d. Hinges and Latches: 1-by-1-inch butt or piano hinge and cam latches.
 - e. Fabricate doors airtight and suitable for duct pressure class.
2. Frame: Galvanized sheet steel, with bend-over tabs and foam gaskets.
3. Number of Hinges and Locks:
 - a. Access Doors Less Than 12 Inches Square: No hinges and two sash locks.
 - b. Access Doors up to 18 Inches Square: Continuous and two sash locks.
 - c. Access Doors up to 24 by 48 Inches: Continuous and two compression latches with outside and inside handles.
 - d. Access Doors Larger Than 24 by 48 Inches: Continuous and two compression latches with outside and inside handles.

2.8 DUCT ACCESS PANEL ASSEMBLIES

- A. Manufacturers: Subject to compliance with requirements, provide products by the following:
1. Basis of Design: Ductmate Industries, Inc.
- B. Labeled according to UL 1978 by an NRTL.
- C. Panel and Frame: Minimum thickness 0.0428-inch stainless steel.
- D. Fasteners: Carbon steel. Panel fasteners shall not penetrate duct wall.
- E. Gasket: Comply with NFPA 96; grease-tight, high-temperature ceramic fiber, rated for minimum 2000 deg F.
- F. Minimum Pressure Rating: 10-inch wg, positive or negative.

2.9 DUCT SECURITY GRILLES

- A. Manufacturers: Subject to compliance with requirements, provide products by the following:
1. Basis of Design: Titus.

- B. Description: Security grilles shall be steel of the sizes and mounting type shown on the Drawings. Grilles shall be constructed with 3/4 inch diameter bars with maximum spacing of 6 inches each direction. All barrier grilles shall be surrounded by a 3/16 inch sleeve. The sleeve shall be stitch welded along the entire length. Two 1-1/2 x 1-1/2 x 3/16 inch angle frames shall be shipped loose for field welding in place. The barrier grille finish shall be white. The finish shall be an anodic acrylic paint, baked at 315°F for 30 minutes. The pencil hardness must be HB to H. The paint must pass a 100-hour ASTM B117 corrosive Environments Salt Spray Test without creepage, blistering or deterioration of film. The paint must pass a 150-hour ASTM D870 Water Immersion Test. The paint must also pass the ASTM D2794 Reverse Impact Cracking Test with a 50-inch pound force applied.
1. Provide at round ducts 8" and larger in diameter.
 2. Provide at rectangular ducts with a dimension of 8" in any direction.
 3. For details see Code Plan drawing 54C/CP4.0.
- C. Configuration:
1. See plans for security bar location on mechanical floor plan.

2.10 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.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install duct accessories according to applicable details in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for metal ducts and in NAIMA AH116, "Fibrous Glass Duct Construction Standards," for fibrous-glass ducts.
- B. Install duct accessories of materials suited to duct materials; use galvanized-steel accessories in galvanized-steel and fibrous-glass ducts, stainless-steel accessories in stainless-steel ducts, and aluminum accessories in aluminum ducts.
- C. Install backdraft or control dampers at inlet of exhaust fans or exhaust ducts as close as possible to exhaust fan unless otherwise indicated.
- D. Install volume dampers at points on supply, return, and exhaust systems where branches extend from larger ducts. Where dampers are installed in ducts having duct liner, install

dampers with hat channels of same depth as liner, and terminate liner with nosing at hat channel.

1. Install steel volume dampers in steel ducts.
 2. Install aluminum volume dampers in aluminum ducts.
- E. Set dampers to fully open position before testing, adjusting, and balancing.
- F. Install test holes at fan inlets and outlets and elsewhere as indicated.
- G. Install fire and smoke dampers according to UL listing.
- H. Install duct security bars. Construct duct security bars from 0.164-inch steel sleeve, continuously welded at all joints and 1/2-inch-diameter steel bars, 6 inches o.c. (max.) in each direction in center of sleeve. Weld each bar to steel sleeve and each crossing bar. Weld 2-1/2-by-2-1/2-by-1/4-inch steel angle to 4 sides and both ends of sleeve. Provide 12-by-12-inch hinged access panel with cam lock in duct in each side of sleeve and in the gyp. board ceiling.
- I. Install duct access doors on sides of ducts to allow for inspecting, adjusting, and maintaining accessories and equipment at the following locations:
1. Upstream and downstream from duct filters.
 2. At outdoor-air intakes and mixed-air plenums.
 3. Downstream from manual volume dampers, control dampers, backdraft dampers, and equipment.
 4. Adjacent to and close enough to fire or smoke dampers, to reset or reinstall fusible links. Access doors for access to fire or smoke dampers having fusible links shall be pressure relief access doors and shall be outward operation for access doors installed upstream from dampers and inward operation for access doors installed downstream from dampers.
 5. At each change in direction and at maximum 50-foot spacing.
 6. Upstream and downstream from turning vanes.
 7. Elsewhere as indicated.
- J. Install access doors with swing against duct static pressure.
- K. Access Door Sizes:
1. One-Hand or Inspection Access: 8 by 5 inches.
 2. Two-Hand Access: 12 by 6 inches.
- L. Label access doors according to Section 230553 "Identification for HVAC Piping and Equipment" to indicate the purpose of access door.
- M. Install flexible connectors to connect ducts to equipment.
- N. Install duct test holes where required for testing and balancing purposes.

- O. Install thrust limits at centerline of thrust, symmetrical on both sides of equipment. Attach thrust limits at centerline of thrust and adjust to a maximum of 1/4-inch movement during start and stop of fans.

3.2 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
- B. Tests and Inspections:
 - 1. Operate dampers to verify full range of movement.
 - 2. Inspect locations of access doors and verify that purpose of access door can be performed.
 - 3. Inspect turning vanes for proper and secure installation.
 - 4. Operate remote damper operators to verify full range of movement of operator and damper.

END OF SECTION 23 33 00

SECTION 23 37 13 - DIFFUSERS, REGISTERS, AND GRILLES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Grilles and registers as scheduled on the plans. Scheduled models by reference include required features and performance in addition to those specified herein. Where in conflict with this specification section the scheduled products will govern.

B. Related Sections:

1. Section 233300 "Air Duct Accessories" for fire and smoke dampers and volume-control dampers not integral to diffusers, registers, and grilles.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product indicated, include the following:

1. Data Sheet: Indicate materials of construction, finish, and mounting details; and performance data including throw and drop, static-pressure drop, and noise ratings.
2. Register, and Grille Schedule: Indicate drawing designation, room location, quantity, model number, size, and accessories furnished.

1.3 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Reflected ceiling plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from Installers of the items involved:

1. Ceiling suspension assembly members.
2. Method of attaching hangers to building structure.
3. Size and location of initial access modules for acoustical tile.
4. Ceiling-mounted items including lighting fixtures, diffusers, grilles, speakers, sprinklers, access panels, and special moldings.
5. Duct access panels.

B. Source quality-control reports.

PART 2 - PRODUCTS

2.1 REGISTERS AND GRILLES (IN STAFF OCCUPIED AREAS)

A. Exhaust Register:

1. Manufacturers: Subject to compliance with requirements, provide products by the following:
 - a. Basis of Design: Titus.
2. Construction and configuration as Scheduled.

2.2 SECURITY REGISTERS & GRILLES

A. Wall Supply and Exhaust Security Grille:

1. Manufacturers: Subject to compliance with requirements, provide products by the following:
 - a. Basis of Design: Titus.
2. Security Level: Maximum and suicide deterrent (Compliant with NIC).
3. Material: Steel.
4. Material Thickness: 0.19 inch.
5. Finish: Baked enamel, color selected by Architect.
6. Face Arrangement:
 - a. Shape: Square.
 - b. Design: Perforated.
 - c. Core: Louvered.
 - d. 3/16-inch-thick, perforated faceplate with 3/16-inch-diameter holes spaced 7/16 inch o.c., staggered at 60 degrees.
7. Damper: Duct mounted.

B. Ceiling Supply Security Grille:

1. Manufacturers: Subject to compliance with requirements, provide products by the following:
 - a. Basis of Design: Titus.
2. Security Level: Maximum and suicide deterrent (Compliant with NIC).
3. Material: Steel.
4. Material Thickness: 0.19 inch.
5. Finish: Baked enamel, color selected by Architect.
6. Face Arrangement:
 - a. Shape: Square.
 - b. Design: Perforated.
 - c. Core: Louvered.

- d. 3/16-inch-thick, perforated faceplate with 3/16-inch-diameter holes spaced 7/16 inch o.c., staggered at 60 degrees.
- 7. Damper: Duct mounted.
- C. Ceiling Exhaust Security Grille:
 - 1. Manufacturers: Subject to compliance with requirements, provide products by the following:
 - a. Basis of Design: Titus.
 - 2. Security Level: Maximum and suicide deterrent (Compliant with NIC).
 - 3. Material: Steel.
 - 4. Material Thickness: 0.19 inch.
 - 5. Finish: Baked enamel, color selected by Architect.
 - 6. Face Arrangement:
 - a. Shape: Square.
 - b. Design: Perforated.
 - c. Core: Louvered.
 - d. 3/16-inch-thick, perforated faceplate with 3/16-inch-diameter holes spaced 7/16 inch o.c., staggered at 60 degrees.
 - 7. Damper: Duct mounted.

2.3 SOURCE QUALITY CONTROL

- A. Verification of Performance: Rate diffusers, registers, and grilles according to ASHRAE 70, "Method of Testing for Rating the Performance of Air Outlets and Inlets."

PART 3 - EXECUTION

3.1 EXAMINATION

- A. 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.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install diffusers, registers, and grilles level and plumb.
- B. Ceiling-Mounted Outlets and Inlets: Drawings indicate general arrangement of ducts, fittings, and accessories. Air outlet and inlet locations have been indicated to achieve design requirements for air volume, noise criteria, airflow pattern, throw, and pressure

drop. Make final locations where indicated, as much as practical. For units installed in lay-in ceiling panels, locate units in the center of panel. Where architectural features or other items conflict with installation, notify Architect for a determination of final location.

- C. Install diffusers, registers, and grilles with airtight connections to ducts and to allow service and maintenance of dampers, air extractors, and fire dampers.

3.3 ADJUSTING

- A. After installation, adjust diffusers, registers, and grilles to air patterns indicated, or as directed, before starting air balancing.

END OF SECTION 23 37 13