



## **PROJECT MANUAL**

**McCLELLAN PARK**  
**Bay G & H Tenant Improvements**  
**Sacramento County, California**  
**No. C26863011**  
**September 2026**



**STATE OF CALIFORNIA**  
**NATURAL RESOURCES AGENCY**  
**DEPARTMENT OF PARKS AND RECREATION**

# CALIFORNIA DEPARTMENT OF PARKS AND RECREATION

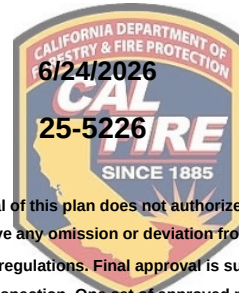
# CONTRACT DOCUMENTS

MCCLELLAN BAY G & H  
LEESD CWPP, TELECOM & I.T. TENANT IMPROVEMENT  
December 5, 2025



## 100% CONSTRUCTION DOCUMENTS

OFFICE OF THE STATE FIRE MARSHAL  
APPROVED FIRE AND PANIC ONLY



Approval of this plan does not authorize or  
approve any omission or deviation from  
applicable regulations. Final approval is subject  
to field inspection. One set of approved plans  
shall be available on the project site at all times.

PROJECT MANUAL  
For  
MCCLELLAN BAY G & H  
LEESD CWPP, TELECOM & I.T. TENANT IMPROVEMENT

| APPROVAL STAMP                                                                      | NAME                                                                                                                                                                   |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | McKenna Redeagle<br>State of California<br>Department of Parks & Recreation<br>2241 Harvard Street, Suite 200<br>Sacramento, CA 95815<br>mckenna.redeagle@parks.ca.gov |
|   | Robert Taketa<br>State of California<br>Department of Parks & Recreation<br>2241 Harvard Street, Suite 200<br>Sacramento, CA 95815<br>robert.taketa@parks.ca.gov       |
|  | Brian Starrett<br>3C Engineering an EMCOR Company<br>1500 Palm Street<br>San Luis Obispo, CA 93401<br>bstarrett@emcor.net                                              |

NATURAL RESOURCES AGENCY  
DEPARTMENT OF PARKS AND RECREATION  
McCLELLAN PARK  
Bay G&H Tenant Improvements  
Sacramento County, California

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McCLELLAN PARK, Bay G&H Tenant Improvements

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# SMALL BUSINESS PREFERENCE NOTICE

## 5% Small Business Preference

### 5% SMALL BUSINESS PREFERENCE PROGRAM

#### What is a California Certified Small Business (SB)?

- 1) For a business to be considered a Small Business (SB), they must be certified with the State of California - Department of General Services in accordance with California Code of Regulations, Title 2, Section 1896.94.
- 2) Your business may be eligible if it meets all of the following\*:
  - a. Must be independently owned and operated.
  - b. Cannot be dominant in its field of operation.
  - c. Must have its principal office located in California.
  - d. Must have its owners (or officers in the case of a corporation) domiciled in California.
  - e. Together with its affiliates, be either:
    - A business with 100 or fewer employees, and an average annual gross receipts of \$16 million or less over the previous three tax years, **or**
    - A manufacturer with 100 or fewer employees.
  - f. Microbusiness: A small business will automatically be designated as a microbusiness if gross annual receipts, together with all affiliates, are less than \$5,000,000 or, the small business is a manufacturer with 25 or fewer employees.

\* For additional details visit the [Department of General Services \(DGS\) website](#).

#### What is the Small Business Preference?

**5% Small Business Preference:** State law allows certified small business (SB) and microbusiness (MB) firms to receive a 5% bidding preference on applicable state solicitations. The 5% preference is also available for non-certified businesses who subcontract 25% of contract amount with a certified SB/MB. **In no event shall the SB preference or non-SB subcontracting preference exceed \$50,000 in any single bid.**

The effect of the preference is to help SBs/MBs be more competitive in the bid process, thereby enhancing state contract awards directly or indirectly to SB/MB. The preference is only used for computation purposes to determine the winning bidder, the contract is awarded at the actual bid amount.

#### 1. How does the 5% Small Business (SB) Preference Work?

- a) The following example shows how the 5% preference computation works, and how it is used to determine a successful bidder.

| Bidder | Bid Amount | Bid After 5% Preference | Small Business Status                                                |
|--------|------------|-------------------------|----------------------------------------------------------------------|
| 1      | \$30,750   | \$30,750                | Claims small business status, but is not CA certified                |
| 2      | \$28,975   | \$28,975                | Does not claim to be a small business                                |
| 3      | \$29,520   | \$29,520                | Claims small business status, but their CA certification has expired |
| 4      | \$29,870   | \$28,421                | Claims small business and is CA Certified                            |

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b) Computation Method for example 4-a:

1. Five percent is applied to the **lowest (non-certified small business)** responsible bid ([Bidder 2] \$28,975 x .05 = \$1448.75).
2. The preference amount (\$1,448.75) is subtracted from the certified small business (Bidder 4's) bid amount (\$29,870 - \$1,448.75 = \$28,421.25).
3. Bidder 4's computed total is \$28,421.25, making them the lowest bidder.
4. The contract is awarded to Bidder 4 for \$29,870.

c) **NOTE:** *The 5% SB preference is applied to currently certified and registered small businesses and is used for bid evaluation purposes and **does not alter the bid's actual amount.***

## 2. Documentation

- a) Bidders must provide a printout from the State's SB/DVBE vendor system showing your certification and expiration date from the following web site. [www.Caleprocure.ca.gov](http://www.Caleprocure.ca.gov)
- b) If a non-certified firm is claiming the SB Preference based on subcontracting at least 25% of the contract to a certified SB/MB, you must include a complete GSPD 05-105 with your bid. An evaluated bid under the 25% SB subcontracting qualification cannot displace a certified and registered SB.
- c) At completion of performance and when SB participation was included toward SB goals under this contract, then the contractor must complete and submit form DPR 489 to the State's designated representative under this contract and within the time specified within the contracting documents or within 60 days of receipt of final payment, whichever is sooner.

## 3. Verification

Information submitted by the bidders to claim the SB Preference will be verified by the State. If evidence of an alleged violation is found during the verification process, the State shall initiate an investigation, in accordance with the requirements of the PCC §10115, et seq., and MVC §999 et seq., and follow the investigatory procedures required by the 2 CCR §1896.80. Contractors found to be in violation of certain provisions may be subject to loss of certification, penalties and/or contract termination.

## 4. To locate SB/MB contractors:

- a) Contact the department's contracting official named in this solicitation for any SB/MB contractors who may have identified themselves as potential subcontractors, and to obtain suggestions for search criteria to possibly identify SB/MB contractors for the solicitation. You may also contact the department's SB/DVBE Advocate for assistance: [www.parks.ca.gov/advocate](http://www.parks.ca.gov/advocate).
- b) Access the list of all certified SB/MBs by using the Department of General Services, Procurement Division (DGS-PD) online certified firm database at: [www.Caleprocure.ca.gov](http://www.Caleprocure.ca.gov)
- c) Search by "Keywords" or United Nations Standard Products and Services Codes (UNSPSC) that apply to the elements of work you want to subcontract to a SB/MB.
- d) Check for subcontractor ads that may be placed on the California State Contracts Register (CSCR) for this solicitation prior to the closing date. You may access the CSCR at: [www.Caleprocure.ca.gov](http://www.Caleprocure.ca.gov)

## 5. Information

The State of California, Department of General Services, Procurement Division, Office of Small Business and DVBE Services (OSDS) offers many services that assist contractor/business owners with a variety of information designed to streamline the State contracting process. OSDS also certifies SB/MB contractors. For more information, please contact

The State of California  
Department of General Services  
Office of Small Business and DVBE Services  
707 Third Street, First Floor – Room 400  
West Sacramento, CA 95605

[www.dgs.ca.gov/PD/Contact](http://www.dgs.ca.gov/PD/Contact)  
Receptionist: (916) 375-4940  
24-hour recording: (916) 322-5060  
FAX: (916) 375-4950  
[OSDSHelp@dgs.ca.gov](mailto:OSDSHelp@dgs.ca.gov)

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**Disabled Veteran Business Enterprise (DVBE) Notice**  
**DVBE Participation Requirement and Incentive for**  
**Invitation For Bids (IFB)**

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1. Bidder's attention is directed to the Disabled Veteran Business Enterprise (DVBE) Participation Requirement for bidders, as outlined in the accompanying bid package.
2. In order to be responsive and eligible for award of the contract, bidder must attain the prescribed goals for the DVBE participation.

**The DVBE Participation Requirement  
for this solicitation is 6%.**

**Failure to fulfill the DVBE requirement will render  
your bid non-responsive.**

3. It is essential that you commence the required participation process **immediately**, to allow adequate response time for potential DVBE participants.
4. The DVBE participation requirement is mandatory by state law, whether you are conducting business as an individual, partnership or corporation.

**IMMEDIATE ACTION REQUIRED**

## 5. What is a Disabled Veteran Business Enterprise (DVBE)?

- a) For a business to be considered a Disabled Veteran Business Enterprise (DVBE), they must be certified with the State of California - Department of General Services in accordance with California Code of Regulations, Title 2, Section 1896.94. Please see the following website for more information about DVBE certification benefits and eligibility requirements:

[www.dgs.ca.gov/PD/Services/Page-Content/Procurement-Division-Services-List-Folder/Certify-or-Re-apply-as-Small-Business-Disabled-Veteran-Business-Enterprise](http://www.dgs.ca.gov/PD/Services/Page-Content/Procurement-Division-Services-List-Folder/Certify-or-Re-apply-as-Small-Business-Disabled-Veteran-Business-Enterprise)

- b) Only DVBEs who perform a commercially useful function relevant to this solicitation, may be used to satisfy the DVBE participation and/or incentive program requirements.

## 6. **Commercially Useful Function Definition**

- a) California Code of Regulations, Title 2, § 1896.61(l): The term "DVBE contractor, subcontractor or supplier" means any person or entity that satisfies the ownership (or management) and control requirements of §1896.61(f); is certified in accordance with §1896.70; and provides services or goods that contribute to the fulfillment of the contract requirements by performing a commercially useful function.
- b) A person or entity must perform a commercially useful function (CUF) as defined under Military and Veterans Code (MVC) §999.
- c) A contractor, subcontractor, or supplier will not be considered to perform a commercially useful function if the contractor's, subcontractor's, or supplier's role is limited to that of an extra participant in a transaction, contract, or project through which funds are passed in order to obtain the appearance of disabled veteran business enterprise participation.

## 7. What is the DVBE participation requirement?

- a) **Bidders must commit at minimum 6% of their total bid** to currently certified and registered DVBE companies for this solicitation. All bidders must meet the full participation requirement based on the total bid amount in order to be considered a responsive bidder.
- b) **Reporting Requirement:** *If, for this agreement and pursuant to Military & Veterans Code (MVC) 999.5 (d), a contractor made a commitment to achieve disabled veteran business enterprise (DVBE) participation, within 60 days of receiving final payment under this agreement (or within such other time period as may be specified elsewhere in this agreement) the contractor must certify in a report to the awarding department:*
  - 1. *the total amount the prime contractor received under the contract*
  - 2. *the name and address of the DVBE(s) that participated in the performance of the contract*
  - 3. *the amount each DVBE received from the prime contractor*
  - 4. *that all payments under the contract have been made to the DVBE(s)*
  - 5. *the actual percentage of DVBE participation that was achieved*

- c) *You will be required to report to DPR the actual dollars spent with each DVBE subcontractor on a STD. 817. If awarded the contract you will receive this form at the completion of the contract. A person or entity that knowingly provides false information shall be subject to a civil penalty for each violation. (Military & Veterans Code (M&VC) § 999.5(d))*

#### **8. What is the DVBE Incentive Program?**

- a) The DVBE Incentive Program was established by statute and applies to contracts solely financed by State funds. This program is separate from the DVBE Participation Program. The incentive is designed to encourage bidders to partner with DVBE subcontractors.
- b) DVBE incentive will be given to bidders who provide DVBE participation above 6%.
- c) The incentive may be combined with other incentives and preferences up to an established cap of \$100,000.00. **The incentive is used only for evaluation purposes and does not alter the amounts of the actual bids.**

#### **9. Who is eligible to receive the incentive?**

- a) Any responsive bidder who has attained more than the required amount (6%) of DVBE participation per the solicitation instructions.

#### **10. Documentation**

- a) To be considered a responsive bidder, bidders must document at least 6% DVBE participation commitment by completing and submitting the following forms:
1. GSPD 05-105, Bidder Declaration
  2. DGS PD 843, DVBE Declaration
- b) GSPD 05-105, Bidder Declaration: The GSPD 05-105 is used to document the proposed prime contractor and subcontractors, including their roles and responsibilities. **The form must be submitted with the bid package.** If there is a discrepancy between the dollar amount and percentage of bid for DVBE participation then the percentage shall prevail.
- c) DGS PD 843, DVBE Declaration: All disabled veteran owners and disabled veteran managers of the DVBE must complete the form and submit it with the bid package. A DGS PD 843 needs to be submitted by every DVBE supplier who is part of a bid whether they are the prime contractor or subcontractor .
- d) Bids that fail to submit the completed required forms to confirm the level of DVBE participation will not be eligible to receive the DVBE incentive and may be declared unresponsive due to DVBE participation requirements. Clerical and typographical errors on these forms may be corrected at the State's sole discretion.
- e) Information submitted by the bidders to claim the DVBE incentive(s) will be verified by the State. If evidence of an alleged violation is found during the verification process, the State shall initiate an investigation, in accordance with the requirements of the PCC §10115, et seq., and MVC §999 et seq., and follow the investigatory procedures required by the 2 CCR §1896.80. Contractors found to be in violation of certain provisions may be subject to loss of certification, penalties and/or contract termination.



## 11. How does the DVBE Incentive Program Work?

- a) The DVBE incentive is used only for evaluation purposes to determine the successful bidder and does not alter the amounts of the actual bids. A dollar cap of \$100,000.00 is set for all combined incentives and preferences.
- b) For contracts to be awarded based on the Low Price Method, the incentive amount is equal to a percentage of the lowest responsive and responsible bid based on the amount of DVBE participation in the bid being evaluated per Table A below. The Computation Method does not include the small business preference; however, the small business preference may be applied and may affect the application of the incentive and the outcome of the ranking.

### c) **Table A – Invitation For Bid (IFB) (aka Low Price Method)**

| <b>Confirmed DVBE Participation of</b> | <b>DVBE Incentive Amount for IFB</b>        |
|----------------------------------------|---------------------------------------------|
| 10% or more                            | 5% of lowest responsive and responsible bid |
| 9% - 9.99%                             | 4% of lowest responsive and responsible bid |
| 8% - 8.99%                             | 3% of lowest responsive and responsible bid |
| 7% - 7.99%                             | 2% of lowest responsive and responsible bid |
| 6.01% - 6.99%                          | 1% of lowest responsive and responsible bid |

### d) **Computation Method**

#### Low Price Method

| <b>Bidder Name</b>                                                    | <b>A</b>            | <b>B</b>                                    | <b>C</b>     |
|-----------------------------------------------------------------------|---------------------|---------------------------------------------|--------------|
| Original Bid Price                                                    | \$98,000.00         | \$102,100.00                                | \$100,000.00 |
| DVBE Participation for certified DVBE Prime or Subcontractors         | 4%                  | 8%                                          | 6%           |
| Initial Ranking                                                       | Unresponsive        | 2                                           | 1            |
| DVBE Incentive (from Table A)                                         | n/a                 | 3%                                          | n/a          |
| Incentive Amount<br>(% x Lowest Responsive and Responsible Bid Price) | n/a                 | <b>\$3,000.00</b><br>(3% x \$100,000)       | n/a          |
| Evaluated Bid Price<br>(Bidder's Price - Bidder's Incentive Amount)   | n/a                 | <b>\$99,100.00</b><br>(\$102,100 - \$3,000) | n/a          |
| <b>Final Rank:</b>                                                    | <b>Unresponsive</b> | <b>1</b>                                    | <b>2</b>     |

## 12. Substitution of Proposed DVBE

- a) If awarded the contract, the DVBE subcontractors and/or contractors proposed by bidder must be used unless prior written notice of substitution is provided to the state and the state approves such substitution.
- b) The notice must include a minimum of: (1) a written explanation of the reason for the substitution; and (2) an updated GSPD 05-105 must be submitted to the award office of Department of Parks and Recreation. The substitution request must be approved before the substitution can take place.
- c) Failure to adhere to at least the DVBE participation proposed by the successful bidder may be cause for contract termination and recovery of damages under the rights and remedies due the state under the default section of the contract.
- d) Contractor understands and agrees that should award of this contract be based in part on their commitment to use the Disabled Veteran Business Enterprise (DVBE) subcontractor(s) identified in their bid or offer, per Military and Veterans Code 999.5 (e), a DVBE subcontractor may only be replaced by another DVBE subcontractor and must be approved by the State. Changes to the scope of work that impact the DVBE subcontractor(s) identified in the bid or offer and approved DVBE substitutions will be documented by contract amendment.
- e) Failure of Contractor to seek substitution and adhere to the DVBE participation level identified in the bid or offer may be cause for contract termination, recovery of damages under rights and remedies due to the State, and penalties as outlined in M&VC § 999.9; Public Contract Code (PCC) § 10115.10, or PCC § 4110 (applies to public works only).

## 13. To locate DVBE contractors:

- a) Contact the department's contracting official named in this solicitation for any DVBE contractors who may have identified themselves as potential subcontractors, and to obtain suggestions for search criteria to possibly identify DVBE contractors for the solicitation. You may also contact the department's SB/DVBE Advocate for assistance:
- b) Access the list of all certified DVBEs by using the Department of General Services, Procurement Division (DGS-PD) online certified firm database at:

<https://caleprocure.ca.gov/pages/PublicSearch/supplier-search.aspx?psNewWin=true>

Search by "Keywords" or United Nations Standard Products and Services Codes (UNSPSC), that apply to the elements of work you want to subcontract to a DVBE.

- c) Check for subcontractor ads that may be placed on the California State Contracts Register (CSCR) for this solicitation prior to the closing date. You may access the CSCR at:  
[www.Caleprocure.ca.gov](http://www.Caleprocure.ca.gov)
- d) The State of California, Department of General Services (DGS), Procurement Division, Office of Small Business and DVBE Services (OSDS) offers many services that assist contractor/business owners with a variety of information designed to streamline the State contracting process. OSDS also certifies DVBE contractors. For more information, please

The State of California  
Department of General Services  
Office of Small Business and DVBE Services  
707 Third Street, First Floor – Room 400  
West Sacramento, CA 95605

[www.dgs.ca.gov/PD](http://www.dgs.ca.gov/PD)  
Receptionist: (916) 375-4940  
24-hour recording: (916) 322-5060  
FAX: (916) 375-4950  
[OSDSHelp@dgs.ca.gov](mailto:OSDSHelp@dgs.ca.gov)

**DISABLED VETERAN BUSINESS ENTERPRISE (DVBE)  
DVBE Documentation Checklist**

1. The State of California acknowledges the service and sacrifice of its disabled veterans, in part, through the "Disabled Veteran Business Enterprise (DVBE) Participation Program." As mandated by law, state agencies have a goal to award at least 3% of their annual contract dollars to certified DVBE's.
2. When a firm bids on a state DPR contract that contains DVBE participation, the the dollar amount of **the bid must meet the 6% participation requirement** set by DPR.
3. **INCOMPLETE DOCUMENTATION (GSPD 05-105 AND DGS PD 843) MUST RESULT IN DISQUALIFICATION FROM FURTHER PARTICIPATION IN THE SELECTION PROCESS FOR THE CONTRACT.**
4. The following checklist is provided to assist bidders with their DVBE participation documentation:

**a) GSPD 05-105, Bidder Declaration**

- ☐ All DVBE participation is indicated.
- ☐ The names of each participating DVBE company is listed with the dollar value and applied percentage of the bid.
- ☐ A copy of the printout from eProcurement system showing the company's DVBE certification status.
- ☐ The DVBE participation percentage listed agrees with the dollar value claimed.

**b) DGS PD 843, DVBE Declaration**

- ☐ A completed and signed DGS PD 843 is included with the bid for every DVBE (whether prime contractor or subcontractor) included.

State of California - Natural Resources Agency  
DEPARTMENT OF PARKS AND RECREATION

**PUBLIC WORKS  
NOTICE TO CONTRACTORS**

**McCLELLAN PARK**  
Bay G & H Tenant Improvements  
Sacramento County, California  
Bid Number: C26863011

Bids must be submitted electronically with all necessary fully executed bid submission documents as an attachment in Portable Document Format (PDF) to [DPR.PWBIDS@parks.ca.gov](mailto:DPR.PWBIDS@parks.ca.gov) no later than **2:00 p.m., Wednesday, September 30, 2026**. Bid submission time will be as of the electronic time stamp associated with when the electronic email submission was received. Submissions with attached PDF documents in excess of 10 Megabytes in size risk being rejected and can be deemed unresponsive. DPR will provide an individual electronic email response confirming receipt of each submission received. If a confirmation receipt is not received within 30-minutes of submission, please contact Merrilee Byrnes at [Merrilee.Byrnes@parks.ca.gov](mailto:Merrilee.Byrnes@parks.ca.gov) to confirm your bid was received. Confirmation receipt is not a representation by DPR that the submitted bid is responsive and complete. Bidders shall ensure that the electronic submission contains the attachment, the documents are fully responsive and lack any deficiency and is directed to the appropriate email address ([DPR.PWBIDS@parks.ca.gov](mailto:DPR.PWBIDS@parks.ca.gov)) without error. Failure to do so risks the bid being deemed unresponsive. It is recommended that Bidders submit bids at least an hour in advance of the bid submission deadline to allow for confirmation of bid submission. Bid will be opened publicly over conference-call, individuals interested in calling into the conference must send their request into [DPR.PWBIDS@parks.ca.gov](mailto:DPR.PWBIDS@parks.ca.gov) to receive a conference participation access code. Please ensure a request for conference-call is submitted 24-hours in advance to allow DPR adequate time to accommodate all Bidders. Bids will be submitted for performing the work as follows:

Furnish all labor, materials, tools and equipment necessary for tenant improvements to multiple areas within the existing building to support the Cannabis Watershed Protection Program, Telecommunications, and IT groups, including reconfigured office and storage spaces, added lab and high-pile rack areas, enhanced security partitions, and upgrades to mechanical, fire sprinkler, and alarm systems to meet new operational and ventilation requirements at **McCLELLAN PARK** in Sacramento County, California, complete and in accordance with the plans and specifications therefore and such addenda thereto as may be issued prior to bid opening date.

License required: **B**

Engineer's Estimate: **\$1,000,000 to \$1,400,000**

Contract Term: **635 Calendar Days from Notice to Proceed**

Work Performance Period: **270 Calendar Days from Formal Start Work Date**

**NOTE: A job showing will be held at 10:00 a.m., Wednesday, September 16, 2026, at 4840 Lang Avenue, McClellan Park, CA 95652 in Sacramento County. Meeting location will be the parking lot in front of the building. Attendance at the job showing is MANDATORY and will be the only opportunity made available for prospective bidders to view the site with park personnel. No Bid will be considered from a Prime Contractor that did not attend the mandatory job showing.**

The bidder agrees to complete all work within **TWO HUNDRED SEVENTY (270)** calendar days from the date of written notice to commence work. This time includes ten (10) calendar days allowed for the contractor to begin work.

**Instructions to Download Bid Package:** Prospective bidders may examine and obtain the bid forms, specifications, plans and addenda (if any) by downloading this bid package from the Department of General Services' (DGS) website at: <https://caleprocure.ca.gov/pages/Events-BS3/event-search.aspx>. At the website go to Quicklinks, Find Bid Opportunities, and enter Bid Number "**C26863011**" in the "Event Name" field. Click on the "Search" button to view the full advertisement and bid documents.

**Questions and Answers:** Any discrepancies, omissions, ambiguities, or conflicts in or among the contract documents or doubts as to meaning shall be brought to the State's attention by including your comments directly to [Merrilee.Byrnes@parks.ca.gov](mailto:Merrilee.Byrnes@parks.ca.gov) **NO LATER THAN 2 p.m., seven (7)** calendar days prior to bid opening date. Answers will be provided by Addendum which will be posted within the Bid Solicitation located on the Cal eProcure website stated above. It is the responsibility of the bidders to download any addenda as needed.

No bid will be considered unless it is made on a standard bid form furnished by the Department of Parks and Recreation, and is made in accordance with the "Instructions to Bidders".

Bids must be submitted for the entire work as described herein. The Department of Parks and Recreation reserves the right to waive any irregularity in a bid or to reject any or all bids.

The apparent low bidder will be required to execute a contractual agreement in the form of a "Standard Agreement - Form 213" which shall be binding upon the State of California only upon approval by the State.

Bond requirements for contracts exceeding \$5,000 are stated in the General Conditions, DPR 483, Section 000700.

In accordance with the provisions of Section 1770, 1773 and 1773.1 of the Labor Code, the Department has ascertained that the general prevailing rate of wages in the county in which the work to be done be as listed by the Department of Industrial Relations (415) 703-4780. A copy of this listing is on file at the address listed above or at [www.dir.ca.gov](http://www.dir.ca.gov).

**Participation in Small Business Preference Program:** Preference will be granted to bidder properly approved as "Small Business" in accordance with Section 1896, et seq., Title 2, California Code of Regulations. A small business firm must have an approved certification form (STD. 812) on file at the Department of General Services, Office of Small Business and DVBE Services, 707 Third Street, First Floor – Room 400, West Sacramento, California 95605, by 5:00 p.m. of bid opening date (website address: <http://www.pd.dgs.ca.gov/smbus>). If bidder requests "Small Business" preference on this project, bidder must sign STD. 811 form (Small Business Preference and Certification Request) and submit with bid. A printout from the eProcurement website [www.caleprocure.ca.gov](http://www.caleprocure.ca.gov) showing Small Business Certification and expiration date must be submitted with bid.

**Non-Small Business Preference** – refer to "Bidder Declaration," GSPD 05-105 form: A five percent (5%) bid preference is available to a non-small business proposing firms claiming twenty-five percent (25%) California certified small business subcontractor participation. If claiming the non-small business subcontractor preference, follow the directions and fill out the "Bidder Declaration" (GSPD 05-105) which is included in the Bid Forms. Proposers claiming the five percent (5%) preference must commit to subcontract at least twenty-five percent (25%) of the net bid price with one or more California certified small businesses. Completed certification applications and required support documents must be submitted to the office of Small Business and DVBE Services (OSDS) no later than 5:00 p.m. on the bid due date, and the OSDS must be able to approve the application as submitted. Questions regarding certification should be directed to the OSDS at (916) 375-4940.

**Participation in Disabled Veteran Business Enterprise Program (DVBE):** The **minimum** DVBE participation percentage goal is **6%**. Failure to fulfill the DVBE requirement will render your bid non-responsive. **DVBE Incentive:** For evaluation purposes only, an incentive will be given to bidders who exceed 6% DVBE participation requirements. Refer to the DVBE forms beginning with DPR 479IP. In determining the lowest responsible bidder, the SB Preference is applied first in the bid evaluation process. If the Low Bidder is claiming the SB Preference or the Non-Certified SB Preference, the 5% or \$50,000 max is not calculated for any bidder. However, the DVBE Incentive would be calculated. A Low Bidder claiming the SB Preference can only be displaced by another bidder claiming the SB Preference, if the adjusted bid price with SB Preference and DVBE Incentive is lower. The DVBE program incentives are applied second for bidders attaining more than the required amount of DVBE participation per the solicitation instructions. More information regarding the incentive program(s) and how bids are evaluated is available on the State Administrative Manual Management Memo Number MM08-03 (Management Memo) at [http://www.documents.CaleProcure.ca.gov/osp/sam/memos/MM08\\_03.pdf](http://www.documents.CaleProcure.ca.gov/osp/sam/memos/MM08_03.pdf).

**Notice of Requirement for Nondiscrimination Program:** Your attention is called to the "Nondiscrimination Clause" set forth or referred to herein, which is applicable to all nonexempt State construction contracts, and subcontracts, and to the "Standard California Nondiscrimination Construction Contract Specifications" set forth herein. (Refer to General Terms and Conditions (GTC 02/2025) at <http://www.CaleProcure.ca.gov/ols/Resources/StandardContractLanguage.aspx>).

**Withdrawal of Bid:** As stated in the Instructions to Bidders, any requests to withdraw a bid must be submitted in writing. Submit via email to [PWBids@parks.ca.gov](mailto:PWBids@parks.ca.gov). See Instructions to Bidders, section 1.03M for details.

**Public Works Contractor Registration Program – SB 854:** 1) 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)]. 2) 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. 3) This project is subject to compliance monitoring and enforcement by the Department of Industrial Relations. Refer to <http://www.dir.ca.gov/Public-Works/SB854.html> for more information.

### **Executive Order N-6-22 – Russia Sanctions**

On March 4, 2022, Governor Gavin Newsom issued Executive Order N-6-22 (the EO) regarding Economic Sanctions against Russia and Russian entities and individuals. “Economic Sanctions” refers to sanctions imposed by the U.S. government in response to Russia’s actions in Ukraine, as well as any sanctions imposed under state law. By submitting a bid or proposal, Contractor represents that it is not a target of Economic Sanctions. Should the State determine Contractor is a target of Economic Sanctions or is conducting prohibited transactions with sanctioned individuals or entities, that shall be grounds for rejection of the Contractor’s bid/proposal any time prior to contract execution, or, if determined after contract execution, shall be grounds for termination by the State.

### **Gen AI solicitation language**

The State of California seeks to realize the potential benefits of GenAI, through the development and deployment of GenAI tools, while balancing the risks of these new technologies.

Bidder / Offeror must notify the State in writing if it: (1) intends to provide GenAI as a deliverable to the State; or (2), intends to utilize GenAI, including GenAI from third parties, to complete all or a portion of any deliverable that materially impacts: (i) functionality of a State system, (ii) risk to the State, or (iii) Contract performance. For avoidance of doubt, the term “materially impacts” shall have the meaning set forth in State Administrative Manual (SAM) § 4986.2 Definitions for GenAI.

Failure to report GenAI to the State may result in disqualification. The State reserves the right to seek any and all relief to which it may be entitled to as a result of such nondisclosure.

Upon notification by a Bidder / Offeror of GenAI as required, the State reserves the right to incorporate GenAI Special Provisions into the final contract or reject bids/offers that present an unacceptable level of risk to the State.

Government Code 11549.64 defines “Generative Artificial Intelligence (GenAI)” as an artificial intelligence system that can generate derived synthetic content, including text, images, video, and audio that emulates the structure and characteristics of the system’s training data.

**DEPARTMENT OF PARKS AND RECREATION**  
**Armando Quintero, Director**



**SECTION 00100  
PUBLIC WORKS  
INSTRUCTIONS TO BIDDERS**

**PART 1. GENERAL**

**1.01 EXAMINATION OF BID DOCUMENTS AND SITE**

- A. *Bidder shall carefully examine and thoroughly acquaint himself/herself with the conditions at the site of the work, the plans, the specifications and the provisions contained in the project manual. He/she shall investigate conditions character, quality and quantity of surface, and sub-surface materials of obstacles to be encountered. Failure by the bidder to acquaint himself/herself with site conditions and available information will not relieve him/her from the responsibility for estimating properly the difficulty or cost of successfully performing the work. The submission of a bid will be considered as conclusive evidence that the bidder has made such examination.*
- B. Questions pertaining to the Plans and Specifications which may arise during the bidding period shall be directed to the Question and Answer section of the solicitation posted within the advertisement.

**1.02 DISCREPANCIES**

- A. Any discrepancies, omissions, ambiguities, or conflicts in or among the contract documents or doubts as to meaning shall be brought to the state's attention not later than seven days prior to bid opening date.
- B. All interpretations and clarifications will be in the form of written addenda. All bidders are responsible to inquire as to addenda issued. All addenda become part of the contract documents. Any oral representations issued shall be of no force or effect.

**1.03 BIDS AND BIDDERS**

- A. Before submitting bids, all bidders must be licensed in the appropriate classification in accordance with provisions in Chapter 9, Division 3, of the "California Business and Professions Code" as amended.
- No bidder may bid on work of a kind for which he/she is not properly licensed by the Contractors State License Board, and any such bid received will be rejected. Joint venture bidders must possess a joint venture license.*
- B. State shall not award a contract to a bidder, nor shall a bidder be eligible to bid for or receive a contract, who has, in the preceding five years, been convicted of violating a state or federal law respecting the employment of undocumented aliens.
- C. Bids shall be signed and submitted on the Bid Form provided and shall be filled out in the same name style, manner and license number as bidder is licensed with the Contractors State License Board.
- D. Each bid shall have listed therein the name, address, license number and portion of the work of each subcontractor to whom the bidder proposes to subcontract portions of the work in an amount in excess of 1/2 of 1 percent of the total bid in accordance with the "Subletting and Subcontracting Fair Practices Act," commencing with Section 4100 of the Public Contract Code. The contractor agrees that he/she is fully qualified to perform that portion of the work, and that he/she shall perform that portion of the work for which a subcontractor has not been listed.
- E. Bids exceeding \$5,000 shall have enclosed cash, a cashier's check, certified check, or a bidder's bond, executed as surety by a corporation authorized to issue surety bonds in the State of California, made payable to "Director of Parks and Recreation," in an amount equal to at least 10 percent of amount of bid. No such bid shall be considered unless one of the forms of bidder's security is enclosed therewith. If bidder's security is a bidder's bond, it must be executed on a form approved by the state. Personal checks are not acceptable.

Within 10 days after the contract award the Department of Parks and Recreation will return all bidder's security, other than bidder's bonds, accompanying proposals that are not to be further considered in making the award. Retained bidder's security will be held until the contract has been fully executed, after which all bidder's security, except bidder's bonds, will be returned.

- F. Bids shall not be qualified. Any proposal modifying the conditions of the bid will be disregarded, or will be cause for rejection of the bid. Deviations from the Plans and Specifications shall not be considered and shall be cause for rejection of the bid.
- G. Bids shall include the cost of all items shown on the Plans, mentioned in the Specifications, or reasonably inferred therefrom as necessary to complete the work within the intent of the contract documents.
- H. Bid shall include all applicable federal, state and other taxes, together with the cost of all permits, licenses and the like, which may be required under various laws and regulations.
- I. Amounts shall be written in figures.
- J. Bids shall be submitted electronically in Portable Document Format (PDF) to DPR.PWBIDS@parks.ca.gov no later than the time and date determined in the Notice to Contractors. If confirmation receipt of your bid submission is not received within 30-minutes, please contact Merrilee Byrnes at [Merrilee.Byrnes@parks.ca.gov](mailto:Merrilee.Byrnes@parks.ca.gov) to confirm your bid has been received. It is recommended Bidders submit their bids at least one (1) hour in advance of the bid submission deadline to allow for confirmation of bid submission; however, it is the responsibility of the bidder to see that his/her bid is received in the proper time. Bids will be opened publicly over conference-call, upon request of Bidder(s). Please ensure a request for conference-call of bid opening is submitted 24-hours in advance to allow DPR adequate time to accommodate all Bidders. Neither confirmation receipt nor announcement of bid implicates responsiveness of Any bid. DPR will determine responsiveness of all bids after completion of bid reviews.
- K. No bids will be accepted after the time set for the bid opening.
- L. Bids will be opened and read publicly at the time set for the bid opening, or as soon as practicable thereafter.
- M. Any bid may be withdrawn prior to the time fixed in the Notice to Contractors for submitting bids, provided a request for withdrawal is submitted in writing, signed by the bidder or his duly authorized representative and filed at, or e-mailed to or faxed to the place shown on the Notice to Contractors. *An oral, telegraphic, or telephonic request to withdraw or alter a bid proposal is not acceptable.*
- N. No bid may be withdrawn after the time fixed in the Notice to Contractors for submitting bids.
- O. No bids shall be considered unless a sworn statement is executed by the bidder on the form provided by the state titled "NONCOLLUSION AFFIDAVIT TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID FOR PUBLIC WORKS," DPR 837, and submitted with the bid.
- P. In the case of a tie bid, the determination of a successful bidder will be made by a coin toss in the presence of all interested bidders, at a time and date set by the state.

#### **1.04 CONTRACT**

- A. **Bids shall remain valid for 120 calendar days after the bid opening date ("120-Day Bid Validity Period"):** The State will endeavor to award a contract within 120 calendar days from the bid opening date. A contract is awarded upon the State providing written notifications to a bidder that it is the lowest responsible bidder and forwarding the contract documents to such bidder for bidder's signature. A contract is executed upon the State agency with approval authority approving the contract. Bidders shall honor their bids for 120 calendar days after the bid opening date. If after 120 calendar days from the bid opening date a bidder has not received written notification from the State that bidder has been awarded the contract, such bidder may withdraw their bid. If within the 120-Day Bid Validity Period, a bidder receives written notification from the State that such bidder has been awarded the contract, such bidder shall continue to honor its bid and have no claim for any reason to amend its bid pending execution of the contract.

- B. If the contract is awarded, it will be awarded to lowest responsible bidder whose bid complies with all prescribed requirements, which may include a "Small Business Vendor" in accordance with California Code of Regulations, Title 2, Section 1896 et seq.
- C. The apparent low bidder, in order to qualify as the lowest responsible bidder, will be required to execute and deliver to the State the required contract documents.
- D. The apparent low bidder shall execute the required number of copies of the contract documents and return them within ten (10) working days, not including Saturdays, Sundays and Legal Holidays, after he/she has received notice that he/she is the apparent low bidder. Signature of the apparent low bidder on the contract documents will complete identification of these documents.

Failure to provide the required executed contract documents within the ten (10) working days, not including Saturdays, Sundays and Legal Holidays may be deemed refusal of an award which may be cause for forfeiture of bidder's security.

The state may award to the next lowest responsible bidder and avail itself of all legal remedies provided by statute.

- E. The contract shall be binding upon the state only after approval by the state. Should work begin in advance of receiving notice that the Contract is approved, that work shall be considered as having been done by a volunteer and Contractor shall go unpaid.

#### **1.05 CERTIFICATE OF INSURANCE**

The contractor shall furnish a Certificate of Insurance to the state as described in General Conditions, DPR 483, Section 00700.

#### **1.06 CALIFORNIA PUBLIC CONTRACT CODE SECTION 10162 QUESTIONNAIRE**

Bidder shall be required to submit a DPR 20 (California Public Contract Code Section 10162 Questionnaire). Failure to submit this form with the bid shall not be cause for rejection; however, bidders must furnish the completed form within the time frame prescribed by the Department of Parks and Recreation. Failure to submit the required information within the time frame prescribed by the Department of Parks and Recreation may be deemed refusal of an award which shall be cause for forfeiture of bidder's security.

## BIDDER DECLARATION

**1. Prime bidder information (Review attached Bidder Declaration Instructions prior to completion of this form):**

- a. Identify current California certification(s) (MB, SB, NVSA, DVBE):** \_\_\_\_\_ **or None** ☐ (If "None," go to Item #2)
- b. Will subcontractors be used for this contract?** **Yes** ☐ **No** ☐ (If yes, indicate the distinct element of work your firm will perform in this contract e.g., list the proposed products produced by your firm, state if your firm owns the transportation vehicles that will deliver the products to the State, identify which solicited services your firm will perform, etc.). Use additional sheets, as necessary.
- \_\_\_\_\_
- \_\_\_\_\_
- c. If you are a California certified DVBE:** (1) Are you a broker or agent? **Yes** ☐ **No** ☐  
(2) If the contract includes equipment rental, does your company own at least 51% of the equipment provided in this contract (quantity and value)? **Yes** ☐ **No** ☐ **N/A** ☐

**2. If no subcontractors will be used, skip to certification below. Otherwise, list all subcontractors for this contract. (Attach additional pages if necessary):**

| Subcontractor Name, Contact Person,<br>Phone Number & Fax Number | Subcontractor Address<br>& Email Address | CA Certification (MB, SB,<br>NVSA, DVBE or None) | Work performed or goods provided<br>for this contract | Corresponding<br>% of bid price | Good<br>Standing?        | 51%<br>Rental?           |
|------------------------------------------------------------------|------------------------------------------|--------------------------------------------------|-------------------------------------------------------|---------------------------------|--------------------------|--------------------------|
|                                                                  |                                          |                                                  |                                                       |                                 | <input type="checkbox"/> | <input type="checkbox"/> |
|                                                                  |                                          |                                                  |                                                       |                                 | <input type="checkbox"/> | <input type="checkbox"/> |
|                                                                  |                                          |                                                  |                                                       |                                 | <input type="checkbox"/> | <input type="checkbox"/> |

**CERTIFICATION: By signing the bid response, I certify under penalty of perjury that the information provided is true and correct.**

## BIDDER DECLARATION Instructions

### All prime bidders (the firm submitting the bid) must complete the Bidder Declaration.

- 1.a.** Identify all current certifications issued by the State of California. If the prime bidder has no California certification(s), check the line labeled "None" and proceed to Item #2. If the prime bidder possesses one or more of the following certifications, enter the applicable certification(s) on the line:

- Microbusiness (MB)
- Small Business (SB)
- Nonprofit Veteran Service Agency (NVSA)
- Disabled Veteran Business Enterprise (DVBE)

- 1.b.** Mark either "Yes" or "No" to identify whether subcontractors will be used for the contract. If the response is "No," proceed to Item #1.c. If "Yes," enter on the line the distinct element of work contained in the contract to be performed or the goods to be provided by the prime bidder. Do not include goods or services to be provided by subcontractors.

Bidders certified as MB, SB, NVSA, and/or DVBE must provide a commercially useful function as defined in Military and Veterans Code Section 999 for DVBEs and Government Code Section 14837(d)(4)(A) for small/microbusinesses.

Bids must propose that certified bidders provide a commercially useful function for the resulting contract or the bid will be deemed non-responsive and rejected by the State. For questions regarding the solicitation, contact the procurement official identified in the solicitation.

**Note: A subcontractor is any person, firm, corporation, or organization contracting to perform part of the prime's contract.**

- 1.c.** This item is only to be completed by businesses certified by California as a DVBE.

(1) Declare whether the prime bidder is a broker or agent by marking either "Yes" or "No." The Military and Veterans Code Section 999.2 (b) defines "broker" or "agent" as a certified DVBE contractor or subcontractor that does not have title, possession, control, and risk of loss of materials, supplies, services, or equipment provided to an awarding department, unless one or more of the disabled veteran owners has at least 51-percent ownership of the quantity and value of the materials, supplies, services, and of each piece of equipment provided under the contract.

(2) If bidding rental equipment, mark either "Yes" or "No" to identify if the prime bidder owns at least 51% of the equipment provided (quantity and value). If **not** bidding rental equipment, mark "N/A" for "not applicable."

- 2.** If no subcontractors are proposed, do not complete the table. Read the certification at the bottom of the form and complete "Page \_\_\_\_ of \_\_\_\_" on the form.

If subcontractors will be used, complete the table listing all subcontractors. If necessary, attach additional pages and complete the "Page \_\_\_\_ of \_\_\_\_" accordingly.

### 2. (continued) Column Labels

**Subcontractor Name, Contact Person, Phone Number & Fax Number**—List each element for all subcontractors.

**Subcontractor Address & Email Address**—Enter the address and if available, an Email address.

**CA Certification (MB, SB, NVSA, DVBE or None)**—If the subcontractor possesses a current State of California certification(s), verify on this website ([www.eprocure.pd.dgs.ca.gov](http://www.eprocure.pd.dgs.ca.gov)).

**Work performed or goods provided for this contract**—Identify the distinct element of work contained in the contract to be performed or the goods to be provided by each subcontractor. Certified subcontractors must provide a commercially useful function for the contract. (See paragraph 1.b above for code citations regarding the definition of commercially useful function.) If a certified subcontractor is further subcontracting a greater portion of the work or goods provided for the resulting contract than would be expected by normal industry practices, attach a separate sheet of paper explaining the situation.

**Corresponding % of bid price**—Enter the corresponding percentage of the total bid price for the goods and/or services to be provided by each subcontractor. Do not enter a dollar amount.

**Good Standing?**—Provide a response for each subcontractor listed. Enter either "Yes" or "No" to indicate that the prime bidder has verified that the subcontractor(s) is in good standing for all of the following:

- Possesses valid license(s) for any license(s) or permits required by the solicitation or by law
- If a corporation, the company is qualified to do business in California and designated by the State of California Secretary of State to be in good standing
- Possesses valid State of California certification(s) if claiming MB, SB, NVSA, and/or DVBE status

**51% Rental?**—This pertains to the applicability of rental equipment. Based on the following parameters, enter either "N/A" (not applicable), "Yes" or "No" for each subcontractor listed.

Enter "N/A" if the:

- Subcontractor is NOT a DVBE (regardless of whether or not rental equipment is provided by the subcontractor) or
- Subcontractor is NOT providing rental equipment (regardless of whether or not subcontractor is a DVBE)

Enter "Yes" if the subcontractor is a California certified DVBE providing rental equipment and the subcontractor owns at least 51% of the rental equipment (quantity and value) it will be providing for the contract.

Enter "No" if the subcontractor is a California certified DVBE providing rental equipment but the subcontractor does NOT own at least 51% of the rental equipment (quantity and value) it will be providing.

**Read the certification at the bottom of the page and complete the "Page \_\_\_\_ of \_\_\_\_" accordingly.**

**DISABLED VETERAN BUSINESS ENTERPRISE DECLARATIONS**

DGS PD 843 (Rev. 9/2019)

Formerly STD. 843

**Instructions:** The disabled veteran (DV) owner(s) and DV manager(s) of the Disabled Veteran Business Enterprise (DVBE) must complete this declaration when a DVBE contractor or subcontractor will provide materials, supplies, services or equipment [Military and Veterans Code Section 999.2]. Violations are misdemeanors and punishable by imprisonment or fine and violators are liable for civil penalties. All signatures are made under penalty of perjury.

**SECTION 1**

Name of certified DVBE: \_\_\_\_\_ DVBE Ref. Number: \_\_\_\_\_

Description (materials/supplies/services/equipment proposed): \_\_\_\_\_

Solicitation/Contract Number: \_\_\_\_\_ SCPRS Ref. Number: \_\_\_\_\_

(FOR STATE USE ONLY)

**SECTION 2****APPLIES TO ALL DVBEs. Check only one box in Section 2 and provide original signatures.**

- ☐ I (we) declare that the DVBE is not a broker or agent, as defined in Military and Veterans Code Section 999.2 (b), of materials, supplies, services or equipment listed above. Also, complete Section 3 below if renting equipment.
- ☐ Pursuant to Military and Veterans Code Section 999.2 (f), I (we) declare that the DVBE is a broker or agent for the principal(s) listed below or on an attached sheet(s). *(Pursuant to Military and Veterans Code 999.2 (e), State funds expended for equipment rented from equipment brokers pursuant to contracts awarded under this section shall not be credited toward the 3-percent DVBE participation goal.)*

All DV owners and managers of the DVBE (attach additional pages with sufficient signature blocks for each person to sign):

|                                    |                                  |               |
|------------------------------------|----------------------------------|---------------|
| _____                              | _____                            | _____         |
| (Printed Name of DV Owner/Manager) | (Signature of DV Owner/ Manager) | (Date Signed) |

|                                    |                                 |               |
|------------------------------------|---------------------------------|---------------|
| _____                              | _____                           | _____         |
| (Printed Name of DV Owner/Manager) | (Signature of DV Owner/Manager) | (Date Signed) |

|                                                                  |                      |
|------------------------------------------------------------------|----------------------|
| Firm/Principal for whom the DVBE is acting as a broker or agent: | _____                |
| (If more than one firm, list on extra sheets.)                   | (Print or Type Name) |

Firm/Principal Phone: \_\_\_\_\_ Address: \_\_\_\_\_

**SECTION 3****APPLIES TO ALL DVBEs THAT RENT EQUIPMENT AND DECLARE THE DVBE IS NOT A BROKER.**

- ☐ Pursuant to Military and Veterans Code Section 999.2 (c), (d) and (g), I am (we are) the DV(s) with at least 51% ownership of the DVBE, or a DV manager(s) of the DVBE. The DVBE maintains certification requirements in accordance with Military and Veterans Code Section 999 et. seq.
- ☐ The undersigned owner(s) own(s) at least 51% of the quantity and value of each piece of equipment that will be rented for use in the contract identified above. I (we), the DV owners of the equipment, have submitted to the administering agency my (our) personal federal tax return(s) at time of certification and annually thereafter as defined in *Military and Veterans Code 999.2*, subsections (c) and (g). *Failure by the disabled veteran equipment owner(s) to submit their personal federal tax return(s) to the administering agency as defined in Military and Veterans Code 999.2, subsections (c) and (g), will result in the DVBE being deemed an equipment broker.*

Disabled Veteran Owner(s) of the DVBE (attach additional pages with signature blocks for each person to sign):

|                |             |               |
|----------------|-------------|---------------|
| _____          | _____       | _____         |
| (Printed Name) | (Signature) | (Date Signed) |

|                    |             |                                      |
|--------------------|-------------|--------------------------------------|
| _____              | _____       | _____                                |
| (Address of Owner) | (Telephone) | (Tax Identification Number of Owner) |

Disabled Veteran Manager(s) of the DVBE (attach additional pages with sufficient signature blocks for each person to sign):

|                              |                           |               |
|------------------------------|---------------------------|---------------|
| _____                        | _____                     | _____         |
| (Printed Name of DV Manager) | (Signature of DV Manager) | (Date Signed) |

Page \_\_\_\_ of \_\_\_\_

**PRINT****CLEAR**

## COMMERCIALLY USEFUL FUNCTION – BIDDER CERTIFICATION

All California Certified Small Business (SB), Micro Business (MB), and Disabled Veteran Business Enterprise (DVBE) suppliers contracting and subcontracting must complete this certification form.

|                                                                                                                                                                                                                                                                                                                 |  |                                                                                       |                 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|---------------------------------------------------------------------------------------|-----------------|
| LEGAL BUSINESS NAME (including "Doing Business As" DBA name)                                                                                                                                                                                                                                                    |  | DPR REFERENCE/AGREEMENT NUMBER                                                        |                 |
| CERTIFICATIONS (mark all that apply)<br><input type="checkbox"/> Small Business <input type="checkbox"/> Micro Business <input type="checkbox"/> DVBE                                                                                                                                                           |  | DGS CERTIFICATION NUMBER (OSDS)                                                       | EXPIRATION DATE |
| For this agreement, this business is the: <input type="checkbox"/> Prime Contractor <input type="checkbox"/> Subcontractor                                                                                                                                                                                      |  |                                                                                       |                 |
| All Certified Small Business, Micro Business, and/or DVBE prime contractors, subcontractors or suppliers must meet the commercially useful function requirements under Government Code Section 14837(d)(4)(A) for Small and Micro Businesses, and Military and Veterans Code Section 999(b)(5)(B)(i) for DVBEs. |  |                                                                                       |                 |
| A. Is the GSPD-05-105, Bidder Declaration attached?                                                                                                                                                                                                                                                             |  | <input type="checkbox"/> Yes <input type="checkbox"/> No                              |                 |
| B. Is the DGS PD 843, Disabled Veteran Business Enterprise Declarations form attached if applicable?                                                                                                                                                                                                            |  | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |                 |

**Please answer the following 5 questions as they apply to your company for the goods and/or services being acquired in this solicitation:**

|   |                                                                                                                                                                                                                                                                                                                  |                                                          |                              |
|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|------------------------------|
| 1 | Will your business be responsible for the execution of a distinct element of the resulting work?                                                                                                                                                                                                                 | <input type="checkbox"/> Yes <input type="checkbox"/> No |                              |
| 2 | Will your business carry out the obligation of the contract by actually performing, managing or supervising the work involved?                                                                                                                                                                                   | <input type="checkbox"/> Yes <input type="checkbox"/> No |                              |
| 3 | Will you perform work that is normal for your business, service and functions?                                                                                                                                                                                                                                   | <input type="checkbox"/> Yes <input type="checkbox"/> No |                              |
| 4 | Will your business be responsible for products, inventories, materials, suppliers required for the contract, negotiating price, determining quality and quantity, ordering, installing (if applicable) and making payment?<br>(Note: This only applies to GOODS. If this is a service, mark N/A and skip to #5.) | <b>Goods</b>                                             | <b>Services</b>              |
|   |                                                                                                                                                                                                                                                                                                                  | <input type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| 5 | If subcontracting a portion of the work, is it a normal portion as expected by current industry practices? (Also answer Yes if not subcontracting any portion.)                                                                                                                                                  | <input type="checkbox"/> Yes <input type="checkbox"/> No |                              |

A response of "No" may result in your quote being deemed non-responsive and disqualified.

### BIDDER'S CERTIFICATION

*The signatory of this document must be the certified business owner (or authorized representative in the case of a corporation) and as such, hereby certifies under penalty of perjury under the laws of the State of California that all information provided herein is truthful and accurate.*

|                                             |           |      |
|---------------------------------------------|-----------|------|
| PRINTED NAME AND TITLE OF AUTHORIZED SIGNER | SIGNATURE | DATE |
|---------------------------------------------|-----------|------|

### DEPARTMENT OF PARKS AND RECREATION USE

☐ APPROVED    ☐ DENIED

|                                  |           |      |
|----------------------------------|-----------|------|
| DPR BUYER/EVALUATOR PRINTED NAME | SIGNATURE | DATE |
|----------------------------------|-----------|------|

**State of California - Natural Resources Agency**  
**DEPARTMENT OF PARKS AND RECREATION**

**NON-COLLUSION DECLARATION TO BE EXECUTED  
BY BIDDER AND SUBMITTED WITH BID FOR PUBLIC WORKS**

The undersigned declares:

I am the \_\_\_\_\_ of \_\_\_\_\_, the party  
(Position Title) (Company Name)  
making the foregoing bid.

The bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation. The bid is genuine and not collusive or sham. The bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid. The bidder has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or to refrain from bidding. The bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bid or any other bid, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bid. All statements contained in the bid are true. The bidder has not, directly, or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof, to effectuate a collusive or sham bid, and has not paid, and will not pay, any person or entity for such purpose.

Any person executing this declaration on behalf of a bidder that is a corporation, partnership, joint venture, limited liability company, limited liability partnership, or any other entity, hereby represents that he or she has full power to execute, and does execute, this declaration on behalf of the bidder

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct, and that this declaration is executed on

\_\_\_\_\_, at \_\_\_\_\_, \_\_\_\_\_  
(Date) (City) (State/Zip Code)

\_\_\_\_\_  
(Print or Type Name)

\_\_\_\_\_  
(Signature)



State of California - The Resources Agency  
DEPARTMENT OF PARKS AND RECREATION

**BIDDER'S BOND**

**KNOW ALL PEOPLE BY THESE PRESENTS:**

That we, \_\_\_\_\_

\_\_\_\_\_, as Principal, and as Surety,  
are held and firmly bound unto the State of California, hereinafter called the State, in the penal sum of ten percent (10%) of the  
total amount of the bid of the Principal above named, submitted by said Principal to the State of California, Department of Parks  
and Recreation for the work described below, for the payment of which sum in lawful money of the United States, well and truly  
to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

THE CONDITION of this obligation is such that:

WHEREAS, the Principal has submitted the above-mentioned bid to the State of California, Department of Parks and Recreation,  
for certain construction specifically described as follows, for which bids are to be opened at

\_\_\_\_\_  
(Insert place where bids will be opened)

on \_\_\_\_\_

(Insert date of bid opening)

for \_\_\_\_\_  
(Copy here the exact description of work, including location, as it appears on the proposal)

NOW, THEREFORE, If the aforesaid Principal is awarded the contract and, within the time and manner required under the  
specifications, after the prescribed forms are presented to him or her for signature, enters into a written contract, in the prescribed  
form, in accordance with the bid, and files the two bonds with the Department, one to guarantee faithful performance and the other  
to guarantee payment for labor and materials, as required by law, then this obligation shall be null and void; otherwise, it shall be  
and remain in full force and virtue.

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 attorney's fee to be fixed by the court.

IN WITNESS WHEREOF, We have hereunto set our hands and seals on this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

\_\_\_\_\_  
(SEAL)

\_\_\_\_\_  
(SEAL)

\_\_\_\_\_  
(SEAL)

Principal

\_\_\_\_\_  
(SEAL)

\_\_\_\_\_  
(SEAL)

\_\_\_\_\_  
(SEAL)

Surety

NOTE: Signatures of those executing for the Surety must be properly acknowledged.

**CERTIFICATE OF ACKNOWLEDGEMENT**

State of California

County of \_\_\_\_\_ ss

On this \_\_\_\_\_ day of \_\_\_\_\_ in the year of 20\_\_\_\_ before me, a notary public in and for the county and state  
aforesaid, personally appeared, \_\_\_\_\_  
known to me to be the person whose name is subscribed to the within instrument and known to me to be the attorney-in-fact of  
\_\_\_\_\_ and acknowledged to me that  
he subscribed the name of the said company thereto as surety, and his own name as attorney-in-fact.

(SEAL)

\_\_\_\_\_  
Notary Public

**CALIFORNIA PUBLIC CONTRACT CODE SECTION 10162**  
**— Questionnaire —**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |              |      |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|------|
| PARK UNIT NAME                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | PROJECT NAME |      |
| NAME OF BUSINESS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |              |      |
| <b><i>In accordance with Section 10162 of the California Public Contract Code, bidders shall complete, under penalty of perjury, the question below. Please answer the following:</i></b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |              |      |
| HAVE YOU, ANY OFFICER OF YOUR BUSINESS, OR ANY EMPLOYEE OF YOUR BUSINESS WHO HAS PROPRIETARY INTEREST IN YOUR BUSINESS EVER BEEN DISQUALIFIED, REMOVED, OR OTHERWISE PREVENTED FROM BIDDING ON, OR COMPLETING A FEDERAL, STATE, OR LOCAL GOVERNMENT PROJECT BECAUSE OF A VIOLATION OF LAW OR VIOLATION OF SAFETY REGULATIONS?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |      |
| <input type="checkbox"/> <b>Yes</b> (Explain circumstances below. Attach additional pages if needed.) <input type="checkbox"/> <b>No</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |              |      |
| <b>NOTICE TO BIDDERS</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |              |      |
| <p>Bidders are cautioned that making false certification may subject the certifier to criminal prosecution.</p> <p>The Department of Parks and Recreation (DPR) reserves the right under California Public Contract Code Section 10162 to reject any bidder, any officer of such bidder, or any employee of such bidder who has a proprietary interest in such bidder who has been disqualified, removed or otherwise prevented from bidding on, or completing a federal, state or local government project because of a violation of law or violation of safety regulations.</p> <p>Failure to return this form with the bid shall not be cause for rejection; however, bidders must furnish the completed form within the time frame prescribed by the DPR. Failure to submit this form within the time frame prescribed by the DPR may be deemed refusal of an award which shall be cause for forfeiture of bidder's security.</p> |              |      |
| <b>CERTIFICATION</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |              |      |
| <p><i>By my signature, I certify under penalty of perjury under the laws of the State of California that the foregoing questionnaire and statements pursuant to California Public Contract Code Section 10162 are true and correct.</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |              |      |
| BIDDER SIGNATURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | PRINTED NAME | DATE |

## DARFUR CONTRACTING ACT CERTIFICATION

**DO NOT COMPLETE OR RETURN THIS FORM IF:** Within the previous three years, your company **HAS NOT** had any business activities or other operations outside of the United States.

**All other companies, complete Option #1 or Option #2 and return:**

Public Contract Code Sections 10475 -10481 applies to any company that currently or within the previous three years has had business activities or other operations outside of the United States. For such a company to bid on or submit a proposal for a State of California contract, the company must certify that it is either a) not a scrutinized company; or b) a scrutinized company that has been granted permission by the Department of General Services to submit a proposal.

### **OPTION #1 - CERTIFICATION**

If your company, within the previous three years, has had business activities or other operations outside of the United States, in order to be eligible to submit a bid or proposal, please insert your company name and Federal ID Number and complete the certification below.

I, the official named below, CERTIFY UNDER PENALTY OF PERJURY that a) the prospective proposer/bidder named below is not a scrutinized company per Public Contract Code 10476; and b) I am duly authorized to legally bind the prospective proposer/bidder named below. This certification is made under the laws of the State of California.

|                                          |                                     |                   |
|------------------------------------------|-------------------------------------|-------------------|
| COMPANY/VENDOR NAME ( <i>Printed</i> )   |                                     | FEDERAL ID NUMBER |
| BY ( <i>Authorized Signature</i> )       |                                     |                   |
| ▶                                        |                                     |                   |
| PRINTED NAME AND TITLE OF PERSON SIGNING |                                     |                   |
| DATE EXECUTED                            | EXECUTED IN THE COUNTY AND STATE OF |                   |

### **OPTION #2 - WRITTEN PERMISSION FROM DGS**

Pursuant to Public Contract Code section 10477(b), the Director of the Department of General Services may permit a scrutinized company, on a case-by-case basis, to bid on or submit a proposal for a contract with a state agency for goods or services, if it is in the best interests of the state. If you are a scrutinized company that has obtained written permission from the DGS to submit a bid or proposal, complete the information below.

We are a scrutinized company as defined in Public Contract Code section 10476, but we have received written permission from the Department of General Services to submit a bid or proposal pursuant to Public Contract Code section 10477(b). A copy of the written permission from DGS is included with our bid or proposal.

|                                             |  |                   |
|---------------------------------------------|--|-------------------|
| COMPANY/VENDOR NAME ( <i>Printed</i> )      |  | FEDERAL ID NUMBER |
| INITIALS OF SUBMITTER                       |  |                   |
| PRINTED NAME AND TITLE OF PERSON INITIALING |  |                   |

**DO NOT COMPLETE THIS FORM UNLESS YOUR COMPANY MEETS THE CRITERIA OF OPTION #1 OR OPTION #2.**

## FAIR CHANCE EMPLOYMENT ACT

### Public Contract Code 10186:

- (a) This section shall be known, and may be cited, as the "Fair Chance Employment Act."
- (b) Any person submitting a bid to the state on a contract involving onsite construction-related services shall certify that the person will not ask an applicant for onsite construction-related employment to disclose orally or in writing information concerning the conviction history of the applicant on or at the time of an initial employment application.
- (c) This section shall not apply to a position for which the person or the state is otherwise required by state or federal law to conduct a conviction history background check or to any contract position with a criminal justice agency, as that term is defined in Section 13101 of the Penal Code.
- (d) This section shall not apply to a person to the extent that he or she obtains workers from a hiring hall pursuant to a bona fide collective bargaining agreement.

### CERTIFICATION

*By my signature, I certify under penalty of perjury under the laws of the State of California that I have read, understand and will abide by California Public Contract Code Section 10186.*

|                                                 |                                  |                          |
|-------------------------------------------------|----------------------------------|--------------------------|
| <i>Contractor/Bidder Firm Name (Printed)</i>    |                                  | <i>Federal ID Number</i> |
| <i>By (Authorized Bidders Signature)</i>        |                                  |                          |
| <i>Printed Name and Title of Person Signing</i> |                                  |                          |
| <i>Date Executed</i>                            | <i>Executed in the County of</i> |                          |

# ARTIFICIAL INTELLIGENCE (AI) DISCLOSURE FORM

Instructions for this form are on Page 3.

## I. BIDDER CONTACT INFORMATION

BUSINESS NAME

SOLICITATION NUMBER

REPRESENTATIVE NAME

BUSINESS TELEPHONE NUMBER

BUSINESS ADDRESS

CITY

STATE

ZIP CODE

### Description of Services:

Describe in detail the services being provided. Include names of products and large language model.

## II. DISCLOSURE

Will you and/or your subcontractor(s) be using or offering AI technology, model, service, or system (collectively, "product") for this product in question?

☐ No. (Skip to Section III) ☐ Yes. (Answer 1-5 below)

### 1. What type of AI is included?

☐ Traditional AI ☐ Generative AI

### 2. Is the AI required for this product?

☐ No ☐ Yes ☐ Other:

**3. What is the model and version of this product?**

**4. What is the license tier of the AI product, if applicable (free, enterprise, platinum, etc.)?**

SAMPLE

**5. How is the AI solution delivered: IaaS, PaaS, SaaS, or will it be deployed on-premises? (Indicate if this is a thin client, thick client, web extension, plugin, etc.)**

Provide the best contact for information related to questions related to the AI included in the product (if different than the representative listed in Section I.)

|      |        |              |
|------|--------|--------------|
| NAME | E-MAIL | PHONE NUMBER |
|------|--------|--------------|

**III. SIGNATURE**

By signing this document, I have identified and reported any AI use in the performance of this product in question.

|           |      |
|-----------|------|
| Signature | Date |
|-----------|------|

## ARTIFICIAL INTELLIGENCE (AI) DISCLOSURE FORM (Instructions)

---

### **Instructions:**

The Department of Parks and Recreation (DPR) is required to track and complete risk assessments for any Generative Artificial Intelligence (GenAI) purchases. This document is intended to help DPR identify GenAI and assess the risk related to any GenAI purchases.

### **Section I:**

Bidders shall fill in their contact information.

The DPR staff shall fill out the Description of Services in detail and/or reference the applicable Statement of Work or attachment(s). Include the services to be provided related to AI and include the names of products and large language model. It is important to include as much detail as possible related to any AI aspect of the potential purchase.

### **Section II:**

Bidders shall disclose any aspect of AI related to the purchase.

If “no” is selected, no further information is required in this section.

If “yes” is selected, the Bidder shall fill out answers to questions 1-5. Bidders should provide as much detail as possible related to the AI technology, model, service or system as it relates to what the DPR is soliciting for.

**If GenAI is selected and the DPR staff intends to pursue the product, the DPR staff must complete the [SIMM 5305-F GenAI Intelligence Risk Assessment](#), Data Classification section and the Risk Assessment Questionnaire questions a-j; and submit it to [ISPO@parks.ca.gov](mailto:ISPO@parks.ca.gov) with a cc: to both [PMO@parks.ca.gov](mailto:PMO@parks.ca.gov) and [DPR-IT.Procurement@parks.ca.gov](mailto:DPR-IT.Procurement@parks.ca.gov). Contact [ISPO@parks.ca.gov](mailto:ISPO@parks.ca.gov) for assistance with completing this assessment.**

Upon review, ISPO will contact the DPR staff for more information, if needed, prior to submitting the finalized document to the California Department of Technology.

Procurement efforts will be placed on temporary hold pending CDT approval.

### **Definitions:**

- IaaS – Infrastructure as a Service is a cloud computing model that provides on-demand access to virtualized computing resources like servers, storage, and networking.
- PaaS – Platform as a Service is a cloud computing model that provides a complete platform for developing, running, and managing applications.
- SaaS – Software as a Service a cloud-based software delivery model where users access and use applications over the internet via a subscription rather than purchasing and installing software locally.

### **Section III:**

Bidder signatures are required to certify all provided information on this document is true and accurate to the best of their knowledge.

Pursuant to Public Contract Code section 2010, a person that submits a bid or proposal to, or otherwise proposes to enter into or renew a contract with, a state agency with respect to any contract in the amount of \$100,000 or above shall certify, under penalty of perjury, at the time the bid or proposal is submitted or the contract is renewed, all of the following:

1. CALIFORNIA CIVIL RIGHTS LAWS: For contracts executed or renewed after January 1, 2017, the contractor certifies compliance with the Unruh Civil Rights Act (Section 51 of the Civil Code) and the Fair Employment and Housing Act (Section 12960 of the Government Code); and
2. EMPLOYMENT DISCRIMINATORY POLICIES: For contracts executed or renewed after January 1, 2017, if a Contractor has an internal policy against a sovereign nation or people recognized by the United States government, the Contractor certifies that such policies are not used in violation of the Unruh Civil Rights Act (Section 51 of the Civil Code) or the Fair Employment and Housing Act (Section 12960 of the Government Code).

**CERTIFICATION**

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

|                                          |                          |
|------------------------------------------|--------------------------|
| Proposer/Bidder Firm Name (Printed)      | Federal ID Number        |
| By (Authorized Signature)                |                          |
| Printed Name and Title of Person Signing |                          |
| Executed in the County of                | Executed in the State of |
| Date Executed                            |                          |



STATE OF CALIFORNIA - DEPARTMENT OF GENERAL SERVICES

**STANDARD AGREEMENT**

STD 213 (Rev. 04/2020)

AGREEMENT NUMBER

C2XXXXXXX

PURCHASING AUTHORITY NUMBER (If Applicable)

1. This Agreement is entered into between the Contracting Agency and the Contractor named below:

CONTRACTING AGENCY NAME

Department of Parks and Recreation

CONTRACTOR NAME

2. The term of this Agreement is:

START DATE

Notice to Proceed (NTP)

THROUGH END DATE

Two (2) Years From NTP

3. The maximum amount of this Agreement is:

\$

Dollars and Zero Cents

4. The parties agree to comply with the terms and conditions of the following exhibits, which are by this reference made a part of the Agreement.

| Exhibits    | Title                                           | Pages   |
|-------------|-------------------------------------------------|---------|
| Exhibit A   | Scope of Work                                   | 1       |
| Exhibit B   | Budget Detail and Payment Provisions            | 2       |
| Exhibit B   | Attachment I, Public Works Bid Forms            | 2       |
| Exhibit B   | Attachment II, Bidder Declaration (GSPD 05-105) | 1       |
| Exhibit C * | General Terms and Conditions (GTC)              | 04/2017 |
| Exhibit D   | Special Terms and Conditions                    | 1       |
| Exhibit D   | Attachment I, Project Manual                    | XX      |

Items shown with an asterisk (\*), are hereby incorporated by reference and made part of this agreement as if attached hereto.

These documents can be viewed at <https://www.dgs.ca.gov/OLS/Resources>

IN WITNESS WHEREOF, THIS AGREEMENT HAS BEEN EXECUTED BY THE PARTIES HERETO.

**CONTRACTOR**

CONTRACTOR NAME (if other than an individual, state whether a corporation, partnership, etc.)

CONTRACTOR BUSINESS ADDRESS

CITY

STATE

ZIP

PRINTED NAME OF PERSON SIGNING

TITLE

CONTRACTOR AUTHORIZED SIGNATURE

DATE SIGNED

STATE OF CALIFORNIA - DEPARTMENT OF GENERAL SERVICES

**STANDARD AGREEMENT**

STD 213 (Rev. 04/2020)

AGREEMENT NUMBER

C2XXXXXXX

PURCHASING AUTHORITY NUMBER (If Applicable)

**STATE OF CALIFORNIA**

CONTRACTING AGENCY NAME

Department of Parks and Recreation

CONTRACTING AGENCY ADDRESS

2241 Harvard Street, Suite 200

CITY

Sacramento

STATE

CA

ZIP

95815

PRINTED NAME OF PERSON SIGNING

Brian Dewey

TITLE

Assistant Deputy Director, Facilities &amp; Development

CONTRACTING AGENCY AUTHORIZED SIGNATURE

DATE SIGNED

CALIFORNIA DEPARTMENT OF GENERAL SERVICES APPROVAL

EXEMPTION (If Applicable)

DGS APPROVAL NOT REQUIRED

Exempt per PCC § 10106(a)(3)

Exempt per PCC § 10107

Contractor's Name:

Agreement Number:

Page: 1 of 1

**EXHIBIT A — Public Works  
(Standard Agreement)**

**SCOPE OF WORK**

1. Contractor agrees to furnish all labor, tools, materials and equipment necessary to:

2. The work shall be performed at:

3. The work shall be provided during:

4. The project representatives during the term of this agreement will be:

|                      |  |                      |  |
|----------------------|--|----------------------|--|
| State Agency:        |  | Contractor:          |  |
| Section/Unit:        |  | Section/Unit:        |  |
| Attention:           |  | Attention:           |  |
| Address:             |  | Address:             |  |
| City/State/Zip Code: |  | City/State/Zip Code: |  |
| Phone:               |  | Phone:               |  |
| Fax:                 |  | Fax:                 |  |
| E-mail:              |  | E-mail:              |  |

Contractor's Name:

Agreement Number:

Page: 1 of 2

## **EXHIBIT B — PUBLIC WORKS (Standard Agreement)**

### **BUDGET DETAIL AND PAYMENT PROVISIONS**

#### **1. Invoicing and Payment**

- A. For services satisfactorily rendered, and upon receipt and approval of the invoices, the State agrees to compensate the Contractor for actual expenditures incurred in accordance with the rates specified in the Bid Form, marked Exhibit B, Attachment 1, which is attached hereto and made a part of this Agreement.
- B. Invoices shall include the Agreement Number and shall be submitted in triplicate not more frequently than monthly in arrears to:

#### **2. Budget Contingency Clause**

- A. It is mutually agreed that if the Budget Act of the current year and/or any subsequent years covered under this Agreement does not appropriate sufficient funds for the program, this Agreement shall be of no further force and effect. In this event, the State shall have no liability to pay any funds whatsoever to Contractor or to furnish any other considerations under this Agreement and Contractor shall not be obligated to perform any provisions of this Agreement.
- B. If funding for any fiscal year is reduced or deleted by the Budget Act for purposes of this program, the State shall have the option to either cancel this Agreement with no liability occurring to the State, or offer an agreement amendment to Contractor to reflect the reduced amount.

#### **3. Prompt Payment Clause**

Payment will be made in accordance with, and within the time specified in, Government Code Chapter 4.5, commencing with Section 927.

#### **4. Compensation**

Contractor shall submit to the State an itemized request for payment, in triplicate, no more than once each 30 day period. All invoices or requests for payment, not on Contractor's preprinted stationery, shall be signed by the Contractor or his authorized representative and submitted to the State's Representative as indicated in paragraph 1B above.

Five percent (5%) shall be retained from each progress payment and held by the State as partial security for the fulfillment of the contract by the Contractor. The State shall pay the Contractor the value of such work, as estimated therein, after deducting therefrom all previous payments, and all amounts to be retained under the provisions of this Agreement. No progress payments will be made by the State for project terms less than thirty (30) days. The one and only payment will be the final payment made by the State upon satisfactory completion of all work required under the contract documents.

**Exhibit B, Attachment 1**  
**PUBLIC WORKS BID FORM**

|                                                         |                                |
|---------------------------------------------------------|--------------------------------|
| BID TIME<br>2:00 P.M.                                   | BID DATE<br>September 30, 2026 |
| PROJECT LOCATION<br><b>McCLELLAN PARK</b>               |                                |
| PROJECT NAME<br>C26863011 Bay G & H Tenant Improvements |                                |

**Nondiscrimination Compliance Statement:** The prospective contractor's signature affixed hereon and dated shall constitute a certification under penalty of perjury under the laws of the State of California that the bidder has, unless exempted, complied with the nondiscrimination program requirements of Government Code Section 12990 and Title 2, California Code of Regulations, Section 8103.

**Verification:** By signing this Bid Form, the bidder assures the state that it has not been convicted of violating a state or federal law regarding the employment of undocumented aliens, in the preceding five years.

The prospective contractor's signature affixed hereon and dated shall constitute a certification that the representations made by the prospective contract in the bid are made under penalty of perjury under the laws of the State of California.

**Important:** Pursuant to Title 2, California Code of Regulations, Section 8103 and Business and Professions Code Section 7028.15, no bid will be considered unless it contains the certifications and license information requested on this form. The State reserves the right to waive any irregularity in any bid or to reject any or all bids.

**CERTIFICATION**

*I, the official named below, CERTIFY UNDER PENALTY OF PERJURY that I am duly authorized to legally bind the prospective Contractor to the clause(s) listed above. This certification is made under the laws of the State of California. I understand that failure to submit the Public Works Bid Form with the appropriate bidder signature will result in rejection of the bid.*

BY (Authorized Signature)

DATE

PRINTED NAME AND TITLE OF PERSON SIGNING

|                                                                                                                                                                                                                                        |             |                          |                      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|--------------------------|----------------------|
| CONTRACTOR/BIDDER FIRM NAME (Printed) - AS IT APPEARS ON LICENSE                                                                                                                                                                       |             | PHONE NO.                | FAX NO.              |
| MAILING ADDRESS                                                                                                                                                                                                                        |             | CITY/STATE/ZIP CODE      | EMAIL                |
| LICENSE CLASSIFICATION                                                                                                                                                                                                                 | LICENSE NO. | LICENSE EXPIRATION DATE. | DIR REGISTRATION NO. |
| STATUS OF BUSINESS (Check appropriate box.)<br><input type="checkbox"/> Individual.<br><input type="checkbox"/> Corporation. State in which incorporated: _____<br><input type="checkbox"/> Partnership. Full names of partners: _____ |             |                          |                      |

Listed hereinafter are the names, addresses and contractor's license numbers of all subcontractors who will perform work or labor or render services in an amount in excess of one-half of one percent of the general contractor's total bid if this bid is accepted and the portion of the work that each will perform. Material vendors are not included.

| KIND OF WORK | NAME AND ADDRESS | LICENSE NO. & DIR NO. |
|--------------|------------------|-----------------------|
|              |                  |                       |
|              |                  |                       |
|              |                  |                       |
|              |                  |                       |
|              |                  |                       |
|              |                  |                       |
|              |                  |                       |

BID FORM

Bid Number: C26863011

Contractor / Bidder Firm Name: \_\_\_\_\_

Page 2

The bidder hereby proposes to furnish all labor, materials, tools and equipment necessary for tenant improvements to multiple areas within the existing building to support the Cannabis Watershed Protection Program, Telecommunications, and IT groups, including reconfigured office and storage spaces, added lab and high-pile rack areas, enhanced security partitions, and upgrades to mechanical, fire sprinkler, and alarm systems to meet new operational and ventilation requirements at **McCLELLAN PARK** in Sacramento County, California, complete and ready for use in accordance with the contract documents therefore, for the following stipulated sums which shall include all applicable taxes and other expenses:

**Base Bid Lump Sum Total:** \$ \_\_\_\_\_

**Base Bid Lump Sum Total Written Out:**

\_\_\_\_\_

Deductive Alternates:

| <u>Item</u> | <u>Quantity</u> | <u>Description</u>                                                                                                                               | <u>Item Total</u> |
|-------------|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| 1.          | Lump Sum        | Alternate No. 01 Electrical                                                                                                                      | \$ _____          |
|             |                 | Base Bid: Includes all contract bid documents.<br>Construction drawings 00031-77.001 through<br>52                                               |                   |
|             |                 | Deduct 01-- All electrical labor, materials, and<br>installations included in the Bay H electrical<br>scope of work.<br>Refer to sheets E3.01H/1 |                   |

The bidder agrees to complete all work within **TWO HUNDRED SEVENTY (270)** calendar days from the date of written notice to commence work. This time includes ten (10) calendar days allowed for the contractor to begin work.

The State desires to complete the maximum amount of work that can be accomplished within available funds. The award of contract, if made, will be to the lowest responsible bidder who submits the lowest Base Bid amount.

Should the lowest qualified bid for the Base Bid be greater than the available funds, the Project will be reduced by taking into consideration the Deductive Alternates which decreases the bid in listed numerical sequence of precedence shown above (i.e., Deductive Alternate #1; Deductive Alternate #1 and #2; Deductive Alternate #1, #2, and #3, Deductive Alternate #1, #2, #3, and #4). Therefore, the award of contract, if made, will be to the lowest responsible bidder for the Base bid minus Deductive Alternate #1. **\$100,000 - \$10,000 = \$90,000**

BID FORM

Bid Number: C26863011

Contractor / Bidder Firm Name: \_\_\_\_\_

Page 3

After award of the Contract, the State, at its discretion, reserves the right to add, via amendment, to the Contract Work, any additive work that was eliminated during the bid process. Immediately following award of the Contract the State will notify each party involved, in writing of the status of each alternate. The State will indicate if alternates have been accepted, rejected, or deferred for later consideration.

SAMPLE

Contractor's Name:

Agreement Number:

Page: 2 of 2

## **EXHIBIT B — PUBLIC WORKS (Standard Agreement)**

### **BUDGET DETAIL AND PAYMENT PROVISIONS**

#### **5. Disabled Veterans Participation Goals**

- A. Upon completion of an award contract in which a commitment to achieve a DVBE goal was made, the prime contractor that entered into a subcontract with a DVBE is required to complete and submit form STD. 817 within 60 days to certify payment information to the awarding department, in accordance with Military and Veterans Code (M&VC) Section 999.5.
- B. For contracts awarded on or after January 1, 2021, pursuant to M&VC Section 999.7, the State shall withhold ten thousand dollars (\$10,000) from the final payment, or the full final payment if less than ten thousand dollars (\$10,000), until the prime contractor complies with the certification requirements of M&VC Section 999.5. Prime contractors that fail to comply with the certification requirements shall be given notice and allowed to cure the defect. If after 15 calendar days but not more than 30 calendar days from the date of the notice, the prime contractor fails to comply with the certification requirements, the State shall permanently deduct ten thousand (\$10,000) from the final payment, or the full payment if less than ten thousand dollar (\$10,000). The withholding applies to all contracts with a DVBE subcontractor.
- C. Notwithstanding any other law, an awarding department shall not withhold more than the amount specified on the final payment of any disabled veteran business enterprise contract for the purposes of ensuring compliance with the certification requirements of M&VC 999.5.



Contractor's Name:

Agreement Number:

Page: 1 of 1

## **EXHIBIT D — PUBLIC WORKS (Standard Agreement)**

### **SPECIAL TERMS AND CONDITIONS**

#### **1. Project Manual**

The Project Manual, marked Exhibit D, Attachment I, containing general conditions, plans and specifications, and other pertinent bid documents related to this project, as enumerated in the Project Manual's Table of Contents, is hereby attached and incorporated into this agreement.

#### **2. Public Works - Rules/Regulations**

Contractor shall observe and comply with all federal, state, city, and county laws, rules or regulations affecting the work. Any work done that does not comply with any laws, rules, or regulations will be remedied at the Contractor's expense.

#### **3. Executive Order N-6-22 – Russia Sanctions**

On March 4, 2022, Governor Gavin Newsom issued Executive Order N-6-22 (the EO) regarding Economic Sanctions against Russia and Russian entities and individuals. "Economic Sanctions" refers to sanctions imposed by the U.S. government in response to Russia's actions in Ukraine, as well as any sanctions imposed under state law. The EO directs state agencies to terminate contracts with, and to refrain from entering any new contracts with, individuals or entities that are determined to be a target of Economic Sanctions. Accordingly, should the State determine Contractor is a target of Economic Sanctions or is conducting prohibited transactions with sanctioned individuals or entities, that shall be grounds for termination of this agreement. The State shall provide Contractor advance written notice of such termination, allowing Contractor at least 30 calendar days to provide a written response. Termination shall be at the sole discretion of the State.

**PAYMENT BOND TO ACCOMPANY CONSTRUCTION CONTRACT**  
(Public Contract Code Sections 7103 and 10221)

BOND NO. \_\_\_\_\_

The premium on this bond is \_\_\_\_\_ for the term of \_\_\_\_\_

**Know All Men By These Presents:**

That the State of California, acting by and through the \_\_\_\_\_, has awarded to  
\_\_\_\_\_ whose address for service is \_\_\_\_\_  
as Principal, a contract for the work described as follows:

Project Title: \_\_\_\_\_

Project Location: \_\_\_\_\_

WHEREAS, the provisions of Public Contract Code Sections 7103 and 10221 require that the Principal file a bond in connection with said contract and this bond is executed and tendered in accordance therewith.

NOW THEREFORE, Principal and \_\_\_\_\_, a Surety Corporation organized under the laws of \_\_\_\_\_, and authorized to transact a general surety business in the State of California, as Surety, are held and firmly bound to the People of the State of California in the penal sum of \_\_\_\_\_, for which payment we bind ourselves, our heirs, executors, administrators, successors and assigns jointly and severally, firmly by these presents.

**THE CONDITION OF THIS OBLIGATION IS SUCH,**

1. That if said Principal or its subcontractors shall fail to pay any of the persons named in Civil Code Section 9100, or amounts due under the Unemployment Insurance Code with respect to work or labor performed under the contract, or for any amounts required to be deducted, withheld, and paid over to the Employment Development Department from the wages of employees of the Principal and subcontractors pursuant to Section 13020 of the Unemployment Insurance Code, with respect to such work and labor, that the surety herein will pay for the same, otherwise this obligation is to be void. In case suit is brought upon this bond, the Surety will pay a reasonable attorney's fee to be fixed by the court.
2. This bond shall inure to the benefit of any persons named in Civil Code Section 9100 as to give a right of action to such persons or their assigned in any suit brought upon this bond.
3. The aggregate liability of the Surety hereunder, including costs and attorney fees, on all claims whatsoever shall not exceed the penal sum of the bond in accordance with the provisions of Section 996.470(a) of the Code of Civil Procedure.
4. This bond is executed by the Surety, to comply with the provisions of Public Contract Code Sections 7103, 10221 and 10222, of Chapter 5, Title 3, Part 6, Division 4 of the Civil Code and of Chapter 2, Title 14, Part 2 of the Code of Civil Procedure and said bond shall be subject to all of the terms and provisions thereof.
5. This bond may be cancelled by the Surety in accordance with the provisions of Section 996.310 et seq. of the Code of Civil Procedure.
6. This bond to become effective \_\_\_\_\_

\_\_\_\_\_  
(NAME OF SURETY)

\_\_\_\_\_  
(ADDRESS FOR SERVICE)

I certify (or declare) under penalty of perjury under the laws of the State of California that I have executed the foregoing bond under an unrevoked power of attorney.

Executed in \_\_\_\_\_ on \_\_\_\_\_  
(CITY AND STATE) (DATE)

X  
\_\_\_\_\_  
(SIGNATURE OF ATTORNEY IN FACT)

\_\_\_\_\_  
(PRINTED OR TYPED NAME OR ATTORNEY IN FACT)

## PERFORMANCE BOND TO ACCOMPANY CONTRACT

### KNOW ALL MEN BY THESE PRESENTS:

**THAT WHEREAS**, The State of California, acting by and through the Department of Parks and Recreation, has awarded to **CONTRACTOR** a corporation existing under and by virtue of the laws of the State of California as principal, hereinafter designated as the "Contractor", a contract for the work described as follows:

### PARK NAME, Project Name

**AND WHEREAS**, Said Contractor is required to furnish a bond in connection with said contract, guaranteeing the faithful performance thereof;

**NOW, THEREFORE**, We the undersigned Contractor and surety are held and firmly bound unto the State of California, in the sum of **Contract Amount (\$00.00)** to be paid to the State or its certain attorney, its successors and assigns; for which payment, well and truly to be made, we bind ourselves, our heirs, executors and administrators, successors or assigns, jointly and severally, firmly by these presents.

### THE CONDITION OF THIS OBLIGATION IS SUCH,

That if the above bound Contractor, 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 foregoing 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 manner therein specified, and in all respects according to their true intent and meaning, and shall indemnify and save harmless the State of California, its officers and agents, as therein stipulated, then this obligation shall become and be null and void; otherwise, it shall be and remain in full force and virtue.

IN WITNESS WHEREOF, We have hereunto set our hands and seals on this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

\_\_\_\_\_  
By \_\_\_\_\_  
Contractor

\_\_\_\_\_  
Name of Surety (Seal)

By \_\_\_\_\_  
Attorney-in-Fact

NOTE: Signatures of those executing for the surety must be properly acknowledged, and a Power of Attorney attached.

### CERTIFICATE OF ACKNOWLEDGEMENT

State of California  
County of \_\_\_\_\_ ss

On this \_\_\_\_\_ day of \_\_\_\_\_ in the year 20\_\_\_\_ before me, a notary public in and for

The county and state aforesaid, personally appeared \_\_\_\_\_  
(Attorney-in-Fact)

Known to me to be the person whose name is subscribed to the within instrument and known to me to be the Attorney-in-Fact of \_\_\_\_\_ and acknowledged to me that he subscribed the name of the said company thereto as surety, and his own name as Attorney-in-Fact.

(SEAL)

\_\_\_\_\_  
NOTARY PUBLIC

**PAYEE DATA RECORD**

(Required when receiving payment from the State of California in lieu of IRS W-9 or W-7)

STD 204 (Rev. 03/2021)

**Section 1 – Payee Information****NAME** (This is required. Do not leave this line blank. Must match the payee's federal tax return)**BUSINESS NAME, DBA NAME or DISREGARDED SINGLE MEMBER LLC NAME** (If different from above)**MAILING ADDRESS** (number, street, apt. or suite no.) (See instructions on Page 2)**CITY, STATE, ZIP CODE****E-MAIL ADDRESS****Section 2 – Entity Type****Check one (1) box only that matches the entity type of the Payee listed in Section 1 above.** (See instructions on page 2)☐ **SOLE PROPRIETOR / INDIVIDUAL**☐ **SINGLE MEMBER LLC** *Disregarded Entity owned by an individual*☐ **PARTNERSHIP**☐ **ESTATE OR TRUST**☐ **CORPORATION** (see instructions on page 2)☐ **MEDICAL** (e.g., dentistry, chiropractic, etc.)☐ **LEGAL** (e.g., attorney services)☐ **EXEMPT** (e.g., nonprofit)☐ **ALL OTHERS****Section 3 – Tax Identification Number**

Enter your Tax Identification Number (TIN) in the appropriate box. The TIN must **match** the name given in Section 1 of this form. Do not provide more than one (1) TIN. The TIN is a 9-digit number. **Note:** Payment will not be processed without a TIN.

- For **Individuals**, enter SSN.
- If you are a **Resident Alien**, and you do not have and are not eligible to get an SSN, enter your ITIN.
- Grantor Trusts (such as a Revocable Living Trust while the grantors are alive) may not have a separate FEIN. Those trusts must enter the individual grantor's SSN.
- For **Sole Proprietor or Single Member LLC (disregarded entity)**, in which the **sole member is an individual**, enter SSN (ITIN if applicable) or FEIN (FTB prefers SSN).
- For **Single Member LLC (disregarded entity)**, in which the **sole member is a business entity**, enter the owner entity's FEIN. Do not use the disregarded entity's FEIN.
- For all other entities including LLC that is taxed as a corporation or partnership, estates/trusts (with FEINs), enter the entity's FEIN.

**Social Security Number (SSN) or Individual Tax Identification Number (ITIN)**

\_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_

**OR****Federal Employer Identification Number (FEIN)**

\_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_

**Section 4 – Payee Residency Status** (See instructions)☐ **CALIFORNIA RESIDENT** – Qualified to do business in California or maintains a permanent place of business in California.☐ **CALIFORNIA NONRESIDENT** – Payments to nonresidents for services may be subject to state income tax withholding.☐ No services performed in California☐ Copy of Franchise Tax Board waiver of state withholding is attached.**Section 5 – Certification**

**I hereby certify under penalty of perjury that the information provided on this document is true and correct. Should my residency status change, I will promptly notify the state agency below.**

**NAME OF AUTHORIZED PAYEE REPRESENTATIVE****TITLE****E-MAIL ADDRESS****SIGNATURE****DATE****TELEPHONE** (include area code)**Section 6 – Paying State Agency****Please return completed form to:****STATE AGENCY/DEPARTMENT OFFICE**  
Department of Parks and Recreation**UNIT/SECTION**  
Park Operations Administrative Services Division**MAILING ADDRESS**  
2241 Harvard Street, Suite 200**FAX****CITY**  
Sacramento**STATE**  
CA**ZIP CODE**  
95815**E-MAIL ADDRESS**  
merrilee.byernes@parks.ca.gov

**PAYEE DATA RECORD**

(Required when receiving payment from the State of California in lieu of IRS W-9 or W-7)

STD 204 (Rev. 03/2021)

**GENERAL INSTRUCTIONS**

Type or print the information on the Payee Data Record, STD 204 form. Sign, date, and return to the state agency/department office address shown in Section 6. Prompt return of this fully completed form will prevent delays when processing payments.

Information provided in this form will be used by California state agencies/departments to prepare Information Returns (Form 1099).

**NOTE:** Completion of this form is optional for Government entities, i.e. federal, state, local, and special districts.

A completed Payee Data Record, STD 204 form, is required for all payees (non-governmental entities or individuals) entering into a transaction that may lead to a payment from the state. Each state agency requires a completed, signed, and dated STD 204 on file; therefore, it is possible for you to receive this form from multiple state agencies with which you do business.

Payees who do not wish to complete the STD 204 may elect not to do business with the state. If the payee does not complete the STD 204 and the required payee data is not otherwise provided, payment may be reduced for federal and state backup withholding. Amounts reported on Information Returns (Form 1099) are in accordance with the Internal Revenue Code (IRC) and the California Revenue and Taxation Code (R&TC).

**Section 1 – Payee Information**

**Name** – Enter the name that appears on the payee's federal tax return. The name provided shall be the tax liable party and is subject to IRS TIN matching (when applicable).

- Sole Proprietor/Individual/Revocable Trusts – enter the name shown on your federal tax return.
- Single Member Limited Liability Companies (LLCs) that is disregarded as an entity separate from its owner for federal tax purposes - enter the name of the individual or business entity that is tax liable for the business in section 1. Enter the DBA, LLC name, trade, or fictitious name under Business Name.
- Note: for the State of California tax purposes, a Single Member LLC is not disregarded from its owner, even if they may be disregarded at the Federal level.
- Partnerships, Estates/Trusts, or Corporations – enter the entity name as shown on the entity's federal tax return. The name provided in Section 1 must match to the TIN provided in section 3. Enter any DBA, trade, or fictitious business names under Business Name.

**Business Name** – Enter the business name, DBA name, trade or fictitious name, or disregarded LLC name.

**Mailing Address** – The mailing address is the address where the payee will receive information returns. Use form STD 205, Payee Data Record Supplement to provide a remittance address if different from the mailing address for information returns, or make subsequent changes to the remittance address.

**Section 2 – Entity Type**

| If the Payee in Section 1 is a(n)...                                                                                                                                                                              | THEN Select the Box for...               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|
| Individual • Sole Proprietorship • Grantor (Revocable Living) Trust disregarded for federal tax purposes                                                                                                          | Sole Proprietor/Individual               |
| Limited Liability Company (LLC) owned by an individual and is disregarded for federal tax purposes                                                                                                                | Single Member LLC-owned by an individual |
| Partnerships • Limited Liability Partnerships (LLP) • and, LLC treated as a Partnership                                                                                                                           | Partnerships                             |
| Estate • Trust (other than disregarded Grantor Trust)                                                                                                                                                             | Estate or Trust                          |
| Corporation that is medical in nature (e.g., medical and healthcare services, physician care, nursery care, dentistry, etc.) • LLC that is to be taxed like a Corporation and is medical in nature                | Corporation-Medical                      |
| Corporation that is legal in nature (e.g., services of attorneys, arbitrators, notary publics involving legal or law related matters, etc.) • LLC that is to be taxed like a Corporation and is legal in nature   | Corporation-Legal                        |
| Corporation that qualifies for an Exempt status, including 501(c) 3 and domestic non-profit corporations.                                                                                                         | Corporation-Exempt                       |
| Corporation that does not meet the qualifications of any of the other corporation types listed above • LLC that is to be taxed as a Corporation and does not meet any of the other corporation types listed above | Corporation-All Other                    |

**Section 3 – Tax Identification Number**

The State of California requires that all parties entering into business transactions that may lead to payment(s) from the state provide their Taxpayer Identification Number (TIN). The TIN is required by R&TC sections 18646 and 18661 to facilitate tax compliance enforcement activities and preparation of Form 1099 and other information returns as required by the IRC section 6109(a) and R&TC section 18662 and its regulations.

**Section 4 – Payee Residency Status****Are you a California resident or nonresident?**

- A corporation will be defined as a "resident" if it has a permanent place of business in California or is qualified through the Secretary of State to do business in California.
- A partnership is considered a resident partnership if it has a permanent place of business in California.
- An estate is a resident if the decedent was a California resident at time of death.
- A trust is a resident if at least one trustee is a California resident.
  - For individuals and sole proprietors, the term "resident" includes every individual who is in California for other than a temporary or transitory purpose and any individual domiciled in California who is absent for a temporary or transitory purpose. Generally, an individual who comes to California for a purpose that will extend over a long or indefinite period will be considered a resident. However, an individual who comes to perform a particular contract of short duration will be considered a nonresident.

For information on Nonresident Withholding, contact the Franchise Tax Board at the numbers listed below:

Withholding Services and Compliance Section: 1-888-792-4900

E-mail address: [wscs.gen@ftb.ca.gov](mailto:wscs.gen@ftb.ca.gov)

For hearing impaired with TDD, call: 1-800-822-6268

Website: [www.ftb.ca.gov](http://www.ftb.ca.gov)

**Section 5 – Certification**

Provide the name, title, email address, signature, and telephone number of individual completing this form and date completed. In the event that a SSN or ITIN is provided, the individual identified as the tax liable party must certify the form. Note: the signee may differ from the tax liable party in this situation if the signee can provide a power of attorney documented for the individual.

**Section 6 – Paying State Agency**

This section must be completed by the state agency/department requesting the STD 204.

**Privacy Statement**

Section 7(b) of the Privacy Act of 1974 (Public Law 93-579) requires that any federal, state, or local governmental agency, which requests an individual to disclose their social security account number, shall inform that individual whether that disclosure is mandatory or voluntary, by which statutory or other authority such number is solicited, and what uses will be made of it. It is mandatory to furnish the information requested. Federal law requires that payment for which the requested information is not provided is subject to federal backup withholding and state law imposes noncompliance penalties of up to \$20,000. You have the right to access records containing your personal information, such as your SSN. To exercise that right, please contact the business services unit or the accounts payable unit of the state agency(ies) with which you transact that business.

All questions should be referred to the requesting state agency listed on the bottom front of this form.

## STATE OF CALIFORNIA – STATE CONTROLLERS OFFICE

**PAYEE DATA RECORD SUPPLEMENT**

(This form is optional. Form is used to provide remittance address information if different than the mailing address on the STD 204 – Payee Data Record. Use this form to provide additional remittance addresses and additional Authorized Representatives of the Payee not identified on the STD 204.)  
STD 205 (New 03/2021)

**Payee Information (must match the STD 204)**

|                                                                                                   |                                                                                                      |
|---------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| <b>NAME</b> (Required. Do not leave blank.)                                                       | <b>TAX ID NUMBER</b> (Required)<br>SSN, ITIN, or FEIN that matches Tax ID number provided on STD 204 |
| <b>BUSINESS NAME, DBA NAME or DISREGARDED SINGLE MEMBER LLC NAME</b><br>(If different from above) |                                                                                                      |

**Additional Remittance Address Information**

- Use the fields below to provide remittance addresses for payee if different from the mailing address on the STD 204.
- The addresses provided below are for remittance purposes only. 1099 information returns will be sent to the mailing address specified on the STD 204.**

|          |                                                              |       |          |
|----------|--------------------------------------------------------------|-------|----------|
| <b>1</b> | <b>REMITTANCE ADDRESS</b> (number, street, apt or suite no.) |       |          |
|          | CITY                                                         | STATE | ZIP CODE |
| <b>2</b> | <b>REMITTANCE ADDRESS</b>                                    |       |          |
|          | CITY                                                         | STATE | ZIP CODE |
| <b>3</b> | <b>REMITTANCE ADDRESS</b>                                    |       |          |
|          | CITY                                                         | STATE | ZIP CODE |
| <b>4</b> | <b>REMITTANCE ADDRESS</b>                                    |       |          |
|          | CITY                                                         | STATE | ZIP CODE |
| <b>5</b> | <b>REMITTANCE ADDRESS</b>                                    |       |          |
|          | CITY                                                         | STATE | ZIP CODE |

**Additional Contact Information**

Use the fields below to provide additional Authorized Representatives for the Payee if applicable.

|          |                               |       |
|----------|-------------------------------|-------|
| <b>1</b> | <b>CONTACT NAME</b>           |       |
|          | TELEPHONE (Include area code) | EMAIL |
| <b>2</b> | <b>CONTACT NAME</b>           |       |
|          | TELEPHONE                     | EMAIL |
| <b>3</b> | <b>CONTACT NAME</b>           |       |
|          | TELEPHONE                     | EMAIL |

**Certification**

*I hereby certify under penalty of perjury that the information provided on this supplemental document is true and correct.*

*By signing this document, I authorize the State of California to remit payment to the addresses specified on this supplemental form (STD 205) and certify that all persons identified on this form are authorized representatives of this payee. Payments remitted to any of the listed addresses may be reported on 1099 information returns to the tax liable entity identified on the accompanying Payee Data Record - STD 204.*

|                                                                        |              |                                      |
|------------------------------------------------------------------------|--------------|--------------------------------------|
| <b>NAME OF AUTHORIZED PAYEE REPRESENTATIVE</b><br>(Print or Type name) | <b>TITLE</b> | <b>E-MAIL ADDRESS</b>                |
| <b>SIGNATURE</b><br><br>X _____                                        | <b>DATE</b>  | <b>TELEPHONE</b> (Include area code) |

**PAYEE DATA RECORD SUPPLEMENT**

(This form is optional. Form is used to provide remittance address information if different than the mailing address on the STD 204 – Payee Data Record. Use this form to provide additional remittance addresses and additional Authorized Representatives of the Payee not identified on the STD 204.)  
STD 205 (New 03/2021)

**GENERAL INSTRUCTIONS**

Type or print the information on the Payee Data Record Supplement, STD 205. Sign, date, and return to the state agency/department with a completed STD 204. Prompt return of the fully completed forms will prevent delays when processing payments.

**Purpose** – Completion of this form (STD 205) is optional. Payees may use this form to provide remittance addresses or contact information in addition to the 1099 information return mailing address provided on the STD 204. This form shall only be used in conjunction with the STD 204, and will not be accepted without a STD 204.

**Please note:** The State of California Government will issue 1099 information returns to the mailing address provided on the most recently dated form STD 204 validated by the Payee. Addresses provided on this form (STD 205) will be used for remittance purposes only. If the payee would like to update the address for receiving 1099 information returns, please complete the STD 204.

**Payee Information:** The Payee's Tax ID number (TIN) and Name (including any Business, DBA, or Disregarded LLC names) are required. This information is subject to TIN matching via the IRS database for validation. Payee Information provided in this section must clearly match the STD 204. Any discrepancies may result in delays of payment, up to and including denial of the request.

**Name** – Enter the name of the Payee. The name provided shall be the tax liable party and is subject to IRS TIN matching (when applicable).

**Business Name** – Enter the business name, DBA name, trade or fictitious name, or disregarded LLC name.

**Tax ID Number**-The State of California requires that all parties entering into business transactions that may lead to payment(s) from the state provide their Taxpayer Identification Number (TIN). The TIN is required by R&TC sections 18646 and 18661 to facilitate tax compliance enforcement activities and preparation of Form 1099 and other information returns as required by the IRC section 6109(a) and R&TC section 18662 and its regulations.

**Additional Remittance Address Information** - Enter the Payee's additional remittance address(s) that are not listed on STD 204. Up to five (5) addresses may be provided on this form. The Payee may provide additional remittance addresses on a second STD 205 form if needed.

**Additional Contact Information** - Enter the Payee's additional or updated contact information. Up to three contacts may be identified on this form. Payee may provide additional contacts on a second STD 205 if needed.

**PRIVACY STATEMENT**

Section 7(b) of the Privacy Act of 1974 (Public Law 93-579) requires that any federal, state, or local governmental agency, which requests an individual to disclose their social security account number, shall inform that individual whether that disclosure is mandatory or voluntary, by which statutory or other authority such number is solicited, and what uses will be made of it.

It is mandatory to furnish the information requested. Federal law requires that payment for which the requested information is not provided is subject to federal backup withholding and state law imposes noncompliance penalties of up to \$20,000.

You have the right to access records containing your personal information, such as your SSN. To exercise that right, please contact the business services unit or the accounts payable unit of the state agency(ies) with which you transact that business.

All questions should be referred to the requesting state agency listed on the bottom front of the STD 204 form.

# Contractor Certification Clauses

CCC 04/2017

## CERTIFICATION

I, the official named below, CERTIFY UNDER PENALTY OF PERJURY that I am duly authorized to legally bind the prospective Contractor to the clause(s) listed below. This certification is made under the laws of the State of California.

|                                          |                           |
|------------------------------------------|---------------------------|
| Contractor/Bidder Firm Name (Printed)    | Federal ID Number         |
| By (Authorized Signature)                |                           |
| Printed Name and Title of Person Signing |                           |
| Date Executed                            | Executed in the County of |

## CONTRACTOR CERTIFICATION CLAUSES

1. STATEMENT OF COMPLIANCE: Contractor has, unless exempted, complied with the nondiscrimination program requirements. (Gov. Code §12990 (a-f) and CCR, Title 2, Section 11102) (Not applicable to public entities.)

2. DRUG-FREE WORKPLACE REQUIREMENTS: Contractor will comply with the requirements of the Drug-Free Workplace Act of 1990 and will provide a drug-free workplace by taking the following actions:

a. Publish a statement notifying employees that unlawful manufacture, distribution, dispensation, possession or use of a controlled substance is prohibited and specifying actions to be taken against employees for violations.

b. Establish a Drug-Free Awareness Program to inform employees about:

- 1) the dangers of drug abuse in the workplace;
- 2) the person's or organization's policy of maintaining a drug-free workplace;
- 3) any available counseling, rehabilitation and employee assistance programs; and,
- 4) penalties that may be imposed upon employees for drug abuse violations.

c. Every employee who works on the proposed Agreement will:

- 1) receive a copy of the company's drug-free workplace policy statement; and,



2) agree to abide by the terms of the company's statement as a condition of employment on the Agreement.

Failure to comply with these requirements may result in suspension of payments under the Agreement or termination of the Agreement or both and Contractor may be ineligible for award of any future State agreements if the department determines that any of the following has occurred: the Contractor has made false certification, or violated the certification by failing to carry out the requirements as noted above. (Gov. Code §8350 et seq.)

3. NATIONAL LABOR RELATIONS BOARD CERTIFICATION: Contractor certifies that no more than one (1) final unappealable finding of contempt of court by a Federal court has been issued against Contractor within the immediately preceding two-year period because of Contractor's failure to comply with an order of a Federal court, which orders Contractor to comply with an order of the National Labor Relations Board. (Pub. Contract Code §10296) (Not applicable to public entities.)

4. CONTRACTS FOR LEGAL SERVICES \$50,000 OR MORE- PRO BONO REQUIREMENT: Contractor hereby certifies that Contractor will comply with the requirements of Section 6072 of the Business and Professions Code, effective January 1, 2003.

Contractor agrees to make a good faith effort to provide a minimum number of hours of pro bono legal services during each year of the contract equal to the lesser of 30 multiplied by the number of full time attorneys in the firm's offices in the State, with the number of hours prorated on an actual day basis for any contract period of less than a full year or 10% of its contract with the State.

Failure to make a good faith effort may be cause for non-renewal of a state contract for legal services, and may be taken into account when determining the award of future contracts with the State for legal services.

5. EXPATRIATE CORPORATIONS: Contractor hereby declares that it is not an expatriate corporation or subsidiary of an expatriate corporation within the meaning of Public Contract Code Section 10286 and 10286.1, and is eligible to contract with the State of California.

6. SWEATFREE CODE OF CONDUCT:

a. All Contractors contracting for the procurement or laundering of apparel, garments or corresponding accessories, or the procurement of equipment, materials, or supplies, other than procurement related to a public works contract, declare under penalty of perjury that no apparel, garments or corresponding accessories, equipment, materials, or supplies furnished to the state pursuant to the contract have been laundered or produced in whole or in part by sweatshop labor, forced labor, convict labor, indentured labor under penal sanction, abusive forms of child labor or exploitation of children in sweatshop labor, or with the benefit of sweatshop labor, forced labor, convict labor, indentured labor under penal sanction, abusive forms of child labor or exploitation of children in sweatshop labor. The contractor further declares under penalty of perjury that they adhere to the Sweatfree Code of Conduct as set forth on the California Department of Industrial Relations website located at [www.dir.ca.gov](http://www.dir.ca.gov), and Public Contract Code Section 6108.

b. The contractor agrees to cooperate fully in providing reasonable access to the contractor's records, documents, agents or employees, or premises if reasonably

required by authorized officials of the contracting agency, the Department of Industrial Relations, or the Department of Justice to determine the contractor's compliance with the requirements under paragraph (a).

7. DOMESTIC PARTNERS: For contracts of \$100,000 or more, Contractor certifies that Contractor is in compliance with Public Contract Code section 10295.3.

8. GENDER IDENTITY: For contracts of \$100,000 or more, Contractor certifies that Contractor is in compliance with Public Contract Code section 10295.35.

## **DOING BUSINESS WITH THE STATE OF CALIFORNIA**

The following laws apply to persons or entities doing business with the State of California.

1. CONFLICT OF INTEREST: Contractor needs to be aware of the following provisions regarding current or former state employees. If Contractor has any questions on the status of any person rendering services or involved with the Agreement, the awarding agency must be contacted immediately for clarification.

Current State Employees (Pub. Contract Code §10410):

1). No officer or employee shall engage in any employment, activity or enterprise from which the officer or employee receives compensation or has a financial interest and which is sponsored or funded by any state agency, unless the employment, activity or enterprise is required as a condition of regular state employment.

2). No officer or employee shall contract on his or her own behalf as an independent contractor with any state agency to provide goods or services.

Former State Employees (Pub. Contract Code §10411):

1). For the two-year period from the date he or she left state employment, no former state officer or employee may enter into a contract in which he or she engaged in any of the negotiations, transactions, planning, arrangements or any part of the decision-making process relevant to the contract while employed in any capacity by any state agency.

2). For the twelve-month period from the date he or she left state employment, no former state officer or employee may enter into a contract with any state agency if he or she was employed by that state agency in a policy-making position in the same general subject area as the proposed contract within the 12-month period prior to his or her leaving state service.

If Contractor violates any provisions of above paragraphs, such action by Contractor shall render this Agreement void. (Pub. Contract Code §10420)

Members of boards and commissions are exempt from this section if they do not receive payment other than payment of each meeting of the board or commission, payment for preparatory time and payment for per diem. (Pub. Contract Code §10430 (e))

2. LABOR CODE/WORKERS' COMPENSATION: Contractor needs to be aware of the provisions which require every employer to be insured against liability for Worker's Compensation or to undertake self-insurance in accordance with the provisions, and

Contractor affirms to comply with such provisions before commencing the performance of the work of this Agreement. (Labor Code Section 3700)

3. AMERICANS WITH DISABILITIES ACT: Contractor assures the State that it complies with the Americans with Disabilities Act (ADA) of 1990, which prohibits discrimination on the basis of disability, as well as all applicable regulations and guidelines issued pursuant to the ADA. (42 U.S.C. 12101 et seq.)

4. CONTRACTOR NAME CHANGE: An amendment is required to change the Contractor's name as listed on this Agreement. Upon receipt of legal documentation of the name change the State will process the amendment. Payment of invoices presented with a new name cannot be paid prior to approval of said amendment.

5. CORPORATE QUALIFICATIONS TO DO BUSINESS IN CALIFORNIA:

a. When agreements are to be performed in the state by corporations, the contracting agencies will be verifying that the contractor is currently qualified to do business in California in order to ensure that all obligations due to the state are fulfilled.

b. "Doing business" is defined in R&TC Section 23101 as actively engaging in any transaction for the purpose of financial or pecuniary gain or profit. Although there are some statutory exceptions to taxation, rarely will a corporate contractor performing within the state not be subject to the franchise tax.

c. Both domestic and foreign corporations (those incorporated outside of California) must be in good standing in order to be qualified to do business in California. Agencies will determine whether a corporation is in good standing by calling the Office of the Secretary of State.

6. RESOLUTION: A county, city, district, or other local public body must provide the State with a copy of a resolution, order, motion, or ordinance of the local governing body which by law has authority to enter into an agreement, authorizing execution of the agreement.

7. AIR OR WATER POLLUTION VIOLATION: Under the State laws, the Contractor shall not be: (1) in violation of any order or resolution not subject to review promulgated by the State Air Resources Board or an air pollution control district; (2) subject to cease and desist order not subject to review issued pursuant to Section 13301 of the Water Code for violation of waste discharge requirements or discharge prohibitions; or (3) finally determined to be in violation of provisions of federal law relating to air or water pollution.

8. PAYEE DATA RECORD FORM STD. 204: This form must be completed by all contractors that are not another state agency or other governmental entity.

## SECTION 000700 GENERAL CONDITIONS

### 1.01 DEFINITIONS

- A. Acceptance (or Final Completion)** – Acceptance occurs when all the provisions and requirements of the Contract are complete and is so certified by State's Representative.
- B. Bulletin** – A Bulletin is a written order directed to Contractor and issued by State's Representative, directing a minor change or making a clarification in the Work, or requesting information from Contractor about the Work. A Bulletin is to be used for minor changes or clarifications which State's Representative believes will have no impact on the Contract Sum or Contract Time.
- C. Calendar Day (or Day)** – A Calendar Day is a day of twenty-four (24) hours measured from one midnight to the next midnight, Pacific Time. Unless otherwise indicated, a "day" shall mean a Calendar Day.
- D. Change Order (or Amendment)** – A Change Order is a written modification of the Contract Documents made in accordance with the provisions of Section 1.08 of these General Conditions and which has been signed by State and Contractor.
- E. Contract (or Contract Documents)** – The Contract shall consist of the Notice to Contractors; Instructions to Bidders; Bid Form; Bidders Bond; Standard Agreement – STD. 213; General Conditions; STD. 807, Payment Bond; Performance Bond; Special Provisions; Specifications; Plans; STD. 811, Small Business Preference and Certification; Certificate of Insurance; Addenda; Amendments; Non Collusion Affidavit; Disabled Veteran Business Enterprise Compliance Certification and Documentation; and any other provisions made a part thereto by reference.
- F. Contract Time** – The Contract Time shall be the number of Calendar Days specified in which the Work is to be completed including any adjustments and/or time extensions that may be granted by State in accordance with the terms of the Contract.
- G. Contract Sum** – The Contract Sum is the total amount of money stated in the Contract as payable to Contractor for the performance of the Work under the Contract, including authorized adjustments thereto.
- H. Contractor** – The Contractor is the person, firm, individual, partnership, company, corporation, association, joint venture, or any combination thereof, who has entered into the Contract with State.
- I. Event of Default** – An Event of Default is an action that permits termination of the Contract as described herein.
- J. Field Order** – A Field Order is a written order directed to Contractor and signed by State's Representative directing a change or making a clarification in the Work, or requesting information from Contractor about the Work. A Field Order signed by Contractor indicates receipt of the Field Order. A Field Order shall be followed by a Change Order.
- K. Legal Holidays** – Legal Holidays are every Sunday; January 1; 3rd Monday in January; February 12; 3rd Monday in February; March 31; the last Monday in May; July 4; 1st Monday in September; 2nd Monday in October; November 11; Thanksgiving Day and the following Friday; December 25; and every day so declared by the President of the United States or the Governor of California. If January 1, February 12, March 31, July 4, November 11, or December 25 falls on a Sunday, the following Monday is a holiday. If November 11 falls on a Saturday, the preceding Friday is a holiday.
- L. Milestone Date** – A Milestone Date is a significant point in the development of the Work that is illustrated on Contractor's Project Work Schedule.
- M. Not-in-Contract (NIC)** – Not -in-Contract means work not included in the Contract.
- N. Project** – The Project means the erection, construction, alteration, repair, or improvement to be accomplished under the Contract.
- O. Project Work Schedule** – The Project Work Schedule is the schedule furnished by Contractor to State in accordance with Section 1.06A(2) of these General Conditions displaying the anticipated schedule for completing the Work.
- P. Punch List** – The Punch List is the list prepared as a result of a final inspection conducted by State at the completion of the Work indicating items to be completed, corrected, and/or replaced with regard to the Work as specified in the Contract Documents.

- Q. Regular Work Hours** – Eight hours labor constitutes a legal day's work and this Work period shall occur between the hours of 8:00 a.m. and 5:00 p.m. on Working Days unless otherwise agreed by State's Representative.
- R. Schedule of Values** – The Schedule of Values is the statement furnished by Contractor to State in accordance with Section 1.09A of these General Conditions displaying the portions of the Contract Sum allotted for the various parts of the Work and the projected schedule of payment.
- S. State** – The State means the State of California, Department of Parks and Recreation (DPR) and the Director of DPR.
- T. State's Representative** – The State's Representative is the person designated by State to oversee and manage the Contract and completion of the Work on behalf of State and who is the authorized representative of State for this Project. The term State's Representative may be used interchangeably with Project Manager. **CONTRACTOR SHALL ONLY TAKE DIRECTION FROM STATE'S REPRESENTATIVE FOR THE CONTRACT AND MAY NOT RELY ON THE COMMUNICATIONS, REPRESENTATIONS OR OTHER INSTRUCTIONS OF OTHER EMPLOYEES, OFFICERS, MANAGERS, CONTRACTORS, OR AGENTS OR REPRESENTATIVES OF STATE UNLESS CONFIRMED BY STATE'S REPRESENTATIVE IN WRITING OR AS OTHERWISE, FROM TIME TO TIME, MAY BE PERMITTED BY THE PROVISIONS OF THE CONTRACT.**
- U. Subcontractor** – A Subcontractor is anyone having a direct contract with Contractor or another Subcontractor and includes one who furnishes material worked to a special design according to the Plans and/or Specifications, but does not include one who merely furnishes material not so worked.
- V. Substantial Completion** – Substantial Completion is the point at which, in the discretion of State, in accordance with Section 1.09D of these General Conditions, the Project may be used for the purpose for which it is being constructed exclusive of Punch List items which do not interfere with such use and may be completed notwithstanding use of the Project.
- W. Supplier** – A Supplier is anyone who contracts with Contractor or a Subcontractor to furnish materials or equipment for the Project.
- X. Work** – The Work is everything required to complete the Project, including, but not limited to, all labor, suppliers, material, equipment, and tools.
- Y. Working Day** – A Working Day is every day except Saturdays, Sundays, and Legal Holidays and those days not charged as Working Days pursuant to the Contract Documents.

## **1.02 CORRELATION AND INTENT OF CONTRACT DOCUMENTS**

- A.** The General Conditions are incorporated into the Contract Documents in their entirety and may not be revised or modified in any way, except by the Supplemental Conditions.
- B.** What is required by one document shall be as binding as if required by all. In the event of conflicts among the Contract Documents, such conflicts shall be resolved by giving the documents the following order of priority: (1) The Contract between State and Contractor, as the same may be amended (Amendments and revisions of later date take precedence over those of earlier date); (2) Special Conditions; (3) General Conditions; and (4) Drawings and Specifications. Drawings govern Specifications for quantity and location, and Specifications govern Drawings for quality and performance. In the event of ambiguity in quantity or quality, the greater quantity and the higher quality shall govern. Dimensions shall be figured rather than determined by scale or rule. Full-size or large-scale details or Drawings shall govern small-scale details or Drawings.
- C.** Where conflict exists between the Contract Documents or between the Contract Documents and applicable standards under codes or ordinances promulgated by governmental bodies having jurisdiction over the Project, **CONTRACTOR SHALL BE DEEMED TO HAVE AGREED TO PERFORM THE MOST STRINGENT OR HIGHEST QUALITY WAY OF PERFORMING THE WORK.**
- D.** Should Contractor discover conflicts, omissions, or errors in the Contract Documents or have any question concerning interpretation or clarification of the Contract Documents, or if it appears to Contractor that the Work to be done or any matters relative thereto are not sufficiently detailed or explained in the Contract Documents, then, before proceeding with the Work affected, Contractor shall immediately notify State's Representative in writing, using an approved Request For Information (RFI) form, and request interpretation, clarification, or furnishing of additional detailed instructions concerning the Work. Such questions shall be resolved and instructions to Contractor issued within fourteen (14) Calendar Days by State, whose decision shall be final and conclusive. Should Contractor proceed with the Work affected before resolution, Contractor shall be responsible for any resultant damage or added cost, and Contractor shall remove, replace, or adjust the Work not in accordance with State's Representative subsequent instructions.
- E.** All costs and time incurred by Contractor to prepare, review, respond to, estimate, or otherwise process RFI's, Bulletins, Field Orders, Amendments, Schedules, Correspondence, or any other paperwork shall be part of Contractor's base contract overhead and no additional compensation will be allowed therefore.

### 1.03 CONTRACT BONDS

- A. When the Contract Sum exceeds five thousand dollars (\$5,000), Contractor shall furnish, in duplicate, a Payment Bond, to accompany the Contract, in an amount equal to one hundred percent (100%) of the Contract Sum securing payment for laborers, mechanics, and material suppliers used on the Work under the Contract. Payment Bonds shall be prepared on a Payment Bond to Accompany Construction Contract (STD. 807) as furnished by State.
- B. When the Contract Sum exceeds five thousand dollars (\$5,000), Contractor shall furnish, in duplicate, a Performance Bond, to accompany the Contract, in the amount equal to at least one hundred percent (100%) of the Contract Sum guaranteeing faithful performance of the Work. Performance Bonds may be prepared on standard bonding company forms.
- C. Payment and Performance Bonds shall be issued by a corporate surety authorized to transact a general surety business in the State of California. Contractor shall deliver its required bonds before the date of execution of the Contract.
- D. The bonds must remain in full force and effect for the entire length of time Contractor is involved with the Contract and shall include any warranty periods.

### 1.04 INSURANCE

#### A. Insurance Requirements

- (1) General Liability Insurance: Contractor shall procure commercial general liability insurance covering liability arising out of premises operations, products/completed operations, independent contractors, personal/advertising injury and liability assumed under an insured contract with limits not less than \$1,000,000 each occurrence, \$2,000,000 general aggregate and \$2,000,000 products/completed operations aggregate. Said policy shall apply separately to each insured against whom any claim is made or suit is brought subject to Contractor's limits of liability.
- (2) Builder's Risk/Installation Floater: During the term of this Contract, Contractor shall maintain in force, at its own expense, Builder's Risk/Installation Floater for an amount equal to the full amount of the Contract improvements, upon the project and all materials or items which is or will become the property of State pursuant to the Contract Documents, including, but not limited to, materials and other items at the work site or stored off-site with the consent of State. A copy of any applicable Builder's Risk/Installation Floater will be provided to State, and it shall be the responsibility of Contractor and each Subcontractor to satisfy itself as to the terms of such coverage, and to determine whether or not at its own cost, to carry any supplemental policy of insurance.
- (3) Motor Vehicle Liability Insurance: Contractor shall maintain motor vehicle liability insurance with limits not less than \$1,000,000 combined single limit each accident. Such insurance shall cover liability arising out of an accident involving a motor vehicle in use by Contractor, including, but not limited to, Contractor owned, hired, and non-owned motor vehicles.
- (4) Workers' Compensation and Employer's Liability Insurance: Contractor shall maintain statutory worker's compensation and employer's liability insurance for all of Contractor's employees who will be engaged in the performance of work on the property, including special coverage extensions where applicable.

- B. **Insurance Policies** – Each policy of insurance shall: (1) Be in a form acceptable by State; (2) be written by an insurer acceptable to State; (3) be maintained at Contractor's sole expense; (4) require a minimum of ten(10) days written notice to State prior to any cancellation, non-renewal, or modification of insurance coverage; (5) contain an endorsement naming the State of California, its officers, agents, employees, and servants as additionally insured, but only with respect to Work performed for the State of California under this Contract or permit, at no cost to State; the endorsements are to be provided for the general liability and motor vehicle liability policies; (6) be in full force for the complete term of the Contract including any warranty periods; and (7) be primary, and not in excess, to any insurance carried by State.

Waiver of Subrogation: When work is performed on State-owned or controlled property, the Workers' Compensation and Employers' Liability policy shall be endorsed with a waiver of subrogation endorsement in favor of the State. This endorsement shall also be provided.

#### C. Insurance Companies

- (1) Insurance companies issuing any of the policies required by these provisions shall have a rating classification of "A-" or better and a financial size category rating of "vii" or better according to the latest edition of the A.M. Best Key Rating Guide. Any other rating classification requires State approval.
- (2) All insurance companies issuing any of the policies required by these provisions shall be licensed to do business in the State of California.

#### D. Certificate of Insurance

- (1) Concurrent with the execution of the Agreement, Contractor shall provide to State evidence that the insurance required to be

carried by these provisions, including any endorsement affecting the additional insured status, is in full force and effect and that premiums therefore have been paid. Such evidence shall be furnished on the insurance industry's standard ACORD Form (Certificate of Insurance) or a certified copy of the original policy, including all requirements set forth in this section.

- (2) Contractor shall notify the State within 10 days of receipt of a notice of cancellation, expiration, or any reduction in coverage, or if the insurer commences proceedings or has proceedings commenced against it, indicating the insurer is insolvent. Contractor shall provide to State evidence of replacement policy at least ten (10) Working Days prior to the effective date of such cancellation, expiration, or reduction in coverage.

**E. Contractor's Additional Responsibilities**

- (1) Contractor is responsible for any deductible or self-insured retention contained within the insurance program.
- (2) Contractor shall ensure that all Subcontractors procure insurance meeting the requirements of these provisions.

- F. State's Remedies** – Should Contractor fail to keep the insurance required to be carried by these provisions in full force and effect at all times, State may, in addition to any other remedies State has, terminate this Contract immediately, and all payments due or that become due will be withheld, until notice is received by State that such insurance has been restored or replaced in full force and effect and that the premiums, therefore, have been paid to cover a period of time satisfactory to State.

**1.05 STATE'S RIGHTS TO STOP PERFORMANCE AND/OR CARRY OUT WORK**

- A. State's Right to Stop the Work** – If Contractor fails to correct the Work which is not in accordance with the requirements of the Contract Documents or fails to carry out the Work in accordance with the Contract Documents; or fails or refuses to provide a sufficient amount of properly supervised and coordinated labor, materials, or equipment so as to be able to complete the Work within the Contract Time; or disregards the instructions of State's Representative when based on the requirements of the Contract Documents; State may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; provided, however, the right of State to stop the Work shall not give rise to a duty on the part of State to exercise this right for the benefit of Contractor or any other person or entity and any delay resulting from such Work stoppage shall not extend any Milestone Date identified in the Contract or the required dates of Substantial or Final Completion.
- B. State's Right to Carry Out the Work** – If Contractor fails to carry out the Work in accordance with the Contract Documents and fails within a five (5) day period after written notice from State to eliminate (or commence to eliminate and thereafter work diligently to eliminate) such failure, State may, regardless of whether an Event of Default has occurred, and without prejudice to other remedies State may have, correct such deficiencies. In such case an offset may be made deducting from payments then or thereafter due Contractor the cost of correcting such deficiencies, including compensation for State's and State Representative's additional services and expenses made necessary by such default, neglect, or failure. If payments then or thereafter due Contractor are not sufficient to cover such amounts, Contractor shall promptly pay the difference to State on demand. The correction of such deficiencies by State or by others shall not relieve Contractor of any obligation or liability for the Work and shall not operate to waive any right or claim of State.

**1.06 CONTRACTOR**

**A. Contractor's Construction Schedules**

- (1) Contractor agrees to complete the Work within the number of calendar days stated on the Bid Form from the date of written notice to commence Work. This time includes ten (10) Calendar Days allowed for Contractor to begin Work and ten (10) Calendar Days for issuance and completion of the Punch List. Upon written notice to proceed, Contractor shall begin Work and shall diligently prosecute the Work, with adequate forces, to completion within the Contract Time.
- (2) Within ten (10) Calendar Days of the Notice to Proceed, Contractor shall furnish to State one (1) electronic copy and three (3) paper copies of a Critical Path Method (CPM) Project Work Schedule, in form and content satisfactory to State Representative and utilizing Microsoft Project software, presenting an orderly and realistic plan for completing the Work. The schedule shall include all scheduled Working Days, relevant work activities by trade and critical path dates. No activity on the schedule shall have a duration longer than 15 calendar days, with the exception of fabrication and procurement, unless otherwise approved. Within five (5) Working Days from the date the Project Work Schedule is furnished to State's Representative, State's Representative shall review and comment on the Project Work Schedule and approve or disapprove it, giving reasons for any disapproval. If disapproved, Contractor shall modify the Project Work Schedule and resubmit it for approval following the above stated timeframes. Additionally, Contractor shall submit one (1) electronic copy and three (3) paper copies of the updated

Critical Path Method (CPM) Project Work Schedule with each monthly Request for Payment. The Project Work Schedule shall be maintained at the work site and all revisions, along with the reasons therefore, as well as any affect on the critical path of the Work and the completion date, shall be furnished to State as soon as possible after the date of the revision, but in no event later than five (5) days after its revision.

- (3) If the progress of the Work is behind the Project Work Schedule to such an extent that State reasonably determines that Contractor will be unable to meet any of the critical path dates set forth in the Project Work Schedule, including without limitation any Milestone Date, or Contractor fails to take prompt and adequate corrective action to State's satisfaction to bring the progress of the Work in compliance with the Project Work Schedule, State may, in addition to any other right or remedy provided herein, proceed as provided in Sections 1.05, 1.07, and/or 1.11 of these General Conditions.
- (4) Liquidated Damages:
- a. Failure of Contractor to complete the Work within the Contract Time will result in damages being sustained by State. It is and will be extremely difficult and impracticable to determine the actual damage which State will sustain by reason of such delay. Therefore, Contractor shall pay to State, as liquidated damages, the sum of ONE THOUSAND DOLLARS (\$1,000.00) for each and every Calendar Day's delay in finishing the Work under this Contract beyond the stipulated number of days, or any adjustments thereof. State may deduct liquidated damages from funds due or that become due Contractor. Execution of the Contract shall constitute acknowledgment by Contractor that Contractor has ascertained and agrees that State will suffer damages in the amount fixed herein.
  - b. Contractor shall not be assessed liquidated damages when the delay is caused by the failure of State or the owner of any utility to provide for removal or relocation of an existing utility, facility, or to perform work as indicated in the Contract Documents.

**B. Shop Drawings, Product Data, and Samples**

- (1) Reference in the Contract Documents to any equipment, material, article, or process by specific brand, trade name, make, or catalog number, followed by the term "or approved equal", shall be regarded as establishing a standard of quality. In such cases Contractor may, subject to State's Representative's review and approval, substitute any other brand of equal quality, utility, and availability. State's Representative shall be the sole judge of equality and suitability of substitute materials. Contractor shall bear all costs and expenses, including, but not limited to, costs and expenses related to demonstrating equality or suitability of such substitute equipment, material, article or process, and any costs or expenses of changes or adjustments necessitated by such substitutions, including, but not limited to, those related to other parts of the Work or the Work of other contractors. State's Representative's approval of any substitution shall not relieve Contractor from compliance with all requirements of the Contract Documents. Where the Contract Documents do not specifically permit the use of "approved equals" for any equipment, material, article, or process referred to by specific brand, trade name, make or catalog number, no substitutions shall be permitted except by means of the Change Order procedures as set forth in Section 1.08 of these General Conditions.
- (2) Contractor shall not be relieved of responsibility for any deviations from requirements of the Contract Documents or allowed any additional compensation by reason of State's Representative approval of Shop Drawings, Product Data, Samples or similar submittals unless Contractor has specifically informed State's Representative in writing of such deviation at the time of submittal and fully complied with Section 1.08 of these General Conditions, and State's Representative has given written approval to the specific deviation. If Shop Drawings provide detail not shown in Contract Documents, Contractor shall be deemed to have primary design-build responsibility for such items. Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals by State's approval thereof.

- C. Safety and Clean-Up** – Contractor acknowledges that State will continue to occupy and must maintain continuous operations in the Parks in which the Work is located. It is critical that these operations shall not suffer any significant interference, including, without limitation, any interruption in utilities or unreasonable noise, dust, odor, or vibration. Contractor shall perform the Work and limit its use of the Project site in such a manner as to minimize any interference with occupancies and operations in such Parks and in accordance with applicable Park rules and regulations. Contractor shall be liable for all costs for all claims related to dust, mud, noise, odor, vibration, or windblown materials attributed to the Work hereunder.

**D. Potential Subcontractors**

Nothing contained in this agreement or otherwise, shall create any contractual relation between State and any subcontractors, and no subcontract shall relieve Contractor of its responsibilities and obligations hereunder. Contractor agrees to be as fully responsible to State for the acts and omissions of its subcontractors and of persons either directly or indirectly employed by any of them as it is for the acts and omissions of persons directly employed by Contractor. Contractor's obligation to pay its subcontractors is an



independent obligation from State's obligation to make payments to Contractor. As a result, State shall have no obligation to pay or to enforce the payment of any moneys to any subcontractor.

#### **E. Force Majeure**

Except for defaults of subcontractors, neither party shall be responsible for delays or failures in performance resulting from acts beyond the control of the offending party. Such acts shall include but shall not be limited to acts of God, fire, flood, earthquake, other natural disaster, nuclear accident, strike, lockout, riot, freight embargo, public regulated utility, or governmental statutes or regulations superimposed after the fact. If a delay or failure in performance by Contractor arises out of a default of its subcontractor, and if such default of its subcontractor, arises out of causes beyond the control of both Contractor and subcontractor, and without the fault or negligence of either of them, Contractor shall not be liable for damages of such delay or failure, unless the supplies or services to be furnished by subcontractor were obtainable from other sources in sufficient time to permit Contractor to meet the required performance schedule.

### **1.07 ADMINISTRATION OF THE CONTRACT**

#### **A. Claims and Disputes**

- (1) Time Limits on Contractor Claims: Except where a shorter time period is provided herein, claims by Contractor arising during the course of construction, including claims for additional costs, must be made within five (5) days after occurrence of the event giving rise to such claim or within five (5) days after Contractor first recognizes or reasonably should have recognized the condition giving rise to the claim. Claims must be made by written notice to State within five (5) days following such event.
- (2) Continuing Contract Performance: Contractor, in the event of any claim or dispute with State over any matter whatsoever, shall not cause any delay or cessation in Contractor's Work and shall proceed with all Work called for in the Contract Documents and/or required to complete the Project.
- (3) Claims for Additional Cost: If Contractor wishes to make a claim for an increase in the Contract Sum, written notice as provided herein shall be given before proceeding to execute the Work. Said notice shall itemize all claims, shall differentiate between extra work and base contract work, and shall contain sufficient detail and substantiating data to permit evaluation of same by State's Representative. Any change in the Contract Sum resulting from such approved claim shall only be authorized by a Change Order.
- (4) Claims for Additional Time: If Contractor wishes to make claim for an increase in the Contract Time, written notice as provided herein shall be given. Contractor's claim shall include an estimate of cost and the probable effect of delay on progress of the Work and shall document any adverse effect on the Project Work Schedule. In the case of a continuing delay, only one claim is necessary.
- (5) Claim Certification: Any claim for additional cost or time must include the following certification, signed by the Contractor's legal representative: "I certify under penalty of perjury, according to the Laws of the State of California, that this claim is made in good faith, that the supporting documentation is accurate and complete, and that the amount requested accurately reflects the contract adjustments for which the Department is responsible."
- (6) Delays in and Extensions of Time:
  - a. If (a) Work on the critical path as shown on the Project Work Schedule is delayed at any time by (i) an act or neglect of State, any employee of State, or any separate contractor employed by State, (ii) changes ordered in the Work in accordance with the provisions of Article 7, (iii) unusually severe and/or abnormal weather conditions which preclude the safe performance of the Work, (iv) national conflicts or priorities arising therefrom, (v) fires beyond the reasonable control of Contractor, (vi) floods beyond the reasonable control of Contractor, (vii) earthquakes, (viii) off-site or area-wide labor disputes which are beyond the reasonable control of Contractor, (ix) civil disturbances and for no other cause or causes; (b) Contractor would otherwise have been able timely to perform its obligations under the Contract Documents but for such delay; (c) Contractor has taken reasonable precautions to foresee, prevent and to mitigate the effects of delays to Work on the critical path due to such causes; and (d) Contractor has given written notice as required by Section 1.08 of these General Conditions; then subject to the provisions of Section 1.07 of these General Conditions, the Contract Time shall be appropriately extended by Change Order by the number of Working Days of delay on the critical path of the Work actually and directly caused by such occurrence. Such extension of Contract Time shall be net of any delays caused by or due to the fault or negligence of Contractor or which are otherwise the responsibility of Contractor or its agents or Subcontractors, and shall also be net of any contingency or "float" time allowance included in the Project Work Schedule. State may, at its option, authorize extra Work in order to accelerate the Project Work Schedule and minimize or eliminate the impact of the delay. No extension shall be made or allowed nor shall such extra Work be authorized unless a written request therefor by Contractor is made within five (5) Calendar Days after the first occurrence of the delay. Any claims of Contractor relating

to time shall be made promptly in accordance with the applicable provisions of Section 1.08 of these General Conditions, or shall be deemed waived.

- b. If adverse weather conditions are the basis for a claim for additional Contract Time, such claim shall be documented by data substantiating that weather conditions were abnormal for the period of time and could not have been reasonably anticipated, and that weather conditions had a direct and adverse effect on scheduled critical path activities.
  - c. Adjustments in compensation for delays or time extensions will be allowed only for the causes specified in (i) and (ii) of paragraph 1.07A(6)a above, which extend the overall project duration.
- (7) Disputes Resolution: A claim or dispute arising out of or relating to the Contract Documents which is not disposed of by agreement between Contractor and State shall be decided by State's Representative promptly, but not longer than ten (10) Working Days from the date Contractor notifies State's Representative in writing that agreement on a dispute cannot be reached and a written decision from State's Representative is required. The decision of State's Representative shall be final and conclusive on Contractor unless, within fifteen (15) days from the receipt of such decision, Contractor submits to State's Representative a written request for review of the decision made by State's Representative. The Director, or a designee other than State's Representative, shall review all decisions and render a decision in writing on or before thirty (30) days from the date of receipt of written position statements by Contractor and State's Representative as provided for herein. Contractor and State's Representative shall be afforded an opportunity to be heard by way of written submissions and to offer relevant information with respect to the matter in question.
- (8) Decision of Director is Final: The decision of the Director or her or his designee shall be final and conclusive on Contractor, unless, within fifteen (15) Working Days from receipt of such decision, Contractor submits to State's Representative a written notice of Contractor's election to reserve its rights to file a claim with the State Board of Control and seek further adjudication of such claim should such claim be rejected by the State Board of Control.
- (9) Arbitration: Claims (demands for monetary compensation of damages) arising out of related to the Contract Documents shall be resolved by arbitration unless State and Contractor agree in writing, after the claim has arisen, to waive arbitration and to have the claim litigated in a court of competent jurisdiction. Arbitration shall be pursuant to California Public Contract Code, Section 10240 et seq., and applicable regulations, Title 1, California Code of Regulations, Section 301 et seq. The arbitration decision shall be decided under and in accordance with the laws of the State of California, supported by substantial evidence and, in writing, contain the basis for the decision, findings of fact, and conclusions of law. Arbitration shall be initiated by a Demand for Arbitration made in compliance with the requirements of above referenced regulations. A Demand for Arbitration by Contractor shall be made not later than 180 days after date of service in person or by mail on Contractor of the final written decision by State on the claim. (This Section only applies to Contracts that exceed \$117,000.00.)
- (10) Exhaust All Administrative Remedies: Contractor must exhaust all remedies and comply with all disputes resolution procedures set forth in the proceeding section prior to filing any legal action which names the Department of Parks and Recreation, State of California, or any officer, employee, agent or affiliate of any of them. In no event, may Contractor bring any claims or pursue legal action for damages or other remedies for issues or matters not raised and presented in written notifications as provided for in the Contract Documents and as set forth in all written requests for review by State's Representative.

## 1.08 CHANGES IN THE WORK

- A. **Change Orders (Amendments)** – When adjustments in the Contract Sum and Contract Time are determined, such determination shall be effective immediately and shall be recorded by preparation and execution of an appropriate Change Order. A Change Order signed by Contractor indicates Contractor's final and binding agreement therewith, including the adjustment in the Contract Sum or the Contract Time. No Change Order shall authorize an adjustment in the Contract Sum or Contract Time unless such Change Order specifies such adjustment. If no adjustment in either or both the Contract Sum and the Contract Time is specified, Contractor's execution of the Change Order shall constitute Contractor's agreement that no such adjustment shall be made. Contractor agrees that in no event shall it make any subsequent claim relating to the items covered by an executed Change Order, whether direct, indirect, or consequential in nature. All Change Orders are subject to the approval by the Department of General Services, if required.
- B. **Bulletins and Field Orders**
- (1) A Bulletin or Field Order shall not be recognized as having any impact upon the Contract Sum or the Contract Time. Contractor shall have no Claim therefor unless, within five (5) days from the date such direction or order was given, Contractor submits a written Change Order Request to the State's Representative with estimates of any adjustment in the Contract Sum or Contract Time to which Contractor believes it is entitled as a result of the change in the Work described in the Bulletin or Field Order, including sufficient detail to allow evaluation by the State's Representative.
- (2) Upon receipt of a Bulletin or Field Order, Contractor shall promptly proceed with the Work involved, or as otherwise directed by the Bulletin or Field Order.

### C. Pricing Changes

- (1) When submitting its change proposal, Contractor shall include and set forth in clear and precise detail, breakdowns of labor, materials and allowable costs for all trades involved and the estimated impact on the Project Work Schedule. If requested by State, Contractor shall furnish spread sheets from which the breakdowns were prepared, plus spread sheets, if requested, of any Subcontractors. Allowable costs to be included in Contractor's change proposal shall be strictly limited to those set forth in Section 1.08C(2) of these General Conditions.
- (2) In the event that (a) State approves a Change Order to be priced on a time and material basis, (b) State issues a Field Order to proceed with a change in the Work, Contractor timely notifies State of Contractor's belief that it is entitled to an adjustment in the Contract Sum or the Contract Time as a result of such change, and State and Contractor cannot agree on the amount of such adjustment, (c) Contractor is entitled to compensation as the result of a concealed condition, or (d) the Contract Sum includes allowances, then the amount of Contractor's allowable costs shall be governed by this Subsection. Allowable costs include and shall be strictly limited to the following:
  - a. The actual and reasonable cost of additional materials required as a result of such change, purchased by Contractor (or any Subcontractor) and used in the Work, including sales taxes, freight and delivery charges.
  - b. Construction equipment costs shall be substantiated by vendor's invoices. In no event shall the cost of such items exceed (1) the average current wholesale prices at which the items are locally available in the quantities required, delivered to the site, less applicable cash or trade discounts or (2) the equipment rental rates in the Labor Surcharge and Equipment Rental Rates published by Caltrans; whichever is less. The allowable rate constitutes full compensation to the Contractor including cost of fuel, oil, lubrication, supplies, necessary attachments, repairs, maintenance, depreciation, storage, insurance, labor except for construction equipment operators, and incidentals. No costs will be allowed for time while construction equipment is inoperative, idle or on standby, unless approved by the State.
  - c. Labor costs including welfare and fringe benefits shall be the actual labor cost, required as a result of such change in the Work, including no more than one (1) working foreman, but not including any supervisory or administrative personnel. Labor costs shall not exceed the local prevailing wage, which includes the Straight-Time Total Hourly Rate plus Burden. Burden shall be limited to the actual FICA-OASDI, FUTA, SUI, and Workers' Compensation payment percentages multiplied by the sum of the Basic Hourly Rate and Vacation/Holiday payments. Labor costs shall be substantiated by daily time cards (signed by Contractor's Superintendent) and labor summaries.
  - d. The cost of Work performed by Subcontractors or sub-Subcontractors is based on the actual direct costs of material, labor, and construction equipment and is determined pursuant to the provisions of this Subsection.
  - e. For deleted Work otherwise required to be performed hereunder, the Contract Sum shall be reduced by an amount equal to the net savings to Contractor and all Subcontractors and sub-Subcontractors on account of the deleted work for material, labor, and construction equipment.
- (3) Failure of Contractor and State to agree on an adjustment of the Contract Sum or extension of Contract Time for performance under the Contract Documents shall not excuse Contractor from proceeding with the prosecution and performance of the Work as changed. State shall have the right within its sole discretion to require Contractor to commence performance of changes to the Work. If Contractor and State cannot agree on an appropriate stipulated sum for any change, the adjustment to the Contract Sum, if any, shall, subject to the provisions of Section 1.08 of these General Conditions, be determined by State on the basis of the allowable costs incurred as a result of such change as set forth in Section 1.08C(2) plus a fee as set forth in Section 1.08C(4).
- (4) In addition to the allowable costs incurred for a change, Contractor (and any Subcontractors) is entitled to a fee. Such fee shall be included in any agreed upon stipulated sum for the Change Order and shall be added to the allowable costs for Change Orders priced on a time and material basis or as to which no agreement is reached. The additional fee shall be Contractor's (and Subcontractor's) sole reimbursement for overhead, profit and any other cost (including insurance required in the Contract Documents) not specifically reimbursable under the Contract for Construction. No such fee shall be applied to gross receipts or use tax amounts or bond premiums paid by Contractor. The following fees shall apply to Contractor and all Subcontractors and represent the maximum fees chargeable on each Contract tier, who shall receive mark-ups for all categories on a percentage basis equal to Contractor's Fee stated in the Contract:
  - a. For Work to be performed by Subcontractors, such Subcontractors, cumulative of all tiers, shall be permitted an additional fee of fifteen percent (15%) of the allowable costs incurred by such Subcontractors;
  - b. For Work to be performed by Contractor's own forces, Contractor shall be permitted an additional fee in the amount of fifteen percent (15%) of the allowable costs incurred directly by Contractor;

- c. For Work to be performed by Subcontractors, Contractor shall be permitted an additional fee in the amount of five percent (5%) of the sum of the allowable costs incurred by Subcontractors plus the allowance for Subcontractors' fee provided in Subsection 4(a) above.

## 1.09 PAYMENTS AND COMPLETION

- A. **Schedule of Values** – The apparent low bidder, within ten (10) days, not including Saturdays, Sundays, and Legal Holidays, after receiving notice that he/she is the apparent low bidder, shall submit along with the contract documents a complete itemized Schedule of Values that includes, but is not necessarily limited to, the cost of each line item equal to or greater than one and one-half percent of the contractor's total bid and every work item (activity) shown on the Contract Critical Path Method (CPM) Project Work Schedule. The sum of the cost of all activities in the Schedule of Values shall equal the Contract Amount. Contractor's mobilization, profit, fees, taxes, overhead and General Conditions must be itemized separately and not be prorated across other categories. The Schedule of Values, when approved by State's Representative, shall be used to monitor the progress of the Work and as a basis for payment requests. Each item shall show its total Scheduled Value, value of previous applications, value of the application, percentage completed, total value completed and value yet to be completed. All blanks and columns must be filled in, including every percentage complete figure. Contractor is to add approved Change Orders (Amendments) to the Schedule of Values on a monthly basis.
- B. **Request for Payment** – Contractor shall submit to State an itemized request for payment no more than once each 30 day period for operations completed in accordance with the Schedule of Values. Such request shall be supported by such data substantiating Contractor's right to payment as State's Representative may require, such as copies of requisitions from Subcontractors and material suppliers, and reflect retainage. Any allowance included in the request for payment shall be separately itemized with supporting data attached. Progress payments for mobilization shall not exceed that authorized in Section 10264 of the Public Contract Code. Contractor shall furnish with each request for payment:
  - (1) Cost data to support the application, including without limitation, copies of Subcontractor's pay requests accurately reflecting current percentage of completion on a line-item basis.
  - (2) One (1) certified copy of all payroll records for the month.
  - (3) One (1) electronic copy and three (3) paper copies of the updated Project Work Schedule reflecting the current status of the project.
  - (4) One (1) originally signed Unconditional Waiver and Release Upon Progress Payment for all Subcontractor work paid to date.
- C. **Retention**
  - (1) Five percent (5%) shall be retained from each progress payment and held by State. After the Punch List has been issued, retainage remains at five percent (5%) of all amounts billed or two (2) times the value of the Punch List Work, whichever is more, until Final Completion of the Work.
  - (2) Contractor may elect, upon prior notice to State, to retain additional sums, over the five percent (5%) required, from a Subcontractor. If, however, such additional retainage is made, then an equal amount shall be retained by State from Contractor.
  - (3) Section 10263 of the Public Contract Code pertaining to security deposits in lieu of retentions is incorporated, herein, in full by this reference. Pursuant to that Section, Contractor may, for contracts subject to the State Contract Act, request substitution of eligible securities for such retentions prior to issuance of original contract documents. Contractor hereby agrees to execute said securities using a State-furnished standard escrow agreement.
- D. **Substantial Completion**
  - (1) Substantial Completion is the stage in the progress of the Work when, exclusive of Punch List items, the Work or designated portion thereof (which State agrees to accept and occupy and utilize separately) is sufficiently complete in accordance with the Contract Documents so State can legally and practically occupy and utilize the Work for its intended use, except for Work outside the scope of the Contract Documents.
  - (2) Objections to Certificate of Substantial Completion (DPR 248)/Notice of Completion (DPR 249): Contractor shall have seven (7) Working Days after receipt of the Certificate of Substantial Completion (DPR 248) during which Contractor may make written objection to State as to provisions of the Certificate of Substantial Completion and Punch List. If, after considering such objection, State concludes that the Project is not substantially complete, State shall, within seven (7) days after submission of the objection notify the Contractor thereof in writing stating the reasons. Upon Contractor's completion of the items listed on the Punch List and upon satisfaction of the terms and conditions of the Certificate of Substantial Completion, State shall issue a final

Notice of Completion (DPR 249), which shall fix a date as may be necessary or appropriate. State's determination of the Date of Substantial Completion and other items under this paragraph shall be final and conclusive on Contractor.

#### **E. Partial Occupancy or Beneficial Use**

- (1) State and its lessees and separate Contractors may occupy or use any completed or partially completed portion of the Work at any stage of construction regardless of whether the Contract Time has expired (hereinafter sometimes referred to as "Partial Occupancy"). Such Partial Occupancy may commence whether or not the applicable portion of Work is substantially complete.
- (2) It shall be understood, however, that Partial Occupancy shall not: (a) constitute final acceptance of any Work; (b) relieve Contractor for responsibility for loss or damage because of or arising out of defects in, or malfunctioning of, any Work, material, or equipment, or from any other unfulfilled obligations or responsibilities under the Contract Documents; or (c) commence any warranty period under the Contract Documents, provided that Contractor shall not be liable for ordinary wear and tear resulting from such Partial Occupancy.

#### **F. Testing, Inspection, Final Inspection, and Acceptance**

- (1) Testing, inspection, and approval of portions of the Work required by the Contract Documents shall be made by an independent Testing Laboratory arranged and paid for by the Contractor and approved by the State. Contractor shall promptly furnish two certified copies of test results and inspection records to the State Representative. Material and equipment shall not be incorporated into the project until test results indicate conformance to the Contract Documents.
- (2) Authorized employees of State shall have access to the Work at all times. Contractor shall give State's Representative forty-eight (48) hours advance notice of what Work and when the Work will be ready for inspection. Contractor shall provide proper facilities for such access and inspection. Inspection of the Work shall not relieve Contractor of any obligations to fulfill the Contract as prescribed. Any Work covered or concealed by Contractor before approval by State's Representative, shall, if required to be uncovered for examination and recovered, be at Contractor's sole expense.
- (3) When the Work is completed, Contractor shall notify State's Representative and shall request final inspection. Within five (5) Calendar Days, State's Representative shall make final inspection. Contractor shall be notified in writing of any deficiencies (Punch List). Contractor shall remedy these deficiencies to complete satisfaction of State. After all the Work under this Contract has been completed and is so certified by State's Representative, formal acceptance will be made in writing by State by filing a Notice of Completion (DPR 249) for recording in the county in which the Work was performed.

#### **1.10 UNCOVERING AND CORRECTION OF WORK**

**Correction of Work** – If, within one (1) year after the date of Final Completion of the entire Work, or within such longer period of time as may be prescribed by laws or in equity or by terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be defective or otherwise not in accordance with the requirements of the Contract Documents, Contractor shall correct it promptly after receipt of written notice from State to do so unless State has previously given Contractor a written acceptance of such condition. Corrective Work shall be warranted to be free from defects for a period equal to the longer of six (6) months after the completion of the corrective Work or one (1) year after the Date of Final Completion or such longer period of time as may be prescribed by law or in equity, or expiration of the term of any applicable special warranty required by the Contract Documents whichever is longer. Any defect in such Work shall be corrected again by Contractor promptly upon written notice of the defect from State. The obligations under Section 1.10 of these General Conditions shall survive acceptance of the Work under the Contract for Construction and termination of the Contract for Construction. If Contractor fails to correct such Work, State may proceed to have the work corrected at Contractor's expense and Contractor shall pay the cost thereof on demand.

#### **1.11 TERMINATION OR SUSPENSION OF THE CONTRACT**

##### **A. Termination by Contractor**

- (1) Contractor may terminate in writing, the Contract in the manner provided in Section 1.11 of these General Conditions if the Work is entirely stopped for a continuous period of thirty (30) days through no act or fault of Contractor or a Subcontractor, sub-Subcontractor or their agents or employees or any other persons performing portions of the Work under contract with Contractor, for any of the following reasons:
  - a. Issuance of an order of a court or other public authority having jurisdiction.
  - b. An act of government, such as a declaration of national emergency, making material unavailable.

- (2) If one of the above reasons exists, Contractor may, upon fourteen (14) days written notice to State's Representative, terminate the Contract, unless this reason is cured prior to the expiration of the notice period, and recover from State payment for Work properly executed in accordance with the Contract Documents, excluding any anticipated profits from uncompleted Work, and payment for costs directly related to Work thereafter performed by Contractor in terminating such Work, including reasonable demobilization charges, provided said Work is authorized in advance by State's Representative and State.

**B. Termination by State**

- (1) State may terminate the Contract if State deems any of the following conditions to exist:
- a. Contractor refuses or fails to supply enough properly skilled workers or proper materials or equipment.
  - b. Contractor fails to make prompt payment to Subcontractors for materials or equipment or labor in accordance with the respective agreements between Contractor and Subcontractors.
  - c. Contractor disregards laws, ordinances, or rules, regulations, or orders of a public authority having jurisdiction, including, without limitation, environmental rules and regulations and health and safety codes.
  - d. Contractor disregards the instructions of State's Representative (when such instructions are based on the requirements of the Contract Documents).
  - e. In accordance with applicable law, and if permitted by such law, Contractor is the subject of a voluntary or involuntary petition in bankruptcy, or makes a general assignment for the benefit of Contractor's creditors, or a trustee or receiver is appointed for Contractor or for any of its property, or files a petition to take advantage of any debtor's act, or to reorganize under bankruptcy or similar laws.
  - f. Contractor has all or substantially all of its assets, equipment, or materials in any way connected with the work, executed upon or judicially seized, when such attachment or seizure remains undismissed for seven (7) days after levy thereof.
  - g. Contractor has imposed against it a federal or state tax lien.
  - h. Contractor fails to diligently prosecute the Work and/or correct deficiencies.
  - i. Contractor fails to maintain the proper license to perform the Work prescribed by this Contract.
- (2) When any of the above reasons exist, State may, without prejudice to any other rights or remedies of State and after giving Contractor and Contractor's surety, if any, seven (7) days prior written notice (except in cases of emergency, as reasonably determined by State), terminate the Contract and may:
- a. Take possession of the site and Project and of all materials, equipment, tools, and construction equipment and machinery thereon owned, rented, or leased by Contractor; and
  - b. Finish the Work by whatever method State may deem expedient.
  - c. Tender completion of the Work to Contractor's surety, if any, in accordance with terms of the Performance Bond.
- (3) When State terminates the Contract for one of the reasons stated in Subsection 1.11B(1) of these General Conditions, Contractor shall not be entitled to receive further payment until the Work is finished and a final accounting is completed as to the proper sums due Contractor under the terms of the Contract.
- (4) To the extent the costs of completing Work, including compensation for additional professional services and expenses, exceed those costs which would have been payable to Contractor to complete the Work except for Contractor's default, Contractor will pay the difference to State. This obligation for payment shall survive termination of the Contract. Such costs incurred by State shall be determined by State.

- C. Suspension by State for Convenience** – State may, at any time, at will and without cause, suspend, delay, or interrupt any part of the Work or all the Work for any reason whatsoever for such period of time as State may determine by giving seven (7) days' prior written notice to Contractor specifying the part of the Work to be suspended, delayed, or interrupted and the effective date of such suspension, delay, or interruption, as the case may be. Contractor shall continue to perform the part of the Work not suspended, delayed, or interrupted and shall properly protect and secure the part of the Work so suspended, delayed, or interrupted, so far as is necessary in State's reasonable opinion. Notwithstanding Subsection 1.11B of these General Conditions, if any part of the Work is so suspended, delayed, or interrupted, Contractor shall be entitled to payment of reasonable standby fees (or at State's option, payment

for demobilization) and costs directly associated with protecting and securing the affected Work, provided said costs are authorized in advance by State's Representative. No payment shall be made by State, however, to the extent that such Work is, was, or could have been suspended, delayed, or interrupted under the Contract Documents or an equitable adjustment is made or denied under another provision of the Contract for Construction. In case of such suspension, delay, or interruption, State will issue a Change Order making any required adjustment to the Contract Time and/or the Contract Sum. For the remainder of the Work, the Contract Documents shall remain in full force and effect.

## **1.12 EMPLOYEES**

For each phase and type of Work, Contractor shall employ journey level people skilled in their respective trades and skilled in the use of methods, tools, and appliances developed in order to obtain the highest quality of workmanship throughout the Project. Any person State may deem incompetent or disorderly must be promptly removed by Contractor and not re-employed on the Project.

## **1.13 PREVAILING WAGE**

- A. The Notice to Contractors stipulates the prevailing wage rates applicable to the classes of labor to be used on this Project.
- B. Contractor shall abide by the laws and regulations set forth pursuant to California Labor Code, Sections 1720 et seq., and Title 8, California Code of Regulations, Section 16000 et seq.

## **1.14 TRAVEL AND SUBSISTENCE PAYMENTS**

Contractor shall make travel and subsistence payments to each worker needed to execute the Work, as such travel and subsistence payments are defined in the applicable collective bargaining agreements filed in accordance with Labor Code Section 1773.8.

## **1.15 APPRENTICES**

Special attention is directed to California Labor Code, Sections 1777.5, 1777.6, and 1777.7, and Title 8, California Code of Regulations, Section 200 et seq. Each Contractor and Subcontractor must, prior to commencement of the Public Works Contract, contact the Division of Apprenticeship Standards, 455 Golden Gate Avenue, San Francisco, California, 94102, or one of its branch offices to ensure compliance and complete understanding of the law regarding apprentices and specifically the required ratio thereunder. Responsibility for compliance with this section lies with the prime Contractor. For further information, the website for the Division of Apprenticeship Standards can be accessed at: [www.dir.ca.gov](http://www.dir.ca.gov).

## **1.16 SANITARY FACILITIES**

Contractor shall provide potable drinking water, and sanitary toilet facilities for Contractor's workers unless the use of existing facilities is authorized by State's Representative. Contractor shall locate temporary facilities as directed by State's Representative and maintain such facilities in good repair and in a sanitary condition. Contractor shall remove such facilities completely at the conclusion of the Work.

## **1.17 OBSERVANCE OF PARK RULES AND REGULATIONS**

The Work to be done is within the jurisdiction of the State Park System. All persons entering the premises for whatever reason are subject to the "Rules and Regulations" for the State Park System, as set forth in Title 14, California Code of Regulations, Division 3, Chapters 1 and 2. Any person who fails to observe these "Rules and Regulations" may be barred from further work in the State Park System.

## **1.18 RESPONSIBILITY FOR INJURY AND DAMAGE**

- A. Contractor shall be responsible for damage to or loss of property regardless of cause, or for injury or loss of life to persons employed on this Project and to the general public, which arise from operations under this Contract.
- B. From the formal Start Work Date until formal acceptance of the Work, Contractor is responsible to save from injury and damage by whatever cause all of the Work under this Contract, except as provided in Section 7105 of the Public Contract Code. Contractor shall rebuild, restore, and/or repair any such injury or damage, at Contractor's sole expense, before formal acceptance.
- C. State is hereby relieved at all times from an indebtedness or claim other than the Contract Sum.

## **1.19 COOPERATION BETWEEN CONTRACTOR AND STATE**

- A. When the Contract is approved, Contractor will be notified in writing by State of the formal Start Work Date, the Contract completion date, and the name and location of State's Representative responsible for inspection of the Work. Contractor shall start Work within ten (10) Calendar Days of the formal Start Work Date and diligently pursue the Work to completion.

- B. If Work is suspended for more than three (3) Calendar Days “due to Contractor’s actions” or “due to no fault of State,” Contractor shall immediately inform State’s Representative in writing as to the rescheduling of the Work.
- C. Contractor shall be responsible for notifying the surety or sureties, furnishing bonds for the Contract, of all changes to the Contract.
- D. No Work shall be done except on Working Days and during Regular Work Hours unless Contractor has submitted a written request to State’s Representative not less than five (5) Calendar Days in advance of each occurrence and State has given written approval. State may reject, without further reason, any work done in violation of this Subsection.

#### **1.20 PERMITS, LAWS, AND REGULATIONS**

- A. State shall obtain and pay for the permits as indicated in the Project Manual. Contractor is responsible for all other permits. Notwithstanding that State obtains any permits required for the Work, Contractor shall not be relieved of any responsibility for compliance with laws and codes, including without limitation, building codes, pertaining to the Work. Contractor shall pay all public utility usage charges, for utilities consumed during the Work, including any applicable connection charges, which apply to the Work.
- B. No building permits from city or county governments are necessary for Work on State projects.
- C. Contractor shall comply with the current edition of Title 24, California Code of Regulations, and the various safety orders and codes of the State of California where applicable.
- D. All records of Contractor, subcontractors, and suppliers that pertain to the performance of the work or are necessary to determine or verify compensation, including, but not limited to, all documents used to prepare the bid shall be retained for a period of three years after final payment for examination or audit by the State. The State may examine and copy all records including, but not limited to, paper, electronic, and photographic documents.

#### **1.21 STORAGE OF EQUIPMENT AND MATERIALS**

- A. State’s Representative shall inform Contractor of the availability of suitable areas for the storage of Contractor’s equipment and materials. Contractor shall maintain the storage of equipment and materials within the confines of the area designated by State’s Representative.
- B. Contractor shall store materials intended for use on this Project in such a manner that their quality and fitness for the Work will be preserved. When considered necessary by State, materials shall be stored so as to facilitate inspection. It shall be Contractor’s responsibility to protect those stored items. All stored materials remain the property of the Contractor until such time as they are installed in their final position as intended in the Contract Documents.
- C. Routes of hauling and parking vehicles and equipment beyond the limits of the existing roads shall be only as directed by State’s Representative.

#### **1.22 SITE CONDITIONS**

- A. State may furnish reports, surveys, or other information describing physical characteristics, legal limitations and utility locations for the Project site, and a legal description of the site. The furnishing of this information is for the convenience of Contractor only and shall not relieve Contractor from its duties under the Contract Documents in general. In performance of the Work, Contractor shall undertake such further investigations and studies as may be necessary or useful to determine subsurface characteristics and patent and concealed conditions. In connection with the foregoing, Contractor shall be solely responsible for locating (and shall locate prior to performing any Work) all utility lines, telephone company lines and cables, sewer lines, water pipes, gas lines, electrical lines, including, without limitation, all buried pipelines and buried telephone cables and shall perform the Work in such a manner so as to avoid damaging any such lines, cables, pipes, and pipelines. Utility points of connection and other site relationships referenced in the contract documents are diagrammatic in nature. The exact location and routing requirements are the responsibility of the Contractor and are subject to the approval of the State’s Representative.
- B. The Contractor shall visit the Project site and verify all existing conditions prior to preparing its bid, in accordance with Parts 1.01 and 1.02 of Section 00100 Public Works, Instructions to Bidders. No additional compensation will be allowed for any conditions described in the Contract Documents or reasonably anticipated from pre-bid examination and observation of the Project site.
- C. **Differing Site Conditions**
  - (1) During the progress of the Work, if subsurface or latent physical conditions are encountered at the site differing materially from those indicated in the Contract or if unknown physical conditions of an unusual nature, are encountered at the site, Contractor shall promptly notify State in writing of the specific differing conditions before they are disturbed and before the affected Work is performed.



- (2) Upon written notification, State's Representative will investigate the conditions, and if State's Representative determines that the conditions materially differ and cause change in the cost or time required for the performance of any Work under the Contract, an adjustment, excluding loss of anticipated profits, will be made and the Contract modified in writing accordingly. State's Representative will notify Contractor of its determination whether or not an adjustment of the Contract is warranted.

- D. The construction area must be confined to the minimum space needed and be compatible with the ongoing Park Unit operations. The construction area, including all staging and laydown areas, must be approved by the State's Representative.

### **1.23 WARRANTIES**

ALL WARRANTIES SHALL INCLUDE LABOR AND MATERIALS AND SHALL BE SIGNED BY THE MANUFACTURER OR SUBCONTRACTOR AS THE CASE MAY BE AND COUNTERSIGNED BY CONTRACTOR. ALL WARRANTIES SHALL BE ADDRESSED TO STATE AND DELIVERED TO STATE'S REPRESENTATIVE UPON COMPLETION OF THE WORK AND BEFORE OR WITH THE SUBMISSION OF REQUEST FOR FINAL PAYMENT.

### **1.24 AS-BUILT PLANS**

Prior to acceptance, Contractor shall furnish to State's Representative a set of Contract plans in CAD (computer-aided drafting) format unless otherwise directed by State's Representative, clearly and legibly marked showing the location, as constructed, of all elements, features, components, and utilities. The as-built plans shall provide detailed information and reference dimensions locating all concealed elements, features, components, and utilities. Each sheet must be stamped "AS-BUILT", signed and dated by the Contractor.

### **1.25 PROTECTION OF PERSONS AND PROPERTY**

- A. Contractor shall comply with all air pollution control rules, regulations, ordinances, and statutes, which apply to any Work performed pursuant to the Contract, including, but not limited to, any air pollution control rules, regulations, ordinances, and statutes, specified in California Government Code, Section 11017.
- B. Contractor shall give notices and comply with applicable laws, ordinances, rules, regulations, and lawful orders of public authorities bearing on safety of persons or property or their protection from damage, injury or loss. Contractor shall provide all facilities and shall follow all procedures required by the Occupational Safety and Health Act (OSHA) including, but not limited to, providing and posting all required posters and notices and shall otherwise be responsible for all other mandatory safety laws.
- C. Contractor shall not impose or permit loading upon any part of the Work, construction, site or upon or adjacent to the Work site, in excess of safe limits, or permit loading that will result in stress or damage to the structural, architectural, mechanical, electrical, or other components of the Work.
- D. **Hazardous Materials**
- (1) Contractor shall not cause or permit any "Hazardous Materials" [as defined in Section 1.27D(2) of these General Conditions] to be brought upon, kept or used in or about the Project site except to the extent such Hazardous Materials: (a) are necessary for the prosecution of the Work; and (b) are required pursuant to the Contract Documents; and (c) have been approved in writing by State. Any Hazardous Materials allowed to be used on the Project site shall be used, stored, and disposed of in compliance with all applicable laws relating to such Hazardous Materials.
- (2) As used herein, the term "Hazardous Materials" means any hazardous or toxic substances, materials or wastes listed in the United States Department of Transportation Hazardous Materials Table, or listed by the Environmental Protection Agency as a hazardous substance, or as defined in the California Health and Safety Code, Section 25316, or any substances, materials or wastes that are or become regulated, identified, defined or listed under federal, state or local law, and all products containing such Hazardous Materials.
- E. **Spread of Exotic Biological Organisms** – Before entering the park unit and at the conclusion of the Contract, all Contractors shall remove soil and organic materials from all motorized equipment used to transport or process soil or organic matter. Contractors shall clean the hull, motor, pumps, and accessories on all watercraft before entering the park unit and at the conclusion of the Contract.

**SECTION 000802**  
**SUPPLEMENTAL CONDITIONS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. The following requirements either amend or supplement the following sections
1. Section 00700 – General Conditions (DPR 483)
- B. ADD the following paragraph to Section 00700 – General Conditions (DPR 483)

1.04 Insurance, A. Insurance Requirements, (2) Builder's Risk/Installation Floater:

Builders Risk Insurance shall be on an "all-risk" or equivalent policy form and shall include, without limitation, insurance against the perils of fire (with extended coverage) and physical loss or damage including, without duplication of coverage, theft, vandalism, malicious mischief, collapse, windstorm, false work, testing and startup, temporary buildings, and debris removal including demolition occasioned by enforcement of any applicable legal requirements, and shall cover reasonable compensation for the State's and Contractor's services and expenses required as a result of such insured loss.

ADD the following paragraph to Section 00700 – General Conditions (DPR 483), 1.04 Insurance, (5) POLLUTION LIABILITY:

Contractor shall maintain in force, at its own expense, Pollution Liability / Environmental Liability Insurance (covers areas of: asbestos / lead abatement, demolition, electrical, excavation / grading, plumbing, masonry, painting, roofing, DOD & DOE, transformer / PCBs, general contracting, environmental remediation, drilling, emergency response, industrial cleaning / maintenance, lab packing, mechanical, paving, Superfund, storage tank and utility, mold remediation and incidental fungus), with limits not less than one million dollars (\$1,000,000) depending on exposure.

- C. All testing referred to in the Contract Documents shall be made by an independent testing lab arranged and paid for by the Contractor and approved by the State's Representative.

**END OF SECTION 000802**

## **SECTION 000803**

### **MINED PRODUCTS AND MATERIALS**

#### **PART 1 - GENERAL**

##### **1.1 DESCRIPTION**

- A. The following requirements supplement the General Conditions

#### **PART 2 - PRODUCTS**

##### **2.1 MINED PRODUCTS AND MATERIALS**

- A. In accordance with provisions of Section 10295.5 of the Public Contract Code, no sand, gravel, aggregates, or other minerals produced from a surface mining operation subject to the Surface Mining and Reclamation Act of 1975 (Public Resources Code Section 2710, et. seq.), shall be purchased or utilized in the Work of this Contract, unless the operation is identified in the list published quarterly in the California Regulatory Notice Register pursuant to subdivision (b) of Section 2717 of the Public Resources Code. The list is also available through the State of California, Department of Conservation, Office of Mine Reclamation website at [www.consrv.ca.gov/omr](http://www.consrv.ca.gov/omr) (AB 3098 List).

#### **PART 3 - EXECUTION**

##### **3.1 CERIFICATE OF COMPLIANCE**

- A. Submit Signed Certificate Indicating:
  - 1. No sand, gravel, aggregates, or other minerals produced from a surface mining operation subject to the Surface Mining and Reclamation Act of 1975 have been purchased or utilized in the Work of this Contract which have come from sites not currently identified in the list published quarterly in the California Regulatory Notice Register pursuant to subdivision (b) of Section 2717 of the Public Resources Code.
  - 2. Indicate the California Mine Identification Number of each site from which products or materials have been purchased.

**Section 000803 – Page 2**  
**Mined Products and Materials**

END OF SECTION 000803

**SECTION 000804**  
**DISPOSAL OF REFUSE**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

- A. Dispose of waste, debris, and rubbish resulting from the construction of the project.
- B. If excess excavation spoils cannot be suitably disposed of on State property, as directed by the State's Representative, it shall be hauled away at the Contractor's expense.

**PART 2 - PRODUCTS (not used)**

**PART 3 - EXECUTION**

**3.1 REQUIREMENTS**

- A. Remove waste materials, debris, and rubbish from site and legally dispose of at public or private dumping areas off State property.
- B. Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.
  - 1. Do not burn or bury rubbish and waste materials on project site.
  - 2. Do not dispose of volatile wastes such as mineral spirits, oil, or paint thinner in storm or sanitary drains.
  - 3. Do not dispose of wastes into streams or waterways

**END OF SECTION 000804**

## SECTION 011000

### SUMMARY

#### PART 1 - GENERAL

##### 1.1 SUMMARY

###### A. Section Includes:

1. Project information.
2. Work covered by Contract Documents.
3. Contractor's use of site and premises.
4. Specification and Drawing conventions.

###### B. Related Requirements:

1. Section 015000 "Temporary Facilities and Controls" for limitations and procedures governing temporary use of State's facilities.

##### 1.2 PROJECT INFORMATION

###### A. Project Identification: McClellan Bay G & H, LEESD CWPP, Telecom and I.T. Tenant Improvement

1. Project Location:
  - 4840 Lang Avenue, McClellan Park, CA 95652 – Bay “G”
  - 4920 Lang Avenue, McClellan Park, CA 95652 – Bay “H”

##### 1.3 WORK COVERED BY CONTRACT DOCUMENTS

###### A. The Work of Project is defined by the Contract Documents and consists of the following:

This project is a tenant improvement for California State Park's Law Enforcement & Emergency Services Division's (LEESD) Cannabis Watershed Protection Program (CWPP) and Telecommunications groups, and Information Technology (T.I.) group. Work will primarily take place in 5 areas of the existing building:

- a. Open Office 1198B: Removal of (e) cubicles and installation of new cubicles and a meeting room.
- b. CWPP Lab/Storage 1213: Addition of a lab area and high-pile storage pallet racks.
- c. Telecom Supply/Storage 1212: Addition of high-pile storage pallet racks and a chain link fenced storage area.

**Summary**

- d. I.T. Pallet Racking/Fenced Storage 1196: Reconfiguration of existing high-pile storage pallet racks and addition of chain link fence for security.
- e. Evidence Processing 1167 & Evidence Storage 1167A: Division of an existing room into 2 secure areas for evidence storage and processing.

The mechanical system shall be upgraded to support increased ventilation requirements in these areas. The fire sprinkler and alarm systems will be adjusted slightly for new room configurations.

There is no site work on this project.

**B. Type of Contract:**

- 1. Project will be constructed under a single prime contract.

**1.4 CONTRACTOR'S USE OF SITE AND PREMISES**

- A. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weathertight condition throughout construction period. Repair damage caused by construction operations.
- B. Condition of Existing Grounds: Maintain portions of existing grounds, landscaping, and hardscaping affected by construction operations throughout construction period. Repair damage caused by construction operations.

**1.5 SPECIFICATION AND DRAWING CONVENTIONS**

- A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
  - 1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
  - 2. Text Color: Text used in the Specifications, including units of measure, manufacturer and product names, and other text may appear in multiple colors or underlined as part of a hyperlink; no emphasis is implied by text with these characteristics.
  - 3. Hypertext: Text used in the Specifications may contain hyperlinks. Hyperlinks may allow for access to linked information that is not residing in the Specifications. Unless otherwise indicated, linked information is not part of the Contract Documents.
  - 4. Specification requirements are to be performed by Contractor unless specifically stated otherwise.

- B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 011000



## **SECTION 012300**

### **ALTERNATES**

#### **PART 1 - GENERAL**

##### **1.1 SUMMARY**

- A. Section includes administrative and procedural requirements for alternates.

##### **1.2 DEFINITIONS**

- A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the bidding requirements that may be added to or deducted from the base bid amount if the State decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
  - 1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.
  - 2. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternates into the Work. No other adjustments are made to the Contract Sum.

##### **1.3 PROCEDURES**

- A. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
  - 1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.
- B. Execute accepted alternates under the same conditions as other work of the Contract.
- C. Schedule: A schedule of alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

**Section 012300 – Page 2**

**Alternates**

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF DEDUCTIONS

A. Alternate No. 01 Electrical

1. Base Bid: Includes all contract bid documents. Construction drawings 00031-77.001 through 52
2. Deduct 01-- All electrical labor, materials, and installations included in the Bay H electrical scope of work.
  - a. Refer to sheets E3.01H/1

END OF SECTION 012300

## **SECTION 012300**

### **ALTERNATES**

#### **PART 1 - GENERAL**

##### **1.1 SUMMARY**

- A. Section includes administrative and procedural requirements for alternates.

##### **1.2 DEFINITIONS**

- A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the bidding requirements that may be added to or deducted from the base bid amount if the State decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
  - 1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.
  - 2. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternates into the Work. No other adjustments are made to the Contract Sum.

##### **1.3 PROCEDURES**

- A. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
  - 1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.
- B. Execute accepted alternates under the same conditions as other work of the Contract.
- C. Schedule: A schedule of alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

**Section 012300 – Page 2**

**Alternates**

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF DEDUCTIONS

A. Alternate No. 01 Electrical

1. Base Bid: Includes all contract bid documents. Construction drawings 00031-77.001 through 52
2. Deduct 01-- All electrical labor, materials, and installations included in the Bay H electrical scope of work.
  - a. Refer to sheets E3.01H/1

END OF SECTION 012300

**SECTION 012500**  
**SUBSTITUTION PROCEDURES**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section includes administrative and procedural requirements for substitutions.
- B. Related Requirements:
  - 1. Section 016000 "Product Requirements" for requirements for submitting comparable product submittals for products by listed manufacturers.

**1.2 DEFINITIONS**

- A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.
  - 1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.

**1.3 ACTION SUBMITTALS**

- A. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
  - 1. Substitution Request Form: Use form acceptable to State's Representative.
  - 2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
    - a. Statement indicating why specified product or fabrication or installation method cannot be provided, if applicable.
    - b. Coordination of information, including a list of changes or revisions needed to other parts of the Work and to construction performed by State and separate contractors that will be necessary to accommodate proposed substitution.
    - c. Detailed comparison of significant qualities of proposed substitutions with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include

**Section 012500 – Page 2**  
**Substitution Procedures**

attributes, such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.

- d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
  - e. Samples, where applicable or requested.
  - f. Certificates and qualification data, where applicable or requested.
  - g. List of similar installations for completed projects, with project names and addresses as well as names and addresses of State's Representatives and States.
  - h. Material test reports from a qualified testing agency, indicating and interpreting test results for compliance with requirements indicated.
  - i. Research reports evidencing compliance with building code in effect for Project.
  - j. Detailed comparison of Contractor's construction schedule using proposed substitutions with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
  - k. Cost information, including a proposal of change, if any, in the Contract Sum.
  - l. Contractor's certification that proposed substitution complies with requirements in the Contract Documents, except as indicated in substitution request, is compatible with related materials and is appropriate for applications indicated.
  - m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
3. State's Action: State's Representative will notify Contractor of acceptance or rejection of proposed substitution within 14 days of receipt of request.
- a. Forms of Acceptance: Change Order, Construction Change Directive, or State's Supplemental Instructions for minor changes in the Work.
  - b. Use product specified if State's Representative does not issue a decision on use of a proposed substitution within time allocated.

**1.4 QUALITY ASSURANCE**

- A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

1.5 PROCEDURES

- A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

1.6 SUBSTITUTIONS

- A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change:
  - 1. Conditions: State's Representative will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, State's Representative will return requests without action, except to record noncompliance with these requirements:
    - a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
    - b. Substitution request is fully documented and properly submitted.
    - c. Requested substitution will not adversely affect Contractor's construction schedule.
    - d. Requested substitution has received necessary approvals of authorities having jurisdiction.
    - e. Requested substitution is compatible with other portions of the Work.
    - f. Requested substitution has been coordinated with other portions of the Work.
    - g. Requested substitution provides specified warranty.
- B. Substitutions for Convenience: Not Allowed.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012500

## **SECTION 012600**

### **CONTRACT MODIFICATION PROCEDURES**

#### **PART 1 - GENERAL**

##### **1.1 SUMMARY**

- A. This Section specifies administrative and procedural requirements for handling and processing Contract modifications. The terms "Change Order", "Contract Modification", and "Amendment" are synonymous.

##### **1.2 MINOR CHANGES IN THE WORK**

- A. State Representative will issue Bulletins, defined as supplemental instructions authorizing Minor Changes in the Work, not involving adjustment to the Contract Sum or the Contract Time.

##### **1.3 PROPOSED CHANGE ORDER (PCO)**

- A. State-Initiated Requests: State Representative will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
  - 1. PCOs issued by State Representative are for information only. Do not consider them instructions either to stop work in progress or to execute the proposed change.
  - 2. Within 15 days after receipt of a PCO, submit a change proposal indicating all cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
    - a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
    - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
    - c. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity durations, start and finish times, and activity relationships. Use available total float before requesting an extension of the Contract Time.
- B. Contractor - Change Order Request (COR) - : Contractor may propose changes by submitting a Change Order Request (COR).



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**Contract Modification Procedures**

1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
4. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

**1.4 ALLOWANCES**

- A. Allowance Adjustment: To adjust allowance amounts, base each Change Order proposal on the difference between purchase amount and the allowance, multiplied by final measurement of work-in-place. If applicable, include reasonable allowances for cutting losses, tolerances, mixing wastes, normal product imperfections, and similar margins.
  1. Include installation costs in purchase amount only where indicated as part of the allowance.
  2. If requested, prepare explanation and documentation to substantiate distribution of overhead costs and other margins claimed.
  3. Submit substantiation of a change in scope of work, if any, claimed in Change Order proposals related to unit-cost allowances.
  4. State reserves the right to establish the quantity of work-in-place by independent quantity survey, measure, or count.
- B. Submit requests for increased costs because of a change in scope or nature of the allowance described in the Contract Documents, whether for the Purchase Order amount or Contractor's handling, labor, installation, overhead, and profit. Submit request within 10 days of receipt of the Contract Field Order (CFO) authorizing work to proceed on the allowance. The State has the option to reject requests submitted later than 10 days after such authorization.
  1. Do not include Contractor's or subcontractor's indirect expense in the Change Order proposal cost amount unless it is clearly shown that the nature or extent of work has changed from what could have been foreseen from information in the Contract Documents.
  2. No change to Contractor's indirect expense is permitted for selection of higher- or lower-priced materials or systems of the same scope and nature as originally indicated.

1.5 CONTRACT FIELD ORDER (CFO)

- A. Contract Field Order: The State may issue a Contract Field Order (CFO). A CFO instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Contract Amendment.
  - 1. A CFO contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.

1.6 CHANGE ORDER (CONTRACT AMENDMENT)

- A. Submit a letter of authority indicating the Contractor's authorized representative for negotiation of cost and time adjustments, and the limits of their authority. On State's approval of a Contractor's Change Proposal, State will issue a Contract Amendment for signatures of State and Contractor.

PART 2 - PART2 – PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012600

## **SECTION 012900**

### **PAYMENT PROCEDURES**

#### **PART 1 - GENERAL**

##### **1.1 SUMMARY**

- A. This Section specifies administrative and procedural requirements necessary to prepare and process Applications for Payment.

##### **1.2 SCHEDULE OF VALUES**

- A. General: Submit Schedule of Values in accordance with GENERAL CONDITIONS.
- B. Coordination: Coordinate preparation of the Schedule of Values with preparation of Contractor's Construction Schedule.
  - 1. Correlate line items in the Schedule of Values with the project CPM Schedule.
  - 2. Subschedules: Where the Work is separated into phases requiring separately phased payments, provide sub-schedules showing values correlated with each phase of payment.
- C. Format and Content: Use the Project Manual table of contents as a guide to establish line items for the Schedule of Values. Provide at least one line item for each Specification Section.
  - 1. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents. Provide several line items for principal subcontract amounts, where appropriate.
  - 2. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
  - 3. Provide a separate line item in the Schedule of Values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
  - 4. Provide separate line items in the Schedule of Values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
  - 5. Allowances: Provide a separate line item in the Schedule of Values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.
  - 6. Each item in the Schedule of Values and Applications for Payment shall be complete..

## **Section 012900 – Page 2**

### **Payment Procedures**

- a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the Schedule of Values or distributed as general overhead expense, at Contractor's option.
7. Provide separate line items for profit, fees, taxes, overhead, and General Conditions.
8. Schedule Updating: Update and resubmit the Schedule of Values before the next Applications for Payment when Change Orders or Contract Field Orders result in a change in the Contract Sum.

#### **1.3 APPLICATIONS FOR PAYMENT**

- A. Each Application for Payment shall be sequentially numbered and consistent with previous applications and payments as certified by the State Representative and paid for by the State.
  1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.
- B. Transmittal: Submit three (3) signed original copies of each Application for Payment to the State.
  1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.
- C. Administrative Items: Administrative actions, submittals, and update submittals that must precede or coincide with submittal of first Application for Payment include the following:
  1. List of subcontractors.
  2. Schedule of Values.
  3. Contractor's Construction Schedule (preliminary if not final).
  4. Submittals Schedule (preliminary if not final).
  5. List of Contractor's staff assignments.
  6. Copies of required permits.
  7. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
- D. Application for Payment at Substantial Completion: After issuing the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
  1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.

2. This application shall reflect Certificates of Partial Substantial Completion issued previously for State occupancy of designated portions of the Work.
- E. Final Payment Application: Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
1. Evidence of completion of Project closeout requirements.
  2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
  3. Updated final statement, accounting for final changes to the Contract Sum.
  4. Project Record Documents (As-Builts).
  5. Operation and Maintenance (O & M) Manuals.
  6. Warranties.
  7. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when the State took possession of and assumed responsibility for corresponding elements of the Work.

END OF SECTION 012900

## **SECTION 013100**

### **PROJECT MANAGEMENT AND COORDINATION**

#### **PART 1 - GENERAL**

##### **1.1 SUMMARY**

- A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
  - 1. General coordination procedures.
  - 2. Coordination drawings.
  - 3. RFIs.
  - 4. Digital project management procedures.
  - 5. Project meetings.
- B. Related Requirements:
  - 1. Section 017300 "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.

##### **1.2 INFORMATIONAL SUBMITTALS**

- A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:
  - 1. Name, address, telephone number, and email address of entity performing subcontract or supplying products.
  - 2. Number and title of related Specification Section(s) covered by subcontract.
  - 3. Drawing number and detail references, as appropriate, covered by subcontract.

##### **1.3 GENERAL COORDINATION PROCEDURES**

- A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations included in different Sections that depend on each other for proper installation, connection, and operation.

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1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
  2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
  3. Make adequate provisions to accommodate items scheduled for later installation.
- B. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
1. Preparation of Contractor's construction schedule.
  2. Preparation of the schedule of values.
  3. Installation and removal of temporary facilities and controls.
  4. Delivery and processing of submittals.
  5. Progress meetings.
  6. Preinstallation conferences.
  7. Project closeout activities.
  8. Startup and adjustment of systems.

**1.4 COORDINATION DRAWINGS**

- A. Coordination Drawings, General: Prepare coordination drawings according to requirements in individual Sections, and additionally where installation is not completely indicated on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity.
1. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on standard printed data. Include the following information, as applicable:
    - a. Indicate functional and spatial relationships of components of Architectural, structural, civil, mechanical, and electrical systems.
    - b. Indicate dimensions shown on Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternative sketches to State's Representative indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.
- B. Coordination Drawing Organization: Organize coordination drawings as follows:

1. Floor Plans and Reflected Ceiling Plans: Show Architectural and structural elements, and mechanical, plumbing, fire-protection, fire-alarm, and electrical Work. Show locations of visible ceiling-mounted devices relative to acoustical ceiling grid. Supplement plan drawings with section drawings where required to adequately represent the Work.
  2. Plenum Space: Indicate subframing for support of ceiling, raised access floor, and wall systems, mechanical and electrical equipment, and related Work. Locate components within plenums to accommodate layout of light fixtures and other components indicated on Drawings. Indicate areas of conflict between light fixtures and other components.
  3. Mechanical Rooms: Provide coordination drawings for mechanical rooms showing plans and elevations of mechanical, plumbing, fire-protection, fire-alarm, and electrical equipment.
  4. Structural Penetrations: Indicate penetrations and openings required for all disciplines.
  5. Slab Edge and Embedded Items: Indicate slab edge locations and sizes and locations of embedded items for metal fabrications, sleeves, anchor bolts, bearing plates, angles, door floor closers, slab depressions for floor finishes, curbs and housekeeping pads, and similar items.
  6. Review: State's Representative will review coordination drawings to confirm that, in general, the Work is being coordinated, but not for the details of the coordination, which are Contractor's responsibility. If State's Representative determines that coordination drawings are not being prepared in sufficient scope or detail, or are otherwise deficient, State's Representative will so inform Contractor, who shall make suitable modifications and resubmit.
- C. Coordination Digital Data Files: Prepare coordination digital data files according to the following requirements:
1. File Preparation Format: Same digital data software program, version, and operating system as original Drawings.
- 1.5 REQUEST FOR INFORMATION (RFI)
- A. General: Immediately on discovery of the need for additional information, clarification, or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.
1. State's Representative will return without response those RFIs submitted to State's Representative by other entities controlled by Contractor.
  2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.
- B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:



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1. State name.
  2. State's Project number.
  3. Name of State's Representative
  4. State's Project number.
  5. Date.
  6. Name of Contractor.
  7. RFI number, numbered sequentially.
  8. RFI subject.
  9. Specification Section number and title and related paragraphs, as appropriate.
  10. Drawing number and detail references, as appropriate.
  11. Field dimensions and conditions, as appropriate.
  12. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
  13. Contractor's signature.
  14. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.
- C. State's Action: State's Representative will review each RFI, determine action required, and respond. Allow 15 days for State's response for each RFI. RFIs received by State's Representative after 1:00 p.m. will be considered as received the following working day.
1. The following Contractor-generated RFIs will be returned without action:
    - a. Requests for approval of submittals.
    - b. Requests for approval of substitutions.
    - c. Requests for approval of Contractor's means and methods.
    - d. Requests for coordination information already indicated in the Contract Documents.
    - e. Requests for adjustments in the Contract Time or the Contract Sum.
    - f. Requests for interpretation of State's actions on submittals.
    - g. Incomplete RFIs or inaccurately prepared RFIs.
  2. State's action may include a request for additional information, in which case State's time for response will date from time of receipt by State's Representative of additional information.
  3. State's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Section 012600 "Contract Modification Procedures."
    - a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify State's Representative in writing within five days of receipt of the RFI response.

- D. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number.
  - 1. Project name.
  - 2. Name and address of Contractor.
  - 3. Name and address of State's Representative.
  - 4. RFI number including RFIs that were returned without action or withdrawn.
  - 5. RFI description.
  - 6. Date the RFI was submitted.
  - 7. Date State's response was received.
- E. On receipt of State's action, update the RFI log and immediately distribute the RFI response to affected parties.

#### 1.6 PROJECT MEETINGS

- A. General: State's Representative will schedule and conduct meetings and conferences at Project site unless otherwise indicated.
- B. Preconstruction Conference: State's Representative will schedule and conduct a preconstruction conference before starting construction, at a time convenient to State and State's Representative.
  - 1. Attendees: Authorized representatives of State, State's Representative, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
  - 2. Agenda: Discuss items of significance that could affect progress, including the following:
    - a. Responsibilities and personnel assignments.
    - b. Tentative construction schedule.
    - c. Phasing.
    - d. Critical work sequencing and long lead items.
    - e. Designation of key personnel and their duties.
    - f. Lines of communications.
    - g. Procedures for processing field decisions and Change Orders.
    - h. Procedures for RFIs.
    - i. Procedures for testing and inspecting.
    - j. Procedures for processing Applications for Payment.
    - k. Distribution of the Contract Documents.
    - l. Submittal procedures.
    - m. Preparation of Record Documents.
    - n. Use of the premises
    - o. Work restrictions.
    - p. Working hours.

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- q. State's occupancy requirements.
    - r. Responsibility for temporary facilities and controls.
    - s. Procedures for moisture and mold control.
    - t. Procedures for disruptions and shutdowns.
    - u. Construction waste management and recycling.
    - v. Parking availability.
    - w. Office, work, and storage areas.
    - x. Equipment deliveries and priorities.
    - y. First aid.
    - z. Security.
    - aa. Progress cleaning.
  - 3. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.
- C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity when required by other sections and when required for coordination with other construction.
- 1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise State's Representative of scheduled meeting dates.
  - 2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
    - a. Contract Documents.
    - b. Options.
    - c. Related RFIs.
    - d. Related Change Orders.
    - e. Purchases.
    - f. Deliveries.
    - g. Submittals
    - h. Retain first subparagraph below for projects with sustainable design documentation requirements.
    - i. Review of mockups.
    - j. Possible conflicts.
    - k. Compatibility requirements.
    - l. Time schedules.
    - m. Weather limitations.
    - n. Manufacturer's written instructions.
    - o. Warranty requirements.
    - p. Compatibility of materials.
    - q. Acceptability of substrates.
    - r. Temporary facilities and controls.

- s. Space and access limitations.
  - t. Regulations of authorities having jurisdiction.
  - u. Testing and inspecting requirements.
  - v. Installation procedures.
  - w. Coordination with other work.
  - x. Required performance results.
  - y. Protection of adjacent work.
  - z. Protection of construction and personnel.
- 3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
  - 4. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.
  - 5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.
- D. Progress Meetings: State's Representative will conduct progress meetings at biweekly intervals.
- 1. Attendees: In addition to representatives of State and State's Representative, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
  - 2. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
    - a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
      - 1) Review schedule for next period.
    - b. Review present and future needs of each entity present, including the following:
      - 1) Interface requirements.

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- 2) Sequence of operations.
  - 3) Status of submittals.
  - 4) Deliveries.
  - 5) Off-site fabrication.
  - 6) Access.
  - 7) Site use.
  - 8) Temporary facilities and controls.
  - 9) Progress cleaning.
  - 10) Quality and work standards.
  - 11) Status of correction of deficient items.
  - 12) Field observations.
  - 13) Status of RFIs.
  - 14) Status of Proposal Requests.
  - 15) Pending changes.
  - 16) Status of Change Orders.
  - 17) Pending claims and disputes.
  - 18) Documentation of information for payment requests.
3. Minutes: Entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.
    - a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013100

## **SECTION 013200**

### **CONSTRUCTION PROGRESS DOCUMENTATION**

#### **PART 1 - GENERAL**

##### **1.1 SUMMARY**

- A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
  - 1. Contractor's Construction Schedule.
  - 2. Construction schedule updating reports.
  - 3. Daily construction reports.
  - 4. Site condition reports.

##### **1.2 DEFINITIONS**

- A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction Project. Activities included in a construction schedule consume time and resources.
  - 1. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.
  - 2. Predecessor Activity: An activity that precedes another activity in the network.
  - 3. Successor Activity: An activity that follows another activity in the network.
- B. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of Project.
- C. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.
- D. Event: The starting or ending point of an activity.
- E. Float: The measure of leeway in starting and completing an activity.

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**Construction Progress Documentation**

**1.3 INFORMATIONAL SUBMITTALS**

- A. Format for Submittals: Submit required submittals in the following format:
  - 1. Working electronic copy of schedule file.
  - 2. PDF file.
- B. Startup Network Diagram: Of size required to display entire network for entire construction period. Show logic ties for activities.
- C. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.
  - 1. Submit a working digital copy of schedule, using software indicated, and labeled to comply with requirements for submittals.
- D. CPM Reports: Concurrent with CPM schedule, submit each of the following reports. Format for each activity in reports shall contain activity number, activity description, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float in calendar days.
  - 1. Activity Report: List of activities sorted by activity number and then early start date, or actual start date if known.
  - 2. Logic Report: List of preceding and succeeding activities for each activity, sorted in ascending order by activity number and then by early start date, or actual start date if known.
  - 3. Total Float Report: List of activities sorted in ascending order of total float.
- E. Construction Schedule Updating Reports: Submit with Applications for Payment.
- F. Daily Construction Reports: Submit at weekly intervals.
- G. Site Condition Reports: Submit at time of discovery of differing conditions.

**1.4 COORDINATION**

- A. Coordinate Contractor's Construction Schedule with the schedule of values, submittal schedule, progress reports, payment requests, and other required schedules and reports.
  - 1. Secure time commitments for performing critical elements of the Work from entities involved.
  - 2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

**1.5 CONTRACTOR'S CONSTRUCTION SCHEDULE**

- A. Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.
- B. Time Frame: Extend schedule from date established for the Notice to Proceed to date of final completion.
  - 1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.
- C. Activities: Treat each floor or separate area as a separate numbered activity for each main element of the Work. Comply with the following:
  - 1. Activity Duration: Define activities so no activity is longer than 15 days, unless specifically allowed by State's Representative.
  - 2. Procurement Activities: Include procurement process activities for the following long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
  - 3. Submittal Review Time: Include review and resubmittal times indicated in Section 013300 "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's Construction Schedule with submittal schedule.
  - 4. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for State's administrative procedures necessary for certification of Substantial Completion.
  - 5. Punch List and Final Completion: Include not more than 30 days for completion of punch list items and final completion.
- D. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
  - 1. Phasing: Arrange list of activities on schedule by phase.
  - 2. State-Furnished Products: Include a separate activity for each product. Include delivery date indicated in Section 011000 "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
  - 3. Work Restrictions: Show the effect of the following items on the schedule:
    - a. Coordination with existing construction.
    - b. Limitations of continued occupancies.
    - c. Uninterruptible services.



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- d. Partial occupancy before Substantial Completion.
  - e. Use-of-premises restrictions.
  - f. Provisions for future construction.
  - g. Seasonal variations.
  - h. Environmental control.
- E. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and final completion.
- F. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:
  - 1. Unresolved issues.
  - 2. Unanswered Requests for Information.
  - 3. Rejected or unreturned submittals.
  - 4. Notations on returned submittals.
  - 5. Pending modifications affecting the Work and the Contract Time.
- G. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.
  - 1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
  - 2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
  - 3. As the Work progresses, indicate final completion percentage for each activity.
- H. Recovery Schedule: When periodic update indicates the Work is 14 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, equipment required to achieve compliance, and date by which recovery will be accomplished.
- I. Distribution: Distribute copies of approved schedule to State's Representative and other parties identified by Contractor with a need-to-know schedule responsibility.
  - 1. Post copies in Project meeting rooms and temporary field offices.
  - 2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution

when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

#### 1.6 GANTT-CHART SCHEDULE REQUIREMENTS

- A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal, Gantt-chart-type, Contractor's Construction Schedule within 10 days of date established for the Notice to Proceed.
- B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.

#### 1.7 CPM SCHEDULE REQUIREMENTS

- A. Prepare network diagrams using AON (activity-on-node) format.
- B. CPM Schedule: Prepare Contractor's Construction Schedule using a time-scaled CPM network analysis diagram for the Work.
  - 1. Establish procedures for monitoring and updating CPM schedule and for reporting progress. Coordinate procedures with progress meeting and payment request dates.
  - 2. Use "one workday" as the unit of time for individual activities. Indicate nonworking days and holidays incorporated into the schedule to coordinate with the Contract Time.
- C. CPM Schedule Preparation: Prepare a list of all activities required to complete the Work. Using the startup network diagram, prepare a skeleton network to identify probable critical paths.
  - 1. Activities: Indicate the estimated time duration, sequence requirements, and relationship of each activity in relation to other activities. Include estimated time frames for the following activities:
    - a. Preparation and processing of submittals.
    - b. Mobilization and demobilization.
    - c. Purchase of materials.
    - d. Delivery.
    - e. Fabrication.
    - f. Utility interruptions.
    - g. Installation.
    - h. Work by State that may affect or be affected by Contractor's activities.
    - i. Testing and inspection.
    - j. Commissioning.
    - k. Punch list and final completion.
    - l. Activities occurring following final completion.

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2. Critical Path Activities: Identify critical path activities, including those for interim completion dates. Scheduled start and completion dates shall be consistent with Contract milestone dates.
  3. Processing: Process data to produce output data on a computer-drawn, time-scaled network. Revise data, reorganize activity sequences, and reproduce as often as necessary to produce the CPM schedule within the limitations of the Contract Time.
  4. Format: Mark the critical path. Locate the critical path near center of network; locate paths with most float near the edges.
- D. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using a network fragment to demonstrate the effect of the proposed change on the overall Project schedule.
- E. Initial Issue of Schedule: Prepare initial network diagram from a sorted activity list indicating straight "early start-total float." Identify critical activities. Prepare tabulated reports showing the following:
1. Contractor or subcontractor and the Work or activity.
  2. Description of activity.
  3. Main events of activity.
  4. Immediate preceding and succeeding activities.
  5. Early and late start dates.
  6. Early and late finish dates.
  7. Activity duration in workdays.
  8. Total float or slack time.
  9. Average size of workforce.
  10. Dollar value of activity (coordinated with the schedule of values).
- F. Schedule Updating: Concurrent with making revisions to schedule, prepare tabulated reports showing the following:
1. Identification of activities that have changed.
  2. Changes in early and late start dates.
  3. Changes in early and late finish dates.
  4. Changes in activity durations in workdays.
  5. Changes in the critical path.
  6. Changes in total float or slack time.
  7. Changes in the Contract Time.

**1.8 REPORTS**

- A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:
1. List of subcontractors at Project site.
  2. List of separate contractors at Project site.

3. Approximate count of personnel at Project site.
4. Equipment at Project site.
5. Material deliveries.
6. High and low temperatures and general weather conditions, including presence of rain or snow.
7. Testing and inspection.
8. Accidents.
9. Meetings and significant decisions.
10. Stoppages, delays, shortages, and losses.
11. Meter readings and similar recordings.
12. Emergency procedures.
13. Orders and requests of authorities having jurisdiction.
14. Change Orders received and implemented.
15. Construction Change Directives received and implemented.
16. Services connected and disconnected.
17. Equipment or system tests and startups.
18. Partial completions and occupancies.
19. Substantial Completions authorized.

- B. Site Condition Reports: Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013200

**SECTION 013233**  
**PHOTOGRAPHIC DOCUMENTATION**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section includes administrative and procedural requirements for the following:
  - 1. Preconstruction photographs.
  - 2. Concealed Work photographs.
  - 3. Periodic construction photographs.
  - 4. Final completion construction photographs.
- B. Related Requirements:
  - 1. Section 017700 "Closeout Procedures" for submitting photographic documentation as Project Record Documents at Project closeout.
  - 2. Section 024119 "Selective Demolition" for photographic documentation before selective demolition operations commence.

**1.2 INFORMATIONAL SUBMITTALS**

- A. Key Plan: Submit key plan of Project site and building with notation of vantage points marked for location and direction of each photograph. Indicate elevation or story of construction. Include same information as corresponding photographic documentation.
- B. Digital Photographs: Submit image files within 3 days of taking photographs.
  - 1. Submit photos on CD-ROM, thumb-drive or by uploading to web-based Project management software site. Include copy of key plan indicating each photograph's location and direction.
  - 2. Identification: Provide the following information with each image description:
    - a. Name of Project.
    - b. Name and contact information for photographer.
    - c. Name of State's Representative
    - d. Name of Contractor.
    - e. Date photograph was taken.
    - f. Description of location, vantage point, and direction.
    - g. Unique sequential identifier keyed to accompanying key plan.

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**Photographic Documentation**

**1.3 FORMATS AND MEDIA**

- A. Digital Photographs: Provide color images in JPG format, produced by a digital camera with minimum sensor size of 12 megapixels, and at an image resolution of not less than 3200 by 2400 pixels. flash in low light levels or backlit conditions.
- B. Digital Images: Submit digital media as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.
- C. File Names: Name media files with date, Project area and sequential numbering suffix.

**1.4 CONSTRUCTION PHOTOGRAPHS**

- A. Photographer: Engage a qualified photographer to take construction photographs.
- B. General: Take photographs with maximum depth of field and in focus.
  - 1. Maintain key plan with each set of construction photographs that identifies each photographic location.
- C. Preconstruction Photographs: Before commencement of the Work, take photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points, as directed by State's Representative.
  - 1. Flag excavation areas and construction limits before taking construction photographs.
  - 2. Take a minimum of 20 photographs to show existing conditions adjacent to property before starting the Work.
  - 3. Take a minimum of 20 photographs of existing buildings either on or adjoining property to accurately record physical conditions at start of construction.
  - 4. Take additional photographs as required to record settlement or cracking of adjacent structures, pavements, and improvements.
- D. Concealed Work Photographs: Before proceeding with installing work that will conceal other work, take photographs sufficient in number, with annotated descriptions, to record nature and location of concealed Work, including, but not limited to, the following:
  - 1. Underground utilities.
  - 2. Underslab services.
  - 3. Piping.

- 4. Electrical conduit.
- 5. Waterproofing and weather-resistant barriers.
- E. Periodic Construction Photographs: Take a minimum of 20 photographs weekly. Select vantage points to show status of construction and progress since last photographs were taken.
- F. Final Completion Construction Photographs: Take a minimum of 20 photographs after date of Substantial Completion for submission as Project Record Documents. State's Representative will inform photographer of desired vantage points.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013233

**SECTION 013300**  
**SUBMITTAL PROCEDURES**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other miscellaneous submittals.
- B. Absolutely no construction activity shall commence on submittal items or affected assemblies prior to the State's approval of contractors submittals.
- C. Contractor shall upload and submit all electronic submittals through Procore project management software. State's Rep will provide Procore tutorial for instruction on how to upload submittals to Procore.

**1.2 DEFINITIONS**

- A. Action Submittals: Written and graphic information that requires the Designer's responsive action.
- B. Informational Submittals: Written information that does not require the Designer's approval. Submittals may be rejected for not complying with requirements.

**1.3 SUBMITTAL PROCEDURES**

- A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
  - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
  - 2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
    - a. The State Representative reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- B. Submittals Schedule: Electronic copies of each submittal must be uploaded to Procore Project Management software and transmitted to the State Representative within 15 days of Notice To Proceed.



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### **Submittal Procedures**

- C. Processing Time: Allow enough time for submittal review, including time for resubmittals, as follows. Time for review shall commence on the Designer's receipt of submittal.
  - 1. Initial Review: Allow 20 working days for initial review of each submittal. Allow additional time if processing must be delayed to permit coordination with subsequent submittals. The State will advise Contractor when a submittal being processed must be delayed for coordination.
  - 2. If intermediate submittal is necessary, process it in same manner as initial submittal.
  - 3. Allow 15 working days for processing each resubmittal.
  - 4. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing.
- D. Identification: Place a permanent label or title block on each submittal for identification.
  - 1. Indicate name of firm or entity that prepared each submittal on label or title block.
  - 2. Provide a space on label or beside title block to record Contractor's review and approval markings and action taken by the State.
  - 3. Include the following information on label for processing and recording action taken:
    - a. Project name.
    - b. Date.
    - c. Name and address of Contractor.
    - d. Name and address of subcontractor.
    - e. Name and address of supplier.
    - f. Name of manufacturer.
    - g. Unique sequential identifier, including revision number.
    - h. Number and title of appropriate Specification Section.
    - i. Drawing number and detail references, as appropriate.
    - j. Other necessary identification.
- E. Deviations: Highlight, encircle, or otherwise identify in a manner acceptable to the State any deviations from the Contract Documents on submittals.
- F. Additional Copies: Unless additional copies are required for final submittal, and unless the Designer observes noncompliance with provisions of the Contract Documents, initial submittal may serve as final submittal.
  - 1. Additional copies submitted for maintenance manuals will not be marked with action taken and will be returned.
- G. Transmittal: Package each physical sample submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form uploaded to Procore. Number each submittal sequentially and

date each submittal. The State Representative will return submittals, without review, from sources other than Contractor.

1. Include Contractor's certification stating that information submitted complies with requirements of the Contract Documents.
  2. Transmittal Form: Use form approved by the State Representative.
- H. Use for Construction: Use only final submittals with mark indicating action taken by the State in connection with construction.

## **PART 2 - PRODUCTS**

### **2.1 ACTION SUBMITTALS**

- A. General: Prepare and submit in Procore all Action Submittals required by individual Specification Sections.
1. Number of Copies: Submit 1 electronic copy of each submittal. If physical samples are indicated, contractor will submit a coversheet in Procore for response. The State Representative will return physical samples. Mark up and retain one physical sample as a Project Record.
- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
1. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.
  2. Mark each copy of each submittal to show which products and options are applicable.
  3. Include the following information, as applicable:
    - a. Manufacturer's written recommendations.
    - b. Manufacturer's product specifications.
    - c. Manufacturer's installation instructions.
    - d. Manufacturer's catalog cuts.
    - e. Wiring diagrams showing factory-installed wiring.
    - f. Printed performance curves.
    - g. Operational range diagrams.
    - h. Compliance with recognized trade association standards.
    - i. Compliance with recognized testing agency standards.
- C. Shop Drawings: Submit Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.
1. Preparation: Include the following information, as applicable:

**Submittal Procedures**

- a. Dimensions.
    - b. Identification of products.
    - c. Fabrication and installation drawings.
    - d. Roughing-in and setting diagrams.
    - e. Wiring diagrams showing field-installed wiring, including power, signal, and control wiring.
    - f. Shopwork manufacturing instructions.
    - g. Templates and patterns.
    - h. Schedules.
    - i. Notation of coordination requirements.
    - j. Notation of dimensions established by field measurement.
  2. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring.
  3. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches but no larger than 30 by 40 inches.
- D. Samples: Submit physical units of materials or products, including the following:
1. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
    - a. Submit three full set[s] of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. The State Representative will return submittal with options selected.
  2. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from the same material to be used for the Work, cured and finished in manner specified, and physically identical with the product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
    - a. Submit three (3) sets of Samples. The State will retain **two** Sample sets; remainder will be returned. A submittal coversheet for each physical sample to be submitted through Procore for response.
  3. Preparation: Mount, display, or package Samples in manner specified to facilitate review of qualities indicated. Submit Samples to match the State's sample where so indicated. Attach label on unexposed side.

4. Submit Samples for review of kind, color, pattern, and texture for a final check of these characteristics with other elements and for a comparison of these characteristics between final submittal and actual component as delivered and installed.
  5. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
- E. Product Schedule or List: Submit a written summary indicating types of products required for the Work and their intended location.
- F. Application for Payment: Comply with requirements in Division 1 Section 01290 "Payment Procedures."
- G. Schedule of Values: Comply with requirements in Section 00700 General Conditions.

## 2.2 INFORMATIONAL SUBMITTALS

- A. General: Prepare and submit Informational Submittals required by other Specification Sections.
1. Number of Copies: Submit one (1) electronic copy of each submittal, unless otherwise indicated.
  2. Certificates and Certifications: Provide a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
- B. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements.
- C. Environmental Product Declarations (EPD):
1. Per the Buy Clean California Act, Environmental Product Declarations (EPD) shall be submitted for the following items:
    - Concrete Reinforcing Steel: ASTM A615/A615M standard specification for carbon steel bars. ASTM A706/A706M standard specification for low-alloy steel bars. ASTM A767/A767M standard specification for zinc-coated steel bars. ASTM A775/A775M standard specification for epoxy-coated steel bars
    - Structural Steel: Hot-rolled sections consisting of wide flange beams (W-shape and HP-shape used in structural applications), standard beams (S-shape), misc. beams (M-shape), channels, an-

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**Submittal Procedures**

gles, and tees. Hollow structural sections with round, square, or rectangular cross-section. Plate material.

- Flat Glass: Float or rolled glass that is clear or tinted.
  - Mineral Wool Board Insulation: Board insulation made of rock or slag in light- and heavy-density types. Light-density: 2.5 lbs/ft<sup>3</sup> – 4.3 lbs/ft<sup>3</sup> Heavy-density: 4.4 lbs/ft<sup>3</sup> – 8 lbs/ft<sup>3</sup> lbs/ft<sup>3</sup> is pounds per cubic foot
2. An EPD is an independently verified and registered document that reports a product's environmental impact over its life cycle.
  3. An EPD must be:
    - A facility-specific manufacturer declaration
    - Independently verified in accordance with ISO 14025 (Type III environmental declarations – Principles and procedures)
    - Developed according to the guidelines of the applicable Product Category Rule (PCR) as identified by the State
  4. Global Warming Potential (GWP) Limits for Eligible Material

**Table 1: GWP limits for eligible materials**

| <b>Eligible material</b>                    | <b>Maximum acceptable GWP limit (unfabricated)*</b> |
|---------------------------------------------|-----------------------------------------------------|
| Hot-rolled structural steel sections        | 1.01 MT CO <sub>2</sub> eq./MT                      |
| Hollow structural sections                  | 1.71 MT CO <sub>2</sub> eq./MT                      |
| Steel plate                                 | 1.49 MT CO <sub>2</sub> eq./MT                      |
| Concrete reinforcing steel                  | 0.89 MT CO <sub>2</sub> eq./MT                      |
| Flat glass                                  | 1.43 MT CO <sub>2</sub> eq./MT                      |
| Light-density mineral wool board insulation | 3.33 kg CO <sub>2</sub> eq./1 m <sup>2</sup>        |
| Heavy-density mineral wool board insulation | 8.16 kg CO <sub>2</sub> eq./1 m <sup>2</sup>        |

- D. Welding Certificates: Submit written certification that welding procedures and personnel comply with requirements. Submit record of Welding Procedure

Specification (WPS) and Procedure Qualification Record (PQR) on AWS forms. Include names of firms and personnel certified.

- E. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements and, where required, is authorized for this specific Project.
- F. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements. Include evidence of manufacturing experience where required.
- G. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements.
- H. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements.
- I. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
- J. Field Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements.
- K. Product Test Reports: Submit written reports indicating current product produced by manufacturer complies with requirements. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
- L. Research/Evaluation Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project.
- M. Maintenance Data: Submit written and graphic instructions and procedures for operation and normal maintenance of products and equipment.
- N. Design Data: Submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

**Submittal Procedures**

- O. Manufacturer's Instructions: Submit written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer.
- P. Manufacturer's Field Reports: Submit written information documenting factory-authorized service representative's tests and inspections.

**PART 3 - EXECUTION**

**3.1 CONTRACTOR'S REVIEW**

- A. Review each submittal and check for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to the State.
- B. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

**3.2 DESIGNER'S ACTION**

- A. General: The Designer will not review submittals that do not bear Contractor's approval stamp and will return them without action.
- B. Action Submittals: The Designer will review each submittal, make marks to indicate corrections or modifications required, and return it. The Designer will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken:
- C. Informational Submittals: The Designer will review each submittal and will return it, or will reject and return it if it does not comply with requirements. The State Representative will forward each submittal to appropriate party.

**END OF SECTION 013300**

**SECTION 013543.19**  
**CARPET TILE RECLAMATION**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Procedures for removal and reclamation of used carpet tile. All carpet must be reclaimed, not landfilled.
- B. Section Relates to:
  - 1. Section 096813 – Tile Carpeting

**1.2 DEFINITIONS**

- A. Clean Carpet: Carpet dry and free from moisture, demolition debris, asbestos contamination, garbage, and tack strips.

**1.3 REFERENCES**

- A. Carpet and Rug Institute (CRI) 104 2015 – Standard for Installation Specification of Commercial Carpet.

**1.4 SUBMITTALS**

- A. Review Submittals:
  - 1. Designation of general contractor providing:
    - a. Carpet removal services for recycling/landfill diversion purposes.
    - b. Used carpet recycling/landfill diversion.
  - 2. Proposed:
    - a. Packing and transportation measures.
  - 3. Schedule of carpet reclamation activities:
    - a. Contact carpet tile manufacturer to schedule reclamation.
    - b. Provide detailed timeline of removal work from demo to product collection to carpet tile manufacturer.
    - c. Provide inventory of items to be removed and recycled.
- B. Carpet Tile Submittals:
  - 1. Submit carpet tile verifications sample to carpet tile manufacturer. Include:
    - a. Identify carpet tile backing system: Can be either physical sample or photos of carpet tile backing system.
    - b. Square footage of total carpet tile to be reclaimed.



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### **Carpet Tile Reclamation**

- c. If mixed backing type please provide square footage per backing type.
- 2. Certifications from the carpet tile manufacturer that used carpet was removed and recycled or diverted from landfill.

#### **1.5 QUALITY ASSURANCE**

- A. Regulatory Requirements: Comply with governing regulations, including hauling and disposal.

#### **1.6 PROJECT CONDITIONS**

- A. Maintain possession of removed used carpet; place in a covered dry staged area for pick up or trailer.

#### **1.7 COORDINATION**

- A. Contractor is responsible for the demo and staging of materials per carpet tile manufacturer reclamation department guidelines.
- B. Coordinate with the carpet tile manufacturer's reclamation department or reclamation entity to schedule pickup logistics.

### **PART 2 - PRODUCTS**

#### **2.1 MATERIALS**

- A. Only Shaw Contract/Patcraft/Philadelphia Commercial EcoWorx carpet tile and some types of PVC backed carpet tile will be recycled. All other carpet tile types, including PVC and cushion back, will be diverted from landfill.
- B. All collection of polyurethane cushioned back carpet tile will be an additional cost to be downcycled.
- C. Quantity must be a minimum of 100 square yards.
- D. Project must be located within the continental U.S. or Canada.

### **PART 3 - EXECUTION**

#### **3.1 PREPARATION**

- A. Contractor is responsible for contacting the carpet tile manufacturer reclamation department or recycling entity and preparing the material for shipment.

**3.2 CARPET REMOVAL:**

- A. Material must be dry and free of non-carpet debris. Material must not contain asbestos.

**3.3 LIVE LOAD STAGING**

- A. Contractor is responsible for loading material onto the trailer.
- B. The pick-up location must accommodate a 53-ft. trailer.
- C. If 53-ft trailer is not accessible, alternatives such as pup trailers, dropped trailers, etc. will be provided as necessary at additional cost. These services are available in the continental United States only.
- D. Material must be stored in a clean and dry location accessible by trailer.
- E. Material must be staged on pallets no wider than 4 ft. by 4 ft. for loading into a trailer side-by-side.
- F. All carpet tiles must be palletized separately by backing type.
- G. Tiles must be stacked flat and neatly onto pallets at least 48" high and no higher than 54" (including pallet).
- H. Pallets must be strapped to secure the material during shipment – at least 2 straps, one on each pallet side. Rope or twine can be used for strapping. All pallets must be shrink wrapped tightly to ensure stability during transit.

**3.4 DROP TRAILER STAGING**

- A. Contact carpet tile manufacturer reclamation department or recycling entity to schedule container drop-off, timeline, and applicable costs. Drop trailers incur additional fees.
- B. Contractor is responsible for determining secure location and being on site for trailer placement.
- C. Place used carpet in trailer supplied by carpet tile manufacturer or recycling entity.
- D. Use effective packing techniques to maximize amount of material in container.
- E. Comply with applicable codes, ordinances, rules, and regulations for weight limits.

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**Carpet Tile Reclamation**

- F. General: Comply with the Carpet and Rug Institute's CRI 104 and with carpet tile manufacturer's written installation instructions for preparing substrates indicated to receive carpet tile.

**3.5 CARPET TILE PICK UP**

- A. Contractor will schedule pick-up time and location with the carpet tile manufacturer reclamation department or recycling entity.
- B. Contractor is responsible for loading material onto the trailer and should maximize the weight on the trailer, starting in the nose of the trailer and working to the rear.

END OF SECTION 013543.19

**SECTION 014000**  
**QUALITY REQUIREMENTS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspection services are required by the Contractor to verify compliance with requirements specified or indicated.
  - 1. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and quality-control procedures that facilitate compliance with the Contract Document requirements.
  - 2. Requirements for Contractor to provide quality-assurance and quality-control services required by State's Representative, or authorities having jurisdiction are not limited by provisions of this Section.

**1.2 DEFINITIONS**

- A. Experienced: When used with an entity or individual, "experienced" unless otherwise further described means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.
- B. Field Quality-Control Tests and Inspections: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- C. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, assembly, and similar operations.
  - 1. Use of trade-specific terminology in referring to a Work result does not require that certain construction activities specified apply exclusively to specific trade(s).
- D. Mockups: Full-size physical assemblies that are constructed on-site either as freestanding temporary built elements or as part of permanent construction. Mockups are constructed to verify selections made under Sample submittals; to demonstrate aesthetic effects and qualities of materials and execution; to

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**Quality Requirements**

review coordination, testing, or operation; to show interface between dissimilar materials; and to demonstrate compliance with specified installation tolerances. Mockups are not Samples. Unless otherwise indicated, approved mockups establish the standard by which the Work will be judged.

1. Laboratory Mockups: Full-size physical assemblies constructed and tested at testing facility to verify performance characteristics.
  2. Integrated Exterior Mockups: Mockups of the exterior envelope constructed on-site as freestanding temporary built elements or as indicated in-place portions of permanent construction, consisting of multiple products, assemblies, and subassemblies, with cutaways enabling inspection of concealed portions of the Work.
  3. Room Mockups: Mockups of typical interior spaces complete with wall, floor, and ceiling finishes; doors; windows; millwork; casework; specialties; furnishings and equipment; and lighting.
  4. Product Mockups: Mockups that may include multiple products, materials, or systems specified in a single Section.
  5. In-Place Mockups: Mockups constructed on-site in their actual final location as part of permanent construction.
- E. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria. Unless otherwise indicated, copies of reports of tests or inspections performed for other than the Project do not meet this definition.
- F. Product Tests: Tests and inspections that are performed by a nationally recognized testing laboratory (NRTL) according to 29 CFR 1910.7, by a testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program (NVLAP), or by a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.
- G. Source Quality-Control Tests and Inspections: Tests and inspections that are performed at the source; for example, plant, mill, factory, or shop.
- H. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall have the same meaning as testing agency.
- I. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- J. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with

requirements. Contractor's quality-control services do not include contract administration activities performed by State's Representative.

### 1.3 DELEGATED-DESIGN SERVICES

- A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
  - 1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to State's Representative.
- B. Delegated-Design Services Statement: Submit a statement, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional, indicating that the products and systems are in compliance with performance and design criteria indicated. Include list of codes, loads, and other factors used in performing these services.

### 1.4 CONFLICTING REQUIREMENTS

- A. Conflicting Standards and Other Requirements: If compliance with two or more standards or requirements is specified and the standards or requirements establish different or conflicting requirements for minimum quantities or quality levels, inform the State's Representative regarding the conflict and obtain clarification prior to proceeding with the Work. Refer conflicting requirements that are different, but apparently equal, to State's Representative for clarification before proceeding.
- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to State's Representative for a decision before proceeding.

### 1.5 ACTION SUBMITTALS

- A. Mockup Shop Drawings: For mockups.
  - 1. Include plans, sections, elevations, and details, indicating materials and size of mockup construction.

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2. Indicate manufacturer and model number of individual components.
3. Provide axonometric drawings for conditions difficult to illustrate in two dimensions.

**1.6 INFORMATIONAL SUBMITTALS**

- A. Contractor's Statement of Responsibility: When required by authorities having jurisdiction, submit copy of written statement of responsibility submitted to authorities having jurisdiction before starting work on the following systems:
  1. Seismic-force-resisting system, designated seismic system, or component listed in the Statement of Special Inspections.
  2. Main wind-force-resisting system or a wind-resisting component listed in the Statement of Special Inspections.
- B. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.
- C. Permits, Licenses, and Certificates: For State's record, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents established for compliance with standards and regulations bearing on performance of the Work.

**1.7 REPORTS AND DOCUMENTS**

- A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:
  1. Date of issue.
  2. Project title and number.
  3. Name, address, telephone number, and email address of testing agency.
  4. Dates and locations of samples and tests or inspections.
  5. Names of individuals making tests and inspections.
  6. Description of the Work and test and inspection method.
  7. Identification of product and Specification Section.
  8. Complete test or inspection data.
  9. Test and inspection results and an interpretation of test results.
  10. Record of temperature and weather conditions at time of sample taking and testing and inspection.
  11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
  12. Name and signature of laboratory inspector.
  13. Recommendations on retesting and reinspecting.

- B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:
  - 1. Statement on condition of substrates and their acceptability for installation of product.
  - 2. Statement that products at Project site comply with requirements.
  - 3. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
  - 4. Results of operational and other tests and a statement of whether observed performance complies with requirements.
  - 5. Other required items indicated in individual Specification Sections.
- C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:
  - 1. Statement that equipment complies with requirements.
  - 2. Results of operational and other tests and a statement of whether observed performance complies with requirements.
  - 3. Other required items indicated in individual Specification Sections.

## 1.8 QUALITY ASSURANCE

- A. Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units. As applicable, procure products from manufacturers able to meet qualification requirements, warranty requirements, and technical or factory-authorized service representative requirements.
- C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. Installer Qualifications: A firm or individual experienced in installing, erecting, applying, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is



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experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar in material, design, and extent to those indicated for this Project.

- F. Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
  - 1. Requirements of authorities having jurisdiction shall supersede requirements for specialists.
- G. Testing and Inspecting Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspection indicated, as documented according to ASTM E329; and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.
- H. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- I. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:
  - 1. Contractor responsibilities include the following:
    - a. Provide test specimens representative of proposed products and construction.
    - b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
    - c. Build laboratory mockups at testing facility using personnel, products, and methods of construction indicated for the completed Work.
    - d. When testing is complete, remove test specimens and test assemblies, mockups, and laboratory mockups; do not reuse products on Project.
  - 2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to State's Representative, with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.

- J. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:
1. Build mockups of size indicated.
  2. Build mockups in location indicated or, if not indicated, as directed by State's Representative.
  3. Notify State's Representative seven days in advance of dates and times when mockups will be constructed.
  4. Employ supervisory personnel who will oversee mockup construction. Employ workers that will be employed to perform same tasks during the construction at Project.
  5. Demonstrate the proposed range of aesthetic effects and workmanship.
  6. Obtain State's approval of mockups before starting corresponding work, fabrication, or construction.
    - a. Allow seven days for initial review and each re-review of each mockup.
  7. Promptly correct unsatisfactory conditions noted by State's preliminary review, to the satisfaction of the State's Representative, before completion of final mockup.
  8. Approval of mockups by the State's Representative does not constitute approval of deviations from the Contract Documents contained in mockups unless State's Representative specifically approves such deviations in writing.
  9. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
  10. Demolish and remove mockups when directed unless otherwise indicated.
- K. Integrated Exterior Mockups: Construct integrated exterior mockup according to approved Shop Drawings and as indicated on Drawings. Coordinate installation of exterior envelope materials and products for which mockups are required in individual Specification Sections, along with supporting materials. Comply with requirements in "Mockups" Paragraph.
1. Coordinate construction of the mockup to allow observation of air barrier installation, flashings, air barrier integration with fenestration systems, and other portions of the building air/moisture barrier and drainage assemblies, prior to installation of veneer, cladding elements, and other components that will obscure the work.
- L. Room Mockups: Construct room mockups according to approved Shop Drawings and as indicated on Drawings, incorporating required materials and assemblies, finished according to requirements. Provide required lighting and additional lighting where required to enable State's Representative to evaluate quality of the Work. Comply with requirements in "Mockups" Paragraph.

**Section 014000 – Page 8**  
**Quality Requirements**

**1.9 QUALITY CONTROL**

- A. State Responsibilities: Where quality-control services are indicated as State's responsibility, State will engage a qualified testing agency to perform these services.
  - 1. State will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspection they are engaged to perform.
  - 2. Costs for retesting and reinspecting construction that replaces or is necessitated by Work that failed to comply with the Contract Documents will be charged to Contractor
- B. Contractor Responsibilities: Tests and inspections not explicitly assigned to State are Contractor's responsibility. Perform additional quality-control activities, whether specified or not, to verify and document that the Work complies with requirements.
  - 1. Engage a qualified testing agency to perform quality-control services.
    - a. Contractor shall not employ same entity engaged by State, unless agreed to in writing by State.
  - 2. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspection will be performed.
  - 3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
  - 4. Testing and inspection requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
  - 5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- C. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- D. Testing Agency Responsibilities: Cooperate with State's Representative and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
  - 1. Notify State's Representative and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
  - 2. Determine the locations from which test samples will be taken and in which in-situ tests are conducted.

3. Conduct and interpret tests and inspections and state in each report whether tested and inspected Work complies with or deviates from requirements.
  4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
  5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
  6. Do not perform duties of Contractor.
- E. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Section 013300 "Submittal Procedures."
- F. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.
- G. Contractor's Associated Requirements and Services: Cooperate with agencies and representatives performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
1. Access to the Work.
  2. Incidental labor and facilities necessary to facilitate tests and inspections.
  3. Adequate quantities of representative samples of materials that require testing and inspection. Assist agency in obtaining samples.
  4. Facilities for storage and field curing of test samples.
  5. Preliminary design mix proposed for use for material mixes that require control by testing agency.
  6. Security and protection for samples and for testing and inspection equipment at Project site.
- H. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspection.
1. Schedule times for tests, inspections, obtaining samples, and similar activities.

**Quality Requirements**

**1.10 SPECIAL TESTS AND INSPECTIONS**

- A. Special Tests and Inspections: Contractor will engage a qualified testing agency to conduct special tests and inspections required by authorities having jurisdiction and as follows:
  - 1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviewing the completeness and adequacy of those procedures to perform the Work.
  - 2. Notifying State's Representative promptly of irregularities and deficiencies observed in the Work during performance of its services.
  - 3. Submitting a certified written report of each test, inspection, and similar quality-control service to State's Representative and to authorities having jurisdiction.
  - 4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
  - 5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
  - 6. Retesting and reinspecting corrected Work.

**PART 2 - PRODUCTS (Not Used)**

**PART 3 - EXECUTION**

**3.1 TEST AND INSPECTION LOG**

- A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:
  - 1. Date test or inspection was conducted.
  - 2. Description of the Work tested or inspected.
  - 3. Date test or inspection results were transmitted to State's Representative.
  - 4. Identification of testing agency or special inspector conducting test or inspection.
- B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for State's and authorities' having jurisdiction reference during normal working hours.
  - 1. Submit log at Project closeout as part of Project Record Documents.

**3.2 REPAIR AND PROTECTION**

- A. General: On completion of testing, inspection, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
  - 1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 017300 "Execution."
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 014000

## SECTION 014200

### REFERENCES

#### PART 1 - GENERAL

##### 1.1 DEFINITIONS

- A. General: Basic Contract definitions are included in the Conditions of the Contract.
- B. "Approved": Approved by the State.
- C. "Directed": A command or instruction by the State Representative. Other terms including "requested," "authorized," "selected," "approved," "required," and "permitted" have the same meaning as "directed."
- D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."
- E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.
- F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
- G. "Install": Operations at Project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.
- H. "Provide": Furnish and install, complete and ready for the intended use.
- I. "Installer": Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
  - 1. Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to tradespeople of the corresponding generic name.
- J. "Experienced": When used with an entity, "experienced" means having successfully completed a minimum of five previous projects similar in size and scope to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

**References**

- K. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.
- L. "Submit": Deliver information in the specified format to the State for the State's review and approval.

**1.2 INDUSTRY STANDARDS**

- A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
- B. Publication Dates: Comply with standards in effect as of date of the Contract Documents, unless otherwise indicated.
- C. Conflicting Requirements: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to the State for a decision before proceeding.
  - 1. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to the State for a decision before proceeding.
- D. Copies of Standards: Each entity engaged in construction on Project must be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.
  - 1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source and make them available on request.
- E. Abbreviations and Acronyms for Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations in the following list:

ADAAG      Americans with Disabilities Act (ADA)

CFR          Code of Federal Regulations



|         |                                                    |
|---------|----------------------------------------------------|
| CRD     | Handbook for Concrete and Cement                   |
| DOD     | Department of Defense Specifications and Standards |
| FED-STD | Federal Standard (See FS)                          |
| FS      | Federal Specification                              |
| FTMS    | Federal Test Method Standard (See FS)              |
| MILSPEC | Military Specification and Standards               |
| UFAS    | Uniform Federal Accessibility Standards            |

### 1.3 ABBREVIATIONS AND ACRONYMS

- A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in Gale Research's "Encyclopedia of Associations" or in Columbia Books' "National Trade & Professional Associations of the U.S."
- B. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list:

|        |                                                                    |
|--------|--------------------------------------------------------------------|
| AA     | Aluminum Association, Inc. (The)                                   |
| AAADM  | American Association of Automatic Door Manufacturers               |
| AABC   | Associated Air Balance Council                                     |
| AAMA   | American Architectural Manufacturers Association                   |
| AAN    | American Association of Nurserymen (See ANLA)                      |
| AASHTO | American Association of State Highway and Transportation Officials |
| AATCC  | American Association of Textile Chemists and Colorists (The)       |
| ABMA   | American Bearing Manufacturers Association                         |
| ACI    | American Concrete Institute/ACI International                      |
| ACPA   | American Concrete Pipe Association                                 |
| ADC    | Air Diffusion Council                                              |
| AEIC   | Association of Edison Illuminating Companies, Inc. (The)           |

## **Section 014200 – Page 4**

### **References**

|        |                                                                                                  |
|--------|--------------------------------------------------------------------------------------------------|
| AFPA   | American Forest & Paper Association (See AF&PA)                                                  |
| AF&PA  | American Forest & Paper Association                                                              |
| AGA    | American Gas Association                                                                         |
| AGC    | Associated General Contractors of America (The)                                                  |
| AHA    | American Hardboard Association                                                                   |
| AHAM   | Association of Home Appliance Manufacturers                                                      |
| AI     | Asphalt Institute                                                                                |
| AIA    | American Institute of Architects (The)                                                           |
| AISC   | American Institute of Steel Construction                                                         |
| AISI   | American Iron and Steel Institute                                                                |
| AITC   | American Institute of Timber Construction                                                        |
| ALA    | American Laminators Association (See LMA)                                                        |
| ALCA   | Associated Landscape Contractors of America                                                      |
| ALSC   | American Lumber Standard Committee                                                               |
| AMCA   | Air Movement and Control Association International, Inc.                                         |
| ANLA   | American Nursery & Landscape Association<br>(Formerly: AAN - American Association of Nurserymen) |
| ANSI   | American National Standards Institute                                                            |
| AOSA   | Association of Official Seed Analysts                                                            |
| APA    | APA - The Engineered Wood Association                                                            |
| APA    | Architectural Precast Association                                                                |
| API    | American Petroleum Institute                                                                     |
| ARI    | Air-Conditioning & Refrigeration Institute                                                       |
| ASCA   | Architectural Spray Coaters Association                                                          |
| ASCE   | American Society of Civil Engineers                                                              |
| ASHRAE | American Society of Heating, Refrigerating and Air-Conditioning Engineers                        |

|       |                                                                                                        |
|-------|--------------------------------------------------------------------------------------------------------|
| ASME  | ASME International<br>(The American Society of Mechanical Engineers International)                     |
| ASSE  | American Society of Sanitary Engineering                                                               |
| ASTM  | American Society for Testing and Materials                                                             |
| AWCI  | AWCI International<br>(Association of the Wall and Ceiling Industries International)                   |
| AWCMA | American Window Covering Manufacturers Association (See WCMA)                                          |
| AWI   | Architectural Woodwork Institute                                                                       |
| AWPA  | American Wood-Preservers' Association                                                                  |
| AWS   | American Welding Society                                                                               |
| AWWA  | American Water Works Association                                                                       |
| BHMA  | Builders Hardware Manufacturers Association                                                            |
| BIA   | Brick Industry Association (The)                                                                       |
| BIFMA | BIFMA International<br>(Business and Institutional Furniture Manufacturer's Association International) |
| CCC   | Carpet Cushion Council                                                                                 |
| CCFSS | Center for Cold-Formed Steel Structures                                                                |
| CDA   | Copper Development Association Inc.                                                                    |
| CEA   | Canadian Electricity Association                                                                       |
| CFFA  | Chemical Fabrics & Film Association, Inc.                                                              |
| CGA   | Compressed Gas Association                                                                             |
| CGSB  | Canadian General Standards Board                                                                       |
| CIMA  | Cellulose Insulation Manufacturers Association                                                         |
| CISCA | Ceilings & Interior Systems Construction Association                                                   |
| CISPI | Cast Iron Soil Pipe Institute                                                                          |
| CLFMI | Chain Link Fence Manufacturers Institute                                                               |
| CPA   | Composite Panel Association                                                                            |

## **Section 014200 – Page 6**

### **References**

|         |                                                                                           |
|---------|-------------------------------------------------------------------------------------------|
|         | (Formerly: National Particleboard Association)                                            |
| CPPA    | Corrugated Polyethylene Pipe Association                                                  |
| CRI     | Carpet & Rug Institute (The)                                                              |
| CRSI    | Concrete Reinforcing Steel Institute                                                      |
| CSA     | CSA International<br>(Formerly: IAS - International Approval Services)                    |
| CSI     | Construction Specifications Institute (The)                                               |
| CSSB    | Cedar Shake & Shingle Bureau                                                              |
| CTI     | Cooling Technology Institute<br>(Formerly: Cooling Tower Institute)                       |
| DHI     | Door and Hardware Institute                                                               |
| EIA/TIA | Electronic Industries Alliance/Telecommunications Industry Association                    |
| EIMA    | EIFS Industry Members Association                                                         |
| EJMA    | Expansion Joint Manufacturers Association, Inc.                                           |
| FCI     | Fluid Controls Institute                                                                  |
| FGMA    | Flat Glass Marketing Association (See GANA)                                               |
| FM      | Factory Mutual System (See FMG)                                                           |
| FMG     | FM Global<br>(Formerly: FM - Factory Mutual System)                                       |
| GA      | Gypsum Association                                                                        |
| GANA    | Glass Association of North America<br>(Formerly: FGMA - Flat Glass Marketing Association) |
| GRI     | Geosynthetic Research Institute                                                           |
| GTA     | Glass Tempering Division of Glass Association of North America (See GANA)                 |
| HI      | Hydraulic Institute                                                                       |
| HI      | Hydronics Institute                                                                       |
| HMMA    | Hollow Metal Manufacturers Association (See NAAMM)                                        |
| HPVA    | Hardwood Plywood & Veneer Association                                                     |

|        |                                                                                       |
|--------|---------------------------------------------------------------------------------------|
| HPW    | H. P. White Laboratory, Inc.                                                          |
| IAS    | International Approval Services (See CSA International)                               |
| ICEA   | Insulated Cable Engineers Association, Inc.                                           |
| ICRI   | International Concrete Repair Institute (The)                                         |
| IEC    | International Electrotechnical Commission                                             |
| IEEE   | Institute of Electrical and Electronics Engineers, Inc. (The)                         |
| IESNA  | Illuminating Engineering Society of North America                                     |
| IGCC   | Insulating Glass Certification Council                                                |
| ILI    | Indiana Limestone Institute of America, Inc.                                          |
| IRI    | Industrial Risk Insurers                                                              |
| ITS    | Intertek Testing Services                                                             |
| IWS    | Insect Screening Weavers Association (Now defunct)                                    |
| KCMA   | Kitchen Cabinet Manufacturers Association                                             |
| LGSI   | Light Gage Structural Institute                                                       |
| LMA    | Laminating Materials Association<br>(Formerly: ALA - American Laminators Association) |
| LPI    | Lightning Protection Institute                                                        |
| LSGA   | Laminated Safety Glass Association (See GANA)                                         |
| MBMA   | Metal Building Manufacturers Association                                              |
| MCA    | Metal Construction Association                                                        |
| MFMA   | Maple Flooring Manufacturers Association                                              |
| MFMA   | Metal Framing Manufacturers Association                                               |
| MGPHO  | Medical Gas Professional Healthcare Organization, Inc.                                |
| MHIA   | Material Handling Industry of America                                                 |
| MIA    | Marble Institute of America                                                           |
| ML/SFA | Metal Lath/Steel Framing Association (See SSMA)                                       |

**References**

|       |                                                                                   |
|-------|-----------------------------------------------------------------------------------|
| MSS   | Manufacturers Standardization Society of The Valve and Fittings Industry Inc.     |
| NAAMM | National Association of Architectural Metal Manufacturers                         |
| NAAMM | North American Association of Mirror Manufacturers (See GANA)                     |
| NACE  | NACE International<br>(National Association of Corrosion Engineers International) |
| NAIMA | North American Insulation Manufacturers Association (The)                         |
| NAMI  | National Accreditation and Management Institute, Inc.                             |
| NAPM  | National Association of Photographic Manufacturers (See PIMA)                     |
| NBGQA | National Building Granite Quarries Association, Inc.                              |
| NCMA  | National Concrete Masonry Association                                             |
| NCPI  | National Clay Pipe Institute                                                      |
| NCTA  | National Cable Television Association                                             |
| NEBB  | National Environmental Balancing Bureau                                           |
| NECA  | National Electrical Contractors Association                                       |
| NeLMA | Northeastern Lumber Manufacturers' Association                                    |
| NEMA  | National Electrical Manufacturers Association                                     |
| NETA  | InterNational Electrical Testing Association                                      |
| NFPA  | National Fire Protection Association                                              |
| NFRC  | National Fenestration Rating Council                                              |
| NGA   | National Glass Association                                                        |
| NHLA  | National Hardwood Lumber Association                                              |
| NLGA  | National Lumber Grades Authority                                                  |
| NOFMA | National Oak Flooring Manufacturers Association                                   |
| NPA   | National Particleboard Association (See CPA)                                      |
| NRCA  | National Roofing Contractors Association                                          |
| NRMCA | National Ready Mixed Concrete Association                                         |

|        |                                                                                                                                            |
|--------|--------------------------------------------------------------------------------------------------------------------------------------------|
| NSA    | National Stone Association                                                                                                                 |
| NSF    | NSF International<br>(National Sanitation Foundation International)                                                                        |
| NTMA   | National Terrazzo and Mosaic Association, Inc.                                                                                             |
| NWWDA  | National Wood Window and Door Association (See WDMA)                                                                                       |
| PCI    | Precast/Prestressed Concrete Institute                                                                                                     |
| PDCA   | Painting and Decorating Contractors of America                                                                                             |
| PDI    | Plumbing & Drainage Institute                                                                                                              |
| PGI    | PVC Geomembrane Institute                                                                                                                  |
| PIMA   | Photographic & Imaging Manufacturers Association<br>(Formerly: NAPM - National Association of Photographic Manufacturers)                  |
| RCSC   | Research Council on Structural Connections                                                                                                 |
| RFCI   | Resilient Floor Covering Institute                                                                                                         |
| RIS    | Redwood Inspection Service                                                                                                                 |
| RMA    | Rubber Manufacturers Association                                                                                                           |
| SAE    | SAE International                                                                                                                          |
| SDI    | Steel Deck Institute                                                                                                                       |
| SDI    | Steel Door Institute                                                                                                                       |
| SEFA   | Scientific Equipment and Furniture Association                                                                                             |
| SGCC   | Safety Glazing Certification Council                                                                                                       |
| SIGMA  | Sealed Insulating Glass Manufacturers Association                                                                                          |
| SJI    | Steel Joist Institute                                                                                                                      |
| SMA    | Screen Manufacturers Association                                                                                                           |
| SMACNA | Sheet Metal and Air Conditioning Contractors' National Association                                                                         |
| SPFA   | Spray Polyurethane Foam Alliance<br>(Formerly: SPI/SPFD - The Society of the Plastics Industry, Inc.;<br>Spray Polyurethane Foam Division) |

**References**

|          |                                                                                                                     |
|----------|---------------------------------------------------------------------------------------------------------------------|
| SPI      | The Society of the Plastics Industry                                                                                |
| SPIB     | Southern Pine Inspection Bureau (The)                                                                               |
| SPI/SPFD | The Society of the Plastics Industry<br>Spray Polyurethane Foam Division (See SPFA)                                 |
| SPRI     | SPRI (Single Ply Roofing Institute)                                                                                 |
| SSINA    | Specialty Steel Industry of North America                                                                           |
| SSMA     | Steel Stud Manufacturers Association<br>(Formerly: ML/SFA - Metal Lath/Steel Framing Association)                   |
| SSPC     | SSPC: The Society for Protective Coatings                                                                           |
| STI      | Steel Tank Institute                                                                                                |
| SWI      | Steel Window Institute                                                                                              |
| SWRI     | Sealant, Waterproofing, and Restoration Institute                                                                   |
| TCA      | Tile Council of America, Inc.                                                                                       |
| TIA/EIA  | Telecommunications Industry Association/Electronic Industries Alliance                                              |
| TPI      | Truss Plate Institute                                                                                               |
| TPI      | Turfgrass Producers International                                                                                   |
| UFAC     | Upholstered Furniture Action Council                                                                                |
| UL       | Underwriters Laboratories Inc.                                                                                      |
| UNI      | Uni-Bell PVC Pipe Association                                                                                       |
| USITT    | United States Institute for Theatre Technology, Inc.                                                                |
| USP      | U.S. Pharmacopeia                                                                                                   |
| WASTEC   | Waste Equipment Technology Association                                                                              |
| WCLIB    | West Coast Lumber Inspection Bureau                                                                                 |
| WCMA     | Window Covering Manufacturers Association<br>(Formerly: AWCMA - American Window Covering Manufacturers Association) |
| WDMA     | Window & Door Manufacturers Association<br>(Formerly: NWWDA - National Wood Window and Door Association)            |
| WIC      | Woodwork Institute of California                                                                                    |



WMMPA      Wood Moulding & Millwork Producers Association

WWPA      Western Wood Products Association

C.    Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list:

ICC      International Code Council  
(Formerly: CABO - Council of American Building Officials)

D.    Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list:

CE      Army Corps of Engineers

CPSC      Consumer Product Safety Commission

DOC      Department of Commerce

EPA      Environmental Protection Agency

FAA      Federal Aviation Administration

FCC      Federal Communications Commission

FDA      Food and Drug Administration

GSA      General Services Administration

HUD      Department of Housing and Urban Development

LBL      Lawrence Berkeley Laboratory (See LBNL)

LBNL      Lawrence Berkeley National Laboratory

NCHRP      National Cooperative Highway Research Program (See TRB)

## **Section 014200 – Page 12**

### **References**

|      |                                                |
|------|------------------------------------------------|
| NIST | National Institute of Standards and Technology |
| OSHA | Occupational Safety & Health Administration    |
| RUS  | Rural Utilities Service (See USDA)             |
| TRB  | Transportation Research Board                  |
| USDA | Department of Agriculture                      |
| USPS | Postal Service                                 |

- E. State Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list:

|          |                                                                                                          |
|----------|----------------------------------------------------------------------------------------------------------|
| CALTRANS | State of California, Department of Transportation                                                        |
| CAPUC    | (See CPUC)                                                                                               |
| CBHF     | State of California, Department of Consumer Affairs<br>Bureau of Home Furnishings and Thermal Insulation |
| CPUC     | California Public Utilities Commission                                                                   |
| DGS      | State of California, Department of General Services                                                      |
| DPR      | State of California, Department of Parks and Recreation                                                  |
| TFS      | Texas Forest Service<br>Forest Products Laboratory                                                       |

END OF SECTION 014200

## **SECTION 015000**

### **TEMPORARY FACILITIES AND CONTROLS**

#### **PART 1 - GENERAL**

##### **1.1 SUMMARY**

- A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.

##### **1.2 USE CHARGES**

- A. Installation, removal, and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities engaged in the Project to use temporary services and facilities without cost, including, but not limited to State's Representative, testing agencies, and authorities having jurisdiction.
- B. Water and Sewer Service from Existing System: Water from State's existing water system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.
- C. Electric Power Service from Existing System: Electric power from State's existing system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.

##### **1.3 INFORMATIONAL SUBMITTALS**

- A. Site Utilization Plan: Show temporary facilities, temporary utility lines and connections, staging areas, construction site entrances, vehicle circulation, and parking areas for construction personnel.
- B. Project Identification and Temporary Signs: Show fabrication and installation details, including plans, elevations, details, layouts, typestyles, graphic elements, and message content.
- C. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.

## **Section 015000 – Page 2**

### **Temporary Facilities and Controls**

- D. Moisture- and Mold-Protection Plan: Describe procedures and controls for protecting materials and construction from water absorption and damage and mold. Describe delivery, handling, storage, installation, and protection provisions for materials subject to water absorption or water damage.
  - 1. Indicate procedures for discarding water-damaged materials, protocols for mitigating water intrusion into completed Work, and requirements for replacing water-damaged Work.
  - 2. Indicate sequencing of work that requires water, such as sprayed fire-resistive materials, plastering, and terrazzo grinding, and describe plans for dealing with water from these operations. Show procedures for verifying that wet construction has dried sufficiently to permit installation of finish materials.
  - 3. Indicate methods to be used to avoid trapping water in finished work.

#### **1.4 QUALITY ASSURANCE**

- A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.
- B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.
- C. Accessible Temporary Egress: Comply with applicable provisions in the United States Access Board's ADA-ABA Accessibility Guidelines and ICC/ANSI A117.1.

#### **1.5 PROJECT CONDITIONS**

- A. Temporary Use of Permanent Facilities: Engage Installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before State's acceptance, regardless of previously assigned responsibilities.

## **PART 2 - PRODUCTS**

### **2.1 TEMPORARY FACILITIES**

- A. Common-Use Field Office: Of sufficient size to accommodate needs of State, State's Representative and construction personnel office activities and to accommodate Project meetings specified in other Division 01 Sections. Keep office clean and orderly.

## 2.2 EQUIPMENT

- A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.
- B. HVAC Equipment: Unless State authorizes use of permanent HVAC system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.
  - 1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
  - 2. Heating, Cooling, and Dehumidifying Units: Listed and labeled for type of fuel being consumed, by a qualified testing agency acceptable to authorities having jurisdiction, and marked for intended location and application.
- C. Air-Filtration Units: Primary and secondary HEPA-filter-equipped portable units with four-stage filtration. Provide single switch for emergency shutoff. Configure to run continuously.

## PART 3 - EXECUTION

### 3.1 TEMPORARY FACILITIES, GENERAL

- A. Conservation: Coordinate construction and use of temporary facilities with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.
  - 1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. See other Sections for disposition of salvaged materials that are designated as State's property.

### 3.2 INSTALLATION, GENERAL

- A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.
- B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

### 3.3 TEMPORARY UTILITY INSTALLATION

- A. General: Install temporary service or connect to existing service.

**Temporary Facilities and Controls**

1. Arrange with utility company, State Representative, Building Manager and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
- B. Sanitary Facilities: On-site restrooms may be used by construction personnel during construction.
- C. Temporary Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.
  1. Provide temporary dehumidification systems when required to reduce ambient and substrate moisture levels to level required to allow installation or application of finishes and their proper curing or drying.
- D. Isolation of Work Areas in Occupied Facilities: Prevent dust, fumes, and odors from entering occupied areas.
- E. Electric Power Service: Provide electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations.
- F. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.
  1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.
- G. Telephone Service: Provide temporary telephone service in common-use facilities for use by all construction personnel.
- H. Electronic Communication Service: Provide secure WiFi wireless connection to internet with provisions for access by State's Representative and State.

**3.4 SUPPORT FACILITIES INSTALLATION**

- A. Comply with the following:
  1. Utilize approved area within the project's area of work in the existing building for temporary field offices. If additional space is required, coordinate with State's Representative and Building Manager.
  2. Maintain support facilities until State's Representative schedules Substantial Completion inspection. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be

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**Temporary Facilities and Controls**

permitted to use permanent facilities, under conditions acceptable to State.

- B. Traffic Controls: Comply with requirements of authorities having jurisdiction.
  - 1. Protect existing site improvements to remain including curbs, pavement, and utilities.
  - 2. Maintain access for fire-fighting equipment and access to fire hydrants.
- C. Parking: Use designated areas of State's existing parking areas for construction personnel.
- D. Storage and Staging: Use Rooms 1212 and 1213 for storage and staging needs. If additional space is required, coordinate location with Building Manager and State Representative.
- E. Project Signs: Provide Project signs as indicated. Unauthorized signs are not permitted.
  - 1. Temporary Signs: Provide other signs as indicated and as required to inform individuals seeking entrance to Project.
    - a. Provide temporary, directional signs for construction personnel and building occupants.
  - 2. Maintain and touch up signs so they are legible at all times.
- F. Waste Disposal Facilities: Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."
- G. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with progress cleaning requirements in Section 017300 "Execution."
- H. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.
  - 1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.
- I. Existing Stair Usage: Use of State's existing stairs and ramps will be permitted, provided stairs are cleaned and maintained in a condition acceptable to State. At Substantial Completion, restore stairs and ramps to condition existing before initial use.

**Temporary Facilities and Controls**

**3.5 SECURITY AND PROTECTION FACILITIES INSTALLATION**

- A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties or areas, except those indicated to be removed or altered. Repair damage to existing facilities.
- B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
- C. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways, according to requirements of EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent.

urbed areas and to adjacent properties and walkways, according to requirements of EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent.

- 1. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross tree- or plant-protection zones.
  - 2. Inspect, repair, and maintain erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
  - 3. Clean, repair, and restore adjoining properties and roads affected by erosion and sedimentation from Project site during the course of Project.
  - 4. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.
- D. Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Substantial Completion. Perform control operations lawfully, using materials approved by authorities having jurisdiction.
  - 1. Overhead roll up doors must be closed after use to prevent pests from entering the building.
- E. Security Enclosure and Lockup: Install temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Lock entrances at end of each workday.
- F. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.



- G. Temporary Egress: Provide temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction. Provide signage directing occupants to temporary egress.
- H. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.
  - 1. Where heating or cooling is needed and permanent enclosure is incomplete, insulate temporary enclosures.
- I. Temporary Partitions: Provide floor-to-ceiling dustproof partitions to limit dust and dirt migration and to separate areas occupied by State and tenants from fumes and noise.
  - 1. Temporary partitions to be provided in corridors and warehouses surrounding areas of work.
  - 2. Provide walk-off mats at each entrance through temporary partition.
- J. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241; manage fire-prevention program.
  - 1. Prohibit smoking in construction areas. Comply with additional limits on smoking specified in other Sections.
  - 2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
  - 3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.
  - 4. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

### 3.6 MOISTURE AND MOLD CONTROL

- A. Moisture and Mold Protection: Protect stored materials and installed Work in accordance with Moisture and Mold Protection Plan.
- B. Exposed Construction Period: Before installation of weather barriers, when materials are subject to wetting and exposure and to airborne mold spores, protect as follows:

**Temporary Facilities and Controls**

1. Protect porous materials from water damage.
  2. Protect stored and installed material from flowing or standing water.
  3. Keep porous and organic materials from coming into prolonged contact with concrete.
  4. Remove standing water from decks.
  5. Keep deck openings covered or dammed.
- C. Controlled Construction Period: After completing and sealing of the building enclosure but prior to the full operation of permanent HVAC systems, maintain as follows:
1. Control moisture and humidity inside building by maintaining effective dry-in conditions.
  2. Use temporary or permanent HVAC system to control humidity within ranges specified for installed and stored materials.
  3. Comply with manufacturer's written instructions for temperature, relative humidity, and exposure to water limits.

**3.7 OPERATION, TERMINATION, AND REMOVAL**

- A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- B. Maintenance: Maintain facilities in good operating condition until removal.
1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
- C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.
- D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
1. Materials and facilities that constitute temporary facilities are property of Contractor. State reserves right to take possession of Project identification signs.

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**Temporary Facilities and Controls**

2. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 017700 "Closeout Procedures."

END OF SECTION 015000

**SECTION 016000**  
**PRODUCT REQUIREMENTS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.
- B. Related Requirements:
  - 1. Section 012500 "Substitution Procedures" for requests for substitutions.

**1.2 DEFINITIONS**

- A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
  - 1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.
  - 2. New Products: Items that have not previously been incorporated into another project or facility. Salvaged items or items reused from other projects are not considered new products. Items that are manufactured or fabricated to include recycled content materials are considered new products, unless indicated otherwise.
  - 3. Comparable Product: Product by named manufacturer that is demonstrated and approved through the comparable product submittal process described in Part 2 "Comparable Products" Article, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.
- B. Basis-of-Design Product Specification: A specification in which a single manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation. Published attributes and characteristics of basis-of-design product establish salient characteristics of products.

**Section 016000 – Page 2**  
**Product Requirements**

1. Evaluation of Comparable Products: In addition to the basis-of-design product description, product attributes and characteristics may be listed to establish the significant qualities related to type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other special features and requirements for purposes of evaluating comparable products of additional manufacturers named in the specification.
  - C. Subject to Compliance with Requirements: Where the phrase "Subject to compliance with requirements" introduces a product selection procedure in an individual Specification Section, provide products qualified under the specified product procedure. In the event that a named product or product by a named manufacturer does not meet the other requirements of the specifications, select another named product or product from another named manufacturer that does meet the requirements of the specifications; submit a comparable product request or substitution request, if applicable.
  - D. Comparable Product Request Submittal: An action submittal requesting consideration of a comparable product, including the following information:
    1. Identification of basis-of-design product or fabrication or installation method to be replaced, including Specification Section number and title and Drawing numbers and titles.
    2. Data indicating compliance with the requirements specified in Part 2 "Comparable Products" Article.
  - E. Basis-of-Design Product Specification Submittal: An action submittal complying with requirements in Section 013300 "Submittal Procedures."
  - F. Substitution: Refer to Section 012500 "Substitution Procedures" for definition and limitations on substitutions.
- 1.3 QUALITY ASSURANCE
- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.
- 1.4 PRODUCT DELIVERY, STORAGE, AND HANDLING
- A. Deliver, store, and handle products, using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.

## 1.5 PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
  - 1. Manufacturer's Warranty: Written standard warranty form furnished by individual manufacturer for a particular product and issued in the name of the State or endorsed by manufacturer to State.
  - 2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for State and issued in the name of the State or endorsed by manufacturer to State.
- B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.
  - 1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
  - 2. Specified Form: When specified forms are included in the Project Manual, prepare a written document, using indicated form properly executed.
  - 3. See other Sections for specific content requirements and particular requirements for submitting special warranties.

## PART 2 - PRODUCTS

### 2.1 PRODUCT SELECTION PROCEDURES

- A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.
  - 1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
  - 2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
  - 3. State reserves the right to limit selection to products with warranties meeting requirements of the Contract Documents.
  - 4. Where products are accompanied by the term "as selected," State's Representative will make selection.
  - 5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.

**Section 016000 – Page 4**  
**Product Requirements**

B. Product Selection Procedures:

1. Sole Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
  - a. Sole product may be indicated by the phrase "Subject to compliance with requirements, provide the following."
2. Sole Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
  - a. Sole manufacturer/source may be indicated by the phrase "Subject to compliance with requirements, provide products by the following."
3. Limited List of Products: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
4. Non-Limited List of Products: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed or an unnamed product that complies with requirements.
  - a. Non-limited list of products is indicated by the phrase "Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to, the following."
  - b. Provision of an unnamed product is not considered a substitution, if the product complies with requirements.
5. Limited List of Manufacturers: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
6. Non-Limited List of Manufacturers: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed or a product by an unnamed manufacturer that complies with requirements.
  - a. Non-limited list of manufacturers is indicated by the phrase "Subject to compliance with requirements, available manufacturers whose products may be incorporated in the Work include, but are not limited to, the following."

- b. Provision of products of an unnamed manufacturer is not considered a substitution, if the product complies with requirements.
  - 7. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications may additionally indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.
    - a. For approval of products by unnamed manufacturers, comply with requirements in Section 012500 "Substitution Procedures" for substitutions for convenience.
  - C. Visual Matching Specification: Where Specifications require the phrase "match State's sample," provide a product that complies with requirements and matches State's sample. State's decision will be final on whether a proposed product matches.
    - 1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Section 012500 "Substitution Procedures" for proposal of product.
  - D. Visual Selection Specification: Where Specifications include the phrase "as selected by State's Representative from manufacturer's full range" or a similar phrase, select a product that complies with requirements. State's Representative will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.
  - E. Sustainable Product Selection: Where Specifications require product to meet sustainable product characteristics, select products complying with indicated requirements. Comply with requirements in Division 01 sustainability requirements Section and individual Specification Sections.
    - 1. Select products for which sustainable design documentation submittals are available from manufacturer.
- ## 2.2 COMPARABLE PRODUCTS
- A. Conditions for Consideration of Comparable Products: State's Representative will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, State's Representative may return requests without action, except to record noncompliance with the following requirements:



## **Section 016000 – Page 6**

### **Product Requirements**

1. Evidence that proposed product does not require revisions to the Contract Documents, is consistent with the Contract Documents, will produce the indicated results, and is compatible with other portions of the Work.
  2. Detailed comparison of significant qualities of proposed product with those of the named basis-of-design product. Significant product qualities include attributes, such as type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other specific features and requirements.
  3. Evidence that proposed product provides specified warranty.
  4. List of similar installations for completed projects, with project names and addresses and names and addresses of State's Representatives and States, if requested.
  5. Samples, if requested.
- B. State's Action on Comparable Products Submittal: If necessary, State's Representative will request additional information or documentation for evaluation, as specified in Section 013300 "Submittal Procedures."
1. Form of Approval of Submittal: As specified in Section 013300 "Submittal Procedures."
  2. Use product specified if State's Representative does not issue a decision on use of a comparable product request within time allocated.
- C. Submittal Requirements, Two-Step Process: Approval by the State's Representative of Contractor's request for use of comparable product is not intended to satisfy other submittal requirements. Comply with specified submittal requirements.
- D. Submittal Requirements, Single-Step Process: When acceptable to State's Representative, incorporate specified submittal requirements of individual Specification Section in combined submittal for comparable products. Approval by the State's Representative of Contractor's request for use of comparable product and of individual submittal requirements will also satisfy other submittal requirements.

PART 3 - EXECUTION (Not Used)

END OF SECTION 016000

## **SECTION 017300**

### **EXECUTION**

#### **PART 1 - GENERAL**

##### **1.1 SUMMARY**

- A. Section includes general administrative and procedural requirements governing execution of the Work, including, but not limited to, the following:
  - 1. Construction layout.
  - 2. Field engineering and surveying.
  - 3. Installation of the Work.
  - 4. Cutting and patching.
  - 5. Coordination of State's portion of the Work.
  - 6. Coordination of State-installed products.
  - 7. Progress cleaning.
  - 8. Starting and adjusting.
  - 9. Protection of installed construction.
- B. Related Requirements:
  - 1. Section 011000 "Summary"
  - 2. Section 017700 "Closeout Procedures"
  - 3. Section 024119 "Selective Demolition" for demolition and removal of selected portions of the building.

##### **1.2 DEFINITIONS**

- A. Cutting: Removal of in-place construction necessary to permit installation or performance of subsequent work.
- B. Patching: Fitting and repair work required to restore construction to original conditions after installation of subsequent work.

##### **1.3 QUALITY ASSURANCE**

- A. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.
  - 1. Structural Elements: When cutting and patching structural elements, or when encountering the need for cutting and patching of elements whose structural function is not known, notify State's Representative of locations

**Execution**

and details of cutting and await directions from State's Representative before proceeding. Shore, brace, and support structural elements during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection.

2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety.
3. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety.
4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in State's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

- B. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of specified products and equipment.

**PART 2 - PRODUCTS**

**2.1 MATERIALS**

- A. Comply with requirements specified in other Sections.
- B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
  1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to State's Representative for the visual and functional performance of in-place materials. Use materials that are not considered hazardous.
- C. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

1. Use cleaning products that comply with Green Seal's GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work.
  1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, gas service piping, and water-service piping; underground electrical services; and other utilities.
  2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.
- B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
  1. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
  2. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
  3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
- C. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:
  1. Description of the Work, including Specification Section number and paragraph, and Drawing sheet number and detail, where applicable.
  2. List of detrimental conditions, including substrates.
  3. List of unacceptable installation tolerances.
  4. Recommended corrections.
- D. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

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**3.2 PREPARATION**

- A. Existing Utility Information: Furnish information to State that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.
- B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to State's Representative in accordance with requirements in Section 013100 "Project Management and Coordination."

**3.3 CONSTRUCTION LAYOUT**

- A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks and existing conditions. If discrepancies are discovered, notify State's Representative promptly.

**3.4 INSTALLATION**

- A. Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
  - 1. Make vertical work plumb, and make horizontal work level.
  - 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
  - 3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Install products at the time and under conditions that will ensure satisfactory results as judged by State's Representative. Maintain conditions required for product performance until Substantial Completion.

- D. Conduct construction operations, so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy of type expected for Project.
- E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on-site and placement in permanent locations.
- F. Tools and Equipment: Select tools or equipment that minimize production of excessive noise levels.
- G. Templates: Obtain and distribute to the parties involved templates for Work specified to be factory prepared and field installed. Check Shop Drawings of other portions of the Work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
- H. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions with manufacturer.
  - 1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by State's Representative.
  - 2. Allow for building movement, including thermal expansion and contraction.
  - 3. Coordinate installation of anchorages. 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.
- I. Joints: Make joints of uniform width. Where joint locations in exposed Work are not indicated, arrange joints for the best visual effect, as judged by State's Representative. Fit exposed connections together to form hairline joints.
- J. Repair or remove and replace damaged, defective, or nonconforming Work.
  - 1. Comply with Section 017700 "Closeout Procedures" for repairing or removing and replacing defective Work.

### 3.5 CUTTING AND PATCHING

- A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
  - 1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

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- B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.
- C. Temporary Support: Provide temporary support of Work to be cut.
- D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- E. Adjacent Occupied Areas: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching in accordance with requirements in Section 011000 "Summary."
- F. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to prevent interruption to occupied areas.
- G. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
  - 1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
  - 2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
  - 3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
  - 4. Excavating and Backfilling: Comply with requirements in applicable Sections where required by cutting and patching operations.
  - 5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
  - 6. Proceed with patching after construction operations requiring cutting are complete.
- H. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as practicable, as judged by State's Representative. Provide materials and comply with installation requirements specified in other Sections, where applicable.

1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
  - a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
  - b. Restore damaged pipe covering to its original condition.
3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
  - a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch, corner to corner of wall and edge to edge of ceiling. Provide additional coats until patch blends with adjacent surfaces.
4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
- I. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

### 3.6 COORDINATION OF STATE'S PORTION OF THE WORK

- A. Site Access: Provide access to Project site for State's construction personnel.
  1. Refer to Section 011000 "Summary" for other requirements for Owner-furnished, Contractor-installed products
- B. Coordination: Coordinate construction and operations of the Work with work performed by State's construction personnel.
  1. Construction Schedule: Inform State of Contractor's preferred construction schedule for State's portion of the Work. Adjust construction schedule based on a mutually agreeable timetable. Notify State if changes to schedule are required due to differences in actual construction progress.
    - a. Coordinate AV equipment installation and cameras with Philip Usrey, State Parks Lead Network Operations Engineer.
    - b. Coordinate installation of Modular Systems Furniture.



**Execution**

- c. See Section 113150 "Equipment and Furnishings" for additional information.

**3.7 PROGRESS CLEANING**

- A. Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.
  - 1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
  - 2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F.
  - 3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
    - a. Use containers intended for holding waste materials of type to be stored.
  - 4. Coordinate progress cleaning for joint-use areas where Contractor and other contractors are working concurrently.
- B. Site: Maintain Project site free of waste materials and debris.
- C. Work Areas: Clean areas where Work is in progress to the level of cleanliness necessary for proper execution of the Work.
  - 1. Remove liquid spills promptly.
  - 2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
- D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- F. Exposed Surfaces: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways. Comply with waste disposal requirements in Section 015000 "Temporary Facilities and Controls." and Section 017419 "Construction Waste Management and Disposal."

- H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- J. Limiting Exposures: Supervise construction operations to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

### 3.8 STARTING AND ADJUSTING

- A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
- B. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.
- C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- D. Manufacturer's Field Service: Comply with qualification requirements in Section 014000 "Quality Requirements."

### 3.9 PROTECTION AND REPAIR OF INSTALLED CONSTRUCTION

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- B. Repair Work previously completed and subsequently damaged during construction period. Repair to like-new condition.
- C. Protection of Existing Items: Provide protection and ensure that existing items to remain undisturbed by construction are maintained in condition that existed at commencement of the Work.
- D. Comply with manufacturer's written instructions for temperature and relative humidity.

END OF SECTION 017300

**SECTION 017419**  
**CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. This section specifies diversion of construction debris from the landfill.
  - 1. Waste Management Goals: a minimum of 75% of the total project waste should be diverted from landfill by, in order of preference 1) weight, 2) volume, whichever is most feasible to measure.
  - 2. Provide a construction waste management plan, a construction waste estimate and a final waste management report to show evidence of recycling, and reuse of recovered materials.
  - 3. Inform the Contracting Officer where Construction Waste Management requirements could detrimentally impact construction schedule.
- B. Waste Management Objective for the Project:
  - 1. The Government has established that this Project shall minimize the generation of construction and demolition waste at the site. Factors that contribute to waste, such as over-packaging, improper storage, ordering error, poor planning, breakage, mishandling, and contamination shall be minimized.
  - 2. Of the inevitable waste that is generated, as many of the waste materials as economically feasible shall be reused or recycled. Waste disposal in landfills shall be minimized.
- C. Diversion From Landfill: Waste categories appropriate for diversion from landfill shall include, but not be limited to, the following:
  - 1. Land clearing debris
  - 2. Soil
  - 3. Wood: Clean dimensional wood, palette wood
  - 4. Sheet Wood: Plywood, OSB and particle board
  - 5. Concrete
  - 6. Asphalt Concrete
  - 7. Paper
    - a. Bond
    - b. Newsprint
    - c. Cardboard and paper packaging materials

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**Construction Waste Management and Disposal**

- 8. Metals
  - a. Ferrous
  - b. Non-Ferrous
- 9. Glass
- 10. Plastics
- 11. Beverage Containers

**1.2 RELATED REQUIREMENTS**

- A. Appendix 017419A: Construction Waste Estimate.
- B. Appendix 017419B: Waste Management Report.
- C. Section 013300: Submittal Procedures.
- D. Section 017700: Closeout Procedures.

**1.3 REFERENCES**

- A. The California Integrated Waste Management Board (CIWMB); including the California Materials Exchange (CalMAX), Telephone 877-520-9703; [www.ciwmb.ca.gov/calmax/](http://www.ciwmb.ca.gov/calmax/). This provides a source of information, statewide, to buy and sell recycled materials.
- B. Local Integrated Waste Management Programs and Re-Use Programs in the Project area.
- C. The Department of Toxic Substances Control (DTSC).

**1.4 CONSTRUCTION WASTE SUMMARY REPORTS**

Provide delivery receipts for the recovered materials and waste materials sent to the permitted recycling facilities, processing facilities, or landfill with the following information:

- 1. Name of firm accepting the recovered materials or waste materials
- 2. Specify type of facility (e.g. recycler, processor, Class III landfill, MRF)
- 3. Location of the facility
- 4. Type of materials
- 5. Net weights (or volume) of each type of material
- 6. Date of Delivery
- 7. Value of the materials or tipping fee paid

**1.5 APPLICATION FOR PROGRESS PAYMENT**

The following should be submitted with the Application for Progress Payment:

1. Construction Waste Summary Reports as stated above in section 1.4 CONSTRUCTION WASTE SUMMARY REPORTS.
2. Payment could be withheld until diversion goals are met. The contractor is ultimately responsible for implementation of the Construction Waste Management Plan and achieving the diversion goals.

**1.6 DEFINITIONS**

- A. Class III Landfill – A landfill that accepts non-hazardous waste such as household, commercial, and industrial waste, including construction, remodeling, repair, and demolition operations.
- B. Construction and Demolition Waste – Including solid wastes, such as building materials, packaging, rubbish, debris, and rubble resulting from construction, remodeling, repair, and demolition operations.
  1. Rubbish: Including both combustible and noncombustible wastes, such as paper, boxes, glass, crockery, metal and lumber scrap, tin cans, and bones.
  2. Debris: Including both combustible and noncombustible wastes, such as leaves and tree trimmings that result from construction or maintenance and repair work.
- C. Divert – Using material for any purpose other than disposal in a landfill or transformation facility.
- D. Waste Materials – Large and small pieces of listed materials which are excess to contract requirements and generally include materials to be recycled an/or recovered from existing construction and items of trimmings, cuttings, and damaged goods resulting from new installations, which can be effectively used in the Work.
- E. Reuse – Using a material or product that is recovered from construction, renovation, or demolition activities.
- F. Recycling – The process of collecting and preparing recycle materials and reusing them in their original form or manufacturing processes that do not cause the destruction of recyclable materials in a manner that precludes further use.

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**Construction Waste Management and Disposal**

- G. Recovery – Any process that reclaims materials, substances, energy, or other products contained within or derived from waste on-site.
- H. Sources Separation – Sorting recovered materials into specific material types with no or a minimum amount of contamination on site.
- I. Commingled or Off-site Separation – Collecting all material types into a single bin or mixed collection system and separating the waste materials into recyclable material types in an off-site facility.

**1.7 SUBMITTALS**

- A. Construction Waste Management Plan, Construction Waste Estimate  
Before the start of construction, submit a construction waste management plan and a construction waste estimate for approval, including the following:
  - 1. Indicate how the Contractor proposes to recover at least 75% of the construction wastes and debris for reuse and recycling.
  - 2. The Construction Waste Management Plan should coordinate the recovery effort with the construction schedule.
  - 3. Include a list of reuse facilities, recycling facilities and processing facilities that will be receiving the recovered recyclable materials.
  - 4. Identify materials that are not recyclable or not recovered which will be disposed of in a landfill (or other means acceptable by the State of California and local ordinance and regulations) and explain why the materials are not recovered.
  - 5. List the permitted landfill, or other permitted disposal facilities, that will be accepting the disposed waste materials.
  - 6. Indicate instances or situations where compliance with the requirements of this specification do not apply or do not appear to be possible.
  - 7. Prepare the Construction Waste Estimate identifying each type of waste material to be reused or recycled.

**1.8 WASTE MANAGEMENT REPORT**

- A. Upon completion of Work including final cleanup, provide a final Waste Management Report containing the information required on Appendix 017419B, Waste Management Report forms.
  - 1. The total quantity of each waste material generated; and the date(s) removed from the job-site.
  - 2. The percent of the total quantity generated of each material sent to landfill, the identity of the landfill (receiving facility) handling costs, transport costs, tipping fees paid at the landfill, and total landfill

costs. Attach copies of manifests, weight tickets, receipts, and invoices.

3. For each material reused or recycled from the Project, include the percent of the total quantity generated, the identity of the receiving facility, the total costs of handling and transportation, and income. Attach manifests, weight tickets, receipts, and/or invoices.
  4. Contractor shall edit and use forms included in Appendix 017419B, Waste Management Report, or use them as a basis for Contractor's forms.
  5. The Government will provide electronic copies of Appendix 017419B for Contractors' use.
- B. Submit Waste Management Report under provisions of Section 017700 – Closeout Procedures.

## PART 2 - PRODUCTS (Not Used)

## PART 3 - EXECUTION

### 3.1 WASTE MANAGEMENT

- A. Manager: Contractor shall designate an on-site party (or parties) responsible for instructing workers and subcontractors, and overseeing and documenting results of Waste Management for the Project.
- B. Distribution: Contractor shall distribute copies of the Construction Waste Estimate and Waste Management Report forms to the Job Site Foreman, each Subcontractor, and the Contracting Officer.
- C. Meetings: Contractor shall conduct Waste Management meetings with subcontractors who generate construction waste. Contractor shall present current status of the Waste Management Report at regular job-site meetings.
- D. Material Handling Procedures: Provide means by which waste materials will be protected from contamination, and means to be employed in reuse or recycling of waste material consistent with requirements for acceptance by receiving facilities.
  1. Separation Facilities: Contractor shall lay out and label a specific area to facilitate separation of materials for reuse and recycling. Recycling and waste bin areas shall be kept neat and clean and clearly marked in order to avoid contamination of materials.

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**Construction Waste Management and Disposal**

2. Hazardous Wastes: Hazardous wastes shall be separated, stored, and disposed of according to local regulations, and in accordance with specifications for such work as may be included in the Project.
3. Instruction: Contractor shall provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse, and return methods to be used by all parties at appropriate stages of the Project.

END OF SECTION 017419



# CONSTRUCTION WASTE ESTIMATE

DATE: \_\_\_\_\_

| Waste Material (Edit to Suit) | Unit | Estimated Quantity<br>Generated | Percent to<br>Landfill | Percent<br>Reused | Percent<br>Recycled |
|-------------------------------|------|---------------------------------|------------------------|-------------------|---------------------|
| Land Clearing Debris          | CY   |                                 |                        |                   |                     |
| Soil                          | CY   |                                 |                        |                   |                     |
| Wood                          | CY   |                                 |                        |                   |                     |
| Sheet Wood                    | CY   |                                 |                        |                   |                     |
| Concrete                      | CY   |                                 |                        |                   |                     |
| Bricks                        | CY   |                                 |                        |                   |                     |
| Concrete Masonry Units        | CY   |                                 |                        |                   |                     |
| Asphalt Concrete              | CY   |                                 |                        |                   |                     |
| Paper                         | CY   |                                 |                        |                   |                     |
| Cement Fiber Products         | CY   |                                 |                        |                   |                     |
| Metal (ferrous)               | TON  |                                 |                        |                   |                     |
| Metals (non-ferrous)          | LBS  |                                 |                        |                   |                     |
| Paint                         | GAL  |                                 |                        |                   |                     |
| Rigid Foam                    | CF   |                                 |                        |                   |                     |
| Glass                         | CF   |                                 |                        |                   |                     |
| Plastics                      | CF   |                                 |                        |                   |                     |
| Carpet and Pad                | SY   |                                 |                        |                   |                     |
| Beverage Containers           | LBS  |                                 |                        |                   |                     |
| Insulation                    | CF   |                                 |                        |                   |                     |
| Gypsum Board                  | CF   |                                 |                        |                   |                     |
| Porcelain Plumbing Fixtures   | EA   |                                 |                        |                   |                     |
| Fluorescent Light Tubes       | EA   |                                 |                        |                   |                     |
|                               |      |                                 |                        |                   |                     |
|                               |      |                                 |                        |                   |                     |
|                               |      |                                 |                        |                   |                     |
|                               |      |                                 |                        |                   |                     |

**WASTE MANAGEMENT REPORT  
COST / INCOME**

| Waste Material (Edit to Suit) | Unit | Receiving Facility | Landfill Cost |           |     | Reused |        | Recycled |        |
|-------------------------------|------|--------------------|---------------|-----------|-----|--------|--------|----------|--------|
|                               |      |                    | Handling      | Transport | Fee | Cost   | Income | Cost     | Income |
| Land Clearing Debris          | CY   |                    |               |           |     |        |        |          |        |
| Soil                          | CY   |                    |               |           |     |        |        |          |        |
| Wood                          | CY   |                    |               |           |     |        |        |          |        |
| Sheet Wood                    | CY   |                    |               |           |     |        |        |          |        |
| Concrete                      | CY   |                    |               |           |     |        |        |          |        |
| Bricks                        | CY   |                    |               |           |     |        |        |          |        |
| Concrete Masonry Units        | CY   |                    |               |           |     |        |        |          |        |
| Asphalt Concrete              | CY   |                    |               |           |     |        |        |          |        |
| Paper                         | CY   |                    |               |           |     |        |        |          |        |
| Cement Fiber Products         | CY   |                    |               |           |     |        |        |          |        |
| Metal (ferrous)               | TON  |                    |               |           |     |        |        |          |        |
| Metals (non-ferrous)          | LBS  |                    |               |           |     |        |        |          |        |
| Paint                         | GAL  |                    |               |           |     |        |        |          |        |
| Rigid Foam                    | CF   |                    |               |           |     |        |        |          |        |
| Glass                         | CF   |                    |               |           |     |        |        |          |        |
| Plastics                      | CF   |                    |               |           |     |        |        |          |        |
| Carpet and Pad                | SY   |                    |               |           |     |        |        |          |        |
| Beverage Containers           | LBS  |                    |               |           |     |        |        |          |        |
| Insulation                    | CF   |                    |               |           |     |        |        |          |        |
| Gypsum Board                  | CF   |                    |               |           |     |        |        |          |        |
| Porcelain Plumbing Fixtures   | EA   |                    |               |           |     |        |        |          |        |
| Fluorescent Light Tubes       | EA   |                    |               |           |     |        |        |          |        |
|                               |      |                    |               |           |     |        |        |          |        |
|                               |      |                    |               |           |     |        |        |          |        |
| <b>TOTALS:</b>                |      |                    |               |           |     |        |        |          |        |

## **SECTION 017700**

### **CLOSEOUT PROCEDURES**

#### **PART 1 - GENERAL**

##### **1.1 SUMMARY**

- A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
1. Inspection procedures.
  2. Project Record Documents.
  3. Operation and maintenance manuals.
  4. Warranties.
  5. Instruction of the State's personnel.
  6. Final cleaning.

##### **1.2 SUBSTANTIAL COMPLETION**

- A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.
1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
  2. Make final changeover of permanent locks and deliver keys to the State. Advise the State's personnel of changeover in security provisions.
  3. Complete startup testing of systems. Submit test reports.
  4. Submit test/adjust/balance records.
  5. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
  6. Advise the State of changeover in heat and other utilities.
  7. Submit changeover information related to the State's occupancy, use, operation, and maintenance.
- B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, the State will either proceed with inspection or notify Contractor of unfulfilled requirements. The State will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by the State, that must be completed or corrected before certificate will be issued.
1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
  2. Results of completed inspection will form the basis of requirements for Final Completion.

## **Section 017700 – Page 2**

### **Closeout Procedures**

#### **1.3 FINAL COMPLETION**

- A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:
1. Submit a final Application for Payment according to Division 1 Section 01290 "Payment Procedures."
  2. Submit one copy of the State's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by the State. The copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
  3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
  4. Prepare and submit Project Record Documents, operation and maintenance manuals, Final Completion construction photographs, damage or settlement surveys, property surveys, and similar final record information.
  5. Deliver tools, spare parts, extra materials, and similar items to location designated by the State. Label with manufacturer's name and model number where applicable.
  6. Submit pest-control final inspection report and warranty.
  7. Instruct the State's personnel in operation, adjustment, and maintenance of products, equipment, and systems.
  8. Complete final cleaning requirements, including touchup painting.
  9. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, the State will either proceed with inspection or notify Contractor of unfulfilled requirements. The State will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

#### **1.4 LIST OF INCOMPLETE ITEMS (PUNCH LIST)**

- A. Preparation: Submit one copy of punch list. Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.
1. Organize list of spaces in sequential order.
  2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.

**1.5 PROJECT RECORD DOCUMENTS (AS-BUILTS)**

- A. General: Do not use Project Record Documents for construction purposes. Protect Project Record Documents from deterioration and loss. Provide access to Project Record Documents for the State's reference during normal working hours.
- B. Provide Project Record Documents in accordance with the General Conditions.

**1.6 OPERATION AND MAINTENANCE MANUALS**

- A. Assemble two (2) complete sets of operation and maintenance data indicating the operation and maintenance of each system, subsystem, and piece of equipment not part of a system. Include operation and maintenance data required in individual Specification Sections and as follows:
  - 1. Operation Data: Include emergency instructions and procedures, system and equipment descriptions, operating procedures, and sequence of operations.
  - 2. Maintenance Data: Include manufacturer's information, list of spare parts, maintenance procedures, maintenance and service schedules for preventive and routine maintenance, and copies of warranties and bonds.
- B. Organize operation and maintenance manuals into suitable sets of manageable size. Bind and index data in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, with pocket inside the covers to receive folded oversized sheets. Identify each binder on front and spine with the printed title "OPERATION AND MAINTENANCE MANUAL," Project name, and subject matter of contents.

**1.7 WARRANTIES**

- A. Submittal Time: Submit written warranties on request of the State for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.
- B. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.
  - 1. Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
  - 2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
  - 3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.

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### **Closeout Procedures**

- C. Provide additional copies of each warranty to include in operation and maintenance manuals.

## **PART 2 - PRODUCTS**

### **2.1 MATERIALS**

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

## **PART 3 - EXECUTION**

### **3.1 DEMONSTRATION AND TRAINING**

- A. Instruction: Instruct the State's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
  - 1. Provide instructors experienced in operation and maintenance procedures.
  - 2. Provide instruction at mutually agreed-on times. For equipment that requires seasonal operation, provide similar instruction at the start of each season.
  - 3. Schedule training with the State, with at least seven days' advance notice.
  - 4. Coordinate instructors, including providing notification of dates, times, length of instruction, and course content.
- B. Program Structure: Develop an instruction program that includes individual training modules for each system and equipment not part of a system, as required by individual Specification Sections. For each training module, develop a learning objective and teaching outline.
  - 1. Include instruction for system design and operational philosophy, review of documentation, operations, adjustments, troubleshooting, maintenance, and repair.

### **3.2 FINAL CLEANING**

- A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:
  - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
  - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
  - c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
  - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
  - e. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
  - f. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
  - g. Sweep concrete floors broom-clean in unoccupied spaces.
  - h. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.
  - i. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
  - j. Remove labels that are not permanent.
  - k. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
    - 1) Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.
  - l. Wipe surfaces of mechanical and electrical equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
  - m. Replace parts subject to unusual operating conditions.
  - n. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
  - o. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
  - p. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed

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**Closeout Procedures**

by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

q. Leave Project clean and ready for occupancy.

- C. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the State's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

END OF SECTION 017700



**SECTION 024119**  
**SELECTIVE DEMOLITION**

**PART 1 - GENERAL**

**1.1 SUMMARY**

**A. Section Includes:**

1. Demolition and removal of selected portions of building or structure.
2. Demolition and removal of selected site elements.
3. Salvage of existing items to be reused or recycled.

**1.2 MATERIALS STATESHIP**

**A. Unless otherwise indicated, demolition waste becomes property of Contractor.**

**B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to State that may be uncovered during demolition remain the property of State.**

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

**1.3 PREINSTALLATION MEETINGS**

**A. Predemolition Conference: Conduct conference at Project site.**

**1.4 INFORMATIONAL SUBMITTALS**

**A. Engineering Survey: Submit engineering survey of condition of building.**

**B. 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.**

**C. Schedule of selective demolition activities with starting and ending dates for each activity.**

**D. Predemolition photographs or video.**

## **Section 024119 – Page 2**

### **Selective Demolition**

#### **1.5 CLOSEOUT SUBMITTALS**

- A. Inventory of items that have been removed and salvaged.

#### **1.6 QUALITY ASSURANCE**

- A. Refrigerant Recovery Technician Qualifications: Certified by an EPA-approved certification program.

#### **1.7 FIELD CONDITIONS**

- A. State will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so State's operations will not be disrupted.
- B. Conditions existing at time of inspection for bidding purposes will be maintained by State as far as practical.
  - 1. Before selective demolition, State will remove the following items:
    - a. State to empty any existing pallet racking or storage racks in area of work that would interfere with construction activities.
    - b. State to remove any items or equipment that would interfere with construction activities, U.N.O..
    - c. State to remove modular systems furniture and other furniture in office area.
- C. Notify State's Representative of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
  - 1. If suspected hazardous materials are encountered, do not disturb; immediately notify State's Representative and State. Hazardous materials will be removed by State under a separate contract.
- E. Storage or sale of removed items or materials on-site is not permitted.
- F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
  - 1. Maintain fire-protection facilities in service during selective demolition operations.

- G. Arrange selective demolition schedule so as not to interfere with State's operations.

## 1.8 WARRANTY

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials and using approved contractors so as not to void existing warranties.

## PART 2 - PRODUCTS

### 2.1 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 ASSE A10.6 and NFPA 241.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped before starting selective demolition operations.
- B. Perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective building demolition operations.
- C. Inventory and record the condition of items to be removed and salvaged.

### 3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.
- B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off utility services and mechanical/electrical systems serving areas to be selectively demolished.

## **Section 024119 – Page 4**

### **Selective Demolition**

1. Contractor to coordinate shut off of indicated services/systems with Building Manager and State's Representative.
2. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
3. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated on Drawings to be removed.
  - a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
  - b. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material and leave in place.
  - c. Equipment to Be Removed: Disconnect and cap services and remove equipment.
  - d. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
  - e. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to State.
  - f. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.
  - g. Ducts to Be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material and leave in place.

### **3.3 PROTECTION**

- A. Temporary Protection: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
- B. Temporary Shoring: Design, provide, and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
- C. Remove temporary barricades and protections where hazards no longer exist.

### 3.4 SELECTIVE DEMOLITION

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
1. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain.
  2. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
  3. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
  4. Maintain fire watch during and for at least 2 hours after flame-cutting operations.
  5. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
  6. Dispose of demolished items and materials promptly. Comply with requirements in Section 017419 "Construction Waste Management and Disposal."
- B. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
- C. Removed and Salvaged Items:
1. Clean salvaged items.
  2. Store items in a secure area until delivery to State.
  3. Transport items to State's storage area, designated by State.
  4. Protect items from damage during transport and storage.
- D. Removed and Reinstalled Items:
1. Clean and repair items to functional condition adequate for intended reuse.
  2. Label each item with a nonpermanent mark in a manner to permit reinstallation in its original or new location.

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### **Selective Demolition**

3. Each item removed shall be given a unique catalog number to document its original location. Indicate original location, configurations and orientations on plans or photographs by annotating the identifying marks.
  4. Pack or crate items after cleaning and repairing. Identify contents of containers.
  5. Protect items from damage during transport and storage.
  6. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.
- E. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by State's Representative, 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.
1. Follow instructions under "Removed and Reinstalled Items" if items are removed.
- F. Storage Space:
1. Coordinate with Building Manager and State's Representative as necessary to arrange limited on-site location(s) for free storage.

### **3.5 CLEANING**

- A. Remove demolition waste materials from Project site and recycle or dispose of them according to Section 017419 "Construction Waste Management and Disposal."
1. Do not allow demolished materials to accumulate on-site.
  2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
  3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
  4. Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."
- B. Burning: Do not burn demolished materials.
- C. 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 024119

**SECTION 032000**  
**CONCRETE REINFORCING**

**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 SECTION INCLUDES**

- A. Reinforcing steel for cast-in-place concrete.
- B. Supports and accessories for steel reinforcement.

**1.3 RELATED REQUIREMENTS**

- A. Section 03 30 00 - Cast-in-Place Concrete.

**1.4 REFERENCE STANDARDS**

- A. Utilize the edition of the listed document as identified in the "Design Criteria Notes" in the structural drawings. If not listed in the "Design Criteria Notes", use the edition adopted or referenced by the listed governing building code or material standard. If no specific edition is adopted, use the latest edition.
  - 1. ACI 117 – Specification for Tolerances for Concrete Construction and Materials
  - 2. ACI 301 - Specifications for Concrete Construction.
  - 3. ACI 315R - Guide to Presenting Reinforcing Steel Design Details.
  - 4. ACI 318 - Building Code Requirements for Structural Concrete.
  - 5. ACI SP-66 - ACI Detailing Manual.
  - 6. ASTM A184 - Standard Specification for Welded Deformed Steel Bar Mats for Concrete Reinforcement.
  - 7. ASTM A615 - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
  - 8. ASTM A704 - Standard Specification for Welded Steel Plain Bar or Rod Mats for Concrete Reinforcement.
  - 9. ASTM A706 - Standard Specification for Deformed and Plain Low-Alloy Steel Bars for Concrete Reinforcement.

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**Concrete Reinforcing**

10. ASTM A767 - Standard Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement.
11. ASTM A1035 - Standard Specification for Deformed and Plain, Low-Carbon, Chromium, Steel Bars for Concrete Reinforcement.
12. ASTM A1064 - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete.
13. ASTM E8 – Standard Test Methods for Tension Testing of Metallic Materials
14. AWS B2.1 - Specification for Welding Procedure and Performance Qualification.
15. AWS D1.4 - Structural Welding Code - Steel Reinforcing Bars.
16. CRSI (DA4) - Manual of Standard Practice.
17. CRSI (P1) - Placing Reinforcing Bars.

**1.5 SUBMITTALS**

- A. See Division 01 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Prepare in accordance ACI 315 and ACI SP-66 and CRSI standards. Indicate bending diagrams, assembly diagrams, splicing and laps of bars and shapes, dimensions and details of bar reinforcing and assemblies.
  1. The correctness of all reinforcing requirements and work is the responsibility of the Contractor.
    - a. Identify such shop drawings with reference thereon to sheet and detail numbers from Contract Drawings.
    - b. Direct copies of the contract documents are not acceptable as a submission from the Contractor.
    - c. Do not use scaled dimensions from Contract Drawings in determining the lengths of reinforcing bars.
    - d. No reinforcing steel shall be fabricated without approved shop drawings.
    - e. Any deviations from the contract documents must be clearly indicated as a deviation on the shop drawings.
    - f. Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement. Include any welding to be done.
    - g. Shop drawings shall make it clear where each bar is located. Beams, grade beams and walls shall be shown in elevation. On elevations show locations of sleeves and penetrations.
    - h. Check architectural, structural, mechanical, and electrical and other contract documents for anchor bolt schedules and locations, anchors, inserts, conduits, sleeves, and any other items which are required to be cast in concrete, and make necessary provisions as



required so that reinforcing steel will not interfere with the placement of such embedded items.

- i. Show all areas of congestion. Identify where reinforcing steel will interfere with the placement of embedded items such as anchor bolts, anchors, inserts, conduits, sleeves and any other items which are required to be cast in concrete.
  - C. Submit shop drawings indicating which members will use fusion welding process for assembly. Shop drawings shall show complete structural details indicating the size of stirrups, the size of holding wires, and welding requirements.
  - D. Submit International Code Council (ICC) Evaluation Service Reports indicating approval from ICC Evaluation Service, Inc. for mechanical splices, hooked anchorage systems, large-headed stud punching shear reinforcement and dowel bar replacement systems.
  - E. Manufacturer's Certificate: Certify that reinforcing steel and accessories supplied for this project meet or exceed specified requirements.
    1. Reinforcing Bars
    2. Welded Wire Fabric
    3. Welding Electrodes
    4. Fiber Reinforcement
  - F. Product Data:
    1. Manufacturer's specifications and installation instructions for splice devices.
    2. Bar Supports.
  - G. Welders' Qualification Statement: Welders' certificates in accordance with AWS B2.1 and dated no more than 12 months before start of scheduled welding work.
  - H. Reports: Submit certified copies of mill test report of reinforcement material chemical and physical analysis.
    1. Tensile and bend tests shall be performed by the mill in accordance with ASTM A615 or A706, as applicable to reinforcing type.
- 1.6 QUALITY ASSURANCE
- A. Perform work of this section in accordance with ACI 301.
    1. Maintain one copy of each document on project site.

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**Concrete Reinforcing**

**B. Tests and Inspections:**

1. Provide Architect and Special Inspection Agency with access to fabrication plant to facilitate inspection of reinforcement. Provide notification of commencement and duration of shop fabrication in sufficient time to allow inspection.
2. A testing program is required prior to the start of construction. Testing program to be done in compliance with the CBC requirements and in collaboration with Testing Laboratory, Design team, contractor, owner and submitted for review by the agency in charge of building enforcement. Requirements below are minimum requirements; additional requirements may be required in final testing program.
3. All reinforcing steel whose properties are not identifiable by mill test reports shall be tested in accordance with ASTM A615. One Series of tests for each missing report to be borne by the Contractor.
4. When inspections are indicated for reinforcement placement on the Structural drawings, a special inspector shall be employed to inspect reinforcing placement per CBC Chapter 17.
5. Inspect shop and field welding in accordance with AWS D1.4, including checking materials, equipment, procedure, and welder qualification as well as the welds. Inspector will use non-destructive testing or any other non-destructive aid to visual inspection that Inspector deems necessary to assure the adequacy of the weld.
6. Tests and inspection shall be performed by Owner's testing agency except when needed to justify rejected work, in which case the cost of retests and reinspection shall be paid by the Owner and back-charged to the Contractor.

**C. Installer Qualifications:**

1. Reinforcing Steel: Installation shall be done only by an installation firm normally engaged in this business. All work shall be performed by qualified mechanics working under an experienced supervisor.

**D. Manufacturer Qualifications:**

Reinforcing Steel: A firm regularly engaged in the manufacture of steel bar and welded wire fabric reinforcing.

**E. Mechanical Bar Couplers shall have a current ICC-ES or IAPMO Evaluation Report that indicates compliance with the requirements of these specifications.**

**F. Steel Reinforcing Allowable Tolerance (ACI 117):**

1. Fabrication:
  - a. Sheared length: 1 inch.
  - b. Depth of truss bars: Plus or minus ½-inch.

- c. Ties: Plus or minus ½-inch.
    - d. All other bends: Plus or minus 1 inch.
  - 2. Placement:
    - a. Concrete cover to form surfaces: Plus or minus ¼-inch.
    - b. Minimum spacing between bars: Plus or minus ¼-inch.
    - c. Crosswise of members: Spaced evenly within 2 inches of stated separation.
    - d. Lengthwise of members: Plus or minus 2 inches.
  - 3. Maximum bar movement to avoid interference with other reinforcing steel, conduits, or embedded items: 2 bar diameters.
- G. Unidentifiable Reinforcing Steel: Tested by testing agency; paid for by Contractor:
- 1. Test reinforcing delivered to site which cannot be properly identified by heat number and mill mark for compliance with ASTM A615 as follows:
    - a. No. 8 Bar and Smaller: One tensile test and one bend test of each size per 7-1/2 tons, or portion thereof.
    - b. No. 9 Bar and Larger: One tensile test of each size per 10 tons, or portion thereof.
- H. Welding: Qualify procedures and personnel according to AWS D1.4, "Structural Welding Code--Reinforcing Steel."
- 1. Welders whose work fails to pass inspection shall be requalified before performing further welding.
  - 2. Firm specializing in furnishing and installing reinforcement shall have a minimum of 5 years' experience on projects with requirements similar to this project and shall have sufficient production capacity.
  - 3. All welding shall be performed by operators who are qualified for the types of welds used. Each operator shall have been qualified within the preceding one year as prescribed by AWS.
  - 4. Require welders to retake the qualification test if, as determined by the Architect, there is a reasonable doubt as to the proficiency of the welder. If the welder does not requalify, they shall not perform any welding on the project.
- 1.7 DELIVERY, STORAGE, AND HANDLING
- A. Steel Reinforcement
- 1. Deliver, store, and handle steel reinforcement to prevent bending and damage. Avoid damaging coatings on steel reinforcement where occur.

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**Concrete Reinforcing**

2. Deliver reinforcing to Site properly bundled and tagged. Use tags that indicate bar size, lengths and marks corresponding to markings shown on shop drawings. Bundles shall be identified as to heat number and manufacturer and be accompanied by mill and analysis test reports and affidavit from the supplier stating that the material conforms to the requirements of the ASTM specification listed therein. Segregate to maintain identification after bundles are broken.
  3. Store reinforcement in a manner that will prevent excessive rusting or fouling with/ grease, oil, dirt, and other bond weakening materials.
  4. Do not use damaged, reworked, or deteriorated material.
- B. Deliver and store welding electrodes in accordance with AWS D1.4.

**PART 2 - PRODUCTS**

**2.1 STEEL REINFORCEMENT**

- A. All deformed bars shall conform to ACI 318 Section 20.2.1.3 in addition to referenced ASTM requirements. Where required, uniform elongation shall be determined as the elongation at the maximum force sustained by the reinforcing bar test piece per ASTM E8.
- B. Reinforcing Steel: ASTM A615, Grade 60 (60,000 psi) deformed for all bars unless otherwise indicated.
1. Plain billet-steel bars where indicated.
  2. Unfinished.
- C. Reinforcing Steel: ASTM A706, Grade 60 (60,000 psi) deformed low-alloy steel bars for bars to be welded.
1. Unfinished.
- D. Reinforcing Steel: Dual grade ASTM A615/A706, Grade 60 (60,000 psi) may be used in lieu of A615 or A706, Grade 60 (60,000 psi).
1. Unfinished.
- E. Reinforcing Steel: ASTM A706, Grade 60 (60,000 psi) for bars used in special seismic systems as indicated in drawings.
1. Unfinished.
  2. ASTM A615 Grade 60 bars meeting the following requirements of ACI 318 may be used in lieu of A706 Grade 60 in special seismic systems.

- a. Actual yield strength based on mill tests does not exceed more than 78,000 psi.
  - b. The ratio of the actual tensile strength to the actual yield strength is at least 1.25.
  - c. Minimum fracture elongation in 8 in. shall be at least 14% for bar sizes #3 through #6, at least 12% for bar sizes #7 through #11, and at least 10% for bar sizes #14 and #18.
- F. Minimum uniform elongation shall be at least 9% for bar sizes #3 through #10, and at least 6% for bar sizes #11 through #18. reinforcing Steel: Plain or deformed bars; ASTM A1035, Grade 100 (100,000 psi), Type CL.
- G. Stirrup and Tie Steel: ASTM A615 grade 60 for all bars, unfinished.
- H. Reinforcement Accessories:
  - 1. Tie Wire: FS-QQ-W-461, annealed, minimum 16-gauge, 0.0508 inch.
  - 2. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for adequate support of reinforcement during concrete placement.
    - a. Wire support: CRSI class 2.
    - b. Do not use wood, brick, or other objectionable materials.
    - c. Do not use galvanized supports.
    - d. Supports placed against ground: Pre-cast concrete blocks not less than 4 inches square with embedded wire.
  - 3. Provide stainless steel components for placement within 1-1/2 inches of weathering surfaces.
- I. Welding Electrodes: AWS D1.4, low hydrogen, E70XX series.

## 2.2 FABRICATION

- A. Fabricate concrete reinforcing in accordance with CRSI (DA4) - Manual of Standard Practice and to meet requirements of Drawings.
- B. Fabricate reinforcement in accordance with the requirements of ACI 315R where specific details are not shown or where Drawings and Specifications are not more demanding.
- C. Steel reinforcement shall not be bent or straightened in a manner that will injure the material. Bars with kinks or bends not shown on the Drawings shall not be used. Heating of bars for bending will not be permitted.
- D. Reinforcing shall not be field bent or straightened without architect's review.

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**Concrete Reinforcing**

- E. Provide offsets in rebar (1:6 maximum) where required to maintain clearances.

**PART 3 - EXECUTION**

**3.1 PLACEMENT**

- A. Place, support and secure reinforcement against displacement. Do not deviate from the required position. All reinforcement shall be accurately set in place, lapped, spliced, spaced rigidly and securely held in place and tied with specified wire at all splices and crossing points. All wire tie ends shall point away from the form. Carefully locate all dowel steel to align with wall and column steel.
  - 1. Comply with CRSI recommended practice for "Placing Reinforcing Bars", for details and methods of reinforcement placement and supports and as herein specified.
  - 2. Bars shall be in long lengths with laps and splices as shown. Offset laps in adjacent bars. Place steel with clearances and cover as shown. Bar laps shall be as indicated on the Drawings. Tie all laps and intersections with the specified wire.
  - 3. For horizontal reinforcement, maintain clear space between parallel bars not less than 1 times nominal reinforcement diameter, but in no case shall clear space be less than 4/3 times maximum size concrete aggregate.
  - 4. For vertical reinforcement, maintain clear space between parallel bars not less than 1-1/2 times nominal reinforcement diameter, but in no case shall clear space be less than 4/3 times maximum size concrete aggregate.
  - 5. Reinforcing dowels for slabs shall be placed as detailed. Sleeves may be used if reviewed by the Architect before installation. Install dowel through all construction and expansion joints for all slabs on grade. Support slab-on-grade joint dowel bars independently of support for slab reinforcement on soil supported slab bolsters or specially manufactured cradles such that dowel bar remains parallel to slab surface and at right angles to joint during concreting operations. Lightly coat the exposed end of the dowel with a paraffin-base lubricant, asphalt emulsion, form oil, or grease or use a dowel bar sleeve.
  - 6. Provide and place additional reinforcing steel at all sleeves and openings in beams, slabs, and walls as specified on the drawings. Where sleeves or openings not shown on the drawings interrupt the reinforcement, consult with Architect for instructions for placing and splicing of bars. Provide the required additional reinforcing steel at no additional cost to the Owner.
  - 7. Do not bend reinforcement that is embedded partially in concrete except in locations noted on the drawings, specifications, or approved by the Architect.

- B. Bar Supports: Support and securely fasten bars with chairs, spacers and ties to prevent displacement by construction loads or placement of concrete beyond the tolerances specified. Conform to CRSI as a minimum standard.
- C. Steel Adjustment:
  - 1. Move within ACI 117 specified allowable tolerances to avoid interference with other reinforcing steel, conduits, or embedded items.
  - 2. Do not move bars beyond allowable without concurrence of Architect.
  - 3. Do not heat, bend, or cut bars without concurrence of Architect.
  - 4. Reinforcement shall not be bent after being embedded in hardened concrete.
- D. Splices:
  - 1. Provide splices as indicated on the drawings. Splice reinforcing bars only at locations shown on the structural drawings and approved shop drawings. Unauthorized or unscheduled splices not approved by the Engineer in writing will not be accepted.
  - 2. All lap splices in reinforcing steel shall be contact lap splices unless detailed otherwise on the drawings.
  - 3. Maintain proper cover and spacing between reinforcing bars at splices.
  - 4. Lap unscheduled reinforcing bars not otherwise specified with a Class B lap splice.
  - 5. Lap Splices: Tie securely with wire to prevent displacement of splices during placement of concrete.
  - 6. Mechanical Splice Devices: Install in accordance with manufacturer's written instructions. Obtain Structural Engineer's review before using. The manufacturer of mechanical splice shall be present for first day's installation.
  - 7. Do not splice bars except at locations shown without concurrence of Architect.
    - a. Where splices in addition to those indicated are required, indicate location on shop drawings clearly and highlight "for Architect's approval".
- E. Do not displace or damage vapor barrier.
- F. Accommodate placement of formed openings.
- G. Refer to ACI 318 for concrete cover requirements over reinforcement.
- H. Concrete shown without reinforcing shall be reinforced as similar parts shown with reinforcing except where concrete is specifically noted to be unreinforced.
- I. Examine surfaces and conditions receiving or affecting the work. Do not proceed until unsuitable conditions have been corrected.

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**Concrete Reinforcing**

- J. Reinforcement shall be free of mud, oil or other materials that may reduce bond at the time concrete is placed. Reinforcement with tightly adhered rust or mill scale will be accepted without cleaning provided that rusting has not reduced dimensions and weights below applicable standards. Remove loose rust.
- K. Protection against rust:
  - 1. Where there is danger of rust staining adjacent surfaces, wrap reinforcement with impervious tape or otherwise prevent rust staining.
  - 2. Remove protective materials and clean reinforcement as required before proceeding with concrete placement.
- L. Refer to notes on Drawings for additional reinforcement requirements.
- M. Refer to Mechanical and Electrical Drawings for formed concrete requiring reinforcing steel. All such steel shall be included under the work of this Section.

**3.2 FIELD QUALITY CONTROL**

- A. An independent testing agency, as specified in Division 01 - Quality Requirements, will inspect installed reinforcement for compliance with contract documents before concrete placement.
- B. Reinforcing Steel
  - 1. Notify the testing agency and the Architect at least 48 hours before concrete is to be poured or reinforcing is covered up.
  - 2. Before any concrete is poured on any portion of the building, the reinforcing steel and form dimensions will be inspected by the Testing Agency. Any errors or discrepancies shall be corrected before concrete is placed.
  - 3. A testing program is required prior to the start of construction. Testing program to be done in compliance with the CBC requirements and in collaboration with Testing Laboratory, Design team, contractor, owner and submitted for review by the agency in charge of building enforcement. Requirements below are minimum requirements; additional requirements may be required in the final testing program.
  - 4. All reinforcing steel whose properties are not identifiable by mill test reports shall be tested in accordance with ASTM A615. One Series of tests for each missing report shall be made and costs shall be borne by the Contractor.
  - 5. When tests are indicated for reinforcing steel on the structural drawings, the reinforcing steel used shall be tested in accordance with ASTM A615. One tensile and one bend test for each 2-1/2 tons of steel or fraction thereof, shall be made.



6. In addition to other required inspections, the following are subject to Special Inspection as per the CBC:
  - a. Placement of Reinforcing Steel
  - b. Welding of Reinforcing Steel
7. A special inspector from the Testing Agency shall be present during all field bending of reinforcement.
8. Installation of deformed bar anchors to be tested in accordance with Section 7.1 of AWS D1.1.
9. Welding of Reinforcement: There shall be continuous inspection during all welding of reinforcement. All butt welds are to be inspected using radiographic testing. At the Owner's option, recognized non-destructive tests such as resistance, Magnetic Particle Examination, and Liquid Penetrant Inspection may be used to inspect the welds. Inspect shop and field welding in accordance with AWS D1.4, including checking materials, equipment, procedure, and welder qualification as well as the welds. The inspector will use non-destructive testing or any other aid to visual inspection that he deems necessary to assure the adequacy of the weld.
10. Comply with ICC-ES or IAPMO approvals with respect to special inspection required during installation.
11. Testing and inspection of mechanical splices and reinforcing couplers to conform to manufacturer's recommendations and ICC-ES or IAPMO approval.

END OF SECTION 032000

**SECTION 033000**  
**CAST-IN-PLACE CONCRETE**

**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 SECTION INCLUDES**

- A. Cast-in-place concrete building elements.
- B. Slabs on grade.

**1.3 RELATED REQUIREMENTS**

- A. Section 03 20 00 - Concrete Reinforcing.
- B. Section 05 50 00 – Metal Fabrications

**1.4 REFERENCE STANDARDS**

- A. Utilize the edition of the listed document as identified in the “Design Criteria Notes” in the structural drawings. If not listed in the “Design Criteria Notes”, use the edition adopted or referenced by the listed governing building code or material standard. If no specific edition is adopted, use the latest edition.
  - 1. ACI 117 - Specification for Tolerances for Concrete Construction and Materials.
  - 2. ACI 211.1 – Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete.
  - 3. ACI 211.2 – Standard Practice for Selecting Proportions for Structural Lightweight Concrete.
  - 4. ACI 301 - Specifications for Concrete Construction.
  - 5. ACI 302.1R - Guide to Concrete Floor and Slab Construction.
  - 6. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete.
  - 7. ACI 305R – Guide to Hot Weather Concreting.
  - 8. ACI 306R – Guide to Cold Weather Concreting.

**Cast-in-Place Concrete**

9. ACI 308R - Guide to External Curing of Concrete.
10. ACI 318 - Building Code Requirements for Structural Concrete.
11. ACI 360R – Guide to Design of Slabs-On-Ground.
12. ASTM C31 – Standard Practice for Making and Curing Concrete Test Specimens in the Field.
13. ASTM C33 - Standard Specification for Concrete Aggregates.
14. ASTM C39 – Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
15. ASTM C42 – Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.
16. ASTM C94 - Standard Specification for Ready-Mixed Concrete.
17. ASTM C109 – Standard Test Method for Compressive Strength of Hydraulic Cement Mortars.
18. ASTM C138 – Standard Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete
19. ASTM C143 – Standard Test Method for Slump of Hydraulic Cement Concrete.
20. ASTM C150 - Standard Specification for Portland Cement.
21. ASTM C172 – Standard Practice for Sampling Freshly Mixed Concrete by the Volumetric Method.
22. ASTM C192 – Standard Practice for Making and Curing Concrete Test Specimens in the Laboratory.
23. ASTM C260 - Standard Specification for Air-Entraining Admixtures for Concrete.
24. ASTM C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
25. ASTM C330 - Standard Specification for Lightweight Aggregates for Structural Concrete.
26. ASTM C494 - Standard Specification for Chemical Admixtures for Concrete.
27. ASTM C567 – Standard Test Method for Determining Density of Structural Lightweight Concrete.
28. ASTM C595 – Standard Specification for Blended Hydraulic Cements.
29. ASTM C618 – Standard Specification for Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Portland Cement Concrete.
30. ASTM C685 – Standard Specification for Volumetric Batching and Continuous Mixing.
31. ASTM C989 – Standard Specification for Slag Cement for Use in Concrete and Mortars.
32. ASTM C1116 - Standard Specification for Fiber-Reinforced Concrete.
33. ASTM C1157 – Standard Performance Specification for Hydraulic-Cement.
34. ASTM C1582 - Standard Specification for Admixtures to Inhibit Chloride-Induced Corrosion of Reinforcing Steel in Concrete.

35. ASTM E1155 - Standard Test Method for Determining FF Floor Flatness and FL Floor Levelness Numbers.
36. ASTM E3121 – Standard Test Methods for Field Testing of Anchors in Concrete or Masonry.

#### 1.5 SUBMITTALS

- A. See Division 01 - Administrative Requirements for submittal procedures.
- B. General:
  1. Review of submittals is of a general nature only, and the responsibility for conformance with intent of drawings shall remain with the Contractor. Review does not imply or state that the fabricator has correctly interpreted the construction documents.
  2. All submissions shall be in accordance with the submission schedule developed and agreed between the Architect and Contractor at the commencement of the project. Submission shall include dates of order and delivery of materials to the shop and the site.
  3. Shop drawing schedule shall allow adequate time for reviews. Reinforcing steel shall not be fabricated or placed before the shop drawings have been reviewed by the Architect and returned.
- C. Concrete Design Mixtures: Each concrete mix design to be used on the project shall be reviewed and approved by the Testing Agency prior to concrete being delivered to site. Owner's Testing Agency shall review all mix designs prior to submittal. Submit proposed mix designs for each class of concrete listed on drawings. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
  1. For each concrete mixture, the following information shall be included: where the mix is to be used, all materials and admixtures including their source and proportions in the mix; Water content, water-to-cement ratio, slump, and aggregate grading; whether the mixture is appropriate for pumping; and total chloride content.
  2. Indicate compressive strength and method used to determine strength. The compressive strength of the concrete shall be proportioned per ACI. Include all calculations and tests required by ACI 318 Chapter 5. Laboratory test data must be submitted along with calculations that show each mix design meets the strength requirement. Mix design number must match the mix design number shown on the test data. Include all test results or past history back up data specific as part of the submittal. Test results within the past two years shall be used to indicate performance in accordance with past history.

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3. Indicate amounts of mixing water to be withheld for later addition at Project site.
- D. Transit-mix delivery slips.
1. Keep record at the Site showing time and place of each pour of concrete, together with transit mix delivery slip certifying contents of the pour per ASTM C94. Include the time water was added to dry mix.
  2. Make the record available for inspection at the Site and to the Architect for his review upon request.
  3. Upon completion of this portion of the Work, deliver the record and the delivery slips to the Architect.
- E. Reinforcement: Comply with submittal requirements in Section 03 20 00.
- F. Layout drawings for construction, control, and expansion joints for Engineer and Architect review.
- G. Certificates of Compliance from manufacturer or supplier:
1. Material Test Reports:
    - a. Cement Certificates per CBC Chapter 17.
      - 1) Cement without a certificate shall not be used.
    - b. Aggregates: Material test reports for the following, from a qualified testing agency, indicating compliance with requirements:
      - 1) Light weight aggregate (per ASTM C330).
      - 2) Normal weight aggregate (per ASTM C33). Include service record data indicating absence of deleterious expansion of concrete due to alkali aggregate reactivity. Include evaluation of reactivity.
  2. Product Test Reports and Certificates: Include ICC-ES or IAPMO reports where available. Provide for each of the following, signed by manufacturers.:
    - a. Cementitious materials, per ASTM C150, ASTM C595, ASTM C618, ASTM C989, and/or ASTM C1240, as applicable.
    - b. Admixtures. Where more than one admixture is used, include certification that admixtures are compatible. Per ASTM C494 for each type used; include chloride ion content.
    - c. Curing compounds. Also include data on method of removal in the event of incompatibility with floor covering adhesives.
    - d. Floor and slab treatments.
    - e. Non-shrink grout, per ASTM C1107 Grade B.

- f. Bonding agents.
  - g. Vapor retarders.
  - h. Semirigid joint filler and joint-filler strips
  - i. Waterstops.
  - j. Post-installed concrete anchors.
  - k. Repair materials.
- H. Hardeners and sealers: Provide manufacturer's data.
- I. Grout samples for sacked surface textures and colors upon Architect's request only.
- J. Field quality-control test and inspection reports.

#### 1.6 QUALITY ASSURANCE

- A. Perform work of this section in accordance with ACI 301 and ACI 318 and applicable standards listed in the Reference Standards section.
  - 1. Maintain one copy of ACI 301 and ACI 318 on site.
- B. Follow recommendations of ACI 305R when concreting during hot weather.
- C. Follow recommendations of ACI 306R when concreting during cold weather.
- D. For slabs required to include moisture vapor reducing admixture (MVRA), do not proceed with placement unless manufacturer's representative is present for every day of placement except when waived by owner.
- E. For slabs indicated to receive membrane-forming, moisture emission-reducing, curing and sealing compound, do not proceed with application unless manufacturer's representative is present for every day of placement except when waived by owner.
- F. Installer Qualifications:
  - 1. Concrete: A qualified installer who employs Project personnel qualified as ACI-certified Flatwork Technician and Finisher and a supervisor who is an ACI-certified Concrete Flatwork Technician.
- G. Manufacturer Qualifications:
  - 1. Concrete: A firm experienced in manufacturing ready-mixed concrete products that complies with ASTM C94 requirements for production facilities and equipment.
    - a. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."

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- H. Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified according to ASTM C1077 and ASTM E329 for testing indicated, as documented according to ASTM E548.
  - 1. Personnel conducting field tests shall be qualified as ACI Concrete Field-Testing Technician, Grade 1, according to ACI CP-01 or an equivalent certification program.
  - 2. Personnel performing laboratory tests shall be ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician - Grade I. The Testing Agency laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician - Grade II.
  - 3. Shop and field testing and inspection of steelwork shall be performed by an inspector currently certified as an AWS Certified Welding Inspector.
- I. Testing Agency: Shall be selected and paid for by the Owner, unless otherwise specified; re-testing paid for by the Contractor.
- J. Contractor's Quality Control Plan: Quality Control includes the functions performed by the Contractor to ensure that the material and workmanship of concrete construction meets the project specifications and applicable standards. The Contractor shall submit a Quality Control Plan that addresses all inspection issues, including testing and inspection per ACI. The verification testing and inspection carried out by the Testing Agency does not relieve the contractor of the responsibility for conducting their own quality control/inspection program to ensure the requirements of the Contract Documents have been met. The Contractor's Quality Control Plan will be reviewed by the Testing Agency.
- K. Quality Control Inspector Qualifications: Along with Quality Control Plan, Contractor shall submit written qualifications for all inspectors to be assigned Quality Control functions for concrete work.
- L. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from one source, and obtain admixtures through one source from a single manufacturer.
- M. Mechanical Bar Couplers shall have a current ICC-ES or IAPMO Evaluation Report that indicates compliance with the requirements of these specifications.
- N. Steel Reinforcing Allowable Tolerances: Comply with ACI 117 and requirements in Section 03 20 00.
  - 1. Refer to Section 03 20 00.
- O. Concrete Testing Service: Engage a qualified independent testing agency to perform material evaluation tests and to test concrete mixtures. When mixes are proportioned by trial batch method, engage a Laboratory conforming to

ASTM E329 and under direction of a Professional Engineer licensed in the State in which the Project is located.

**P. Tests and Inspections:**

1. Provide special inspections and testing as described in the “Statement of Structural Special Inspections and Testing” within the structural drawings, and/or TIO form, and as required by this section.
2. A testing program is required prior to start of construction. Testing program to be done in Compliance with the CBC requirements and in collaboration with Testing Laboratory, Design team, contractor, owner and submitted for review by the agency in charge of building enforcement. Requirements below are minimum requirements; additional requirements may be required in final testing program.
3. The following tests shall be made by a recognized testing laboratory selected by the Owner and approved by the governing agency. All tests shall be in accordance with the previously mentioned standards and ACI 318 Section 26.12. A complete record of all tests and inspections shall be kept per CBC Section 1704.5.
  - a. Compressive Strength: Make and cure in accordance with ASTM C-31. Test in accordance with ASTM C-39 and ACI 318 Section 26.12. Standard cure testing shall be utilized. Supplementary field cure testing shall occur where required by SEOR and/or AHJ.
    - 1) A record shall be made of time and of locations of concrete from which samples were taken.
    - 2) A minimum of five identical cylinders shall be taken from each pour of 150 cubic yards or 5000 square feet or part thereof, being placed each day per ACI 318 Section 26.12.2. One cylinder shall be tested at age 7 days, and a minimum of three at age 28 days unless otherwise specified. Preserve a minimum of one remaining cylinder for future use.
  - b. Concrete consistency (slump) shall be tested in accordance with ASTM C143.
4. Provide full time inspection per CBC Section 1705.3 during the taking of test specimens and during the placing of all concrete and embedded steel.
5. See Section 03 20 00 for reinforcing steel tests and inspections.

**1.7 DELIVERY, STORAGE AND HANDLING**

**A. Steel Reinforcement:**

1. See Section 03 20 00.

**B. Deliver and store welding electrodes in accordance with AWS D1.4.**



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- C. Formwork: Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use.
- D. Concrete Materials:
  - 1. Protect cement from moisture and rotate stock to ensure fresh materials.
  - 2. Protect aggregates as necessary to maintain saturated condition when batched.
  - 3. Storage methods should comply with ACI 301 4.1.4.
- E. Contractor to coordinate with owner and/or testing laboratory to provide facilities for job curing of test cylinders and transporting to Testing Laboratory.
- F. Comply with all local building and fire codes for fire safety during construction.

## **PART 2 - PRODUCTS**

### **2.1 CONCRETE MIXES**

- A. Concrete mixes shall be as stated in the Structural Documents with strength, maximum aggregate size, weight, maximum water to cement ratio, and location of usage.
  - 1. Cement content as required by mix design (ACI 318 Section 26.4.3).
  - 2. Admixtures: Water Reducing
  - 3. Weight
    - a. Normal Weight Concrete (NWC): 150 lbs. per cubic foot maximum

### **2.2 REINFORCEMENT MATERIALS**

- A. Comply with requirements of Section 03 20 00.

### **2.3 CONCRETE MATERIALS**

- A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:
  - 1. Portland Cement: ASTM C150, Type II, II/V, Type V, or ASTM C595 Type 1L. One brand of cement shall be used throughout to maintain uniform color for all exposed concrete.
  - 2. Supplement Portland Cement with the following Supplementary Cementitious Materials (SCM):
    - a. Fly Ash Pozzolan: ASTM C618, F as required.

- b. Blast-Furnace Slag: ASTM C989-10
  - c. Silica Fume: ASTM C1240, proportioned in accordance with ACI 211.1.
- 3. The SCM producer shall have a minimum of 5 years experience in the production of acceptable SCM and shall practice an effective quality control program to guard against contamination of the SCM.
  - 4. Cementitious material used shall have at least 2 years of use with proposed aggregates without detrimental reaction.
  - 5. Alkali content shall not exceed 0.6% when tested in accordance with ASTM C114.
  - 6. The temperature of cement delivered to the plant shall not exceed 150 degrees F.
- B. Normal-Weight Aggregates: ASTM C33, fine and coarse aggregate, graded. Provide aggregates from a single source with documented service record data of at least 10 years' satisfactory service in similar applications and service conditions using similar aggregates and cementitious materials. Aggregate shall be crushed granite or Perkins type. Aggregate size shall be determined considering the maximum size listed on drawings, spacing of steel reinforcement, depth of slab, and thickness of concrete member.
- 1. Fine Aggregate: Uniformly graded, clean sand, free from excessive fines, organic materials or other deleterious materials. Free of materials with deleterious reactivity to alkali in cement.
- C. Water: Clean and free from injurious amounts of oil, acids, alkali, organic matter and other deleterious substances; suitable for domestic consumption.
- D. Use of shotcrete except where specifically permitted in contract documents is prohibited.
- E. Use of Returned Plastic Concrete (RPC) or Returned Fresh Concrete is prohibited.

## 2.4 ADMIXTURES

- A. General: Where more than one is used, admixtures shall be compatible. Use of admixtures shall be consistent throughout Work.
- 1. Use of alternate admixtures may only be used with the written acceptance of the Architect. See Substitutions Division 01 – Product Requirements.
  - 2. Admixtures to be in accordance with ACI 318 Section 26.4.1.4.
  - 3. Prohibited Admixtures: Admixtures containing more than 0.05 percent chloride ions, fluorides, sulphites, thiocyanates, and/or nitrates are not

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permitted. Do not use admixtures that will negatively impact the visual finish of concrete exposed to view. Calcium chloride is not permitted.

- B. Air-Entraining Admixture: ASTM C 260, certified by manufacturer to be compatible with other admixtures.
  - 1. Available Products:
    - a. Grace Construction Materials; Darex AEA or Daravair.
    - b. Master Builders, Inc.; MB-VR or Micro Air.
    - c. Euclid Chemical Company (The); Air Mix.
- C. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
  - 1. Water-Reducing (Plasticizing) Admixture: ASTM C494, Type A for use in cool weather. Available Products:
    - a. Grace Construction Products, W. R. Grace & Co.; "WRDA with Hycol".
    - b. Master Builders, Inc.; "Pozzolith 220N".
    - c. Euclid Chemical Company (The); "WR-75, WR-91 or Eucon MR".
  - 2. Retarding Admixture: ASTM C494, Type B.
  - 3. Water-Reducing and Retarding Admixture: ASTM C494, Type D for use in hot weather. Available Products:
    - a. Sika Corporation; "Sikament 30".
    - b. Euclid Chemical Company (The); "Eucon Retarder-75".
  - 4. Mid-Range, Water-Reducers ASTM C494. Available Products:
    - a. Master Builders "Polyheed."
  - 5. Plasticizing and Retarding Admixture: ASTM C1017, Type II.
  - 6. Non-Chloride, Non-Corrosive Accelerating Admixture: ASTM C494, Type C or E. Manufacturer must have long-term non-corrosive test data from an independent testing laboratory (of at least a year's duration) using an acceptable accelerated corrosion test method. Available Products:
    - a. Euclid Chemical Company (The); "Accelguard 80, 90, or NCA".
  - 7. Shrinkage Reducing Admixture: ASTM C494, Type S.
    - a. Euclid Chemical Company; Eucon SRA Floor; Eucon SRA-XT.
    - b. GCP Applied Technologies; Eclipse Floor 200; Eclipse 4500.

8. Waterproofing Admixture: Admixture formulated to reduce permeability to liquid water, with no adverse effect on concrete properties.
  - a. Admixture Composition: Crystalline, functioning by growth of crystals in capillary pores.
  - b. Admixture Composition: Hydrophobic polymer waterproofing and corrosion inhibitor, functioning by closing concrete pores and chemical bonding.
  - c. Permeability of Cured Concrete: No measurable leakage when tested in accordance with COE CRD-C 48 at 200 psi (1.38 MPa); provide test reports.
  - d. Potable Water Contact Approval: National Science Foundation (NSF) certification for use on structures holding potable water, based on testing in accordance with NSF 61 and NSF 372.
  - e. Available Products:
    - 1) Euclid Chemical Company; Eucon Vandex AM-10.
    - 2) W. R. Meadows, Inc; ADI-CON CW Plus.
    - 3) Xypex Chemical Corporation; XYPEX Admix C-500.

D. Set-Accelerating Corrosion-Inhibiting Admixture: Commercially formulated, anodic inhibitor or mixed cathodic and anodic inhibitor; capable of forming a protective barrier and minimizing chloride reactions with steel reinforcement in concrete and complying with ASTM C494, Type C.

1. Available Products:
  - a. Euclid Chemical Company (The); Eucon CIA.
  - b. Grace Construction Products, W. R. Grace & Co.; DCI.
  - c. Master Builders, Inc.; Rheocrete CNI.
  - d. Sika Corporation; Sika CNI.

## 2.5 ACCESSORY MATERIALS

### A. Underslab Vapor Retarder:

1. Sheet Material: ASTM E 1745, Class A, not less than 15 mils thickness. Suitable for installation in contact with soil or granular fill under concrete slabs. Single-ply polyethylene is prohibited. Include manufacturer's recommended adhesive or pressure-sensitive tape. Plastic Vapor Retarder shall have a water-vapor transmission rate (WVTR) no greater than .008 perms (grain/h xft<sup>2</sup> in x Hg) when tested in accordance with ASTM E96. Include manufacturer's recommended tape with water vapor transmission rate no greater than 0.3 perms when tested in accordance with ASTM E96. Tape shall be: a minimum of 6-mils thick, a minimum of 3 ¾ inches wide, manufactured from high density polyethylene, and have

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pressure sensitive adhesive. Include manufacturer's recommended vapor resistant mastic.

a. Sheet Products:

- 1) Alumiseal Corporation; Zero Perm Vapor Barrier.
- 2) Henry Company (Fortifiber); Moistop Ultra 15.
- 3) Raven Industries Inc.; Vapor Block 15.
- 4) Reef Industries, Inc.; Griffolyn Type-65G or 105.
- 5) W.R. Meadows, Inc.; PERMINATOR Class A - 15 mils.
- 6) STEGO Industries LLC; Stego Wrap Vapor Barrier.
- 7) Substitutions: See Section 01 60 00 - Product Requirements.

b. Accessory Products: Vapor retarder manufacturer's recommended tape, adhesive, mastic, prefabricated boots, etc., for sealing seams and penetrations.

1) Vapor Retarder Tape:

- (a) Water Vapor Transmission Rate: ASTM E 96, 0.3 perms or lower
- (b) Minimum 6-mils thick
- (c) Minimum 3 3/4 inches wide
- (d) Manufactured from High Density Polyethylene
- (e) Pressure Sensitive Adhesive

B. Non-Shrink Cementitious Grout: Premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents. Acceptance by Architect required before using.

1. Grout: Comply with ASTM C1107.
2. Height Change, Plastic State; when tested in accordance with ASTM C827:
  - a. Maximum: Plus 4 percent.
  - b. Minimum: Plus 1 percent.
3. When placed at a flowable consistency there shall be at least 95% bearing under an 18 inches x 36 inches base plate.
4. Minimum Compressive Strength at 48 Hours: 3,000 pounds per square inch.
5. Minimum Compressive Strength at 28 Days, ASTM C109: 7,000 pounds per square inch
6. Flowable Products:
  - a. Euclid Chemical Company; Hi-Flow Grout.
  - b. W. R. Meadows, Inc; 588-10K; 1428 HP.
  - c. BASF Construction Products; Masterflow 713 or 928.

- d. Sika Corporation; Sika Grout 328.
  - e. SpecChem; SC Precision Grout
  - f. Metallic grout equivalent to Master Builders "Embeco" may be used only where covered by earth, concrete, or masonry.
  - g. Substitutions: See Division 01 - Product Requirements.
7. Low-Slump, Dry Pack Products:
- a. Dry Pack products may only be used where approved by Architect or otherwise indicated in Drawings.
    - 1) Euclid Chemical Company; DRY PACK GROUT.
    - 2) Five Star Products, Inc; Five Star Grout.
    - 3) L&M Construction Chemicals, Inc, a subsidiary of Laticrete International, Inc; Duragrout.
    - 4) SpecChem, LLC; SC Multipurpose Grout.
    - 5) W. R. Meadows, Inc; PAC-IT.
    - 6) Substitutions: See Division 01 - Product Requirements.
- C. Non-Shrink Epoxy Grout: For anchor reinforcing steel or threaded rods in concrete. Moisture-insensitive, two-part; consisting of epoxy resin, non-metallic aggregate, and activator.
- 1. Composition: High solids content material exhibiting positive expansion when tested in accordance with ASTM C827.
    - a. Maximum Height Change: Plus 4 percent.
    - b. Minimum Height Change: Plus 1 percent.
  - 2. Minimum Compressive Strength at 7 days, ASTM C579: 12,000 pounds per square inch (82.7 MPa).
  - 3. Products:
    - a. BASF Construction Products; Masterflow MP
    - b. Sika Corporation; Sikadur 32 Hi-Mod
    - c. Euclid Chemical Company; Epoxy 452 or E3G.
    - d. Five Star Products, Inc; Five Star DP Epoxy Grout.
    - e. SpecChem, LLC; SpecPoxxy Grout.
    - f. Substitutions: See Division 01 - Product Requirements.
- D. Floor Leveling and Fill Materials
- 1. Epoxy Concrete Mortar (where areas to fill are less than ¼-inch thick): Floor leveling, non-shrink trowel applied epoxy concrete mortar.
  - 2. Concrete Mortar (where areas to fill are greater than ¼-inch thick): Floor leveling, patching and repair, non-shrink trowel applied concrete mortar.

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3. Cementitious Floor Leveling Material: Shall be self-leveling or trowelable with a minimum 28 day compressive strength of 3000 psi in accordance with ASTM C-109.
  - a. The Quikrete Companies; Quikrete No. 1249.
  - b. Ardex; V-1200.
  - c. Mapei; "UltraFlex".
  - d. Substitutions: See Division 01 - Product Requirements.

**2.6 BONDING AND JOINTING PRODUCTS**

**A. Epoxy Bonding System:**

1. Complying with ASTM C881 and of Type required for specific application. Two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade to suit requirements, and as follows:
  - a. Types I and II, non-load bearing or IV and V, load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.
    - 1) CTS Cement Manufacturing Corporation; Fast Anchoring and Repair Adhesive.
    - 2) Euclid Chemical Company; DURAL FAST SET LV.
    - 3) Mapei Corporation; Planibond AE, Planibond 3C.
    - 4) Substitutions: See Division 01 - Product Requirements.

**B. Waterproofing Admixture Slurry: Slurry coat of Portland cement, sand, and crystalline waterproofing additive, mixed with water in proportions recommended by manufacturer to achieve waterproofing at cold joints in concrete.**

1. Products:
  - a. W. R. Meadows, Inc; ADI-CON CW Plus.
  - b. Xypex Chemical Corporation; XYPEX Concentrate.
  - c. Substitutions: See Division 01 - Product Requirements.

**C. Waterstops:**

1. Rubber, complying with COE CRD-C 513.
2. PVC, complying with COE CRD-C 572.
3. Bentonite and butyl rubber, complying with NSF 61 and NSF 372.
4. Synthetic rubber; swells to 1000 percent of original size in clean water.
5. Configuration: As indicated on drawings.
6. Size: As indicated on drawings.
7. Products:

- a. Penetron; Penebar SW-55.
  - b. CETCO, a division of Minerals Technologies Inc; WATERSTOP RX.
  - c. Kryton International, Inc; Krytonite Swelling Waterstop.
  - d. Substitutions: See Division 01 - Product Requirements.
- D. Reglets: Formed steel sheet, galvanized, not less than 26 gauge, with temporary filler to prevent concrete intrusion during placement.
- E. Slab Expansion and Isolation Joint Filler: Preformed non-extruded resilient filler.
  - 1. Material:
    - a. ASTM D1751, cellulose fiber.
    - b. ASTM D1752, sponge rubber (Type I).
    - c. ASTM D8139, semi-rigid, closed-cell polypropylene foam.
  - 2. Products:
    - a. Burke; Fiber Expansion Joint.
    - b. W.R. Meadows; Fibrated Expansion Joint Filler with Snap-Cap; Deck-O-Foam Joint Filler with pre-scored top strip.
    - c. Nomaco, Inc; Nomaflex Expansion Joint Filler with Void Cap Option.
    - d. Substitutions: See Division 01 - Product Requirements.
- F. Slab Contraction Joint Device: Preformed linear strip intended for pressing into wet concrete to provide straight route for shrinkage cracking.
- G. 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.
  - 1. Provide removable plastic cap strip that forms wedge-shaped joint for sealant installation.
  - 2. Height: To suit slab thickness.

## 2.7 CURING MATERIALS

- A. Evaporation Reducer: Liquid thin-film-forming compound that reduces rapid moisture loss caused by high temperature, low humidity, and high winds; intended for application immediately after concrete placement.
  - 1. Conform with State of California Air Resources Board VOC Regulations.
  - 2. Products:
    - a. Euclid Chemical Company ; EUCOBAR.
    - b. Kaufman Products Inc; VaporAid.



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- c. W. R. Meadows, Inc ; Evapre or Evapre-RTU.
  - d. Substitutions: See Division 01 - Product Requirements.
- B. Curing Compound, Naturally Dissipating: Clear, water-based, liquid membrane-forming compound; complying with ASTM C309:
  - 1. Type 1, Class A and B, and AASHTO Specification M-148;
  - 2. Type 1, Class A and B requirements, and State of California Air Resources Board VOC Regulations.
  - 3. Sodium Silicate compounds are prohibited.
  - 4. Certified by curing compound manufacturer to not interfere with bonding of floor covering.
  - 5. Product dissipates within 4 to 6 weeks.
  - 6. Products:
    - a. Euclid Chemical Company; COLOR-CRETE CURE AND SEAL VOC.
    - b. W. R. Meadows, Inc; 1100-Clear.
    - c. Substitutions: See Division 01 - Product Requirements.
- C. Curing Agent, Water-Cure Equivalent Type: Clear, water-based, non-film-forming, liquid-water cure replacement agent.
  - 1. Compressive Strength of Treated Concrete: Equal to or greater than strength after 14-day water cure when tested according to ASTM C39.
  - 2. Conform with State of California Air Resources Board VOC Regulations.
- D. Resin Curing Compound: Solvent-based liquid, white pigmented, membrane-forming.
  - 1. For use on exterior slabs. When slab will be painted, sealed, topped, or receive other applied finish, completely remove curing compound after curing is complete and before finish coatings are applied.
  - 2. Comply with ASTM C309, Type 2, Classes A and B.
  - 3. Conform with State of California Air Resources Board VOC Regulations.
  - 4. VOC Content: Less than 200 g/L.
  - 5. Solids Content: 20 percent, minimum.
  - 6. Products:
    - a. Euclid Chemical Company; KUREZ DR-VOX; KUREZ DR-100.
    - b. Kaufman Products Inc; Thinfilm 450 Resin Base.
    - c. Substitutions: See Division 01 - Product Requirements.
- E. Curing and Sealing Compound, Moisture Emission-Reducing, Membrane-Forming: Clear, liquid sealer for application to newly-placed concrete; capable of providing adequate bond for flooring adhesives, initially and over the long

term; with sufficient moisture vapor impermeability to prevent deterioration of flooring adhesives due to moisture emission.

1. Use this product to cure and seal all slabs to receive adhesively applied flooring or roofing.
2. Comply with ASTM C309 and ASTM C1315 Type I Class A.
3. Conform with State of California Air Resources Board VOC Regulations.
4. VOC Content: Less than 100 g/L.
5. Solids Content: 25 percent, minimum.
6. Sodium silicate compounds prohibited.
7. Products:
  - a. Euclid Chemical Company; Diamond-Clear VOX
  - b. Floor Seal Technology, Inc; VaporSeal 309 System.
  - c. Spec Chem; Cure & Seal WB.
  - d. ShawContract; Moisture Shield
  - e. Substitutions: See Division 01 - Product Requirements.

- F. Curing and Sealing Compound, Moisture Emission-Reducing, Penetrating: Clear, water-based, non-film-forming curing agent; capable of providing adequate bond for flooring adhesives, initially and over the long term; with sufficient moisture vapor impermeability to prevent deterioration of flooring adhesives due to moisture emission, moisture vapor emission, and alkalinity.

1. Use this product to cure and seal all slabs to receive adhesively applied flooring or roofing.
2. Compressive Strength of Treated Concrete: Equal to or greater than strength after 28-day water cure when tested according to ASTM C39.
3. Chloride Ion Resistance of Treated Concrete: Equal to or greater than strength after 28-day water cure when tested according to ASTM C1202.
4. Comply with ASTM C309 and ASTM C1315 Type I Class A.
5. Conform with State of California Air Resources Board VOC Regulations.
6. Products:
  - a. W.R. Meadows; Pentreat 244.
  - b. Substitutions: See Division 01 - Product Requirements.

- G. Curing and Densifying Compound, Membrane-Forming: Lithium polysilicate-based, clear, liquid densifier for application to newly-placed concrete.

1. Comply with ASTM C309.
2. Conform with State of California Air Resources Board VOC Regulations.
3. Solids Content: 25 percent, minimum.
4. Products:
  - a. BASF; Sonosil.
  - b. Euclid Chemical Company; Eucosil.
  - c. Substitutions: See Division 01 - Product Requirements.

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- H. Moisture-Retaining Sheet/Cover: ASTM C171.
  - 1. Provide in a thickness of 42 mils; standard weight of 53 lbs./1000 ft<sup>2</sup>; tensile strength (machine direction) of 36 lbs./in.; and puncture resistance of 70 lbs.
    - a. Fiber reinforced asphaltic vapor barrier building paper, regular.
    - b. Polyethylene film, white opaque.
    - c. White-burlap-polyethylene sheet.
- I. Absorptive Cover: AASHTO M182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry.
- J. Water: Potable, not detrimental to concrete.

**2.8 POST-INSTALLED CONCRETE ANCHORS**

- A. Expansion Anchors:
  - 1. As indicated on Drawings.
- B. Adhesive Anchors:
  - 1. As indicated on Drawings.
- C. Screw Anchors:
  - 1. As indicated on Drawings.

**2.9 REPAIR MATERIALS**

- A. High Strength Flowing Repair Mortar: For forming and pouring structural members, or large horizontal repairs, provide the flowable one-part, high strength microsilica modified repair mortar with 3/8" aggregate. The product shall achieve 9000 psi @ 28-days at a 9-inch slump.
- B. Concrete Patching Mortar:
  - 1. Horizontal repairs, ASTM C1059, Type II. Available Products:
    - a. Euclid Chemical Co.; Euco Thin Coat, Concrete Coat.
    - b. Sika Chemical Corp.; Sikatop 121 or 122.
    - c. Substitutions: See Section 01 60 00 - Product Requirements.
- C. Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch and that can be feathered at edges to match adjacent floor elevations.

1. Cement Binder: ASTM C150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C219.
2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by underlayment manufacturer.
4. Compressive Strength: Not less than specified strength at 28 days when tested according to ASTM C109.
5. Bond Strength: Not less than specified strength at 28 days when tested according to ASTM C1042.
6. Available Products:
  - a. Euclid Chemical Co.; Flo-Top.
  - b. Master Builders; UnderLayment 110.
  - c. Substitutions: See Division 01 - Product Requirements.

D. Repair Overlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch and that can be feathered at edges to match adjacent floor elevations.

1. Cement Binder: ASTM C150, Portland cement or hydraulic or blended hydraulic cement as defined in ASTM C219.
2. Primer: Product of topping manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by topping manufacturer.
4. Compressive Strength: Not less than specified strength at 28 days when tested according to ASTM C109.
5. Product shall exhibit the following properties: Chaplin Abrasion Test – 0.0079-inches maximum at 28 days.
6. Available Products:
  - a. Euclid Chemical Co.; Thin Top SL.
  - b. Master Builders; Topping 112.
  - c. Substitutions: See Division 01 - Product Requirements.

## 2.10 CONCRETE MIX DESIGN

A. General:

1. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.
  - a. Procurement of concrete mix design is responsibility of Contractor.

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- b. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.
  - c. Contractor shall notify the Testing Laboratory and Architect of intent to use concrete pumps to place concrete so that mix designs can be modified accordingly.
- 2. Supplementary Cementitious Materials (SCM): Fly ash shall not exceed 25% of the total cementitious material, unless otherwise indicated by Architect and Structural Engineer. Where slag is used to replace cement, slag shall not exceed 25% of the total cementitious material by mass. Ternary systems where more than one supplementary cementitious material is used are prohibited without consent of SEOR.
- 3. Limit water-soluble, chloride-ion content in hardened concrete to specified percent by weight of cement.
- 4. Admixtures: Use admixtures according to manufacturer's written instructions.
  - a. Use admixtures in concrete, as required, for placement and workability.
  - b. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
  - c. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a water-cementitious materials ratio below 0.50.
  - d. Use corrosion-inhibiting admixture in concrete mixtures where required.

**B. Mixtures:**

- 1. Initial mix design shall be prepared for all concrete in accordance with ACI 318 Section 26.4.3. Mix proportions shall be determined in accordance with ACI 318 Section 26.4.3 or 26.4.4. In the event that additional mix designs are required due to depletion of aggregate sources, aggregate not conforming to Specifications or at request of Contractor, these mixes shall be prepared as above.
- 2. Definition of Mix Properties to be specified for each mix:
  - a. Concrete density, either normal or light weight concrete.
  - b. Concrete strength (f'c) as the minimum compressive strength at a specified number of days, tested in accordance with ASTM C39.
  - c. Aggregate size as the largest of the coarse aggregate.
  - d. Slump limit. Slump shall be measured at the point of delivery in accordance with ASTM C143 prior to the addition of superplasticizer (if used). Slump tolerance shall meet the requirements of ACI 117 and shall be 4 inch plus or minus 1 inch for general concrete

placement. Mixes employing the specified mid-range water reducer shall provide a measured slump not to exceed 7 inch  $\pm$  1 inch after dosing, 2 inch  $\pm$  1 inch before dosing. Use water reducing admixtures as required to provide a workable consistency for pump mixers. Water shall not be added at the jobsite without written review by the structural engineer.

- e. Air content by volume and may be plus or minus 1.5 percent at point of delivery.
- f. Water/cement ratio is a maximum and specified by weight.
- g. SCM cement replacement ratio as a %.

## 2.11 MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94 or ASTM C685 and ASTM C 1116 (fiber reinforced concrete when applicable), and furnish batch ticket information.

- 1. The batching plant shall be equipped with an electric metering device capable of determining moisture content of sand.
- 2. Begin the mixing operation within thirty minutes after the cement has been intermingled with the aggregates.
- 3. After mix water has been added, concrete shall be mixed not less than 1-1/2 minutes nor more than 1-1/2 hours. Concrete shall be rejected if not deposited within the time specified.

- B. Project-Site Mixing: Use only if method of storing material, mixing of material and type of mixing equipment is approved by Architect. Approval of site mixing does not relieve Contractor of any other requirements of Specifications. Measure, batch, and mix concrete materials and concrete according to ASTM C 94. Mix concrete materials in appropriate drum-type batch machine mixer.

- 1. For mixer capacity of 1 cu. yd. or smaller, continue mixing at least 1-1/2 minutes, but not more than 5 minutes after ingredients are in mixer, before any part of batch is released.
- 2. For mixer capacity larger than 1 cu. yd., increase mixing time by 15 seconds for each additional 1 cu. yd.
- 3. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mixture type, mixture time, quantity, and amount of water added. Record approximate location of final deposit in structure.

- C. Admixtures:

- 1. Air entrained and chemical admixtures shall be charged into mixer as a solution and shall be dispensed by an automatic dispenser or similar metering device. Powdered admixtures shall be weighed or measured by

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volume as recommended by manufacturer. Accuracy of measurement of any admixture shall be within plus or minus 3%.

2. Two or more admixtures may be used in same concrete, provided such admixtures are added separately during batching sequence, and provided further that admixtures used in that combination retain full efficiency and have no deleterious effect on concrete or on properties of each other.
3. All admixtures are to be approved by Architect prior to commencing this work.

**D. Re-tempering:**

1. Concrete shall be mixed only in quantities for immediate use. Concrete which has set shall be discarded, not re-tempered.
2. Indiscriminate addition of water to increase slump is prohibited.
3. When concrete arrives at project with slump below that suitable for placing, water may be added only if neither maximum permissible water-cement ratio nor maximum slump is exceeded. Water shall be incorporated by additional mixing equal to at least half of total mixing time required. Any addition of water above that permitted by limitation of water-cement ratio shall be accompanied by a quantity of cement sufficient to maintain proper water-cement ratio. Such additions shall only be used if approved by Architect. In any event, with or without addition of cement, not more than 2 gallons of water per cubic yard of concrete, over that specified in design mix, shall be added.

**E. Cold Weather Batching:**

1. When average of the highest and lowest air temperature falls below 40 degrees F for more than three consecutive days, provide adequate equipment for heating concrete materials. No frozen materials or materials containing ice shall be used. When placed in forms, concrete placed in these temperatures shall have a minimum temperature based on dimensions of concrete sections placed per ACI 301.

**F. Hot Weather Batching:**

1. Concrete deposited in hot weather shall have a placing temperature below 95 degrees F per ACI 301. If necessary, ingredients shall be cooled to accomplish this.

**G. Do not use shrinkage-reducing admixture (SRA) in same concrete batch with a moisture vapor reduction admixture (MVRA) or porosity inhibiting admixture (PIA).**

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Verify lines, levels, and dimensions before proceeding with work of this section.

### **3.2 PREPARATION**

- A. Prior to Work specified in this Section, carefully inspect the installed Work of other trades and verify that such Work is complete to the point where this installation may properly commence.
- B. Reinforcement: Comply with requirements of Section 03 20 00.
- C. Coordinate placement of embedded items with erection of concrete formwork and placement of form accessories.
- D. Notify the Architect at least 48 hours in advance of the beginning of pouring operations and at the completion of formwork and location of all construction joints. An inspection of forms and joints will be made for approval of finished work and general layout only. The foregoing inspection shall in no way relieve the Contractor of responsibility of design and safety of formwork, bulkheads and shorings.
- E. Ensure Excavations are sufficient to permit placement, inspection, and removal of forms. The entire place of deposit shall have been cleaned of wood chips, sawdust, dirt, debris, hardened concrete and other foreign matter. No wooden ties or blocking shall be left in the concrete except where indicated for attachment of other work.
- F. Concrete surfaces to which fresh concrete is to be bonded shall be brush cleaned to remove all dust and foreign matter and to expose the aggregate, and then coated with the bonding adhesive herein specified.
- G. Prior to placing concrete for any slabs on grade, the moisture content of the subgrade below the slabs shall be adjusted to at least optimum moisture.
- H. Verify geotechnical engineer has approved all foundation excavations.
- I. No concrete shall be placed until formwork and reinforcement has been approved by Architect. Clean forms of all debris and remove standing water. Thoroughly clean reinforcement and all handling equipment for mixing and transporting concrete. Concrete shall not be placed against reinforcing steel that is hot to the touch.
- J. Coordinate:



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1. Obtain necessary information for coordination of formwork with items to be embedded in concrete.
2. Coordinate size and location of openings in concrete.

**K. Discrepancies:**

1. Notify the Architect of any discrepancies or inconsistencies.
2. Do not proceed with installation in areas of discrepancy until such discrepancies have been fully resolved.

**L. 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 epoxy bonding system for bonding to damp surfaces, for structural load-bearing applications, and where curing under humid conditions is required.

**M. Concrete Slabs on Grade:**

1. Bases below exterior and interior slabs on grade shall be accurately leveled and compacted prior to placing of concrete.
2. Unless otherwise indicated, interior slabs on grade shall be poured over a minimum of four (4 inch) inches of compacted crushed rock, over a vapor retarder. Install vapor retarder under interior slabs on grade. Comply with ASTM E1643. Lap joints minimum 6 inches. Seal joints, seams and penetrations watertight with manufacturer's recommended products and follow manufacturer's written instructions. Repair damaged vapor retarder before covering.
3. Protect slab on grade subbase from moisture prior to placing concrete. Avoid wetting rock layer to allow adequate concrete curing and avoid future vapor transmission. If the subbase has been wet excessively, verify that water has been eliminated prior to placement of concrete.

**3.3 MISCELLANEOUS CONCRETE ITEMS**

**A. Filling In: Fill in holes and openings left in concrete structures, unless otherwise indicated, after work of other trades is in place. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete the Work.**

**B. Post-Installed Concrete Anchors**

1. Install in accordance with the manufacturer's recommendations and ICC-ES (or IAPMO) reports.
2. Use washers on all bolts.
3. Use care to avoid cutting or damaging reinforcing bars.

4. When exposed to view in the final structure, bolts shall be of a length that will extend entirely through but not more than 1/4-inch beyond the nuts unless otherwise shown on the Drawings.

### 3.4 JOINTS

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Existing Concrete to New Concrete Joints
  1. Chip keys and roughen existing concrete surfaces where new concrete abuts. Roughen surface by bush-hammering, chipping or sandblasting to remove surface mortar and expose clean aggregate.
  2. Drill and install dowels using epoxy grout in accordance with manufacturer's printed recommendations.
  3. Prime surface with 10-mil layer of epoxy adhesive using a stiff brush. Place concrete while the epoxy adhesive is still tacky. Re-prime if necessary.
- C. Joint Filling:
  1. Prepare, clean, and install joint filler according to manufacturer's written instructions.
    - a. Defer joint filling until concrete has aged at least a specified length of month(s). Do not fill joints until construction traffic has permanently ceased.
  2. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joint clean and dry.
  3. Install semirigid joint filler full depth in saw-cut joints and at least 2 inches deep in formed joints. Overfill joint and trim joint filler flush with top of joint after hardening.

### 3.5 PLACING CONCRETE

- A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed. Ensure that all foreign material has been removed from surfaces, including reinforcement and embedded items, against which concrete will be placed.
- B. Contractor shall notify the Testing Laboratory and Architect of intent to use concrete pumps to place concrete. Mix designs shall be modified accordingly as required.

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- C. The addition of water to the mix after leaving the plant is permitted only when the added water would not cause the mix design water/cement ratio to be exceeded. The addition of water at the site is contingent upon full-time inspection of the process by the owner's testing laboratory and the acceptance of the Inspector. Comply with ACI 301, section 4.3.2.1.
- D. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301.
- E. Method: Convey concrete as rapidly and directly as practicable to preserve quality and to prevent segregation. Deposit concrete in forms as nearly as practicable at its final position in a manner which will ensure that required quality is obtained. Chutes shall slope not less than 4 inches and not more than 6 inches per foot of horizontal run.
  - 1. Do not deposit concrete that has initially set. Retempering of concrete, which has partially set, is not permitted.
  - 2. The maximum time for discharge of concrete shall be per ASTM C94.
- F. Placement: Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete. Deposit concrete to avoid segregation.
  - 1. Once placing is started, carry it on as a continuous operation until placement of the panel or section is complete. Construction joints to be made only where indicated on the Drawings or on approved shop drawings. Prevent the formation of cold joints at other locations.
  - 2. Deposit concrete in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. Deposit concrete in a manner to avoid inclined construction joints.
  - 3. Particular care shall be used when starting a concrete pour to maintain the continuity of appearance. Use all means necessary to avoid blemishes, imperfections, or changes in the finish.
  - 4. Maintain reinforcement in position on chairs during concrete placement.
  - 5. Deposit concrete into forms in horizontal layers not exceeding 24 inches in thickness around building, proceeding along forms at a uniform rate and consolidating into previous pour. In no case shall concrete be poured into an accumulation of water ahead of pour, nor shall concrete be flowed along forms to its final place of deposit. Fresh concrete shall not be permitted to fall from a height greater than 6 feet without use of adjustable length pipes or, in narrow walls, of adjustable flexible hose sleeves. Concrete shall be scheduled so that placing is a continuous operation for the completion of each section between predetermined construction joints. If any concreting operation, once planned, cannot be carried on in a continuous operation, concreting shall stop at temporary bulkheads, located where resulting construction joints will least impair the strength of

the structure. Location of construction joints shall be as shown on the drawings or as approved by Structural Engineer. The rate of rise in walls shall not be less than 2 feet per hour.

- G. Consolidation: Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners. Concrete shall be thoroughly compacted and worked to all points with solid continuous contact to forms and reinforcement to eliminate air pockets and honeycombing.
1. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301. Use and type of vibrator shall conform to ACI 309, Guide for Consolidation of Concrete.
  2. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. Place vibrating element directly in concrete and not attached to either inside or outside of forms or to reinforcing steel.
  3. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate. Do not over-vibrate concrete.
- H. Initial Finishing:
1. Screed slab surfaces with a straightedge and strike off to correct elevations.
  2. Where floor drains or floor slopes are indicated, slope slabs uniformly to provide even fall for drainage.
  3. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.
- I. Concrete Slabs on Grade:
1. Exterior and interior concrete slabs on grade shall be poured as required under this Section. Base shall be accurately leveled and compacted prior to placing of concrete.
  2. Typically, interior slabs on grade shall be poured over a minimum of four (4 inch) inches of clean crushed rock, unless otherwise indicated, over a vapor retarder. Base section shall meet the requirements within the Geotechnical Engineering report.
  3. Protect slab on grade subbase from moisture prior to placing concrete. Avoid wetting rock layer to allow adequate concrete curing and avoid

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future vapor transmission. If the subbase has been wet excessively, verify that water has been eliminated prior to placement of concrete.

4. Screed slab surfaces with a straightedge and strike off to correct elevations.
- J. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Concrete placed in these temperatures shall have a minimum temperature based on dimensions of concrete sections placed as shown in ACI 301. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
1. When concrete is expected to be placed at air temperatures of less than 40 deg F, contractor shall review with Architect all special procedures that will be used including mix design modifications and methods of protection. This review shall occur prior to the expected extreme temperatures.
  2. Provide sufficient protection material and equipment on the Project site in advance of the time when the mean daily temperatures are expected to drop below 40 degrees F.
  3. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301. In addition, take precautions including, but not limited to:
    - a. Use non-chloride, non-corrosive accelerating admixture in accordance with previously accepted submittals.
    - b. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
    - c. Do not use calcium chloride, salt, or other materials containing antifreeze agents unless otherwise specified and approved in mixture designs.
- K. Hot-Weather Placement: Comply with ACI 301 and ACI 305.1 and as follows:
1. When concrete is expected to be placed at air temperatures of greater than 75 deg F, contractor shall review with Architect all special procedures that will be used including mix design modifications and methods of protection. This review shall occur prior to the expected extreme temperatures.
  2. Provide sufficient protection material and equipment on the Project site in advance of the time when the mean daily temperatures are expected to rise above 75 degrees F.
  3. When air temperature exceeds 75 deg F, take special precautions to prevent slump loss, rapid setting, and plastic shrinkage; including but not limited to:

- a. Maintain concrete temperature below 95 deg F 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.
  - b. Keep aggregate piles continuously moist by sprinkling with water. Temperature of Concrete: The temperature of the concrete mix at the time it is being placed in the forms shall not exceed 95 degrees F per ACI 301. The method employed to provide this temperature shall in no way alter or endanger the design mix or the design strength required.
  - c. Use set retarding admixture in accordance with previously accepted submittals.
  - d. Convey, deposit, finish and commence curing of concrete as rapidly as practicable.
- L. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.
- M. Minimize evaporation from concrete in place by providing shade and windbreaks. Maintain such protection in place for 14 days minimum.

### 3.6 FINISHING FLOORS AND SLABS (FLATWORK)

- A. Comply with ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Unless otherwise indicated or specified, flatwork shall have an integral monolithic finish.
- C. Integral Monolithic Finish: Apply as soon as freshly poured concrete slabs will bear weight of workers. Pour slabs full thickness to finish floor elevations indicated. At proper time, tamp surface repeatedly with a wire mesh or grid tamper in a manner to force aggregate down below surface and to bring sufficient mortar to surface to provide for a smooth coating of cement mortar over entire surface. Allow surface mortar to partially set, then float with wooden floats and finish with one of following, as required.
  - 1. Broom Finish: Steel trowel surface to a smooth dense surface free of lines, tool marks, cat faces and other imperfections. After troweling, and before final set, give surface a broom finish, brushing in direction noted on Drawings, or as directed. Broom finish shall be used typically on exterior flatwork except as otherwise indicated or specified and shall be "medium" texture as approved by Architect.
  - 2. Smooth Steel Trowel Finish: Apply 2 steel trowelings to obtain hard, smooth surface. All lips, irregularities, uneven levels, etc. shall be worked

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out before last troweling. All interior flatwork shall have a smooth steel trowel finish unless specified otherwise.

- D. Slip-Resistive Finish: Before final floating, apply slip-resistive finish. Apply according to manufacturer's written instructions.
- E. Dry-Shake Floor Hardener Finish: After initial floating, apply dry-shake floor hardener to surfaces according to manufacturer's written instructions.

**3.7 CONCRETE SURFACE REPAIRS**

- A. Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval. Repair and replacement work will be done at Contractor's expense.
- B. Patching Mortar: Mix dry-pack patching mortar, consisting of one part portland cement to two and one-half parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing.
- C. Slabs on Grade: After entire slab is finished, shrinkage cracks that may appear shall be patched as follows:
  - 1. Where slab is not exposed or where appearance is not important, cracks larger than 1/32 inch wide shall be filled with cement grout and struck off level with surface.
  - 2. Where slab is exposed and appearance is important, unsightly cracks shall be repaired in a manner satisfactory in appearance to Architect. If this cannot be accomplished, concrete shall be considered defective.
- 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 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.
  - 4. 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.

5. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
  6. Repair defective areas, except random cracks and single holes 1 inch 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 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.
  7. Repair random cracks and single holes 1 inch 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.
- E. Perform structural repairs of concrete, subject to Architect's approval, using epoxy adhesive and patching mortar.
- F. Repair materials and installation not specified above may be used, subject to Architect's approval.

### 3.8 CURING AND PROTECTION

- A. Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 305.1 for hot-weather protection during curing. Concrete shall be maintained at not less than 50 degrees F nor more than 100 degrees F for a period of 72 hours after being deposited.
- B. Protection: Contractor shall be responsible for protection of finished concrete against injury by rain, cold, vibration, animal tracks, marking by visitors, vandalism, etc.
- C. 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 (7) days with the following materials:



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- a. Water.
    - b. Continuous water-fog spray.
    - c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch 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, and sealed by waterproof tape or adhesive. Cure for not less than seven (7) 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 will 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. After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer unless manufacturer certifies curing compound will 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.
  5. Interior slabs to receive adhesive-applied or resilient flooring: Cure only with moisture retaining cover. Do not cure with curing compound.
- D. Flatwork: Flatwork to be exposed, stained, or painted shall have curing process submitted and approved by the architect prior to construction.
1. Initial Curing Process:

- a. Mist Spraying: As soon as troweling of concrete surfaces is completed, exposed concrete shall be sprayed continuously with a special atomizer spray nozzle, capable of producing a fine mist. Spraying shall be done without any dripping of water from nozzle. Amount of spraying shall be such as to maintain surface of concrete moist without any water accumulating on surface. Maintain spraying for a minimum of 12 hours, or until such time as hereinafter described curing process is applied. Mist spraying will not normally be required when the ambient air temperature is below 90 degrees F.
2. Final Curing Process:
- a. Water Curing: Concrete shall be kept wet by mechanical sprinklers or by any other approved method which will keep surfaces continuously wet.
  - b. Saturated Burlap Curing: Finished surfaces shall be covered with a minimum of two layers of heavy burlap which shall be kept saturated during the curing period.
  - c. Curing Compounds: Membrane curing compounds of chlorinated rubber or resin type conforming to ASTM C309 may be used only if specifically approved by Architect. Use of membrane curing compound will not be permitted on surfaces to be painted, or to receive ceramic tile, membrane water-proofing or hardeners and sealers. Membrane curing compound may be used in areas to receive resilient floor tile, provided it is wax-free, compatible with adhesive used and approved by adhesive manufacturer. Agitate curing compounds thoroughly by mechanical means continuously during use and spray or brush uniformly in accordance with manufacturer's recommendations. Apply immediately following final finishing operation. All curing compounds shall conform to State of California Air Resources Board VOC Regulations.
  - d. Waterproof paper conforming to ASTM C 171, or opaque polyethylene film, may be used. Concrete shall be covered immediately following final finishing operation. Anchor paper or film securely and seal all edges in such a manner as to prevent moisture escaping from concrete.
- E. Refer to Drawings for areas of concrete slab not to receive curing compounds or hardening compounds. Where concrete floors are to receive heavy duty coatings, waterproof coatings and the like, verify with coating installer the type of finish required for specified coating.

### 3.9 SURFACE HARDENER AND SEALER

**Cast-in-Place Concrete**

- A. Seal all interior exposed flatwork with clear sealer, except surfaces receiving ceramic tile, quarry tile, poured flooring or other special finishes specified, or as scheduled on the Drawings.
  - 1. Apply sealer in 2 or 3 coats, in accordance with manufacturer's directions, using the maximum quantity recommended.
    - a. Concrete floors must be thoroughly cured for a minimum of 30 days and completely dry before treatment.
    - b. Surfaces to be treated must be clean, free of membrane curing compounds, dust, oil, grease and other foreign matter.
    - c. Upon completion, concrete surfaces shall be clean and without discoloration or traces of excess hardener left on the surface.
- B. Apply sprayable hardener/sealer at locations as scheduled or as indicated on the Drawings. Apply in accordance with the manufacturer's favorably reviewed application instructions and recommendations.

**3.10 DEFECTIVE CONCRETE**

- A. Defective concrete shall mean any of the following:
  - 1. Concrete not meeting 100 percent of the specified 28 day compressive strength.
  - 2. Concrete exhibiting rock pockets, voids, spalls, streaks, cracks, honeycombing, that has any sawdust, wood, or debris embedded in it, or is otherwise defective, and in the Architect's judgment these defects impair the proper strength or appearance of the work
  - 3. Exposed reinforcing to extent that strength, durability, or appearance is adversely affected.
  - 4. Concrete significantly out of place, line, or level.
  - 5. Concrete not containing the required embedded items.
  - 6. Any concrete work not in accordance with the Specification and Drawings.
- B. Upon determination that concrete strength is defective:
  - 1. Should cylinder tests fall below minimum strength specified, concrete mix for remainder of work shall be adjusted to produce required strength. Core samples shall be taken and tested from cast-in-place concrete where cylinders and samples indicate inferior concrete with less than minimum specified strength.
    - a. Cores of hardened concrete shall be taken and tested in accordance with ASTM C 42 and C 39. Number and location of such cores shall be subject to the approval of Architect.
    - b. Cost of core sampling and testing will be paid for by the Contractor.

- c. “85 percent” reduction in ACI 318 Section 26.12.4 will not justify low cylinder tests.
- C. Upon determining that concrete surface is defective, Contractor may restore concrete to acceptable condition by cutting, chipping, pointing, patching, grinding, if this can be done without significantly altering strength of structure. Permission to patch defective areas will not be considered a waiver of the right to require removal if patching does not, in the opinion of the Architect, satisfactorily restore quality and appearance.
- D. If core tests indicate that concrete is below the strength specified, or if patching does not restore concrete to specified quality and appearance, the concrete shall be deemed defective, and shall be removed and replaced without additional cost to the Owner.
- E. No repair work shall begin until the procedure has been reviewed by the Architect and Structural Engineer.

### 3.11 FIELD QUALITY CONTROL

- A. Testing and Inspecting: Owner will engage a special inspector and qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.
- B. Inspections:
  - 1. Steel reinforcement placement.
  - 2. Steel reinforcement welding.
  - 3. Post-installed concrete anchors, per ICC-ES or IAPMO recommendations.
  - 4. Verification of use of required design mixture.
  - 5. Concrete placement, including conveying and depositing.
  - 6. Curing procedures and maintenance of curing temperature.
  - 7. Verification of concrete strength
- C. Concrete Tests: Provide special inspections and testing as described in the “Statement of Structural Special Inspections and Testing” within the structural drawings and as required by this section.
  - 1. A testing program is required prior to start of construction. Testing program to be done in Compliance with the CBC requirements and in collaboration with Testing Laboratory, Design team, contractor, owner and submitted for review by the agency in charge of building enforcement. Requirements below are minimum requirements; additional requirements may be required in final testing program.
  - 2. The following tests shall be made by a recognized testing laboratory selected by the Owner and approved by the governing agency. All tests shall be in accordance with the previously mentioned standards and ACI

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### **Cast-in-Place Concrete**

318 Section 26.12. A complete record of all tests and inspections shall be kept per CBC Section 1903.1.

a. Compressive Strength: Make and cure in accordance with ASTM C31. Test in accordance with ASTM C39 and ACI 318 Section 26.12.

- 1) A record shall be made of time and of locations of concrete from which samples were taken.
- 2) Four identical cylinders shall be taken from each pour of 150 cubic yards or 5000 square feet or part thereof, being placed each day per ACI 318 Section 26.12.2. One cylinder shall be tested at age 7 days, and two at age 28 days unless otherwise specified. Preserve remaining cylinder for future use.

b. Concrete consistency (slump) shall be tested in accordance with ASTM C143. Perform one slump test for each set of test cylinders taken.

3. Provide full time inspection per CBC Section 1704.3 during the taking of test specimens and during the placing of all concrete and embedded steel.

#### **D. Reinforcing Steel**

1. See Section 03 20 00.

### **3.12 ADJUSTING AND CLEANING**

A. Remove all debris, excess materials, tools and equipment resulting from or used in this operation at completion of this work.

B. Surfaces to be painted shall be smooth and free of substances such as dirt, wax, excessive laitance, grease or materials that would prevent proper bonding of finishes.

1. Removal of foregoing contaminants, and complete removal of parting and curing compounds affecting proper paint bond, shall be responsibility of this Section of Work. Sandblast cleaning shall not be employed without specific approval of Structural Engineer.

**END OF SECTION 033000**

**SECTION 054000**  
**COLD-FORMED METAL FRAMING**

**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 SECTION INCLUDES**

- A. Formed steel stud interior wall framing.

**1.3 RELATED REQUIREMENTS**

- A. Section 03 30 00 – Cast In Place Concrete.

**1.4 REFERENCE STANDARDS**

- A. Utilize the edition of the listed document as identified in the “Design Criteria Notes” in the structural drawings. If not listed in the “Design Criteria Notes”, use the edition adopted or referenced by the listed governing building code or material standard. If no specific edition is adopted, use the latest edition.
  - 1. AISI S100 - North American Specification for the Design of Cold-Formed Steel Structural Members.
  - 2. AISI S202 – Code of Standard Practice for Cold-Formed Steel Framing.
  - 3. AISI S220 - North American Standard for Cold-Formed Steel Nonstructural Framing.
  - 4. AISI S240 - North American Standard for Cold-Formed Steel Structural Framing.
  - 5. AISI S400 - North American Standard for Seismic Design of Cold-Formed Steel Structural Systems.
  - 6. ASTM A153 - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
  - 7. ASTM A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
  - 8. ASTM A1008 - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with

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**Cold-Formed Metal Framing**

Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable.

9. ASTM A1011 - 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.
10. ASTM C955 - Standard Specification for Cold-Formed Steel Structural Framing.
11. ASTM C1007 - Standard Specification for Installation of Load Bearing (Transverse and Axial) Steel Studs and Related Accessories.
12. AWS B2.1 - Specification for Welding Procedure and Performance Qualification.
13. AWS D1.1 - Structural Welding Code - Steel.
14. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer.
15. SSPC-Paint 20 - Zinc-Rich Coating (Type I - Inorganic, and Type II - Organic).

**1.5 ADMINISTRATIVE REQUIREMENTS**

- A. Coordinate with work of other sections that is to be installed in or adjacent to the metal framing system, including but not limited to structural anchors, cladding anchors, utilities, insulation, and firestopping.

**1.6 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on standard framing members; describe materials and finish, product criteria, limitations, and accessories.
- C. Product Data: Provide manufacturer's data on factory-made framing connectors, showing compliance with requirements.
- D. Shop Drawings: Indicate component details, framed openings, bearing, anchorage, loading, welds, and type and location of fasteners, and accessories or items required of related work.
  1. Provide elevations of each building surface showing layout, spacing, sizes, thicknesses, and types of cold-formed metal framing; fabrication; and fastening and anchorage details, including mechanical fasteners. Show reinforcing channels, opening framing, supplemental framing, strapping, bracing, bridging, splices, accessories, connection details, and attachment to adjoining work.
  2. Provide details of all conditions whether shown on the Contract Documents or not. Where engineering of specific conditions is not shown in the Contract Documents, submit details of similar character of those shown using sound engineering practice and preferred means and

methods. Details shall be reviewed by the Structural Engineer of Record who will provide comments to the Contractor as necessary.

- E. Manufacturer's Installation Instructions: Indicate special procedures, and conditions requiring special attention.
- F. Manufacturer's Qualification Statement.
- G. Welders' Qualification Statement: Welders' certificates in accordance with AWS B2.1 and dated no more than 12 months before the start of scheduled welding work.
- H. SSMA Manufacturer Qualification: Submit documentation of manufacturer association membership.

#### 1.7 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the types of products specified in this section, and with minimum three years of documented experience.
- B. Manufacturer Qualifications:
  - 1. Member of Steel Stud Manufacturers Association (SSMA):  
[www.ssma.com](http://www.ssma.com).
  - 2. Member of Steel Framing Industry Association (SFIA):  
[sfia.memberclicks.net](http://sfia.memberclicks.net).
- C. Welder Qualifications: Welding processes and welding operators qualified in accordance with AWS D1.1 and AWS D1.3 and dated no more than 12 months before start of scheduled welding work.
- D. Installer Qualifications: Company specializing in performing the work of this section with minimum three years documented experience.
- E. Product Tests: Mill certificates or data from a qualified independent testing agency indicating steel sheet complies with requirements, including base-metal thickness, yield strength, tensile strength, total elongation, chemical requirements, and metallic-coating thickness.

#### 1.8 DELIVERY, STORAGE, AND HANDLING

- A. Protect metal framing units from rusting and damage.
- B. Deliver to Project site in manufacturer's unopened containers or bundles, identified with name, brand, type and grade.



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**Cold-Formed Metal Framing**

- C. Store off ground in a dry ventilated space or protect with suitable waterproof covering.

**1.9 PROJECT CONDITIONS**

- A. Prior to Pre-installation Conference, review areas of potential interference and conflicts, and coordinate layout and support provisions for interfacing work.

**PART 2 - PRODUCTS**

**2.1 MANUFACTURERS**

**A. Metal Framing:**

1. CEMCO: [www.cemcosteel.com](http://www.cemcosteel.com).
2. ClarkDietrich: [www.clarkdietrich.com](http://www.clarkdietrich.com).
3. SCAFCO Corporation: [www.scafco.com](http://www.scafco.com).
4. Substitutions: See Section 01 60 00 - Product Requirements.

**B. Framing Connectors and Accessories:**

1. ClarkDietrich: [www.clarkdietrich.com](http://www.clarkdietrich.com).
2. Simpson Strong-Tie: [www.strongtie.com](http://www.strongtie.com).
3. Substitutions: See Section 01 60 00 - Product Requirements.

**2.2 FRAMING SYSTEM PERFORMANCE REQUIREMENTS**

- A. Provide primary and secondary framing members, bridging, bracing, plates, gussets, clips, fittings, reinforcement, and fastenings as required to provide a complete framing system.
  1. Able to tolerate movement of components without damage, failure of joint seals, undue stress on fasteners, or other detrimental effects when subject to seasonal or cyclic day/night temperature ranges.
  2. Able to accommodate construction tolerances, deflection of building structural members, and clearances of intended openings.
- B. Shop fabricate framing system to the greatest extent possible.
- C. Deliver to project site in largest practical sections.
- D. Fire-Resistance Ratings: Comply with ASTM E119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Indicate design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.

## 2.3 FRAMING MATERIALS

- A. Studs and Track: ASTM C955; studs formed to channel, C- or Sigma-shaped with punched web; U-shaped track in matching nominal width and compatible height.
  1. Gauge and Depth: As indicated on Drawings and as required to meet specified performance levels.
  2. Galvanized in accordance with ASTM A653, G60 coating.
  3. Products:
    - a. Comply with ICC ES 3064P or ICC ES 4205.
      - 1) CEMCO: [www.cemcosteel.com](http://www.cemcosteel.com)
      - 2) SCAFCO Corporation: [www.scafco.com](http://www.scafco.com)
      - 3) Substitutions: See Section 01 60 00 - Product Requirements.
- B. Framing Connectors: Factory-made, formed steel sheet.
  1. Material: ASTM A653 SS Grade 33 and 40 (minimum), with G90 hot dipped galvanized coating for base metal thickness less than 10 gauge, 0.1345 inch (3.42 mm), and factory punched holes and slots.
  2. Structural Performance: Maintain load and movement capacity required by applicable code, when evaluated in accordance with AISI S100 and AISI S400 as required.
  3. Movement Connections: Provide mechanical anchorage devices that accommodate movement using slotted holes, shouldered screws or screws and anti-friction or stepped bushings, while maintaining structural performance of framing. Provide movement connections where indicated on drawings.
    - a. Where top of stud wall terminates below structural floor or roof, connect studs to structure in manner allowing vertical and horizontal movement of slab without affecting studs; allow for minimum movement of 3/4 inch.
    - b. Products:
      - 1) ClarkDietrich; Drift FastClip Slide Clip D-FCSC: [www.clarkdietrich.com](http://www.clarkdietrich.com)
      - 2) ClarkDietrich; FastClip Slide Clip FCSC: [www.clarkdietrich.com](http://www.clarkdietrich.com)
      - 3) Simpson Strong-Tie; SCB Side-Clip Connector: [www.strongtie.com](http://www.strongtie.com)
      - 4) Substitutions: See Section 01 60 00 - Product Requirements.

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**Cold-Formed Metal Framing**

4. Fixed Connections: Provide non-movement connections for tie-down to foundation, floor-to-floor tie-down, roof-to-wall tie-down, joist hangers, gusset plates, and stiffeners.
  - a. Products:
    - 1) Simpson Strong-Tie: [www.strongtie.com](http://www.strongtie.com)
    - 2) Substitutions: See Section 01 60 00 - Product Requirements.
5. Wall Stud Bridging Connections: Provide mechanical load-transferring devices that accommodate wind load torsion and weak axis buckling induced by axial compression loads. Provide bridging connections where indicated on the drawings.
6. Products:
  - a. ClarkDietrich; Spazzer 5400 Bridging Bar: [www.clarkdietrich.com](http://www.clarkdietrich.com)
  - b. ClarkDietrich; FastBridge Clip: [www.clarkdietrich.com](http://www.clarkdietrich.com)
  - c. Simpson Strong-Tie; SUBH Bridging Connector: [www.strongtie.com](http://www.strongtie.com)
  - d. Substitutions: See Section 01 60 00 - Product Requirements.

**2.4 FASTENERS**

- A. Self-Drilling, Self-Tapping Screws, Bolts, Nuts and Washers: Screws shall comply w/ ASTM C1513. Exterior applications shall be Type 316 Stainless Steel or Hot Dip Galvanized per ASTM A153, Class C.
  1. Products:
    - a. Grabber Construction Products Inc. per ESR 1271: [www.grabberpro.com](http://www.grabberpro.com)
    - b. Primesouce Building Products per ESR 1408: [www.primesourcebp.com](http://www.primesourcebp.com)
    - c. ITW Commercial Construction North America; ITW CCNA-Buildex Tek Select Series per ESR 1976 or 3223: [www.ITWBuildex.com](http://www.ITWBuildex.com)
    - d. Hilti per ESR 2196: [www.hilti.com](http://www.hilti.com)
    - e. Brighton Best International Inc. per ESR 3231: [www.brightonbest.com](http://www.brightonbest.com)
    - f. Elco Construction Products per ESR 3294: [anchors.dewalt.com](http://anchors.dewalt.com)
    - g. Simpson Strong-Tie Company per ESR 3006: [www.strongtie.com](http://www.strongtie.com)
    - h. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Anchorage Devices: As indicated on the Drawings.
- C. Welding: Comply with AWS D1.1.

## 2.5 ACCESSORIES

- A. Bracing, Furring, Bridging: Formed sheet steel, thickness determined for conditions encountered; finish to match framing components unless otherwise noted.
- B. Plates, Gussets, Clips: Formed Sheet Steel, thickness determined for conditions encountered; finish to match framing components unless otherwise noted.
- C. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.
- D. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20 Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Verify that substrate surfaces are ready to receive work.
- B. Verify field measurements and adjust installation as required.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Before sprayed fire-resistive materials are applied, attach continuous angles, supplementary framing, or tracks to structural members indicated to receive sprayed fire-resistive materials.
- B. After applying sprayed fire-resistive materials, remove only as much of these materials as needed to complete installation of cold-formed framing without reducing thickness of fire-resistive materials below that are required to obtain fire-resistance rating indicated. Protect remaining fire-resistive materials from damage.
- C. Install load bearing shims or grout between the underside of wall bottom track or rim track and the top of foundation wall or slab at stud locations to ensure a uniform bearing surface on supporting concrete or masonry construction.

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**Cold-Formed Metal Framing**

**3.3 INSTALLATION OF FRAMING, GENERAL**

- A. Install components in accordance with manufacturers' instructions and AISI S200 - Code of Standard Practice for Cold-Formed Steel Framing.
- B. Install cold-formed metal framing and accessories plumb, level, square, and true to line, and with connections securely fastened.
- C. Install framing members at 16-inches on center unless otherwise shown. Framing at sink and toilet carriers may be installed at 24 inches on center where the span rating for the attached sheathing can accommodate the increased spacing.
- D. Install framing members in one-piece lengths unless splice connections are indicated for track or tension members. Install load-bearing studs full length in one piece. Splicing of studs is not permitted.
- E. Align floor and ceiling tracks; locate to wall layout. Coordinate installation of sealant with floor and ceiling tracks.
- F. Install temporary bracing and supports to secure framing and support loads comparable in intensity to those for which structure was designed. Maintain braces and supports in place, undisturbed, until entire integrated supporting structure has been completed and permanent connections to framing are secured.
- G. Do not bridge building expansion and control joints with cold-formed metal framing. Independently frame both sides of joints.
- H. Install insulation, specified in Division 07 Section "Thermal Insulation" in built-up exterior framing members, such as headers, sills, boxed joists, and multiple studs at openings, that are inaccessible on completion of framing work.
- I. Fasten hole reinforcing plate over web penetrations that exceed size of manufacturer's standard punched openings.
- J. Erection Tolerances: Install cold-formed metal framing level, plumb, and true to line to a maximum allowable non-cumulative tolerance variation of 1/8 inch in 8 feet (1:768) and as follows:
  - 1. Space individual framing members no more than plus or minus 1/8 inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.
- K. Touch-up field welds and damaged galvanized surfaces with primer.

### 3.4 WALL FRAMING INSTALLATION

- A. Install movement joints at corners and intersections to allow for differential movement of wall planes.
- B. Install continuous top and bottom tracks sized to match studs. Align tracks accurately and securely anchor at corners and ends, and at spacings as indicated.
  - 1. Fasten bottom track to concrete floor slab with power actuated fasteners or expansion anchors sized and spaced as shown on Drawings or as required by structural performance.
  - 2. Fasten top compensation channel to structure as indicated on the Drawings.
- C. Squarely seat studs against top and bottom tracks with gap not exceeding of 1/8 inch between the end of wall framing member and the web of track. Fasten both flanges of studs to top and bottom tracks. Space studs as indicated.
- D. Set studs plumb, except as needed for diagonal bracing or required for non-plumb walls or warped surfaces and similar configurations.
- E. Align load bearing studs vertically where floor framing interrupts wall-framing continuity. Where studs cannot be aligned, continuously reinforce track to transfer loads.
- F. Align floor and roof framing over load bearing studs. Where framing cannot be aligned, continuously reinforce track to transfer loads or as shown in approved engineering shop drawings.
- G. Anchor studs abutting structural columns or walls, including masonry walls, to supporting structure as required.
- H. Install headers over wall openings wider than stud spacing. Locate headers above openings as indicated. Fabricate headers of compound shapes indicated or required to transfer load to supporting studs, complete with clip-angle connectors, web stiffeners, or gusset plates as shown in approved engineered shop drawings.
  - 1. Frame wall openings with jamb studs per the schedule(s) on the Drawings at each jamb of frame. Fasten jamb members together to uniformly distribute loads as shown in approved engineered shop drawings.
  - 2. Install runner tracks and jack studs above and below wall openings. Anchor tracks to jamb studs with clip angles or by welding, and space jack studs same as full-height wall studs as shown in the drawings.

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**Cold-Formed Metal Framing**

- I. Install supplementary framing, blocking, and bracing in stud framing indicated to support fixtures, equipment, services, casework, heavy trim, furnishings, and similar work requiring attachment to framing.
  - 1. If type of supplementary support is not indicated, comply with stud manufacturer's written recommendations and industry standards in each case, considering weight or load resulting from item supported.
  - 2. Provide backing plate support for each point of fastening of every unit to be anchored. Coordinate requirements and locations with work of related sections.
- J. Install horizontal bridging in stud system, spaced at (vertical distance) not more than four feet on center and as indicated; fasten at each stud intersection. Horizontal bridging may be omitted at interior wall framing where gypsum board sheathing is required on both sides for the full height of the wall.
  - 1. Bridging: Cold-rolled steel channel, welded or mechanically fastened to webs of punched studs with a minimum of 2 screws into each flange of the clip angle for framing members up to 6 inches deep.
- K. Install miscellaneous framing and connections, including supplementary framing, web stiffeners, clip angles, continuous angles, anchors, and fasteners, to provide a complete and stable wall-framing system as shown in the drawings.
- L. Install strap bracing and blocking at unsheathed sides of walls as indicated on the Drawings.

**3.5 INSTALLATION OF JOISTS AND PURLINS**

- A. Install framing components in accordance with manufacturer's instructions.
- B. Make provisions for erection stresses. Provide temporary alignment and bracing.
- C. Place joists with spacing as indicated on the Drawings; not more than 2 inches from abutting walls, and connect joists to supports using fastener method.
- D. Set floor and ceiling joists parallel and level, with lateral bracing and bridging.
- E. Locate joist end bearing directly over load-bearing studs or provide load distributing member to top of stud track.
- F. Provide web stiffeners at reaction points as required by the Drawings.
- G. Touch-up field welds and damaged galvanized surfaces with primer.

**3.6 FIELD QUALITY CONTROL**

- A. Testing: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports in accordance with Division 01.
- B. Field and shop welds will be subject to testing and inspecting.
- C. Testing agency will report test results promptly and in writing to Contractor and Architect.
- D. Remove and replace work where test results indicate that it does not comply with specified requirements.
- E. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

**3.7 REPAIRS AND PROTECTION**

- A. Painting Repairs: Use compatible primer for prime coated surfaces.
- B. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on fabricated and installed cold-formed metal framing with galvanized repair paint according to manufacturer's written instructions.
- C. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer that ensures that cold-formed metal framing is without damage or deterioration at time of Completion.

END OF SECTION 054000



**SECTION 055000**  
**METAL FABRICATIONS**

**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 SECTION INCLUDES**

- A. Shop fabricated steel and aluminum items.
- B. Slotted channel framing (Unistrut) as shown on Drawings.
- C. Steel framing and supports for:
  - 1. Countertops.
  - 2. Steel tube supports for free-standing partitions.
  - 3. Metal bollards.
  - 4. Shelf angles.
  - 5. Steel weld plates and angles.
  - 6. Diamond plate metal threshold.
  - 7. Miscellaneous steel trim, including:
    - a. Steel angles for window pop-outs.
    - b. Steel edgings.
    - c. Loading-dock edge angles.

**1.3 RELATED REQUIREMENTS**

- A. Section 03 30 00 - Cast-in-Place Concrete.
- B. Division 09 – Painting Sections.

**1.4 REFERENCE STANDARDS**

- A. Utilize the edition of the listed document as identified in the “Design Criteria Notes” in the structural drawings. If not listed in the “Design Criteria Notes”, use

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### **Metal Fabrications**

the edition adopted or referenced by the listed governing building code or material standard. If no specific edition is adopted, use the latest edition.

1. ASTM A276 - Standard Specification for Stainless Steel Bars and Shapes.
2. ASTM A36 - Standard Specification for Carbon Structural Steel.
3. ASTM A48 - Standard Specification for Gray Iron Castings.
4. ASTM A53 - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
5. ASTM A123 - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
6. ASTM A153 - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
7. ASTM A240 - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
8. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60,000 PSI Tensile Strength.
9. ASTM A500 - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
10. ASTM A501 - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.
11. ASTM A554 - Standard Specification for Welded Stainless Steel Mechanical Tubing.
12. ASTM A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
13. ASTM A1011 - 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.
14. ASTM B633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel.
15. ASTM F3125 - Standard Specification for High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi and 150 ksi Minimum Tensile Strength.
16. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination.
17. AWS B2.1 - Specification for Welding Procedure and Performance Qualification.
18. AWS D1.1 - Structural Welding Code - Steel.
19. AWS D1.2 - Structural Welding Code - Aluminum.
20. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer.
21. SSPC-Paint 20 - Zinc-Rich Coating (Type I - Inorganic, and Type II - Organic).
22. SSPC-SP 2 - Hand Tool Cleaning.

## 1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. 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.
  - 2. Design data: Submit drawings and supporting calculations, signed and sealed by a qualified professional structural engineer licensed in the State in which the Project is located.
- C. Welders' Qualification Statement: Welders' certificates in accordance with AWS B2.1 and dated no more than 12 months before start of scheduled welding work.

## 1.6 QUALITY ASSURANCE

- A. Welder Qualifications: Welding processes and welding operators qualified in accordance with AWS D1.1, AWS D1.2, AWS D1.6 and dated no more than 12 months before start of scheduled welding work.

## 1.7 COORDINATION

- A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.
- B. Coordinate installation of anchorages and steel weld plates and angles for casting into concrete. 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.

## PART 2 - PRODUCTS

### 2.1 MATERIALS - STEEL

- A. Wide Flange and WT Shapes: ASTM A992.
- B. M- and S- Shapes: ASTM A572 Grade 50.
- C. C- and MC- Shapes: ASTM A992.

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### **Metal Fabrications**

- D. L- Shapes: ASTM A572 Grade 50.
- E. Round HSS: ASTM A500 Grade C (Fy = 50 ksi).
- F. Rectangular HSS: ASTM A500 Grade C (Fy = 50 ksi).
- G. Pipe: ASTM A53, Grade B (Fy = 35 ksi).
- H. All other Plate Material: ASTM A36 or ASTM A572 Grade 50.
- I. Stainless Steel, General: ASTM A666, Type 304.
- J. Stainless Steel Tubing: ASTM A554, Type 304.
- K. Stainless Steel Bars, Shapes and Moldings: ASTM A276, Type 304.
- L. Slotted Channel Fittings: ASTM A1011.
- M. Mechanical Fasteners: Same material as or compatible with materials being fastened; type consistent with design and specified quality level.
- N. Bolts, Nuts, and Washers: ASTM A307, Grade A, plain.
- O. Bolts, Nuts, and Washers: ASTM F3125, Type 1, plain.
- P. Welding Materials: AWS D1.1 and AWS D1.6; type required for materials being welded.
- Q. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.
- R. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.

## **2.2 MATERIALS - ALUMINUM**

- A. Extruded Aluminum: ASTM B221, 6063 alloy, T6 temper.
- B. Sheet Aluminum: ASTM B209, 5052 alloy, H32 or H22 temper.
- C. Aluminum-Alloy Drawn Seamless Tubes: ASTM B210, 6063 alloy, T6 temper.
- D. Aluminum-Alloy Bars: ASTM B211, 6061 alloy, T6 temper.
- E. Aluminum-Alloy Sand Castings: ASTM B26.
- F. Aluminum-Alloy Die Castings: ASTM B85.

- G. Bolts, Nuts, and Washers: Stainless steel.
- H. Welding Materials: AWS D1.2; type required for materials being welded.

## 2.3 FASTENERS

- A. General: Unless otherwise indicated, provide Type 304 stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B633 or ASTM F1941, Class Fe/Zn 5, at exterior walls. Select fasteners for type, grade, and class required.
  - 1. Provide stainless-steel fasteners for fastening aluminum.
  - 2. Provide stainless-steel fasteners for fastening stainless steel.
- B. Steel Bolts, Nuts, and Washers: Regular hexagon-head bolts, ASTM A307, Grade A; with hex nuts, ASTM A563; and, where indicated, flat washers.
- C. Stainless-Steel Bolts and Nuts: Regular hexagon-head annealed stainless-steel bolts, ASTM F593; with hex nuts, ASTM F594; and, where indicated, flat washers; Alloy Group 1.
- D. Dissimilar Materials: Separate dissimilar surfaces in contact with or in close proximity to non-compatible metals, concrete masonry, or plaster with neoprene gasket; or other approved means.

## 2.4 FABRICATION

- A. Verify dimensions on site prior to shop fabrication.
- B. Fit and shop assemble items in largest practical sections, for delivery to site.
- C. Fabricate items with joints tightly fitted and secured.
- D. 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.
- E. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.
- F. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.
- G. Furnish components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

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### **Metal Fabrications**

- H. Provide for anchorage of type indicated; coordinate with supporting structure. Space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.

#### **2.5 FABRICATED ITEMS**

- A. General: Provide steel framing and supports not specified in other Sections as needed to complete the Work.
- B. Bumper Posts and Guard Rails: As detailed; prime paint finish.
- C. Bollards: Steel pipe, concrete filled, crowned cap, as detailed; prime paint finish.
- D. Ledge Angles, Shelf Angles, Channels, and Plates Not Attached to Structural Framing: For support of metal decking; prime paint finish.
- E. Slotted Channel Framing: Cold-formed metal box channels (struts) complying with MFMA-4, as manufactured by Unistrut, or equal.
- F. Door Frames for Overhead Door Openings, and Wall Openings: Channel sections; prime paint finish.
- G. Recessed Mat Frames: As detailed; steel, galvanized finish.
- H. Diamond Plate Metal Threshold: Fabricate from abrasive surface floor plate. Provide angle supports as indicated.

#### **2.6 FINISHES - STEEL**

- A. Prime paint steel items.
  - 1. Exceptions: Do not prime surfaces in direct contact with concrete, where field welding is required, and items to be covered with sprayed fireproofing.
- B. Prepare surfaces to be primed in accordance with SSPC-SP2.
- C. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.
- D. Prime Painting: One coat.
- E. Galvanizing of Structural Steel Members: Galvanize after fabrication to ASTM A123 requirements. Provide minimum 1.7 oz/sq ft galvanized coating.
- F. Galvanizing of Non-structural Items: Galvanize after fabrication to ASTM A123 requirements.

- G. Chrome Plating: ASTM B177, nickel-chromium alloy, satin finish.
- H. Slotted Channel Framing: ASTM A653, Grade 33.
- I. Stainless Steel Finish: No. 4 Bright Polished finish.

## 2.7 FINISHES - ALUMINUM

- A. Exterior Aluminum Surfaces: Class I color anodized.
- B. Interior Aluminum Surfaces: Class I natural anodized.
- C. Apply one coat of bituminous paint to concealed aluminum surfaces in contact with cementitious or dissimilar materials.

## 2.8 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

### 3.1 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive work.

### 3.2 PREPARATION

- A. Clean and strip primed steel items to bare metal where site welding is required.
- B. Furnish setting templates to the appropriate entities for steel items required to be cast into concrete or embedded in masonry.

### 3.3 INSTALLATION

- A. Install items plumb and level, accurately fitted, free from distortion or defects.

**Metal Fabrications**

- 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. Perform field welding in accordance with AWS D1.1, AWS D1.2, or AWS D1.6.
- E. Obtain approval prior to site cutting or making adjustments not scheduled.
- F. After erection, prime welds, abrasions, and surfaces not shop primed, except surfaces to be in contact with concrete.
- G. Corrosion Protection: Coat concealed surfaces of aluminum that will come into contact with grout, concrete, masonry, wood, or dissimilar metals with the following:
  - 1. Cast Aluminum: Heavy coat of bituminous paint.
  - 2. Extruded Aluminum: Two coats of clear lacquer.

**3.4 INSTALLING MISCELLANEOUS FRAMING AND SUPPORTS**

- A. General: Install framing and supports to comply with requirements of items being supported, including manufacturers' written instructions and requirements indicated on Shop Drawings.
- B. Install items plumb and level, accurately fitted, free from distortion or defects.
- C. Perform field welding in accordance with AWS D1.1/D1.2/D1.6.

**3.5 INSTALLING METAL BOLLARDS**

- A. Fill metal-capped bollards solidly with concrete and allow concrete to cure seven days before installing. Do not fill removable bollards with concrete.
- B. Anchor bollards in concrete with pipe sleeves preset and anchored into concrete. Fill annular space around bollard solidly with nonshrink, nonmetallic grout; mixed and placed to comply with grout manufacturer's written instructions. Slope grout up approximately 1/8 inch toward bollard.
- C. Fill bollards solidly with concrete, mounding top surface to shed water.

**3.6 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.

**3.7 ADJUSTING AND CLEANING**

- A. Touchup Painting: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint are specified in Division 09 painting Sections.
- B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A780.

**END OF SECTION 055000**

## **SECTION 079200**

### **JOINT SEALANTS**

#### **PART 1 - GENERAL**

##### **1.1 SUMMARY**

- A. Section Includes: sealants, joint backing, and accessories.

##### **1.2 PREINSTALLATION MEETINGS**

- A. Preinstallation Conference: Conduct conference at Project site.

##### **1.3 ACTION SUBMITTALS**

- A. Product Data: For each joint-sealant product.
- B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.
- C. Mockup for Verification: Photos of each kind and color of joint sealant required, next to adjacent surface where installed to ensure match.
- D. Joint-Sealant Schedule: Include the following information:
  - 1. Joint-sealant application, joint location, and designation.
  - 2. Joint-sealant manufacturer and product name.
  - 3. Joint-sealant formulation.
  - 4. Joint-sealant color.

##### **1.4 INFORMATIONAL SUBMITTALS**

- A. Product test reports.
- B. Field-adhesion-test reports.
- C. Sample warranties.

##### **1.5 QUALITY ASSURANCE**

- A. Testing Agency Qualifications: Qualified according to ASTM C1021 to conduct the testing indicated.

**Joint Sealants**

**1.6 PRECONSTRUCTION TESTING**

- A. Preconstruction Field-Adhesion Testing: Before installing sealants, field test their adhesion to Project joint substrates. Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1.1 in ASTM C1193 or Method A, Tail Procedure, in ASTM C1521.

**1.7 WARRANTY**

- A. Special Installer's Warranty: Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
  - 1. Warranty Period: Two years from date of Substantial Completion.
- B. Special Manufacturer's Warranty: Manufacturer agrees to furnish joint sealants to repair or replace those joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
  - 1. Warranty Period: Five years from date of Substantial Completion.

**PART 2 - PRODUCTS**

**2.1 JOINT SEALANTS, GENERAL**

- A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.
- B. Colors of Exposed Joint Sealants: As selected by State's Representative from manufacturer's full range.

**2.2 MANUFACTURERS**

- A. Manufacturers:
  - 1. Sonneborn
  - 2. Tremco
  - 3. Sika Corp.
  - 4. Pecora
  - 5. Dow Corning Corp.
  - 6. G.E.
  - 7. Or approved equal.

**2.3 JOINT SEALANTS**

**A. Concrete: Horizontal**

1. Self leveling, chemical curing, non-staining, non-bleeding polyurethane sealant; ASTM C920; Type M; Grade NS or Grade P; Class 25; uses: M, T.
2. Location: Interior horizontal traffic joints in low-slope concrete with slopes less than five
3. percent.
4. Joint-Sealant Color: As selected by State's Representative from manufacturer's full range of colors.
5. Products:
  - a. Sonneborn "Sonolastic SL-2".
  - b. Tremco "THC-900/THC-901".
  - c. Sika "Sikaflex - 2C-SL"
  - d. Pecora "NR-200 Urexpan"
  - e. Or approved equal.

**B. Metal**

1. Metal Lap and Bedding Sealant (non-soldered flashings): Non-drying, non-skinning, non-curing flexible butyl rubber sealant; ASTM C1311; Type S; Grade NS; Class 10; uses: G, M, O.
2. Location: Use for bedding thresholds and sheet metal flashing and trim not exposed to ultraviolet (UV) light.
3. Joint-Sealant Color: As selected by State's Representative from manufacturer's full range of colors.
4. Products:
  - a. Tremco Butyl Sealant.
  - b. Pecora Corp. BA-98 Butyl Rubber Sealant.
  - c. Or approved equal.

**C. Metal**

1. Metal Lap and Bedding Sealant (non-soldered flashings): High performance, moisture curing, gun grade polyurethane sealant, ASTM C920; Type S, Grade NS, Class 25, use: A, I, M, NT, O, T
2. Location: Use for bedding threshold and sheet metal flashing and trim exposed to ultraviolet (UV) light.
3. Joint-Sealant Color: As selected by State's Representative from manufacturer's full range of colors.
4. Products:
  - a. Tremco Vulkem 116.
  - b. BASF MasterSeal TX1.
  - c. Sika Sikaflex Textured Sealant.
  - d. Or approved equal.

**D. Interior**

**Joint Sealants**

1. Interior Sealant: Nonoxidizing, skinnable, paintable, gunnable, non-staining, non-bleeding acrylic latex sealant; ASTM C834; Type S; Grade NS; Class 12.5; use: O.
  2. Location: Interior joints in vertical surfaces and horizontal nontraffic surfaces not subject to significant movement. Perimeter joints between interior wall surfaces and frames of interior doors and windows.
  3. Joint-Sealant Color: As selected by State's Representative from manufacturer's full range of colors.
  4. Products:
    - a. Sonneborn "Sonolac"
    - b. Tremco "Tremflex 834"
    - c. Pecora "AC-20 + Silicone"
    - d. Or approved equal.
- E. Interior
1. Interior Sealant: Low modulus, moisture curing, non-staining, non-bleeding polyurethane sealant; ASTM C920; Type S; Grade NS; Class 35; uses: A, M, NT, O.
  2. Location: Use at interior vertical expansion, control, and air seal joints.
  3. Joint-Sealant Color: As selected by State's Representative from manufacturer's full range of colors.
  4. Products:
    - a. Tremco Dymonic FC.
    - b. Euclid Chemical Company Eucolastic 1NS.
    - c. Sika Sikaflex 1a.
    - d. Or approved equal.
- F. Sanitary Sealant
1. Silicone, Mildew Resistant, Acid Curing, S, NS, 25, NT: Mildew-resistant, single-component, nonsag, plus 25 percent and minus 25 percent movement capability, nontraffic-use, acid-curing silicone joint sealant; ASTM C920, Type S, Grade NS, Class 25, Use NT.
  2. Location: Joints between plumbing fixtures and adjoining walls, floors, and counters.
  3. Joint-Sealant Color: As selected by State's Representative from manufacturer's full range of colors.
  4. Products:
    - a. Tremco Tremsil 200 Sanitary
    - b. The Dow Chemical Company Dowsil 785 Mildew Resistant
    - c. GE Silicones Sanitary SCS 1700
    - d. Pecora 898NST
    - e. Sika Sikasil-N Plus US
    - f. Or approved equal.

## **2.4 JOINT-SEALANT BACKING**

- A. Sealant Backing Material, General: Nonstaining; compatible with joint substrates, sealants, primers, and other joint fillers; and approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Alcot Plastics Ltd.
    - b. BASF Corporation; Construction Systems.
    - c. Construction Foam Products; a division of Nomaco, Inc.
- B. Cylindrical Sealant Backings: ASTM C1330, Type C (closed-cell material with a surface skin, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance).
- C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer.

## **2.5 MISCELLANEOUS MATERIALS**

- A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials.
- C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

# **PART 3 - EXECUTION**

## **3.1 PREPARATION**

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
  - 1. Remove laitance and form-release agents from concrete.
  - 2. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion.

**Joint Sealants**

- B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces.

**3.2 INSTALLATION OF JOINT SEALANTS**

- A. General: Comply with ASTM C1193 and joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.
- B. 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.
- C. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.
- D. 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.
- E. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants to form smooth, uniform beads of configuration indicated. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
  - 1. Provide concave joint profile per Figure 8A in ASTM C1193 unless otherwise indicated.

**3.3 FIELD QUALITY CONTROL**

- A. 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 C1193 or Method A, Tail Procedure, in ASTM C1521.
- B. 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.

END OF SECTION 079200



**SECTION 079219**  
**ACOUSTICAL JOINT SEALANTS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section includes acoustical joint sealants.

**1.2 ACTION SUBMITTALS**

- A. Product Data: For each acoustical joint sealant.
- B. Samples: For each kind and color of acoustical joint sealant required.
- C. Acoustical-Joint-Sealant Schedule: Include the following information:
  - 1. Joint-sealant application, joint location, and designation.
  - 2. Joint-sealant manufacturer and product name.
  - 3. Joint-sealant formulation.
  - 4. Joint-sealant color.

**1.3 INFORMATIONAL SUBMITTALS**

- A. Product test reports.
- B. Sample warranties.

**1.4 WARRANTY**

- A. Special Installer's Warranty: Installer agrees to repair or replace acoustical joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
  - 1. Warranty Period: Two years from date of Substantial Completion.
- B. Special Manufacturer's Warranty: Manufacturer agrees to furnish acoustical joint sealants to repair or replace those joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
  - 1. Warranty Period: one year from date of Substantial Completion.

**Section 079219 – Page 2**  
**Acoustical Joint Sealants**

**PART 2 - PRODUCTS**

**2.1 PERFORMANCE REQUIREMENTS**

- A. Provide acoustical joint-sealant products that effectively reduce airborne sound transmission through perimeter joints and openings in building construction, as demonstrated by testing representative assemblies according to ASTM E90.

**2.2 ACOUSTICAL JOINT SEALANTS**

- A. Acoustical Sealant: Manufacturer's standard nonsag, paintable, nonstaining latex acoustical sealant complying with ASTM C834.
  - 1. Manufacturers:
    - a. USG Sheetrock Brand Acoustical Sealant
    - b. Pabco Gypsum QuietSeal Pro
    - c. Or approved equal.
- B. Colors of Exposed Acoustical Joint Sealants: As selected by State's Representative from manufacturer's full range of colors.
- C. Primer: Material recommended by acoustical-joint-sealant manufacturer where required for adhesion of sealant to joint substrates.
- D. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials.
- E. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

**PART 3 - EXECUTION**

**3.1 PREPARATION**

- A. Surface Cleaning of Joints: Clean out joints immediately before installing acoustical joint sealants to comply with joint-sealant manufacturer's written instructions.
- B. Joint Priming: Prime joint substrates where recommended by acoustical-joint-sealant manufacturer.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces.

**3.2 INSTALLATION OF ACOUSTICAL JOINT SEALANTS**

- A. Comply with acoustical joint-sealant manufacturer's written installation instructions unless more stringent requirements apply.
- B. STC-Rated Assemblies: Seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical joint sealant. Install acoustical joint sealants at both faces of partitions, at perimeters, and through penetrations. Comply with ASTM C919, ASTM C1193, and manufacturer's written recommendations for closing off sound-flanking paths around or through assemblies, including sealing partitions to underside of floor slabs above acoustical ceilings.
- C. Acoustical Ceiling Areas: Apply acoustical joint sealant at perimeter edge moldings of acoustical ceiling areas in a continuous ribbon concealed on back of vertical legs of moldings before they are installed.

**END OF SECTION 079219**

## **SECTION 081113**

### **HOLLOW METAL DOORS AND FRAMES**

#### **PART 1 - GENERAL**

##### **1.1 RELATED DOCUMENTS**

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

##### **1.2 SUMMARY**

- A. Section includes:
  - 1. Interior standard steel doors and frames.

##### **1.3 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
- B. Shop Drawings: Include the following:
  - 1. Elevations of each door type.
  - 2. Details of doors, including vertical- and horizontal-edge details and metal thicknesses.
  - 3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
- C. Product Schedule: For hollow-metal doors and frames, prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with final door hardware schedule.

##### **1.4 INFORMATIONAL SUBMITTALS**

- A. Product test reports.

#### **PART 2 - PRODUCTS**

##### **2.1 MANUFACTURERS**

- A. Curries/Assa Abloy

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**Hollow Metal Doors and Frames**

- B. Steelcraft
- C. Door Components, Inc.
- D. Or approved equal.

**2.2 INTERIOR STANDARD STEEL DOORS AND FRAMES**

- A. Construct hollow-metal doors and frames to comply with standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.
- B. Extra-Heavy-Duty Doors and Frames: ANSI/SDI A250.8, Level 3; ANSI/SDI A250.4, Level A. At locations indicated in the Door and Frame Schedule
  - 1. Doors:
    - a. Type: As indicated in the Door and Frame Schedule. Steelcraft LF16, or approved equal.
    - b. Thickness: 1-3/4 inches.
    - c. Face: Uncoated steel sheet, minimum thickness of 0.053 inch.
    - d. Edge Construction: Model 2, Seamless.
    - f. Core: Honeycomb.
  - 2. Frames:
    - a. Type: Steelcraft F14, or approved equal.
    - b. Materials: Uncoated steel sheet, minimum thickness of 0.067 inch.
    - c. Construction: Full profile welded.

**2.3 FRAME ANCHORS**

- A. Jamb Anchors:
  - 1. Type: Anchors of minimum size and type required by applicable door and frame standard, and suitable for performance level indicated.
  - 2. Quantity: Minimum of three anchors per jamb, with one additional anchor for frames with no floor anchor. Provide one additional anchor for each 24 inches of frame height above 7 feet.
  - 3. Postinstalled Expansion Anchor: Minimum 3/8-inch-diameter bolts with expansion shields or inserts, with manufacturer's standard pipe spacer.
- B. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor.

- C. Floor Anchors for Concrete Slabs with Underlayment: Adjustable-type anchors with extension clips, allowing not less than 2-inch height adjustment. Terminate bottom of frames at top of underlayment.
- D. Material: ASTM A879/A879M, Commercial Steel (CS), 04Z coating designation; mill phosphatized.
  - 1. For anchors built into exterior walls, steel sheet complying with ASTM A1008/A1008M or ASTM A1011/A1011M; hot-dip galvanized according to ASTM A153/A153M, Class B.

## 2.4 MATERIALS

- A. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.
- B. Cold-Rolled Steel Sheet: ASTM A1008/A1008M, Commercial Steel (CS), Type B; suitable for exposed applications.
- C. Hot-Rolled Steel Sheet: ASTM A1011/A1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.
- D. Metallic-Coated Steel Sheet: ASTM A653/A653M, Commercial Steel (CS), Type B.
- E. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A153/A153M.
- F. 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.
- G. Mineral-Fiber Insulation: ASTM C665, Type I (blankets without membrane facing); consisting of fibers manufactured from slag or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively; passing ASTM E136 for combustion characteristics.

## 2.5 SMOKE SEALS

- A. At Evidence Processing 1167A for odor/draft control. Gaskets to match frame color.

## 2.6 FABRICATION

- A. Hollow-Metal Frames: Fabricate in one piece except where handling and shipping limitations require multiple sections. Where frames are fabricated in

**Hollow Metal Doors and Frames**

sections, provide alignment plates or angles at each joint, fabricated of metal of same or greater thickness as frames.

1. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
2. Door Silencers: Except on weather-stripped frames, drill stops to receive door silencers as follows. Keep holes clear during construction.

- a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.

- B. Hardware Preparation: Factory prepare hollow-metal doors and frames to receive templated mortised hardware, and electrical wiring; include cutouts, reinforcement, mortising, drilling, and tapping according to ANSI/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 BHMA A156.115 for preparing hollow-metal doors and frames for hardware.

**2.7 STEEL FINISHES**

- A. Prime Finish: Clean, pretreat, and apply manufacturer's standard primer.
  1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with ANSI/SDI A250.10; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.

**PART 3 - EXECUTION**

**3.1 PREPARATION**

- A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces. Touch up factory-applied finishes where spreaders are removed.
- B. Drill and tap doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.

**3.2 INSTALLATION**

- A. Hollow-Metal Frames: Comply with ANSI/SDI A250.11.

1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces without damage to completed Work.
    - a. Where frames are fabricated in sections, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces. Touch-up finishes.
    - b. Install frames with removable stops located on secure side of opening.
  2. Fire-Rated Openings: Install frames according to NFPA 80.
  3. Floor Anchors: Secure with postinstalled expansion anchors.
    - a. Floor anchors may be set with power-actuated fasteners instead of postinstalled expansion anchors if so indicated and approved on Shop Drawings.
  4. Solidly pack mineral-fiber insulation inside frames.
  5. Installation Tolerances: Adjust hollow-metal frames to the following tolerances:
    - a. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
    - b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
    - c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
    - d. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.
- B. Hollow-Metal Doors: Fit and adjust hollow-metal doors accurately in frames, within clearances specified below.
1. Non-Fire-Rated Steel Doors: Comply with ANSI/SDI A250.8.

### 3.3 REPAIR

- A. 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.
- B. Touchup Painting: Cleaning and touchup painting of abraded areas of paint are specified in painting Sections.

END OF SECTION 081113



**SECTION 081216**  
**ALUMINUM FRAMES**

**PART 1 - GENERAL**

**1.1 SUMMARY**

**A. Section Includes:**

1. Interior aluminum frames for doors installed in gypsum board partitions.

**1.2 PREINSTALLATION MEETINGS**

- A. Preinstallation Conference:** Conduct conference at Project site.

**1.3 ACTION SUBMITTALS**

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

- B. Shop Drawings:** For aluminum frames:

1. Include elevations, sections, and installation details for each wall-opening condition.

- C. Samples:** For each exposed product and for each color and texture specified.

**PART 2 - PRODUCTS**

**2.1 MANUFACTURERS**

- A. Basis of Design:** Alpha Aluminum, or approved equal.

- B. Approved Manufacturers:**

1. Timely

**2.2 COMPONENTS**

- A. Aluminum Framing:** ASTM B221, with alloy and temper required to suit structural and finish requirements, and not less than 0.062 inch thick.

- B. Door Frames:** Extruded aluminum, reinforced for hinges, strikes, and closers.

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### **Aluminum Frames**

- C. Trim: Extruded aluminum, not less than 0.062 inch thick; removable, snap-in casing trim glazing stops and door stops, without exposed fasteners.
  - 1. Trim Style: To match existing.
- D. Doors: As specified in Section 081416 "Flush Wood Doors".
- E. Frame and Trim Finish: Color-anodized aluminum.
  - 1. Color: Match existing frames. (Dark bronze anodized.)

### **2.3 ACCESSORIES**

- A. Fasteners: Aluminum, nonmagnetic, stainless-steel or other noncorrosive metal fasteners compatible with frames, stops, panels, reinforcement plates, hardware, anchors, and other items being fastened.
- B. Door Silencers: Manufacturer's standard continuous mohair, wool pile, or vinyl seals in black color.
- C. Smoke Seals: At CWPP Lab/Stor. 1213 for odor/draft control. Gaskets to match frame color.
- D. Door Hardware: As specified in Section 087100 "Door Hardware."

### **2.4 FABRICATION**

- A. Provide concealed corner reinforcements and alignment clips for accurately fitted hairline joints at butted and mitered connections.
- B. Factory prepare aluminum frames to receive templated mortised hardware; include cutouts, reinforcements, mortising, drilling, and tapping, according to the Door Hardware Schedule and templates furnished as specified in Section 087100 "Door Hardware".
  - 1. Locate hardware cutouts and reinforcements as required by fire-rated label for assembly.
- C. Fabricate components to allow secure installation without exposed fasteners.

**PART 3 - EXECUTION**

**3.1 INSTALLATION**

- A. Install aluminum frames plumb, rigid, properly aligned, and securely fastened in place; according to manufacturer's written instructions.
- B. Install frame components in the longest possible lengths with no piece less than 48 inches; components 96 inches or shorter shall be one piece.

**3.2 ADJUSTING**

- A. Clean exposed frame surfaces promptly after installation, using cleaning methods recommended in writing by frame manufacturer and according to AAMA 609 and 610.
- B. Touch Up: Repair marred frame surfaces to blend inconspicuously with adjacent unrepaired surface so touchup is not visible from a distance of 48 inches as viewed by State's Representative. Remove and replace frames with damaged finish that cannot be satisfactorily repaired.

**END OF SECTION 081216**

**SECTION 081416**  
**FLUSH WOOD DOORS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

**A. Section Includes:**

1. Flush wood doors.

**B. REFERENCES**

1. *North American Architectural Woodwork Standards (NAAWS)*, latest edition, published jointly by the Woodwork Institute and the Architectural Woodwork Manufacturer's Association of Canada.

**1.2 ACTION SUBMITTALS**

**A. Product Data:** For each type of product, including the following:

1. Door core materials and construction.
2. Door edge construction
3. Door face type and characteristics.
4. Factory-machining criteria.
5. Factory-finishing specifications.

**B. Shop Drawings:** Submit shop drawings in conformance with the requirements of the North America Woodwork Standards. Indicate location, size, and hand of each door; elevation of each type of door; construction details not covered in Product Data; and the following:

1. Door schedule indicating door location, type, size, fire protection rating, and swing.
2. Door elevations, dimensions and locations of hardware.
3. Details of frame for each frame type, including dimensions and profile.
4. Details of electrical raceway and preparation for electrified hardware, access control systems, and security systems.
5. Dimensions and locations of blocking for hardware attachment.
6. Clearances and undercuts.
7. Requirements for veneer matching.
8. Furnish a Woodwork Institute Certified Compliance Shop Drawing Label on the first page of the shop drawings.

**C. Samples:** For factory-finished doors:

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### **Flush Wood Doors**

1. Factory finishes applied to actual door face materials, approximately 8 x 10 inches. Samples shall represent the range of color and grain expected to be provided.

#### **1.3 CLOSEOUT SUBMITTALS**

- A. Quality Standard Compliance Certificates: WI Certified Compliance Program certificates.

#### **1.4 QUALITY ASSURANCE**

- A. Work shall be in accordance with Grade or Grades Specified of the *North American Architectural Woodwork Standards*.
- B. Certified Compliance
  1. Before delivery to the jobsite the woodwork supplier shall provide a Woodwork Institute Certified Compliance Certificate indicating the millwork products being supplied and certifying that these products fully meet the requirements of the Grade or Grades specified.
  2. At completion of installation the woodwork installer shall provide a Woodwork Institute Certified Compliance Certificate indicating the products installed and certifying that the installation of these products fully meets the requirements of the Grade or Grades specified.
  3. All fees charged by the Woodwork Institute for their Certified Compliance program are the responsibility of the millwork manufacturer and/or installer and shall be included in their bid.
- C. Qualification
  1. Firm (woodwork manufacturer) with not less than 5 years of production experience similar to this Project, whose qualifications indicate the ability to comply with the requirements of this Section.

## **PART 2 - PRODUCTS**

### **2.1 SOLID-CORE, FIVE-PLY FLUSH WOOD VENEER-FACED DOORS FOR TRANSPARENT FINISH**

- A. Interior Doors (Door 1213C )
  1. Approved Manufacturers:
    - a. Oregon Door
    - b. VT Industries
    - c. Lynden Door
    - d. Or approved equal

2. Performance Grade:
  - a. Doors shall meet the requirements of ANSI/WDMA Extra Heavy Duty performance level.
3. Slab doors shall be North America Architectural Woodwork Standards Custom Grade.
4. Faces: Single-ply wood veneer not less than 1/50 inch thick.
  - a. Species: Match existing. (Natural Birch, V.I.F.)
  - b. Cut: Match existing. (Rotary, V.I.F.)
  - c. Match between Veneer Leaves: Match existing.
  - d. Assembly of Veneer Leaves on Door Faces: Match existing.
  - e. Pair and Set Match: Provide for doors hung in same opening.
5. Core for Non-Fire-Rated Doors:
  - a. WDMA I.S. 10 structural composite lumber.
    - 1) Screw Withdrawal, Face: 550 lbf.
    - 2) Screw Withdrawal, Edge: 550 lbf
6. Construction: Five plies, hot-pressed bonded (vertical and horizontal edging is bonded to core), with entire unit abrasive planed before veneering.
7. Edge material must match in species and grain cut. Exposed finger-joint solids are not allowed at Premium Grade.

## 2.2 FABRICATION

- A. Factory fit doors to suit frame-opening sizes indicated.
  1. Comply with clearance requirements of referenced quality standard for fitting unless otherwise indicated.
  2. Comply with NFPA 80 requirements for fire-rated doors.
- B. Factory machine doors for hardware that is not surface applied.
  1. Locate hardware to comply with DHI-WDHS-3.
  2. Comply with final hardware schedules, door frame Shop Drawings, ANSI/BHMA-156.115-W, and hardware templates.
  3. Provide blocking as required for surface mounted hardware to prevent the need for through bolting.
  4. Coordinate with hardware mortises in metal frames, to verify dimensions and alignment before factory machining.

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### **Flush Wood Doors**

5. For doors scheduled to receive electrified locksets, provide factory-installed raceway and wiring to accommodate specified hardware.
6. Metal Astragals: Factory machine astragals and formed-steel edges for hardware for pairs of fire-rated doors.

### **2.3 FACTORY FINISHING**

- A. Comply with referenced quality standard for factory finishing.
  1. Complete fabrication, including fitting doors for openings and machining for hardware that is not surface applied, before finishing.
  2. Finish faces, all four edges, edges of cutouts, and mortises.
- B. Transparent Finish:
  1. All products provided in this section shall be factory finished using North America Architectural Woodwork Standards Finish System 12, Polyurethane, Water Based.
  2. Finish shall be Woodwork Institute Premium Grade.
  3. Staining: Match existing doors.
  4. Sheen: Match existing doors.

## **PART 3 - EXECUTION**

### **3.1 DELIVERY STORAGE AND HANDLING**

- A. Deliver materials only when the project is ready for installation and the general contractor has provided a clean storage area.
- B. Delivery of architectural millwork shall be made only when the area of operation is enclosed, all plaster and concrete work is dry and the area broom clean.
- C. Maintain indoor temperature and humidity within the range to be expected after occupancy.

### **3.2 SCHEDULING**

- A. Coordinate fabrication, delivery, and installation with the general contractor and other applicable trades.

### **3.3 INSTALLATION**

- A. Hardware: For installation, see Section 087100 "Door Hardware."
  1. Hardware shall be installed complete and as recommended by the manufacturer.

- B. Install doors to comply with manufacturer's written instructions and referenced quality standard, and as indicated.
- C. Verify that frames are set square, plumb and level, and in plane.
  - 1. Report openings that are not within tolerance to the General Contractor for correction before hanging doors.
- D. Install all work in conformance with the *North American Architectural Woodwork Standards*, latest edition.
  - 1. Installation shall conform to the NAAWS Grade of the items being installed.
- E. Job-Fitted Doors:
  - 1. Align and fit doors in frames with uniform clearances and bevels as indicated below.
    - a. Do not trim stiles and rails in excess of limits set by manufacturer or permitted for fire-rated doors.
  - 2. Machine doors for hardware.
  - 3. Seal edges of doors, edges of cutouts, and mortises after fitting and machining.
  - 4. Clearances:
    - a. Provide 1/8 inch at heads, jambs, and between pairs of doors.
    - b. Provide 1/8 inch from bottom of door to top of decorative floor finish or covering unless otherwise indicated on Drawings.
    - c. Where threshold is shown or scheduled, provide 1/4 inch from bottom of door to top of threshold unless otherwise indicated.
  - 5. Bevel non-fire-rated doors 1/8 inch in 2 inches at lock and hinge edges.
  - 6. Bevel fire-rated doors 1/8 inch in 2 inches at lock edge; trim stiles and rails only to extent permitted by labeling agency.
- F. Factory-Finished Doors: Restore finish before installation if fitting or machining is required at Project site.

### 3.4 FIELD QUALITY CONTROL

- A. Inspection Agency: Engage a qualified inspector to perform inspections and to furnish reports to State's Representative.
- B. Inspections:



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### **Flush Wood Doors**

1. Provide inspection of installed Work through WI's Certified Compliance Program, certifying that wood doors and frames, including installation, comply with requirements of AWI/AWMCA/WI's "Architectural Woodwork Standards" for the specified grade.
- C. Repair or remove and replace installations where inspections indicate that they do not comply with specified requirements.
- D. Reinspect repaired or replaced installations to determine if replaced or repaired door assembly installations comply with specified requirements.

### **3.5 ADJUSTING**

- A. Operation:
  1. Rehang or replace doors that do not swing or operate freely.
  2. Before completion of the installation the installer shall adjust moving and operating parts to function smoothly and correctly.
- B. Finished Doors: Replace doors that are damaged or that do not comply with requirements. Doors may be repaired or refinished if Work complies with requirements and shows no evidence of repair or refinishing.

### **3.6 CLEANUP**

1. Upon completion of installation the installer shall clean all installed items of pencil and ink marks, and broom clean his area of operation, depositing debris in containers provided by the general contractor.

END OF SECTION 081416

## **SECTION 083473.13**

### **METAL SOUND CONTROL DOOR ASSEMBLIES**

#### **PART 1 - GENERAL**

##### **1.1 SUMMARY**

- A. Section includes metal sound control door assemblies for Meeting Room Door 1198B3.

##### **1.2 PREINSTALLATION MEETINGS**

- A. Preinstallation Conference: Conduct conference at Project site.

##### **1.3 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
- B. Shop Drawings: For sound control door assemblies. Include elevations, details, seals, anchorages, and accessories.
- C. Samples: For units with factory-applied finishes.
- D. Schedule: Provide a schedule of sound control door assemblies prepared using same reference numbers for details and openings as those on Drawings.

##### **1.4 INFORMATIONAL SUBMITTALS**

- A. Product certificates.
  - 1. Provide certification that the door construction utilized has been tested at an independent laboratory in accordance with ASTM E90, and that the STC rating determined in accordance with ASTM E413, is not less than that specified in Part 2 of this Section. The laboratory referenced in the certification must be qualified under the National Voluntary Accreditation Program (NVLAP) of the U.S. Bureau of Standards. Certification must reference laboratory name, test report number, and date of test; substitution of test data not in accordance with ASTM E90 and E413 will not be acceptable.
- B. Product test reports.
  - 1. Secure the services of a qualified Independent Testing agency to test door and frame installations in accordance with ASTM E336. Installed product

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**Metal Sound Control Door Assemblies**

shall perform no less than (5) [FSTC] [NIC] rating points below the specified laboratory STC rating. Any installations which fail to meet these criteria shall be examined, re-worked and re-tested until compliance is obtained.

**1.5 CLOSEOUT SUBMITTALS**

- A. Maintenance data.

**1.6 WARRANTY**

- A. Special Warranty: Manufacturer agrees to repair or replace components of sound control door assemblies that fail in materials or workmanship within specified warranty period.

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

**PART 2 - PRODUCTS**

**2.1 PERFORMANCE REQUIREMENTS**

- A. STC Rating: STC 48, min. as calculated by ASTM E413 when tested in an operable condition according to ASTM E90.

**2.2 STEEL SOUND CONTROL DOORS**

- A. Overly Door Company, or approved equal. Contact: Eric Gemmell (760) 945-7116
  - 1. Single swinging flush metal door: Model # 4812019 (STC 48)
  - 2. Sidelight: Model # 5292272 (STC 52)
- B. Doors: Flush-design sound control doors, 1-3/4 inches thick, of seamless construction; with manufacturer's standard sound-retardant core as required to provide STC rating indicated. Construct doors with smooth, flush surfaces without visible joints or seams on exposed faces or stile edges. Fabricate according to NAAMM-HMMA 865.
  - 1. Interior Doors: Fabricate from cold-rolled steel sheet unless otherwise indicated, 0.048-inch nominal thickness or thicker as required to achieve STC rating indicated.
  - 2. Core: Manufacturer's standard sound control core.
  - 3. Loose Stops for Glazed Lites in Doors: Same material as face sheets.

4. Top and Bottom Channels: Closed with continuous channels of same material as face sheets, spot welded to face sheets not more than 6 inches o.c.
  5. Hardware Reinforcement: Same material as face sheets.
- C. Glazing: Manufacturers' standard factory-installed glazing.
- D. Materials:
1. Cold-Rolled Steel Sheet: ASTM A1008/A1008M, Commercial Steel (CS), Type B.
  2. Hot-Rolled Steel Sheet: ASTM A1011/A1011M, Commercial Steel (CS), Type B.
  3. Glazing: As required by sound control door assembly manufacturer to comply with sound control requirements.
- E. Finishes:
1. Prime Finish: Apply manufacturer's standard primer immediately after cleaning and pretreating.

## 2.3 SOUND CONTROL FRAMES

- A. Frames: Fabricate sound control door frames with corners mitered, reinforced, and continuously welded the full depth and width of frame. Fabricate according to NAAMM-HMMA 865.
1. Weld frames according to NAAMM-HMMA 820.
  2. Interior Frames: Fabricate from cold-rolled steel sheet unless otherwise indicated, 0.075-inch nominal thickness or thicker as required to provide STC rating indicated.
  3. Hardware Reinforcement: Fabricate according to NAAMM-HMMA 865 of same material as face sheets.
- B. Materials:
1. Cold-Rolled Steel Sheet: ASTM A1008/A1008M, Commercial Steel (CS), Type B.
  2. Hot-Rolled Steel Sheet: ASTM A1011/A1011M, Commercial Steel (CS), Type B.
  3. Mineral-Fiber Insulation: Insulation composed of rock-wool fibers, slag-wool fibers, or glass fibers.
- C. Finishes:
1. Prime Finish: Apply manufacturer's standard primer immediately after cleaning and pretreating.

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**Metal Sound Control Door Assemblies**

**2.4 HARDWARE**

- A. Sound Control Door Hardware: Manufacturer's standard sound control system, including head and jamb seals, door bottoms, hinges, and thresholds, as required by testing to achieve STC rating indicated.
  - 1. Magnetic Seals: One-piece units consisting of closed-cell sponge neoprene seal and resiliently mounted magnet held in place by metal retainer, with retainer cover of same material as door frame; attached to door frame with concealed screws.
  - 2. Automatic Door Bottoms: Neoprene or silicone gasket, held in place by metal housing, that automatically drops to form seal when door is closed.
  - 3. Cam-Lift Hinges or Heavy Weight Level Swing Full Mortise Hinges: Depending on manufacturer's assembly.
  - 4. Thresholds: Flat, smooth, unfluted type as recommended by manufacturer; fabricated from aluminum.
- B. Other Hardware: Comply with requirements in Section 087100 "Door Hardware."

**2.5 FABRICATION**

- A. Steel Sound Control Door Fabrication:
  - 1. Seamless Edge Construction: Fabricate doors with faces joined at vertical edges by welding; welds shall be ground, filled, and dressed to make them invisible and to provide a smooth, flush surface.
  - 2. Glazed Lites: Factory install glazed lites according to requirements of tested assembly to achieve STC rating indicated. Provide fixed stops and moldings welded on secure side of door.
  - 3. Hardware Preparation: Factory prepare sound control doors to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping.
    - a. Reinforce doors to receive nontemplated mortised and surface-mounted door hardware.
    - b. Locate door hardware as indicated, or if not indicated, according to NAAMM-HMMA 831, "Recommended Hardware Locations for Custom Hollow Metal Doors and Frames."
  - 4. Tolerances: Fabricate doors to tolerances indicated in NAAMM-HMMA 865.
- B. Sound Control Frame Fabrication:
  - 1. Weld flush face joints continuously; grind, fill, dress, and make smooth, flush, and invisible. Where frames are fabricated in sections due to

- shipping or handling limitations, provide alignment plates or angles at each joint, fabricated from same thickness metal as frames.
2. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
  3. Anchors: Provide number and spacing of anchors as indicated in NAAMM-HMMA 865.
  4. Hardware Preparation: Factory prepare sound control frames to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping.
    - a. Reinforce frames to receive nontemplated mortised and surface-mounted door hardware.
    - b. Locate hardware as indicated, or if not indicated, according to NAAMM-HMMA 831, "Recommended Hardware Locations for Custom Hollow Metal Doors and Frames."
  5. Tolerances: Fabricate frames to tolerances indicated in NAAMM-HMMA 865.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Frames: Install sound control door frames in sizes and profiles indicated.
  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. Where frames are fabricated in sections due to shipping or handling limitations, field splice at approved locations by welding face joint continuously; grind, fill, and dress; make splice smooth, flush, and invisible on exposed faces.
    - b. Install sound control frames with removable glazing stops located on secure side of opening.
    - c. Remove temporary braces only after frames or bucks have been properly set and secured.
    - d. Check squareness, twist, and plumbness of frames as walls are constructed. Shim as necessary to comply with installation tolerances.
    - e. Apply corrosion-resistant coating to backs of frames to be filled with mortar, grout, and plaster containing antifreezing agents.
  2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with postinstalled expansion anchors.
  3. Metal-Stud Partitions: Fully fill frames with mineral-fiber insulation.

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**Metal Sound Control Door Assemblies**

4. In-Place Concrete or Masonry Construction: Secure frames in place with postinstalled expansion anchors. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
  5. In-Place Gypsum Board Partitions: Secure frames in place with postinstalled expansion anchors through floor anchors at each jamb. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
  6. Ceiling Struts: Extend struts vertically from top of frame at each jamb to supporting construction above unless frame is anchored to masonry or to other structural support at each jamb. Bend top of struts to provide flush contact for securing to supporting construction above. Provide adjustable wedged or bolted anchorage to frame jamb members.
  7. Installation Tolerances: Adjust sound control door frames for squareness, alignment, twist, and plumbness as indicated in NAAMM-HMMA 865.
- B. Doors: Fit sound control doors accurately in frames, within clearances as indicated in NAAMM-HMMA 865.
- C. Sound Control Seals: Where seals have been factory prefabricated and preinstalled and subsequently removed for shipping, reinstall seals and adjust according to manufacturer's written instructions.
- D. Hinges: Install hinges according to manufacturer's written instructions.
- E. Thresholds: Set thresholds in full bed of acoustic sealant complying with requirements in Section 079200 "Joint Sealants."
- F. Glazing: Comply with installation requirements in sound control door assembly manufacturer's written instructions.
- G. Prior to installation, secure the services of a qualified representative of the manufacturer to visit the job site and instruct the contractor's personnel in proper installation and adjustment of the assemblies or secure services of manufacturer's factory trained and authorized installer to perform installation of assemblies.
- H. Install work of this Section in strict accordance with approved shop drawings and manufacturer's recommended installation instructions. Where installations require field welding, all work must be performed by certified welders in accordance with AWS D1.1/D1.3.
- I. Upon installation, secure the services of a qualified representative of the manufacturer to visit the jobsite and inspect the complete installation of the door and frame assemblies, test all components thru a minimum of ten (10) cycles of operation and direct installer in correcting any non-conforming items found.

END OF SECTION 083473.13

## **SECTION 087100**

### **DOOR HARDWARE**

#### **PART 1 - GENERAL**

##### **1.1 SUMMARY**

- A. Section Includes:
  - 1. Mechanical door hardware for the following:
    - a. Swinging doors.
  - 2. Cylinders for door hardware specified in other Sections.
  - 3. Electrified door hardware.

##### **1.2 PREINSTALLATION MEETINGS**

- A. Preinstallation Conference: Conduct conference at Project site.
- B. Keying Conference: Conduct conference at Project site.
- C. Include State's Representative and Building Manager in meetings.

##### **1.3 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
- B. Shop Drawings: For electrified door hardware.
  - 1. Include diagrams for power, signal, and control wiring.
  - 2. Include details of interface of electrified door hardware and building safety and security systems.
- C. Samples: For each exposed product in each finish specified.
- D. Door hardware schedule.
- E. Keying schedule.

##### **1.4 INFORMATIONAL SUBMITTALS**

- A. Sample warranty.

##### **1.5 CLOSEOUT SUBMITTALS**

- A. Maintenance data.



## **Section 087100 – Page 2**

### **Door Hardware**

#### **1.6 QUALITY ASSURANCE**

- A. Installer Qualifications: Supplier of products and an employer of workers trained and approved by product manufacturers and of an Architectural Hardware Consultant who is available during the course of the Work to consult Contractor, State's Representative, and State about door hardware and keying.
  - 1. Scheduling Responsibility: Preparation of door hardware and keying schedule.
  - 2. Engineering Responsibility: Preparation of data for electrified door hardware, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.
- B. Architectural Hardware Consultant Qualifications: A person who is experienced in providing consulting services for door hardware installations that are comparable in material, design, and extent to that indicated for this Project and who is currently certified by DHI as an Architectural Hardware Consultant (AHC) and an Electrified Hardware Consultant (EHC) or Architectural Openings Consultant (AOC).

#### **1.7 WARRANTY**

- A. Special Warranty: Manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.
  - 1. Warranty Period: Three years from date of Substantial Completion unless otherwise indicated below:
    - a. Electromagnetic Locks: Five years from date of Substantial Completion.
    - b. Exit Devices: Two years from date of Substantial Completion.
    - c. Manual Closers: 10 years from date of Substantial Completion.

## **PART 2 - PRODUCTS**

#### **2.1 PERFORMANCE REQUIREMENTS**

- A. Electrified Door Hardware: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Means of Egress Doors: Single operation unlatching. Latches do not require more than 15 lbf to release the latch. Locks do not require use of a key, tool, or special knowledge for operation.

- C. Accessibility Requirements: For door hardware on doors in an accessible route, comply with 2022 CBC Chapter 11B.

## 2.2 HINGES

- A. Hinges: BHMA A156.1. Provide template-produced hinges for hinges installed on hollow-metal doors and hollow-metal frames.

## 2.3 MECHANICAL LOCKS AND LATCHES

- A. Lock Functions: As indicated in door hardware schedule.
- B. Lock Throw: Comply with testing requirements for length of bolts required for labeled fire doors, and as follows:
  - 1. Bored Locks: Minimum 1/2-inch latchbolt throw.
  - 2. Mortise Locks: Minimum 3/4-inch latchbolt throw.
  - 3. Deadbolts: Minimum 1-inch bolt throw.
- C. Lock Backset: 2-3/4 inches unless otherwise indicated.
- D. Lock Trim:
  - 1. Description: As indicated on hardware schedule.
- E. Strikes: Provide manufacturer's standard strike for each lock bolt or latchbolt complying with requirements indicated for applicable lock or latch and with strike box and curved lip extended to protect frame; finished to match lock or latch.
  - 1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
  - 2. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.
  - 3. Aluminum-Frame Strike Box: Manufacturer's special strike box fabricated for aluminum framing.
  - 4. Rabbet Front and Strike: Provide on locksets for rabbeted meeting stiles.
- F. Bored Locks: BHMA A156.2; Grade 1; Series 4000.
- G. Mortise Locks: BHMA A156.13; Operational Grade 1 stamped steel case with steel or brass parts; Series 1000.

## 2.4 ELECTRIC STRIKES

- A. Electric Strikes: BHMA A156.31; Grade 1 with faceplate to suit lock and frame.

## **Section 087100 – Page 4**

### **Door Hardware**

#### **2.5 ELECTROMECHANICAL LOCKS**

- A. Electromechanical Locks: BHMA A156.25; Grade 1; motor or solenoid driven; with strike that suits frame.

#### **2.6 SELF-CONTAINED ELECTRONIC LOCKS**

- A. Self-Contained Electronic Locks: BHMA A156.25, with internal, battery-powered, self-contained electronic locks; consisting of complete lockset, motor-driven lock mechanism, and actuating device; enclosed in zinc-dichromate-plated, wrought-steel case, and strike that suits frame. Provide key override, low-battery detection and warning, LED status indicators, and ability to program at the lock.

#### **2.7 AUTOMATIC FLUSH BOLTS**

- A. Automatic Flush Bolts: BHMA A156.3, Type 25; minimum 3/4-inch throw; with dust-proof strikes; designed for mortising into door edge. Include wear plates.

#### **2.8 EXIT DEVICES AND AUXILIARY ITEMS**

- A. Exit Devices and Auxiliary Items: BHMA A156.3.

#### **2.9 LOCK CYLINDERS**

- A. Lock Cylinders: Tumbler type, constructed from brass or bronze, stainless steel, or nickel silver.
- B. Standard Lock Cylinders: BHMA A156.5; Grade 1 permanent cores; face finished to match lockset.
  - 1. Core Type: Interchangeable.
- C. Construction Cores: Provide construction cores that are replaceable by permanent cores. Provide 10 construction master keys.

#### **2.10 KEYING**

- A. Keying System: Factory registered, complying with guidelines in BHMA A156.28, appendix. Provide one extra key blank for each lock. Incorporate decisions made in keying conference.
  - 1. Master Key System: Change keys and a master key operate cylinders.
    - a. Provide three cylinder change keys and five master keys.

- 2. Existing System:
    - a. Master key or grand master key locks to State's existing system.
  - B. Keys: Nickel silver or Brass. To be determined during keying conference.
    - 1. Stamping: Permanently inscribe each key with a visual key control number and include the following notation:
      - a. Notation: Information to be furnished by State.
- 2.11 OPERATING TRIM
- A. Operating Trim: BHMA A156.6; stainless steel unless otherwise indicated.
- 2.12 ACCESSORIES FOR PAIRS OF DOORS
- A. Coordinators: BHMA A156.3; consisting of active-leaf, hold-open lever and inactive-leaf release trigger; fabricated from steel with nylon-coated strike plates; with built-in, adjustable safety release and with internal override.
  - B. Astragals: BHMA A156.22.
- 2.13 SURFACE CLOSERS
- A. Surface Closers: BHMA A156.4; rack-and-pinion hydraulic type with adjustable sweep and latch speeds controlled by key-operated valves and forged-steel main arm. Comply with manufacturer's written instructions for size of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Provide factory-sized closers, adjustable to meet field conditions and requirements for opening force.
- 2.14 MECHANICAL STOPS AND HOLDERS
- A. Wall- and Floor-Mounted Stops: BHMA A156.16.
- 2.15 OVERHEAD STOPS AND HOLDERS
- A. Overhead Stops and Holders: BHMA A156.8.

## **Section 087100 – Page 6**

### **Door Hardware**

#### **2.16 DOOR GASKETING**

- A. Door Gasketing: BHMA A156.22; with resilient or flexible seal strips that are easily replaceable and readily available from stocks maintained by manufacturer.
- B. Maximum Air Leakage: When tested according to ASTM E283 with tested pressure differential of 0.3-inch wg, as follows:
  - 1. Smoke-Rated Gasketing: 0.3 cfm/sq. ft. of door opening.
  - 2. Gasketing on Single Doors: 0.3 cfm/sq. ft. of door opening.
  - 3. Gasketing on Double Doors: 0.50 cfm per ft. m/s per m) of door opening.

#### **2.17 THRESHOLDS**

- A. Thresholds: BHMA A156.21; fabricated to full width of opening indicated.

#### **2.18 METAL PROTECTIVE TRIM UNITS**

- A. Metal Protective Trim Units: BHMA A156.6; fabricated from 0.050-inch-thick stainless steel; with manufacturer's standard machine or self-tapping screw fasteners.

#### **2.19 AUXILIARY DOOR HARDWARE**

- A. Auxiliary Hardware: BHMA A156.16.

#### **2.20 FINISHES**

- A. Provide finishes complying with BHMA A156.18 as indicated in door hardware schedule.

### **PART 3 - EXECUTION**

#### **3.1 INSTALLATION**

- A. Mounting Heights: Mount door hardware units at heights indicated on Drawings unless otherwise indicated or required to comply with governing regulations.
- B. Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units

with finishing work. Do not install surface-mounted items until finishes have been completed on substrates involved.

- C. Hinges: Install types and in quantities indicated in door hardware schedule, but not fewer than the number recommended by manufacturer for application indicated or one hinge for every 30 inches of door height, whichever is more stringent, unless other equivalent means of support for door, such as spring hinges or pivots, are provided.
- D. Intermediate Offset Pivots: Where offset pivots are indicated, provide intermediate offset pivots in quantities indicated in door hardware schedule, but not fewer than one intermediate offset pivot per door and one additional intermediate offset pivot for every 30 inches of door height greater than 90 inches.
- E. Lock Cylinders: Install construction cores where noted in hardware schedule to secure building and areas during construction period.
  - 1. Replace construction cores with permanent cores as directed by State.
- F. Boxed Power Supplies: Locate power supplies as indicated or, if not indicated, above accessible ceilings. Verify location with State's Representative.
  - 1. Configuration: Provide one power supply for each door opening with electrified door hardware.
- G. Thresholds: Set thresholds for exterior doors and other doors indicated in full bed of sealant complying with requirements specified in Section 079200 "Joint Sealants."
- H. Stops: Provide floor stops for doors unless wall or other type stops are indicated in door hardware schedule. Do not mount floor stops where they will impede traffic.
- I. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.
  - 1. Do not notch perimeter gasketing to install other surface-applied hardware.
- J. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.
- K. Door Bottoms: Apply to bottom of door, forming seal with threshold when door is closed.

## **Section 087100 – Page 8**

### **Door Hardware**

#### **3.2 ADJUSTING**

- A. 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.

#### **3.3 DOOR HARDWARE SCHEDULE**

- A. All products shown are basis of design, or approved equal.

| Abbreviation | Name                        |
|--------------|-----------------------------|
| BES          | Best Locking Systems        |
| IVE          | H.B. Ives                   |
| LCN          | LCN Commercial Division     |
| RIC          | Richards-Wilcox, Inc.       |
| SCE          | Schlage Electronic Security |
| SLY          | Stanley                     |
| TRI          | Trimco/Bbw/Quality          |
| TRM          | Trimco                      |
| VON          | Von Duprin                  |
| ZER          | Zero International Inc      |

#### **GROUP NO. A - (EVIDENCE STORAGE)**

|   |     |                        |                                      |     |     |
|---|-----|------------------------|--------------------------------------|-----|-----|
| 3 | EA  | HINGE                  | 5BB1 4.5 X 4.5                       | 652 | IVE |
| 1 | EA  | ELEC STOREROOM<br>LOCK | AD-200-CY-70-KP-RHO-B 4AA<br>BATTERY | 626 | SCE |
| 1 | EA  | PERMANENT CORE         | OWNER'S STANDARD                     | 626 | BES |
| 1 | EA  | ELECTRIC STRIKE        | 6211 FSE 12/16/24/28<br>VAC/VDC      | 630 | VON |
| 1 | EA  | SURFACE CLOSER         | 4040XP                               | 689 | LCN |
| 2 | EA  | KICK PLATE             | K0050 10" X 2" LDW                   | 630 | TRI |
| 1 | EA  | UNIVERSAL DOME         | W1211                                | 626 | TRM |
| 1 | SET | SMOKE SEAL             | BY FRAME MANUFACTURER                |     |     |
| 1 | EA  | DOOR BOTTOM            | 364AA                                | AA  | ZER |
| 1 | EA  | THRESHOLD              | TO SUIT CONDITIONS                   |     | ZER |

**Note:**

All keys for this room to be provided directly to tenant. Coordinate with State's Representative.

**Door Hardware**

GROUP NO. B - (MEETING ROOM)

|   |     |                        |                      |     |     |
|---|-----|------------------------|----------------------|-----|-----|
| 3 | EA  | HEAVY-WEIGHT<br>HINGE  | FBB199 (32D) 5 X 4.5 |     | SLY |
| 1 | EA  | CLASSROOM LOCK         | 9K4 7 R 15D          | 626 | BES |
| 1 | EA  | UNIVERSAL DOME<br>STOP | W1211                | 626 | TRM |
| 1 | SET | SOUND SEAL             | BY DOOR MANUFACTURER |     |     |
| 1 | EA  | DOOR BOTTOM            | BY DOOR MANUFACTURER |     |     |
| 1 | EA  | THRESHOLD              | 164D                 |     | ZER |

GROUP NO. C – (CWPP LAB/STOR.)

|   |     |                            |                             |     |     |
|---|-----|----------------------------|-----------------------------|-----|-----|
| 7 | EA  | HINGE                      | 5BB1 4.5 X 4.5              | 652 | IVE |
| 1 | EA  | ELECTRIC HINGE             | 5BB1 4.5 X 4.5 TW8          | 652 | IVE |
| 1 | EA  | AUTO FLUSH BOLT            | FB41T                       | 630 | IVE |
| 1 | EA  | EU LOCK                    | 9KW3 7 DEU RQE 15D PTD      | 626 | BES |
| 1 | EA  | COORDINATOR                | COR X FL                    | 628 | IVE |
| 2 | EA  | SURFACE CLOSER             | 1461 FC                     | 689 | LCN |
| 2 | EA  | KICK PLATE                 | K0050 10" X 2" LDW          | 630 | TRI |
| 2 | EA  | HOLDER WITH WALL<br>STRIKE | 1260-W                      | 626 | TRM |
| 1 | SET | SMOKE SEAL                 | BY AL FRAME<br>MANUFACTURER |     |     |
| 2 | EA  | DOOR BOTTOM                | 364AA                       | AA  | ZER |
| 1 | EA  | ASTRAGAL                   | 383AA                       | AA  | ZER |
| 1 | EA  | THRESHOLD                  | TO SUIT CONDITIONS          |     | ZER |
| 1 | EA  | CONSTRUCTION<br>CORE       | BRASS                       |     |     |

Note:

Reuse existing card reader.

GROUP NO. D - (EVIDENCE PROCESSING)

|   |    |                |                        |     |     |
|---|----|----------------|------------------------|-----|-----|
| 1 | EA | PERMANENT CORE | OWNER'S STANDARD, SFIC | 626 | BES |
| 1 | EA | UNIVERSAL DOME | W1211                  | 626 | TRM |

Note:

All keys for this room to be provided directly to tenant. Coordinate with State's Representative.



**Section 087100 – Page 10****Door Hardware**GROUP NO. E – (I.T. FENCED STORAGE GATE)

|   |    |                                                                                                                  |                    |     |     |
|---|----|------------------------------------------------------------------------------------------------------------------|--------------------|-----|-----|
| 4 | EA | HINGE                                                                                                            | BY GATE FABRICATOR |     |     |
| 2 | EA | CANE BOLT                                                                                                        | 0524.00021         | Z   | RIC |
| 2 | EA | PAD LOCK ASSEMBLY                                                                                                | 0524PL             | Z   | RIC |
| 1 | EA | PADLOCK                                                                                                          | 21B772             | 606 | BES |
| 1 | EA | STOREROOM LOCK                                                                                                   | 45H 7 D 15H        | 626 | BES |
| 1 | EA | ASTRAGAL                                                                                                         | BY GATE FABRICATOR |     |     |
| 1 | EA | SECURITY SHROUD TO<br>PREVENT LEVER<br>ACCESS FROM<br>OUTSIDE OF FENCE.<br>(MAINTAIN 1.5" CLR.<br>AROUND LEVER.) | BY GATE FABRICATOR |     |     |
| 1 | EA | CONSTRUCTION CORE                                                                                                | BRASS              |     |     |

END OF SECTION 087100

## **SECTION 092216**

### **NON-STRUCTURAL METAL FRAMING (SECURITY MESH)**

#### **PART 1 - GENERAL**

##### **1.1 SUMMARY**

- A. Section Includes:
  - 1. Auxiliary Materials

##### **1.2 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
- B. Shop Drawings: Showing locations of security mesh.

##### **1.3 QUALITY ASSURANCE**

- A. Contractor to provide effective, full-time quality control over fabrication and erection complying with pertinent codes and regulations of government agencies having jurisdiction. Conduct preinstallation meeting to verify Project requirements, substrate conditions, and manufacturer's written installation instructions.

#### **PART 2 - PRODUCTS**

##### **2.1 AUXILIARY MATERIALS**

- A. General: Provide auxiliary materials that comply with referenced installation standards.
  - 1. Fasteners for Steel Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.
- B. Drywall Penetration Security Mesh: Supply and install security mesh, steel, expanded-metal panels as a penetration barrier behind gypsum wallboard walls and/or ceilings, where indicated on Drawings.
  - 1. Basis of Design: ClarkDietrich Barrier Mesh; BM75-13F Medium Security, or approved equal.

**Section 092216 – Page 2**  
**Non-Structural Metal Framing**

2. Approved Manufacturers:
  - a. Amico
  - b. Niles XM
3. Finished shape of mesh openings is a flattened diamond, per ASTM F1267, Style 2.
4. Security Mesh Clips: Security mesh is attached to framing members using security mesh clips and appropriate threaded fasteners at 8-10" O.C.
  - a. Install per manufacturer's instructions.
  - b. Framing members should be no less than 20 ga.
  - c. For steel framing, install a flat-head, bugle-type, self-tapping, fine-thread screw long enough to penetrate the framing member a minimum of 3/8 inch.

**PART 3 - EXECUTION**

**3.1 INSTALLATION OF DRYWALL PENETRATION SECURITY MESH**

- A. Install drywall penetration security mesh as follows:
  1. Install security mesh sheets with diamond running in direction most suitable.
  2. Install security mesh clips to secure mesh to framing members.
  3. Join staggered or butt mesh joints that occur on framing members.
  4. Overlapping mesh joints to achieve tie-in is acceptable.
  5. Install security mesh sheets to join, begin, and terminate on framing members.
  6. Wire tie security mesh sheets not joining on framing member with 0.046-inches, 18-gauge, steel tie wire.
  7. Wire tying to be no less frequent than mesh clip installation.

**END OF SECTION 092216**

## **SECTION 092900**

### **GYPSUM BOARD**

#### **PART 1 - GENERAL**

##### **1.1 SUMMARY**

**A. Section Includes:**

1. Interior gypsum board.
2. Texture finishes.

##### **1.2 ACTION SUBMITTALS**

**A. Product Data:** For the following:

1. Gypsum wallboard.
2. Mold-resistant gypsum board.
3. Interior trim.
4. Joint treatment materials.
5. Textured finishes.

**B. Samples:** For each texture finish indicated on same backing indicated for Work.

#### **PART 2 - PRODUCTS**

##### **2.1 PERFORMANCE REQUIREMENTS**

- A. Fire-Resistance-Rated Assemblies:** For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E119 by an independent testing agency.
- B. STC-Rated Assemblies:** For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E90 and classified according to ASTM E413 by an independent testing agency.

##### **2.2 GYPSUM BOARD, GENERAL**

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

## **Section 092900 – Page 2**

### **Gypsum Board**

#### **2.3 INTERIOR GYPSUM BOARD**

- A. Manufacturers:
  - 1. Gold Bond Building Products provided by National Gypsum Company
  - 2. Pabco
  - 3. USG Corporation
  - 4. Or approved equal.
- B. Gypsum Wallboard: ASTM C1396/C1396M.
  - 1. Type X at rated assemblies.
  - 2. Thickness: 5/8 inch.
  - 3. Long Edges: Tapered.
- C. Mold-Resistant Gypsum Board: ASTM C1396/C1396M. With moisture- and mold-resistant core and paper surfaces.
  - 1. Core: 5/8"
  - 2. Long Edges: Tapered.
  - 3. Mold Resistance: ASTM D3273, score of 10 as rated according to ASTM D3274.

#### **2.4 SPECIALTY GYPSUM BOARD**

- A. Acoustically Enhanced Gypsum Board, ASTM C1396/C1396M. Multilayer products constructed of layers of gypsum board sandwiching a viscoelastic sound-absorbing polymer core tested in accordance with ASTM C1629/C1629M.
  - 1. Manufacturers:
    - a. National Gypsum Company, Gold Bond, SoundBreak XP Fire-Shield Gypsum Board
    - b. Pabco Gypsum, QuietRock ES
    - c. Or approved equal.
  - 2. Thickness: 5/8 inch
  - 3. Long Edges: Tapered.

#### **2.5 TRIM ACCESSORIES**

- A. Interior Trim: ASTM C1047.
  - 1. Material: zinc-coated steel sheet.
  - 2. Shapes:
    - a. Cornerbead.
    - b. Bullnose bead.
    - c. LC-Bead: J-shaped; exposed long flange receives joint compound.

- d. L-Bead: L-shaped; exposed long flange receives joint compound.
- e. U-Bead: J-shaped; exposed short flange does not receive joint compound.
- f. Expansion (control) joint.
- g. Curved-Edge Cornerbead: With notched or flexible flanges.

## 2.6 JOINT TREATMENT MATERIALS

- A. General: Comply with ASTM C475/C475M.
- B. Joint Tape:
  - 1. Interior Gypsum Board: Paper.
- C. Joint Compound for Interior Gypsum Board: For each coat, use formulation that is compatible with other compounds applied on previous or for successive coats.
  - 1. Prefilling: At open joints and damaged surface areas, use setting-type taping compound.
  - 2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use all-purpose compound.
    - a. Use setting-type compound for installing paper-faced metal trim accessories.
  - 3. Fill Coat: For second coat, use all-purpose compound.
  - 4. Finish Coat: For third coat, use sandable topping compound.
  - 5. Skim Coat: For final coat of Level 5 finish, use sandable topping compound.

## 2.7 AUXILIARY MATERIALS

- A. Provide auxiliary materials that comply with referenced installation standards and manufacturer's written instructions.
- B. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.
- C. Steel Drill Screws: ASTM C1002 unless otherwise indicated.
  - 1. Use screws complying with ASTM C954 for fastening panels to steel members from 0.033 to 0.112 inch thick.
  - 2. For fastening cementitious backer units, use screws of type and size recommended by panel manufacturer.
- D. Acoustical Sealant: As specified in Section 079219 "Acoustical Joint Sealants."

**Section 092900 – Page 4**  
**Gypsum Board**

- E. Thermal Insulation: As specified in Section 072100 "Thermal Insulation."

**2.8 TEXTURE FINISHES**

- A. Primer: As recommended by textured finish manufacturer.
- B. Aggregate Finish: Water-based, job-mixed, aggregated, drying-type texture finish for spray application.
  - 1. Texture: To match existing.

**PART 3 - EXECUTION**

**3.1 INSTALLATION AND FINISHING OF PANELS**

- A. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.
- B. Comply with ASTM C840.
- C. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments. Provide 1/4- to 1/2-inch-wide spaces at these locations and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.
- D. For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.
- E. Prefill open joints and damaged surface areas.
- F. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.
- G. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C840:
  - 1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
  - 2. Level 2: Panels that are substrate for tile.
  - 3. Level 3: Where indicated on Drawings.
  - 4. Level 4: At panel surfaces that will be exposed to view unless otherwise indicated.
    - a. Primer and its application to surfaces are specified in Section 099123 "Interior Painting."
  - 5. Level 5: Where indicated on Drawings.

- a. Primer and its application to surfaces are specified in Section 099123 "Interior Painting."

### 3.2 APPLYING TEXTURE FINISHES

- A. Surface Preparation and Primer: Prepare and apply primer to gypsum panels and other surfaces receiving texture finishes. Apply primer to surfaces that are clean, dry, and smooth.
- B. Texture Finish Application: Mix and apply finish using powered spray equipment, to produce a uniform texture matching approved mockup and free of starved spots or other evidence of thin application or of application patterns.

### 3.3 PROTECTION

- A. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.
- B. Remove and replace panels that are wet, moisture damaged, and mold damaged.

END OF SECTION 092900



**SECTION 096513**  
**RESILIENT BASE AND ACCESSORIES**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Thermoplastic-rubber base.

**1.2 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
- B. Samples: For each exposed product and for each color and texture specified.

**PART 2 - PRODUCTS**

**2.1 THERMOPLASTIC-RUBBER BASE (B1)**

- A. Johnsonite by Tarkett:, or approved equal.
- B. Product Standard: ASTM F1861, Type TP (rubber, thermoplastic).
  - 1. Location: Provide where shown on finish plan.
    - a. Profile: Traditional Coved Wall Base
- C. Thickness: 0.125 inch
- D. Height: 4 inches
- E. Lengths: Coils in manufacturer's standard length
- F. Outside Corners: Job formed.
- G. Inside Corners: Job formed.
- H. Colors: Per materials legend.

**Section 096513 – Page 2**  
**Resilient Base and Accessories**

**2.2 INSTALLATION MATERIALS**

- A. Trowelable Leveling and Patching Compounds: Latex-modified, portland-cement-based or blended hydraulic-cement-based formulation provided or approved by resilient-product manufacturer for applications indicated.
- B. Adhesives: Water-resistant type recommended by resilient-product manufacturer for resilient products and substrate conditions indicated.

**PART 3 - EXECUTION**

**3.1 PREPARATION**

- A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.
- B. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.
- C. Do not install resilient products until materials are the same temperature as space where they are to be installed.
- D. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient products.

**3.2 RESILIENT BASE INSTALLATION**

- A. Comply with manufacturer's written instructions for installing resilient base.
- B. Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.
- C. Install resilient base in lengths as long as practical without gaps at seams and with tops of adjacent pieces aligned.
- D. Tightly adhere resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.
- E. Do not stretch resilient base during installation.
- F. Job-Formed Corners:
  - 1. Outside Corners: Use straight pieces of maximum lengths possible and form with returns not less than 6 in length.

- a. Form without producing discoloration (whitening) at bends.
  - b. No visible gaps at top of base.
  - c. Where cove base is formed at outside corners, stretch toe of cove for smooth transition around corner with uniform contact with the finish flooring.
2. Inside Corners: Use straight pieces of maximum lengths possible and form with returns not less than 6 in length.
- a. Miter or cope corners to minimize open joints.

### 3.3 CLEANING AND PROTECTION

- A. Comply with manufacturer's written instructions for cleaning and protecting resilient products.
- B. Cover resilient products subject to wear and foot traffic until Substantial Completion.

END OF SECTION 096513

## **SECTION 096813**

### **TILE CARPETING**

#### **PART 1 - GENERAL**

##### **1.1 SUMMARY**

**A. Section Includes:**

1. Modular carpet tile.

**B. Section Relates to:**

1. Section 013543.19 – Carpet Tile Reclamation

##### **1.2 PREINSTALLATION MEETINGS**

- A. Preinstallation Conference:** Conduct conference at Project site.

##### **1.3 ACTION SUBMITTALS**

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

- B. Shop Drawings:** For carpet tile installation, plans showing the following:

1. Columns, doorways, enclosing walls or partitions, built-in cabinets, and locations where cutouts are required in carpet tiles.
2. Carpet tile type, color, and dye lot.
3. Type of subfloor.
4. Type of installation.
5. Pattern of installation.
6. Pattern type, location, and direction.
7. Pile direction.
8. Type, color, and location of edge, transition, and other accessory strips.
9. Transition details to other flooring materials.

- C. Samples:** For each exposed product and for each color and texture required.

##### **1.4 INFORMATIONAL SUBMITTALS**

- A. Product test reports.**

- B. Sample warranty.**

## **Section 096813 – Page 2**

### **Tile Carpeting**

#### **1.5 CLOSEOUT SUBMITTALS**

- A. Maintenance data.

#### **1.6 QUALITY ASSURANCE**

- A. Installer Qualifications: Certified by the International Certified Floorcovering Installers Association.

#### **1.7 WARRANTY**

- A. Special Warranty for Carpet Tiles: Manufacturer agrees to repair or replace components of carpet tile installation that fail in materials or workmanship within specified warranty period.

- 1. Warranty Period: Lifetime Commercial Limited Warranty.

- B. EXTRA MATERIALS

- 1. Furnish Owner with an additional ten percent material.

### **PART 2 - PRODUCTS**

#### **2.1 CARPET TILE (CP1)**

- A. Shaw Contract, or approved equal.
- B. Color: Per materials legend.
- C. Pattern: Per materials legend.
- D. Fiber Type: Ecosolution Q100 Nylon
- E. Dye Method: 100% Solution Dyed
- F. Construction: Multi-Level Pattern Loop
- G. Density: 6261 oz./cu. yd.
- H. Finished Pile Thickness: 0.092 in
- I. Total Thickness: 0.230 in
- J. Tufted Weight: 16 oz./sq. yd.
- K. Primary Backing/Backcoating: Synthetic
- L. Secondary Backing: Ecoworx Tile.

- M. Size: 24 by 24 inches.
- N. Soil-Resistance Treatment: SSP Shaw Soil Protection.
- O. Performance Characteristics:
  - 1. Appearance Retention Rating: Moderate traffic, 2.5 minimum according to ASTM D7330.
  - 2. Critical Radiant Flux Classification: Not less than 0.22 W/sq. cm according to NFPA 253.
  - 3. Dry Breaking Strength: Not less than 100 lbf according to ASTM D2646.
  - 4. Dimensional Tolerance: Within 1/32 inch of specified size dimensions, as determined by physical measurement.
  - 5. Dimensional Stability: 0.2 percent or less according to ISO 2551 (Aachen Test).
  - 6. Colorfastness to Crocking: Not less than 4, wet and dry, according to AATCC 165.
  - 7. Colorfastness to Light: Not less than 4 after 40 AFU (AATCC fading units) according to AATCC 16, Option E.
  - 8. Electrostatic Propensity: Less than 3.5 kV according to AATCC 134.

## 2.2 INSTALLATION ACCESSORIES

- A. Trowelable Leveling and Patching Compounds: Latex-modified, hydraulic-cement-based formulation provided or recommended by carpet tile manufacturer.
- B. Adhesives: Water-resistant, mildew-resistant, nonstaining, pressure-sensitive type to suite products and subfloor conditions indicated, that comply with flammability requirements for installed carpet tile, and are recommended by carpet tile manufacturer for releasable installation.
  - 1. Adhesive 5000
  - 2. Confirm appropriate adhesive with manufacturer after Moisture and pH testing.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Concrete Slabs:

**Tile Carpeting**

1. Moisture Testing: Perform tests so that each test area does not exceed 1000 sq. ft. and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.
  - a. Anhydrous Calcium Chloride Test: ASTM F1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. in 24 hours.
  - b. Relative Humidity Test: Using in situ probes, ASTM F2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level measurement.
  - c. Perform additional moisture tests recommended in writing by adhesive and carpet tile manufacturers. Proceed with installation only after substrates pass testing.
2. pH / Alkalinity Testing: Perform ASTM F-3441 pH/Alkalinity testing. Test results must not exceed the ranges specified by the manufacturer's adhesive.

**3.2 PREPARATION**

- A. General: Comply with the Carpet and Rug Institute's CRI 104 and with carpet tile manufacturer's written installation instructions for preparing substrates indicated to receive carpet tile.
- B. Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, depressions, and protrusions in substrates. Fill or level cracks, holes and depressions 1/8 inch wide or wider, and protrusions more than 1/32 inch unless more stringent requirements are required by manufacturer's written instructions.
- C. Concrete Substrates: Remove coatings, including curing compounds, and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, without using solvents. Use mechanical methods recommended in writing by adhesive and carpet tile manufacturers.
- D. Metal Substrates: Clean grease, oil, soil and rust, and prime if recommended in writing by adhesive manufacturer. Rough sand painted metal surfaces and remove loose paint. Sand aluminum surfaces, to remove metal oxides, immediately before applying adhesive.
- E. Broom and vacuum clean substrates to be covered immediately before installing carpet tile.

**3.3 INSTALLATION**

- A. General: Comply with the Carpet and Rug Institute's CRI 104, Section 10, "Carpet Tile," and with carpet tile manufacturer's written installation instructions.
- B. Installation Method: As recommended in writing by carpet tile manufacturer
- C. Maintain dye-lot integrity. Do not mix dye lots in same area.
- D. Maintain pile-direction patterns indicated on Drawings.
- E. Cut and fit carpet tile to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings. Bind or seal cut edges as recommended by carpet tile manufacturer.
- F. Extend carpet tile into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.
- G. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on carpet tile as marked on subfloor. Use nonpermanent, nonstaining marking device.
- H. Install pattern parallel to walls and borders.
- I. Protect carpet tile against damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods indicated or recommended in writing by carpet tile manufacturer.

**END OF SECTION 096813**



**SECTION 098100**  
**ACOUSTIC INSULATION**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Acoustic insulation in interior wall construction.

**1.2 SUBMITTALS**

- A. Product Data: Provide manufacturer's product data on product characteristics and performance criteria.
- B. Manufacturer's Certificate: Certify that products meet or exceed California Quality Standards.

**1.3 SYSTEM DESCRIPTION**

- A. Materials of this section: Provide continuity of acoustic barriers and separations at building interior elements.

**PART 2 - PRODUCTS**

**2.1 MINERAL FIBER INSULATING MATERIALS**

- A. Insulation for Sound Attenuation: Where batt insulation is indicated, either glass fiber or mineral wool insulation may be used.
  - 1. Glass-Fiber Blanket Insulation, Unfaced: ASTM C665, Type I; passing ASTM E136 for combustion characteristics.
  - 2. Mineral-Wool Blanket Insulation, Unfaced: ASTM C665, Type I (blankets without membrane facing); consisting of fibers; passing ASTM E136 for combustion characteristics.
- B. Flame-Spread Index: Not more than 25 when tested in accordance with ASTM E84.
- C. Smoke-Developed Index: Not more than 50 when tested in accordance with ASTM E84.
- D. Batt size to fit each metal framing size as shown in the drawings.

## **Section 098100 – Page 2**

### **Acoustic Insulation**

- E. Sound Transmission Class: ASTM C423, STC based on manufacturer's published data on thickness and wall assembly.
- F. Provide formaldehyde-free thermal insulation products.
- G. Available Manufacturers:
  - 1. Owens Corning; Sound Attenuation Batts
  - 2. ROXUL, Inc; Rockwool Sound Insulation.
  - 3. ROXUL, Inc; Rockwool AFB Acoustical Fire Batt Insulation.
  - 4. Approved equal.

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION – BATT INSULATION**

- A. Install insulation in accordance with insulation manufacturer's instructions and with the flame spread rating and smoke density requirements of CBC Section 720, ASTM E84, and UL 723.
- B. Install in interior walls full width, depth, and height of cavity, without gaps or voids. Do not compress insulation.
- C. Trim insulation neatly to fit spaces. Insulate miscellaneous gaps and voids.
- D. Fit insulation tight in spaces and tight to exterior side of mechanical and electrical services within the plane of insulation.
- E. Securely fasten and anchor insulation in place to prevent displacement or sagging of material in all areas.

**SECTION 098433**  
**SOUND-ABSORBING WALL UNITS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section includes shop-fabricated, sound-absorbing acoustical panel units tested for acoustical performance.

**1.2 PREINSTALLATION MEETINGS**

- A. Preinstallation Conference: Conduct conference at Project site.

**1.3 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
- B. Shop Drawings: For unit assembly and installation.
- C. Samples: For each exposed product and for each color and texture specified.

**1.4 INFORMATIONAL SUBMITTALS**

- A. Product certificates.

**1.5 CLOSEOUT SUBMITTALS**

- A. Maintenance data.

**PART 2 - PRODUCTS**

**2.1 PERFORMANCE REQUIREMENTS**

- A. Fire-Test-Response Characteristics: Units shall comply with "Surface-Burning Characteristics" or "Fire Growth Contribution" Subparagraph below, or both, as determined by testing identical products by UL or another testing and inspecting agency acceptable to authorities having jurisdiction:

**Section 098433 – Page 2**  
**Sound-Absorbing Wall Units**

1. Surface-Burning Characteristics: Comply with ASTM E84 or UL 723; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
  - a. Flame-Spread Index: 25 or less.
  - b. Smoke-Developed Index: 450 or less.
2. Fire Growth Contribution: Comply with acceptance criteria of local code and authorities having jurisdiction when tested according to NFPA 265 Method B Protocol or NFPA 286.

**2.2 SOUND-ABSORBING WALL UNITS**

- A. Sound-Absorbing Wall Panel (WP1): Manufacturer's standard panel
- B. See finish plan, materials legend, and interior elevations for additional information.
- C. Ezo Bord, Full Sheet, or approved equal.
  1. Mounting: Back mounted with manufacturer's standard adhesive tape strips secured to substrate.
  2. Core: Rigid felt wall panel. (100% PET)
    - a. Tackable, impact resistant, bacteria resistant, moisture resistant.
  3. Edge Construction: Manufacturer's standard straight edge.
  4. Reveals between Panels: Invisible joints.
  5. Acoustical Performance: Sound absorption NRC not less than .40 for mounting with no air gap.
  6. Panel Thickness: 1/2 inch.
  7. Color and pattern: As selected by State's Representative from manufacturer's full range.

**2.3 FABRICATION**

- A. Standard Construction: Use manufacturer's standard construction unless otherwise indicated.
- B. Dimensional Tolerances of Finished Units: Plus or minus 1/16 inch.

**PART 3 - EXECUTION**

**3.1 INSTALLATION**

- A. Install units in locations indicated. Unless otherwise indicated, install units with vertical surfaces and edges plumb, top edges level and in alignment with other

units, faces flush, and scribed to fit adjoining work accurately at borders and at penetrations.

- B. Comply with manufacturer's written instructions for installation of units using type of mounting devices indicated. Mount units securely to supporting substrate.

### 3.2 CLEANING

- A. Clip loose threads; remove pills and extraneous materials.
- B. Clean panels on completion of installation to remove dust and other foreign materials according to manufacturer's written instructions.

END OF SECTION 098433

## **SECTION 099123**

### **INTERIOR PAINTING**

#### **PART 1 GENERAL**

##### **1.1 SECTION INCLUDES**

- A. Interior paint and coating commercial systems including surface preparation.
- B. Exterior paint and coating systems including surface preparation.

##### **1.2 REFERENCES**

- A. Steel Structures Painting Council (SSPC):
  - 1. SSPC-SP 1 - Solvent Cleaning.
  - 2. SSPC-SP 2 - Hand Tool Cleaning.
  - 3. SSPC-SP 3 - Power Tool Cleaning.
  - 4. SSPC-SP5/NACE No. 1, White Metal Blast Cleaning.
  - 5. SSPC-SP6/NACE No. 3, Commercial Blast Cleaning.
  - 6. SSPC-SP7/NACE No. 4, Brush-Off Blast Cleaning.
  - 7. SSPC-SP10/NACE No. 2, Near-White Blast Cleaning.
  - 8. SSPC-SP11, Power Tool Cleaning to Bare Metal.
  - 9. SSPC-SP12/NACE No. 5, Surface Preparation and Cleaning of Metals by Waterjetting Prior to Recoating.
  - 10. SSPC-SP 13 / NACE No. 6 Surface Preparation for Concrete.
- B. Material Safety Data Sheets / Environmental Data Sheets: Per manufacturer's MSDS/EDS for specific VOCs (calculated per 40 CFR 59.406). VOCs may vary by base and sheen.

##### **1.3 SUBMITTALS**

- A. Submit under provisions of Section 01 30 00 - Administrative Requirements.
- B. Product Data: For each paint system indicated, including.
  - 1. Product characteristics.
  - 2. Surface preparation instructions and recommendations.
  - 3. Primer requirements and finish specification.
  - 4. Storage and handling requirements and recommendations.
  - 5. Application methods.
  - 6. Cautions for storage, handling and installation.
- C. Verification Samples: For each finish product specified, submit samples that represent actual product, color, and sheen. Where paint is to match existing

walls, take picture next to adjacent finish to ensure color and sheen match the existing. Samples may also be approved via mock-up.

- D. Coating Maintenance Manual: Upon conclusion of project, the Contractor or paint manufacturer/supplier shall furnish a coating maintenance manual. Manual shall include an Area Summary with finish schedule, Area Detail designating where each product/color/finish was used, product data pages, Material Safety Data Sheets, care and cleaning instructions, touch-up procedures, and color samples of each color and finish used. "
- E. Only submit complying products based on project requirements (i.e. LEED). One must also comply with the regulations regarding VOCs (CARB, OTC, SCAQMD, LADCO). To ensure compliance with district regulations and other rules, businesses that perform coating activities should contact the local district in each area where the coating will be used.

#### 1.4 QUALITY ASSURANCE

- A. Installer Qualifications: A firm or individual experienced in applying paints and coatings similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance.
- B. Paint exposed surfaces. If a color of finish, or a surface is not specifically mentioned, State's Representative will select from standard products, colors and sheens available.
- C. Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels unless indicated.
- D. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
  - 1. Finish surfaces for verification of products, colors and sheens.
  - 2. Finish area designated by State's Representative:
    - a. CWPP Lab/Storage 1213 – to show color/sheen match existing
    - b. Telecom Supply/Storage 1212 – to show color/sheen match existing
  - 3. Final approval of color selections will be based on mockups.
    - a. If preliminary color selections are not approved, apply additional mockups of colors at no added cost to the state.
  - 4. Do not proceed with remaining work until the State's Representative approves the mock-up.

#### 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver manufacturer's unopened containers to the work site. Packaging shall bear the manufacturer's name, label, and the following list of information.
  - 1. Product name, and type (description).

2. Application and use instructions.
  3. Surface preparation.
  4. VOC content.
  5. Environmental handling.
  6. Batch date.
  7. Color number.
- B. Storage: Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.
- C. Store materials in an area that is within the acceptable temperature range, per manufacturer's instructions. Protect from freezing.
- D. Handling: Maintain a clean, dry storage area, to prevent contamination or damage to the coatings.

## 1.6 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

## 1.7 EXTRA MATERIALS

- A. Furnish extra paint materials from the same production run as the materials applied and in the quantities described below. Package with protective covering for storage and identify with labels describing contents. Deliver extra materials to Owner.
- B. Furnish Owner with an additional one percent of each material and color, but not less than 1 gal (3.8 l) or 1 case, as appropriate.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- A. Basis Of Design: Sherwin-Williams.
- B. Approved Manufacturers:
- Benjamin Moore
  - PPG
- C. Substituted products must be equal to or better in quality than the Sherwin Williams products listed in section 2.4.
- D. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.



## 2.2 APPLICATIONS/SCOPE

- A. Interior Paint and Coating Commercial Systems:
  - 1. Concrete: Poured, precast, tilt-up, cast-in-place, cement board, plaster.
  - 2. Metal: Aluminum, galvanized steel.
  - 3. Drywall: Walls, ceilings, doors, trim and similar items.

## 2.3 PAINT MATERIALS - GENERAL

- A. Paints and Coatings:
  - 1. Unless otherwise indicated, provide factory-mixed coatings. When required, mix coatings to correct consistency in accordance with manufacturer's instructions before application. Do not reduce, thin, or dilute coatings or add materials to coatings unless such procedure is specifically described in manufacturer's product instructions.
  - 2. For opaque finishes, tint each coat including primer coat and intermediate coats, one-half shade lighter than succeeding coat, with final finish coat as base color. Or follow manufacturer's product instructions for optimal color conformance.
- B. Primers: Where the manufacturer offers options on primers for a particular substrate, use primer categorized as "best" by the manufacturer.
- C. Coating Application Accessories: Provide all primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials required, per manufacturer's specifications.
- D. Color: Refer to Materials Legend for paint colors, and as selected.

## 2.4 INTERIOR PAINT AND COATING COMMERCIAL SYSTEMS

- A. Concrete: Columns, walls, beams.
  - 1. Sheen: Eggshell in office spaces. To match existing in warehouses.
  - 2. Latex Systems:
    - a. Office Areas: High Performance (HP) Upgrade.
      - 1) 1st Coat: S-W Loxon Concrete and Masonry Primer Sealer, LX02W50 (8 mils wet, 3.2 mils dry).
      - 2) 2nd Coat: S-W ProMar 200 HP Zero VOC Latex..
      - 3) 3rd Coat: S-W ProMar 200 HP Zero VOC Latex. (4 mils wet, 1.6 mils dry per coat).
    - b. Warehouses: Scuff Resistant Waterbased Enamel.
      - 1) 1st Coat: S-W Loxon Concrete and Masonry Primer Sealer, LX02W50 (8 mils wet, 3.2 mils dry)
      - 2) 2nd Coat: Sherwin-Williams Scuff Tuff Int. Waterbased Enamel.
      - 3) 3rd Coat: Sherwin-Williams Scuff Tuff Int. Waterbased Enamel. (4 mils wet, 1.2 mils dry per coat).
- B. Metal: Steel, aluminum, galvanizing. Use at Primed Hollow Metal Doors.

1. Alkyd Systems; Waterbased:
  - a. Semi-Gloss Finish:
    - 1) 1st Coat: S-W Pro Industrial Pro-Cryl Universal Primer, B66-1310 Series (5.0 mils wet, 2.0 mils dry). Omit when item is already primed.
    - 2) 2nd Coat: S-W Pro Industrial Waterbased Alkyd Urethane Enamel Semi-Gloss, B53-1150/2150 Series.
    - 3) 3rd Coat: S-W Pro Industrial Waterbased Alkyd Urethane Enamel Semi-Gloss, B53-1150/2150 Series. (4.0-5.0 mils wet, 1.4 - 1.7 mils dry per coat).
- C. Drywall: Walls, ceilings.
  1. Sheen: Eggshell in office spaces. To match existing in warehouses.
  2. Latex Systems:
    - a. Office Areas: High Performance (HP) Upgrade.
      - 1) 1st Coat: S-W ProMar 200 Zero VOC Interior Latex Primer, B28W2600. (4 mils. Wet, 1.5 mils. Dry per coat).
      - 2) 2nd Coat: S-W ProMar 200 HP Zero VOC Latex.
      - 3) 3rd Coat: S-W ProMar 200 HP Zero VOC Latex. (4 mils wet, 1.3 mils dry per coat).
    - b. Warehouses: Scuff Resistant Waterbased Enamel.
      - 1) 1st Coat: S-W ProMar 200 Zero VOC Interior Latex Primer, B28W2600. (4 mils. Wet, 1.5 mils. Dry per coat).
      - 2) 2nd Coat: Sherwin-Williams Scuff Tuff Int. Waterbased Enamel.
      - 3) 3rd Coat: Sherwin-Williams Scuff Tuff Int. Waterbased Enamel (4 mils wet, 1.2 mils dry per coat).

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared; notify State's Representative of unsatisfactory conditions before proceeding. If substrate preparation is the responsibility of another installer, notify State's Representative of unsatisfactory preparation before proceeding.
- B. Proceed with work only after conditions have been corrected and approved by all parties, otherwise application of coatings will be considered as an acceptance of surface conditions.
- C. Previously Painted Surfaces: Verify that existing painted surfaces do not contain lead based paints, notify State's Representative immediately if lead based paints are encountered.

### 3.2 SURFACE PREPARATION

- A. General: Surfaces shall be dry and in sound condition. Remove oil, dust, dirt, loose rust, peeling paint or other contamination to ensure good adhesion.

1. Prior to attempting to remove mildew, it is recommended to test any cleaner on a small, inconspicuous area prior to use. Bleach and bleaching type cleaners may damage or discolor existing paint films. Bleach alternative cleaning solutions are advised.
  2. Remove mildew before painting by washing with a solution of 1 part liquid household bleach and 3 parts of warm water. Apply solution and scrub the mildewed area. Allow solution to remain on the surface for 10 minutes. Rinse thoroughly with clean water and allow surface to dry before painting. Wear protective glasses or goggles, waterproof gloves, and protective clothing. Quickly wash off any of the mixture that comes in contact with your skin. Do not add detergents or ammonia to the bleach/water solution.
  3. Remove items including but not limited to thermostats, electrical outlets, switch covers and similar items prior to painting. After completing painting operations in each space or area, reinstall items removed using workers skilled in the trades involved.
  4. No exterior painting should be done immediately after a rain, during foggy weather, when rain is predicted, or when the temperature is below 50 degrees F (10 degrees C), unless products are designed specifically for these conditions. On large expanses of metal siding, the air, surface and material temperatures must be 50 degrees F (10 degrees F) or higher to use low temperature products.
- B. Aluminum: Remove all oil, grease, dirt, oxide and other foreign material by cleaning per SSPC-SP1, Solvent Cleaning.
- C. Block (Cinder and Concrete): Remove all loose mortar and foreign material. Surface must be free of laitance, concrete dust, dirt, form release agents, moisture curing membranes, loose cement, and hardeners. Concrete and mortar must be cured at least 30 days at 75 degrees F (24 degrees C). The pH of the surface should be between 6 and 9 unless the products are designed to be used in high pH environments. On tilt-up and poured-in-place concrete, commercial detergents and abrasive blasting may be necessary to prepare the surface. Fill bug holes, air pockets, and other voids with a cement patching compound.
- D. Concrete, SSPC-SP13 or NACE 6: This standard gives requirements for surface preparation of concrete by mechanical, chemical, or thermal methods prior to the application of bonded protective coating or lining systems. The requirements of this standard are applicable to all types of cementitious surfaces including cast-in-place concrete floors and walls, precast slabs, masonry walls, and shotcrete surfaces. An acceptable prepared concrete surface should be free of contaminants, laitance, loosely adhering concrete, and dust, and should provide a sound, uniform substrate suitable for the application of protective coating or lining systems.
- E. Cement Composition Siding/Panels: Remove all surface contamination by washing with an appropriate cleaner, rinse thoroughly and allow to dry.

Existing peeled or checked paint should be scraped and sanded to a sound surface. Pressure clean, if needed, with a minimum of 2100 psi pressure to remove all dirt, dust, grease, oil, loose particles, laitance, foreign material, and peeling or defective coatings. Allow the surface to dry thoroughly. The pH of the surface should be between 6 and 9 unless the products are designed to be used in high pH environments.

- F. Copper and Stainless Steel: Remove all oil, grease, dirt, oxide and other foreign material by cleaning per SSPC-SP 2, Hand Tool Cleaning.
- G. Exterior Composition Board (Hardboard): Some composition boards may exude a waxy material that must be removed with a solvent prior to coating. Whether factory primed or unprimed, exterior composition board siding (hardboard) must be cleaned thoroughly and primed with an alkyd primer.
- H. Drywall - Exterior: Must be clean and dry. All nail heads must be set and spackled. Joints must be taped and covered with a joint compound. Spackled nail heads and tape joints must be sanded smooth and all dust removed prior to painting. Exterior surfaces must be spackled with exterior grade compounds.
- I. Drywall - Interior: Must be clean and dry. All nail heads must be set and spackled. Joints must be taped and covered with a joint compound. Spackled nail heads and tape joints must be sanded smooth and all dust removed prior to painting.
- J. Galvanized Metal: Clean per SSPC-SP1 using detergent and water or a degreasing cleaner to remove greases and oils. Apply a test area, priming as required. Allow the coating to dry at least one week before testing. If adhesion is poor, Brush Blast per SSPC-SP16 is necessary to remove these treatments.
- K. Plaster: Must be allowed to dry thoroughly for at least 30 days before painting unless the products are designed to be used in high pH environments. Room must be ventilated while drying; in cold, damp weather, rooms must be heated. Damaged areas must be repaired with an appropriate patching material. Bare plaster must be cured and hard. Textured, soft, porous, or powdery plaster should be treated with a solution of 1 pint household vinegar to 1 gallon of water. Repeat until the surface is hard, rinse with clear water and allow to dry.
- L. Steel: Structural, Plate, And Similar Items: Should be cleaned by one or more of the surface preparations described below. These methods are used throughout the world for describing methods for cleaning structural steel. Visual standards are available through the Society of Protective Coatings. A brief description of these standards together with numbers by which they can be specified follow.
  - 1. Solvent Cleaning, SSPC-SP1: Solvent cleaning is a method for

removing all visible oil, grease, soil, drawing and cutting compounds, and other soluble contaminants. Solvent cleaning does not remove rust or mill scale. Change rags and cleaning solution frequently so that deposits of oil and grease are not spread over additional areas in the cleaning process. Be sure to allow adequate ventilation.

2. Hand Tool Cleaning, SSPC-SP2: Hand Tool Cleaning removes all loose mill scale, loose rust, and other detrimental foreign matter. It is not intended that adherent mill scale, rust, and paint be removed by this process. Before hand tool cleaning, remove visible oil, grease, soluble welding residues, and salts by the methods outlined in SSPC-SP1.
3. Power Tool Cleaning, SSPC-SP3: Power Tool Cleaning removes all loose mill scale, loose rust, and other detrimental foreign matter. It is not intended that adherent mill scale, rust, and paint be removed by this process. Before power tool cleaning, remove visible oil, grease, soluble welding residues, and salts by the methods outlined in SSPC-SP1.
4. White Metal Blast Cleaning, SSPC-SP5 or NACE 1: A White Metal Blast Cleaned surface, when viewed without magnification, shall be free of all visible oil, grease, dirt, dust, mill scale, rust, paint, oxides, corrosion products, and other foreign matter. Before blast cleaning, visible deposits of oil or grease shall be removed by any of the methods specified in SSPC-SP1 or other agreed upon methods.
5. Commercial Blast Cleaning, SSPC-SP6 or NACE 3: A Commercial Blast Cleaned surface, when viewed without magnification, shall be free of all visible oil, grease, dirt, dust, mill scale, rust, paint, oxides, corrosion products, and other foreign matter, except for staining. Staining shall be limited to no more than 33 percent of each square inch of surface area and may consist of light shadows, slight streaks, or minor discoloration caused by stains of rust, stains of mill scale, or stains of previously applied paint. Before blast cleaning, visible deposits of oil or grease shall be removed by any of the methods specified in SSPC-SP1 or other agreed upon methods.
6. Brush-Off Blast Cleaning, SSPC-SP7 or NACE 4: A Brush-Off Blast Cleaned surface, when viewed without magnification, shall be free of all visible oil, grease, dirt, dust, loose mill scale, loose rust, and loose paint. Tightly adherent mill scale, rust, and paint may remain on the surface. Before blast cleaning, visible deposits of oil or grease shall be removed by any of the methods specified in SSPC-SP 1 or other agreed upon methods.
7. Power Tool Cleaning to Bare Metal, SSPC-SP11: Metallic surfaces that are prepared according to this specification, when viewed without magnification, shall be free of all visible oil, grease, dirt, dust, mill scale, rust, paint, oxide corrosion products, and other foreign matter. Slight residues of rust and paint may be left in the lower portions of pits if the original surface is pitted. Prior to power tool surface preparation, remove visible deposits of oil or grease by any of the methods specified in SSPC-SP1, Solvent Cleaning, or other agreed upon methods.

8. Near-White Blast Cleaning, SSPC-SP10 or NACE 2: A Near White Blast Cleaned surface, when viewed without magnification, shall be free of all visible oil, grease, dirt, dust, mill scale, rust, paint, oxides, corrosion products, and other foreign matter, except for staining. Staining shall be limited to no more than 5 percent of each square inch of surface area and may consist of light shadows, slight streaks, or minor discoloration caused by stains of rust, stains of mill scale, or stains of previously applied paint. Before blast cleaning, visible deposits of oil or grease shall be removed by any of the methods specified in SSPC-SP1 or other agreed upon methods.
  9. High- and Ultra-High Pressure Water Jetting for Steel and Other Hard Materials: SSPC-SP12 or NACE 5: This standard provides requirements for the use of high- and ultra-high pressure water jetting to achieve various degrees of surface cleanliness. This standard is limited in scope to the use of water only without the addition of solid particles in the stream.
  10. Water Blasting, SSPC-SP12/NACE No. 5: Removal of oil grease dirt, loose rust, loose mill scale, and loose paint by water at pressures of 2,000 to 2,500 psi at a flow of 4 to 14 gallons per minute.
- M. Vinyl Siding, Architectural Plastics, EIFS and Fiberglass: Clean vinyl siding thoroughly by scrubbing with a warm, soapy water solution. Rinse thoroughly. Do not paint vinyl siding with any color darker than the original color unless the paint system features Sherwin-Williams VinylSafe technology. Painting with darker colors that are not Sherwin-Williams VinylSafe may cause siding to warp. Follow all painting guidelines of the vinyl manufacturer when painting. Only paint properly installed vinyl siding. Deviating from the manufacturer's painting guidelines may cause the warranty to be voided.
- N. Stucco: Must be clean and free of any loose stucco. If recommended procedures for applying stucco are followed, and normal drying conditions prevail, the surface may be painted in 30 days. The pH of the surface should be between 6 and 9 unless the products are designed to be used in high pH environments such as Loxon.
- O. Wood: Must be clean and dry. Prime and paint as soon as possible. Knots and pitch streaks must be scraped, sanded, and spot primed before a full priming coat is applied. Patch all nail holes and imperfections with a wood filler or putty and sand smooth.

### 3.3 INSTALLATION

- A. Apply all coatings and materials with the manufacturer's specifications in mind. Mix and thin coatings according to manufacturer's recommendations.
- B. Do not apply to wet or damp surfaces. Wait at least 30 days before applying to new concrete or masonry. Or follow manufacturer's procedures to apply

appropriate coatings prior to 30 days. Test new concrete for moisture content. Wait until wood is fully dry after rain or morning fog or dew.

- C. Apply coatings using methods recommended by manufacturer.
- D. Uniformly apply coatings without runs, drips, or sags, without brush marks, and with consistent sheen.
- E. Apply coatings at spreading rate required to achieve the manufacturers recommended dry film thickness.
- F. Regardless of number of coats specified, apply as many coats as necessary for complete hide, and uniform appearance.
- G. Inspection: The coated surface must be inspected and approved by the State Representative just prior to the application of each coat.

#### 3.4 PROTECTION

- A. Protect finished coatings from damage until completion of project.
- B. Touch-up damaged coatings after substantial completion, following manufacturer's recommendation for touch up or repair of damaged coatings. Repair any defects that will hinder the performance of the coatings.

END OF SECTION

## **SECTION 101423**

### **PANEL SIGNAGE**

#### **PART 1 - GENERAL**

##### **1.1 SUMMARY**

###### **A. Section Includes:**

1. Panel signs.

##### **1.2 ACTION SUBMITTALS**

###### **A. Product Data:** For each type of product.

###### **B. Shop Drawings:** For panel signs.

1. Include fabrication and installation details and attachments to other work.
2. Show sign mounting heights, locations of supplementary supports to be provided by other installers, and accessories.
3. Show message list, typestyles, graphic elements, including raised characters and Braille, and layout for each sign.

###### **C. Mock Up:** Provide 1 full-size Room Name Sign "RN" mock up showing colors to be used, type/font, and braille, and that it matches the existing signage. Contractor may provide a full-size sign as a mock-up that may become part of the final installation, if approved.

###### **D. Samples:** For each exposed product and for each color and texture specified.

##### **1.3 CLOSEOUT SUBMITTALS**

###### **A. Maintenance data.**

##### **1.4 WARRANTY**

###### **A. Special Warranty:** Manufacturer agrees to repair or replace components of signs that fail in materials or workmanship within specified warranty period.

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



## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

- A. Accessibility Standard: Comply with applicable provisions in the USDOJ's "2010 ADA Standards for Accessible Design" as adopted and amended by the California Building Code
- B. California Building Code, Title 24, Part 2, Chapter 11B, Division 7.

### 2.2 PANEL SIGNS

- A. Panel Sign: Sign with smooth, uniform surfaces; with message and characters having uniform faces, sharp corners, and precisely formed lines and profiles; and as follows:
  - 1. See information provided in drawings for each sign type.
  - 2. Solid-Sheet Sign: Acrylic sheet with finish specified in "Surface Finish and Applied Graphics" Subparagraph and as follows:
    - a. Surface-Applied or Subsurface-Applied, Flat Graphics: Applied vinyl film, paint.
    - b. Surface-Applied, Raised Graphics: Applied polymer characters and Braille.
    - c. Subsurface Graphics: Slide-in changeable insert.
  - 3. Sign-Panel Perimeter: Finish edges smooth.
    - a. Edge Condition: As indicated on Drawings. (To match existing.)
    - b. Corner Condition in Elevation: As indicated on Drawings. (To match existing.)
  - 4. Frame: To hold changeable sign panel. (Sign "CN")
    - a. Material: Aluminum.
    - b. Profile, Finish and Color: Match State's sample, see photos in drawings.
  - 5. Mounting: As indicated on Drawings. Manufacturer's standard method for substrates indicated.

### 2.3 PANEL-SIGN MATERIALS

- A. Acrylic Sheet: ASTM D4802, Type UVF (UV filtering)
  - 1. Romark ADA Alternative Substrate & Applique, or approved equal.

- a. Matte, non-glare
  - b. Colors: As selected by State's Representative from manufacturer's full range. Colors to match existing, where applicable.
- B. Vinyl Film: UV-resistant vinyl film of nominal thickness indicated, with pressure-sensitive, permanent adhesive on back; die cut to form characters or images as indicated on Drawings and suitable for exterior applications.

## 2.4 ACCESSORIES

- A. Fasteners and Anchors: Manufacturer's standard as required for secure anchorage of signs, noncorrosive and compatible with each material joined, and complying with the following unless otherwise indicated:
  - 1. Use concealed fasteners and anchors unless indicated to be exposed.
  - 2. Exposed Metal-Fastener Components, General:
    - a. Fabricated from same basic metal and finish of fastened metal unless otherwise indicated.
  - 3. Sign Mounting Fasteners:
    - a. Through Fasteners: Exposed metal fasteners matching sign finish, with type of head indicated, and installed in predrilled holes.
- B. Adhesive: As recommended by sign manufacturer.
- C. Two-Face Tape: Manufacturer's standard high-bond, foam-core tape, 0.045 inch thick, with adhesive on both sides.

## 2.5 FABRICATION

- A. General: Provide manufacturer's standard sign assemblies according to requirements indicated.
  - 1. Mill joints to a tight, hairline fit. Form assemblies and joints exposed to weather to resist water penetration and retention.
  - 2. Provide welds and brazes behind finished surfaces without distorting or discoloring exposed side. Clean exposed welded and brazed connections of flux, and dress exposed and contact surfaces.
  - 3. Conceal connections if possible; otherwise, locate connections where they are inconspicuous.
  - 4. Internally brace signs for stability, to meet structural performance loading without oil-canning or other surface deformation, and for securing fasteners.
  - 5. Provide rabbets, lugs, and tabs necessary to assemble components and to attach to existing work. Drill and tap for required fasteners. Use

concealed fasteners where possible; use exposed fasteners that match sign finish.

- B. Subsurface-Applied Graphics: Apply graphics to back face of clear face-sheet material to produce precisely formed image. Image shall be free of rough edges.
- C. Shop- and Subsurface-Applied Vinyl: Align vinyl film in final position and apply to surface. Firmly press film from the middle outward to obtain good bond without blisters or fishmouths.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. General: Install signs using mounting methods indicated and according to manufacturer's written instructions.
  - 1. Install signs level, plumb, true to line, and at locations and heights indicated, with sign surfaces free of distortion and other defects in appearance.
  - 2. Install signs so they do not protrude or obstruct according to the accessibility standard.
  - 3. Before installation, verify that sign surfaces are clean and free of materials or debris that would impair installation.
- B. Mounting Methods:
  - 1. Through Fasteners: Drill holes in substrate using predrilled holes in sign as template. Countersink holes in sign if required. Place sign in position and flush to surface. Install through fasteners and tighten.
  - 2. Adhesive: Clean bond-breaking materials from substrate surface and remove loose debris. Apply linear beads or spots of adhesive symmetrically to back of sign and of suitable quantity to support weight of sign after cure without slippage. Keep adhesive away from edges to prevent adhesive extrusion as sign is applied and to prevent visibility of cured adhesive at sign edges. Place sign in position, and push to engage adhesive. Temporarily support sign in position until adhesive fully sets.
  - 3. Two-Face Tape: Clean bond-breaking materials from substrate surface and remove loose debris. Apply tape strips symmetrically to back of sign and of suitable quantity to support weight of sign without slippage. Keep strips away from edges to prevent visibility at sign edges. Place sign in position, and push to engage tape adhesive.
- C. Remove temporary protective coverings and strippable films as signs are installed.

END OF SECTION 101423

## **SECTION 102253**

### **CHAIN LINK FENCING PARTITIONS**

#### **PART 1 - GENERAL**

##### **1.1 SUMMARY**

- A. Section Includes:
  - 1. Chain-link fences.
  - 2. Gates.

##### **1.2 PREINSTALLATION MEETINGS**

- A. Preinstallation Conference: Conduct conference at Project site.

##### **1.3 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
- B. Shop Drawings: For each type of fence and gate assembly.
  - 1. Include plans, elevations, sections, details, and attachments to other work.

##### **1.4 INFORMATIONAL SUBMITTALS**

- A. Product certificates.
- B. Product test reports.
- C. Sample warranty.

##### **1.5 QUALITY ASSURANCE**

- A. Manufacturer: Company operating in the United States having U.S. manufacturing facility/facilities specializing in manufacturing chain link fence products with at least 5 years experience.
- B. Fence contractor: Company with demonstrated successful experience installing similar projects and products in accordance with ASTM F567 and have at least 5 years experience.

**Section 323113 – Page 2**  
**Chain Link Fences and Gates**

**1.6 WARRANTY**

- A. Special Warranty: Manufacturer and Installer agree to repair or replace components of chain-link fences and gates that fail in materials or workmanship within specified warranty period.

1. Warranty Period: 15 years from date of Substantial Completion.

**PART 2 - PRODUCTS**

**2.1 CHAIN-LINK FENCE FABRIC**

- A. General: Provide fabric in one-piece heights measured between top and bottom of outer edge of selvage knuckle or twist according to "CLFMI Product Manual" and requirements indicated below:

1. Fabric Height: As indicated on Drawings.
2. Steel Wire for Fabric: Wire diameter of 0.148 inch.
  - a. Mesh Size: 1 inch.
  - b. Zinc-Coated Fabric: ASTM A392, Type II, Class 1, 1.2 oz./sq. ft. with zinc coating applied after weaving.
3. Selvage: As indicated on Drawings.

**2.2 FENCE FRAMEWORK**

- A. Posts and Rails: ASTM F1043 for framework, including rails, braces, and line; terminal; and corner posts. Provide members with minimum dimensions and wall thickness according to ASTM F1043 or ASTM F1083 based on the following:

1. Fence Height: As indicated on Drawings.
2. Heavy-Industrial-Strength Material: Group IA, round steel pipe, Schedule 40
  - a. Line Post: 2.875 inches in diameter.
  - b. End, Corner, and Pull Posts: 4.0 inches in diameter
3. Horizontal Framework Members: Intermediate top and bottom rails according to ASTM F1043.

4. Brace Rails: ASTM F1043.
5. Metallic Coating for Steel Framework:
  - a. Type A zinc coating.
  - b. Type B zinc with organic overcoat.
  - c. External, Type B zinc with organic overcoat and internal, Type D zinc-pigmented coating.
  - d. Type C, Zn-5-Al-MM alloy coating.
  - e. Coatings: Any coating above.

## 2.3 TENSION WIRE

- A. Metallic-Coated Steel Wire: 0.177-inch-diameter, marcelled tension wire according to ASTM A817 or ASTM A824, with the following metallic coating:
  1. Type II: Zinc coated (galvanized) with minimum coating weight matching chain-link fabric coating weight.

## 2.4 SWING GATES (AT I.T. STORAGE AREA):

- A. General: ASTM F900 for gate posts and double swing gate types.
  1. Gate Leaf Width: As indicated on Drawings.
  2. Framework Member Sizes and Strength: Based on gate fabric height as indicated on Drawings.
- B. Pipe and Tubing:
  1. Zinc-Coated Steel: ASTM F1043 and ASTM F1083; protective coating and finish to match fence framework.
  2. Gate Posts: Round tubular steel.
  3. Gate Frames and Bracing: Round tubular steel.
- C. Frame Corner Construction: Welded.
- D. Commercial Grade Hardware:
  1. Provide all hardware necessary for a fully-functioning, heavy-duty, secure, tamper-proof gate.
  2. Hinges: Industrial 180-degree outward swing. Weld in place.
  3. One of the gates shall be readily openable from the egress side without the use of a key or special knowledge or effort.

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**Chain Link Fences and Gates**

4. See Section 087100 for additional information.

**2.5 FITTINGS**

- A. Provide fittings according to ASTM F626.
- B. Finish:
  1. Metallic Coating for Pressed Steel or Cast Iron: Not less than 1.2 oz./sq. ft. of zinc.

**PART 3 - EXECUTION**

**3.1 PREPARATION**

- A. Examine areas with installer present for compliance with requirements for installation tolerances and other conditions affecting performance of work.
- B. Examine floor for suitable conditions. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. Stake locations of fence lines, gates, and terminal posts. Indicate locations of utilities.

**3.2 CHAIN-LINK FENCE INSTALLATION**

- A. Install chain-link fencing according to ASTM F567 and more stringent requirements specified.
- B. Post Setting: Set posts with mechanical anchors at indicated spacing.
  1. Verify that posts are set plumb, aligned, and at correct height and spacing, and hold in position during setting with mechanical devices.
- C. Terminal Posts: Install terminal end, corner, and gate posts according to ASTM F567.
- D. Line Posts: Space line posts uniformly at 10 feet max. o.c.
- E. Tension Wire: Install according to ASTM F567, maintaining plumb position and alignment of fence posts. Pull wire taut, without sags. Fasten fabric to tension wire with 0.120-inch-diameter hog rings of same material and finish as fabric wire, spaced a maximum of 24 inches o.c. Install tension wire in locations



indicated before stretching fabric. Provide horizontal tension wire at the following locations:

1. As indicated on Drawings.

- F. Chain-Link Fabric: Apply fabric to outside of enclosing framework. Leave 2-inch bottom clearance between finish grade or surface and bottom selvage unless otherwise indicated. Pull fabric taut and tie to posts, rails, and tension wires. Anchor to framework so fabric remains under tension after pulling force is released.

### 3.3 ADJUSTING

- A. Gates: Adjust gates to operate smoothly, easily, and quietly, free of binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Confirm that latches and locks engage accurately and securely without forcing or binding.
- B. Lubricate hardware and other moving parts.

**SECTION 102800**  
**TOILET, BATH, AND LAUNDRY ACCESSORIES**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Public-use washroom accessories.

**1.2 ACTION SUBMITTALS**

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

**1.3 INFORMATIONAL SUBMITTALS**

- A. Sample warranties.

**1.4 CLOSEOUT SUBMITTALS**

- A. Maintenance data.

**1.5 WARRANTY**

- A. Manufacturer's standard 1 or 3 year warranty for materials and workmanship.

**PART 2 - PRODUCTS**

**2.1 PUBLIC-USE WASHROOM ACCESSORIES**

- A. Paper Towel (Folded) Dispenser (AC-1):
  - 1. Basis of design or equal: See Accessory Schedule
  - 2. Mounting: Surface-mounted.
  - 3. Minimum Capacity: 400 C-fold or 525 multifold towels.
  - 4. Material and Finish: Stainless steel, satin finish.
  - 5. Lockset: Tumbler type.
  - 6. Refill Indicator: Pierced slots at sides or front.

## **Section 102800 – Page 2**

### **Toilet, Bath, and Laundry Accessories**

- B. Soap Dispenser (AC-2):
  - 1. Basis of design or equal: See Accessory Schedule.
  - 2. Description: Designed for manual operation and dispensing soap in liquid or lotion form.
  - 3. Mounting: surface mounted
  - 4. Capacity: 40-fl oz.
  - 5. Materials: Stainless Steel, satin finish.
  - 6. Refill Indicator: Window type.

## **2.2 FABRICATION**

- A. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of six keys to State's representative.

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION**

- A. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.
  - 1. Remove temporary labels and protective coatings.

**END OF SECTION 102800**

**SECTION 104416**  
**FIRE EXTINGUISHERS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section includes portable, hand-carried fire extinguishers.

**1.2 PREINSTALLATION MEETINGS**

- A. Preinstallation Conference: Conduct conference at Project site.

**1.3 ACTION SUBMITTALS**

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

**1.4 INFORMATIONAL SUBMITTALS**

- A. Warranty: Sample of special warranty.

**1.5 CLOSEOUT SUBMITTALS**

- A. Operation and maintenance data.

**1.6 COORDINATION**

- A. Coordinate type and capacity of fire extinguishers with fire-protection cabinets to ensure fit and function.

**1.7 WARRANTY**

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace fire extinguishers that fail in materials or workmanship within specified warranty period.

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

## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

- A. NFPA Compliance: Fabricate and label fire extinguishers to comply with NFPA 10, "Portable Fire Extinguishers."
- B. Fire Extinguishers: Listed and labeled for type, rating, and classification by an independent testing agency acceptable to authorities having jurisdiction.

### 2.2 MANUFACTURERS:

- A. Fire Extinguishers:
  - a. Ansul
  - b. Amerex
  - c. JL Industries
  - d. Kidde
  - e. Larsen's Manufacturing Company
  - f. Nystrom
  - g. Pyro-Chem
  - h. Or approved equal.

### 2.3 PORTABLE, HAND-CARRIED FIRE EXTINGUISHERS (F.E.)

- A. Fire Extinguishers: Type, size, and capacity for each fire-protection cabinet indicated. See "Fire Extinguisher Notes" on sheet G0.20 for additional information.
  - 1. Instruction Labels: Include pictorial marking system complying with NFPA 10, Appendix B and bar coding for documenting fire-extinguisher location, inspections, maintenance, and recharging.
- B. Multipurpose Dry-Chemical Type UL-rated 5 lb. nominal capacity, with monoammonium phosphate-based dry chemical in manufacturer's standard enameled container.
- C. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate as indicated by State's Representative.
  - 1. Identify bracket-mounted fire extinguishers with the words "FIRE EXTINGUISHER" in red letter decals applied to mounting surface.
    - a. Orientation: Vertical

**2.4 FIRE EXTINGUISHER CABINET (F.E.C.)**

- A. Fire Rating: Listed and labeled in accordance with ASTM E814 requirements for fire resistance rating of walls where being installed.
- B. Cabinet Construction: Non-fire rated.
  - 1. Formed primed steel sheet; 0.036 inch thick base material.
- C. Cabinet Construction: Semi-recessed type.
  - 1. Size to accommodate accessories.
  - 2. Depth to fit in wall.
  - 3. Provide cabinet enclosure with right angle inside corners and seams, and with formed perimeter trim and door stiles.
  - 4. Cabinets to match existing in office areas.
- D. Door: 0.036 inch metal thickness, reinforced for flatness and rigidity with nylon catch. Hinge doors for 180 degree opening with two butt hinges.
- E. Door Glazing: Acrylic plastic, clear, 1/8 inch thick, flat shape and set in resilient channel glazing gasket.
- F. Cabinet Mounting Hardware: Appropriate to cabinet, with pre-drilled holes for placement of anchors.
- G. Finish of Cabinet Interior: White colored enamel.

**PART 3 - EXECUTION**

**3.1 INSTALLATION**

- A. Examine fire extinguishers for proper charging and tagging.
  - 1. Remove and replace damaged, defective, or undercharged fire extinguishers.
- B. Install fire extinguishers and mounting brackets or fire extinguisher cabinets in locations indicated and in compliance with requirements of authorities having jurisdiction.
  - 1. Mounting Brackets: Top of fire extinguisher to be at 48 inches max A.F.F. to highest operable part.
  - 2. Mounting Brackets: Fasten mounting brackets to surfaces, square and plumb, at locations indicated.

**END OF SECTION 104416**

**SECTION 105113**  
**METAL EVIDENCE LOCKERS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. This Section includes:
  - 1. Standard and Refrigerated Pass-thru Metal Evidence Lockers

**1.2 PREINSTALLATION MEETING**

- A. Preinstallation Conference: Conduct conference at Project site.

**1.3 REFERENCES**

- A. American National Standards Institute (ANSI) Standards:  
Applicable standards for fasteners used for assembly.
- B. American Society for Testing and Materials (ASTM) Standards:  
Applicable standards for steel sheet materials used for fabrication.  
Applicable standards for the testing of electrostatically applied Powder Coat Paint
- C. American Institute Of Steel Construction (AISC) Standards:  
Applicable standards for steel materials used for fabrication.

**1.4 ACTION SUBMITTALS**

- A. Product Data: Submit manufacturer's product literature and installation instructions for each type of evidence lockers required.
- B. Shop Drawings: Show fabrication, assembly, and installation details including descriptions of procedures and diagrams. Show complete extent of evidence lockers installation layout including quantities, locations and types of accessory units required. Include notations and descriptions of all installation items and components.  
  
Show installation details at non-standard conditions, if any.  
  
Provide layout, dimensions, and identification of each unit corresponding to sequence of installation procedures.

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**Metal Evidence Lockers**

Provide installation schedule and procedures to ensure proper installation.

- C. Samples: Provide minimum 3 inch square example of each color and texture on actual substrate for each component to remain exposed after installation.
- D. Selection Samples: For initial selection of colors and textures, submit manufacturer's color charts consisting of actual product pieces, showing full range of colors and textures available.

**1.5 INFORMATIONAL SUBMITTALS**

- A. Warranty: Submit draft copy of proposed warranty for review by the State's Representative.

**1.6 CLOSEOUT SUBMITTALS**

- A. Maintenance Data.

**1.7 WARRANTY**

- A. Limited Lifetime Warranty
- B. Refrigeration units shall be free from defects in materials and workmanship for one (1) year from the date of the customer's written acceptance of installation.

**1.8 QUALITY ASSURANCE**

- A. Installer Qualifications: Engage an experienced installer who is a manufacturer's authorized representative for the specified products for installing evidence lockers.

Minimum Qualifications: 1-year experience installing evidence lockers of comparable size and complexity to specified project requirements.

**1.9 PROJECT CONDITIONS**

- A. Field Measurements: Verify quantities of evidence lockers before fabrication. Indicate verified measurements on Shop Drawings. Coordinate fabrication and delivery to ensure no delay in progress of the Work.
- B. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating evidence lockers units without field measurements. Coordinate construction to ensure actual dimensions correspond to established dimensions.



## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

- A. Design Requirements:
  - 1. Limit overall width to 0.032 inches greater or less than the nominal specified width.
- B. Seismic Performance: Provide Metal Evidence lockers capable of withstanding the effects of earthquake movement when required by applicable building codes.

### 2.2 PASS-THRU EVIDENCE STORAGE LOCKERS (EQ-1)

- A. Spacesaver Corporation, or approved equal.
- B. Size: Nominal height 82" high, 36" wide and 24" deep.
- C. Quantity & Configuration: See Equipment Schedule on Sheet A2.30, floor plan and interior elevations.
- D. Basic Materials: Provide materials and quality of workmanship, which meets or exceeds established industry standards for products specified. Use furniture grade sheet metal and fasteners for component fabrication unless indicated otherwise. Material thicknesses/gauges are manufacturer's option unless indicated otherwise.
- E. Welded Frame:
  - 1. The welded frame is structural and shall consist of top, bottom, back and sides constructed of a minimum of 18 gage steel. All frame components shall be joined using resistance welding. Riveting or bolting of structural members will not be permitted.
  - 2. Horizontal and vertical outer front flanges will be a minimum of 1.5 inches. Horizontal and vertical flanges will overlap with a minimum of 2 resistance welds per corner.
  - 3. Center vertical lock housing is structural and will run the full height and depth of the locker. All locks will be completely enclosed by a full height removable panel. Pass-thru rear release mechanisms will be completely enclosed by the lock housing and accessible only when the rear door is open. Provide engagement points for the anti-pry tabs that are on all front doors.
  - 4. Exposed lock mechanisms that can snag evidence and be obstructed by stored articles will not be permitted.

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**Metal Evidence Lockers**

**F. Welded Bases:**

1. Each welded base shall be permanently affixed to each locker using modern Inert Gas Metal Arc Welding techniques for lateral unit stability. The base shall be a minimum of 14 gage steel 4 inches high with a 1.5 inch return on the bottom for support.
2. Provide four 0.375 inch mounting holes and four 0.375 inch nuts welded in place for the mounting of floor levelers. Provide four appliance levelers per locker.
3. Provide removable access panels for access to mounting holes and leveling points.

**G. Shelves:**

1. Shall be a single-piece formed from a minimum of 18-gage cold rolled steel with a double 90-degree bend on the rear of the shelf and a double 90-degree bend on the front of the shelf. Shelf sides shall be turned up 90-degrees for ease of cleaning and to prevent debris from becoming caught between the shelf and the sidewall.
2. All shelves shall be welded into place. Rivets, screws, bolts or other loose fasteners will not be permitted for the fastening of shelves to the locker frame.

**H. Locks:**

1. Lock shall be push button locking with a stainless steel push button and alignment bezel. Locks shall be a one-piece removable design. Locks will secure the door with the single push of a button with no other action required by the user.
2. Locks will be deadbolt type locks with multi-point engagement. Rotary latches or cam locks will not be tolerated.
3. Pass-thru locks will be reset from the rear of the locker when the rear door is in the open position only.
4. Provide documentation for cycle testing where locks are tested successfully to a minimum 40,000 cycles without failure.
5. Locks shall be pre-lubricated with no maintenance required for the lifetime of the unit.

**I. One Piece Welded Doors:**

1. Shall be formed from two pieces of minimum 18-gauge cold rolled steel box formed and welded together using modern GMAW techniques. The one piece door with inner and outer door skins shall have a combined steel thickness of no less than 0.096 inches thick.

2. Each door shall have a nickel plated, flush mounted door handle installed with fasteners visible only in the unlocked position.
3. Provide neoprene silencers on each door.
4. Provide anti-pry tabs that engage with the Center Vertical Lock Housing when the door is locked.
5. Doors shall have no moving parts except the door and the hinge.
6. Provide stainless steel spring loaded hinges that are welded to prevent pin removal. Spring loaded hinges shall be capable of holding the door closed and flush with the door frame. Doors that hang ajar are a safety concern and will not be tolerated.

J. Rear Doors (Pass-thru lockers):

1. Shall be formed from two pieces of minimum 18-gauge cold rolled steel box formed and welded together using modern Inert Gas Metal Arc Welding techniques. The one piece door with inner and outer door skins shall have a combined steel thickness of no less than 0.096 inches thick.
2. Each locker module shall have one rear door each and allow evidence to be removed from all compartments at once.
3. Each rear door shall have multi-point engagement with a built-in L handle lock. Access to all lock mechanisms shall be hidden behind cover plates that are secured with tamperproof fasteners.

K. Accessories:

1. Security mail slots: Provide manufacturer's standard.
2. Small Refrigerators
  - a. Available with 2 compartments each individually locking without keys.
  - b. Factory installed into a standard evidence locker.
  - c. Pass-thru is emptied and reset from the rear at the push of a button.
  - d. Shall have a stainless steel interior with spring loaded door hinges to hold each door closed.
  - e. Shall have magnetic seals on outer door[s.]
  - f. Shall have circulation fans that can maintain a consistent temperature throughout the interior of the fridge.
  - g. Shall have digital controls with settings preset to maintain 38° to 42° Fahrenheit.
  - h. Shall have an audible alarm.
3. Digilock: Push button locking system that functions by entry of a 4-digit code or insertion of an accessibility user key in keyslot.

**Section 105113 – Page 6**  
**Metal Evidence Lockers**

- 4. Wall Trim: Front and rear trim kit.
- L. Finishes:
  - 1. Colors: Selected from manufacturer's standard available colors.
  - 2. Paint Finish: Provide factory applied electrostatic powder coat paint. Meet or exceed specifications of the American Society for Testing and Materials (ASTM) standards.

**PART 3 - EXECUTION**

**3.1 EXAMINATION**

- A. Examine evidence lockers scheduled to receive accessories with Installer present for compliance with requirements for installation tolerances and other conditions affecting performance of specified accessory items.
- B. Proceed with accessory installation only after unsatisfactory conditions have been corrected.

**3.2 INSTALLATION**

- A. General: Follow manufacturer's written instructions for installation of each type of accessory item specified.

**3.3 FIELD QUALITY CONTROL**

- A. Verify accessory unit alignment and plumb after installation. Correct if required following manufacturer's instructions.
- B. Remove components that are chipped, scratched, or otherwise damaged and which do not match adjoining work. Replace with new matching units, installed as specified and in manner to eliminate evidence of replacement.

**3.4 ADJUSTING**

- A. Adjust all accessories to provide smoothly operating, visually acceptable installation.

**3.5 CLEANING**

- A. Immediately upon completion of installation, clean components and surfaces. Remove surplus materials, rubbish and debris resulting from installation upon completion of work and leave areas of installation in neat, clean condition.

**3.6 DEMONSTRATION/TRAINING**

- A. Schedule and conduct demonstration of installed accessory items and features with Owner's personnel.
- B. Schedule and conduct maintenance training with Owner's maintenance personnel. Training session should include lecture and demonstration of all maintenance and repair procedures that end user personnel would normally perform.

**3.7 PROTECTION**

- A. Protect system against damage during remainder of construction period. Advise Owner of additional protection needed to ensure that system will be without damage or deterioration at time of substantial completion.

**END OF SECTION 105113**

**SECTION 105613**  
**METAL STORAGE SHELVING**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Post-and-beam metal storage shelving (pallet racking).

**1.2 COORDINATION**

- A. Coordinate locations and installation of metal storage shelving that may interfere with ceiling systems including lighting, HVAC, speakers, sprinklers, access panels, electrical switches or outlets, and floor drains.

**1.3 PREINSTALLATION MEETINGS**

- A. Preinstallation Conference: Conduct conference at Project site.

**1.4 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
- B. Shop Drawings: For metal storage shelving.
  - 1. Include plans, elevations, sections, and attachment details.
  - 2. Include installation details of connectors, lateral bracing, and special bracing.
  - 3. Include any high pile pallet racking requirements.
- C. Samples: For each type of metal storage shelving and for each color specified.
- D. Delegated-Design Submittal: For seismic restraint of metal storage shelving.

**1.5 INFORMATIONAL SUBMITTALS**

- A. Seismic Qualification Certificates: For metal storage shelving, accessories, and components, from manufacturer.
- B. Product certificates.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance data.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Design metal storage shelving, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- B. Seismic Performance: Metal storage shelving shall withstand the effects of earthquake motions determined according to 2022 CBC, ASCE 7, and the RMI Rack Design Manual.
  - 1. Seismic Component Importance Factor: 1.0.

2.2 POST-AND-BEAM METAL STORAGE SHELVING (PALLET RACKING)

- A. Post-and-Beam Metal Shelving: Complying with MH 28.2; field-assembled from factory-formed components. Shelves are supported by beams that span between supporting corner posts that allow beam-height adjustment over full height of shelving unit.
  - 1. Sacramento Rack & Shelving, Contact: Mark Munsinger (916) 446-4650
  - 2. McMurray Stern, Contact: Evan Kirkpatrick (714) 644-9129
  - 3. Or approved equal.
- B. Load-Carrying Capacity per Shelf: 4,000 lb per level, uniformly distributed.
- C. Posts: Fabricated from cold-rolled steel; shape to match existing pallet racks; with perforations at 1-1/2 inches o.c. to receive beam-to-post connectors.
  - 1. Unit Configuration: Configure shelving units as starter and add-on unit assemblies.
  - 2. Post Base: Cold-rolled steel floor plate, drilled for floor anchors.

- D. Beams: Fabricated from cold-rolled steel; shape to match existing pallet racks. Provide beam at each side of each shelf, with center supports as required for load-carrying capacity of shelf.
  - 1. Beam-to-Post Connectors: To match existing racks.
  - 2. Beam Quantity: As required for number of shelves indicated on interior elevations.
- E. Wire Shelves: Welded steel wire; with opening size to match existing pallet racks.
- F. Accessories:
  - 1. To match existing racks.
  - 2. Pallet Rack Security Cage Enclosure at I.T. Pallet Racking area in Bay H as indicated on Floor Plan, sheet A2.01H.
  - 3. Signage:
    - a. As required by A.H.J.
- G. Steel Finish: powder coat.
  - 1. Color and Gloss:
    - a. To match existing at Telecom Supply/Stor. 1212
    - b. High visibility colors at CWPP Lab/Stor. 1213. As selected by State's Representative from manufacturer's full range.

## 2.3 ANCHORS

- A. Floor Anchors: Type and quantity to be determined during engineering analysis by a qualified professional engineer.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Install metal storage shelving level, plumb, square, rigid, true, and with shelves flat and free of dents or distortion. Make connections to form a rigid structure, free of buckling and warping.
  - 1. Install exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible.
  - 2. Install braces, straps, plates, brackets, and other reinforcements as needed to support shelf loading and as required for stability.
  - 3. Adjust post-base bolt leveler to achieve level and plumb installation.



4. Anchor shelving units to floor with floor anchors through floor plate. Shim floor plate to achieve level and plumb installation.
5. Install seismic restraints.
6. Connect side-to-side shelving units together.
7. Install shelves in each shelving unit at spacing indicated on Drawings.
  - a. Post-and-Beam Metal Storage Shelving: Install beams with beam-to-post connectors fully engaged in post perforations.

### 3.2 ERECTION TOLERANCES

- A. Erect post-and-beam metal storage shelving to a maximum tolerance from vertical of 1/4 inch in 84 inches of height.

### 3.3 ADJUSTING

- A. Adjust metal storage shelving so that connectors and other components engage accurately and securely.
- B. Adjust and lubricate operable components to operate smoothly and easily, without binding or warping. Check and readjust operating hardware.
- C. Touch up marred finishes or replace metal storage shelving that cannot be restored to factory-finished appearance. Use only materials and procedures recommended or furnished by metal storage shelving manufacturer.
- D. Replace metal storage shelving components that have been damaged beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 105613

**SECTION 113150**  
**EQUIPMENT AND FURNISHINGS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

**A. Section Includes:**

1. Equipment and Appliances
2. Printer/FAX/Copier
3. AV Equipment
4. Furniture

**ACTION SUBMITTALS**

- B. Product Data:** For each type of product indicated.

**1.2 INFORMATIONAL SUBMITTALS**

- A. Product certificates.**
- B. Warranties:** Sample of special warranties.

**1.3 CLOSEOUT SUBMITTALS**

- A. Operation and maintenance data.**

**1.4 QUALITY ASSURANCE**

- A. Installer Qualifications:** An employer of workers trained and approved by manufacturer for installation and maintenance of units required for this Project.
- B. Pre-installation Conference:** Conduct conference at Project site.

**1.5 WARRANTY**

- A. Special Warranties:** Manufacturer's standard form in which manufacturer agrees to repair or replace equipment or components that fail in materials or workmanship within their standard warranty period.

**Section 113150 – Page 2**  
**Equipment and Furnishings**

**PART 2 - PRODUCTS**

**2.1 MANUFACTURERS**

- A. Basis-of-Design Product: The design is based on the product named. Subject to compliance with requirements, provide the named product or comparable product. Comparable products shall be evaluated for compliance based on characteristics of the product named, per Section 01600 – Product Requirements.
- B. Equipment and Appliances:
  - 1. See Equipment/Appliance Schedule on Sheet A2.30.
    - a. EQ-1 Pass-Thru Evidence Storage Lockers: See section 105113.
- C. Printers/Fax Machines/Copier
  - 1. O.F.O.I.
- D. AV Equipment
  - 1. See AV Equipment Schedule on Sheet A2.30.
    - a. Coordinate AV Equipment with Philip Usrey, State Parks Lead Network Operations Engineer. Contact State Representative for his contact information.
- E. Furniture
  - 1. Modular Systems Furniture (MSF), O.F.O.I. (To be provided and installed by outside vendor.) Electrician to have coordination meeting with furniture vendor/installer.
  - 2. See Sheet A2.41 for additional furniture.

**PART 3 - EXECUTION**

**3.1 INSTALLATION, GENERAL**

- A. Built-in Equipment: Securely anchor units to supporting cabinets or countertops with concealed fasteners. Verify that clearances are adequate for proper functioning and that rough openings are completely concealed.
- B. Freestanding Equipment and Furnishings: Place units in final locations after finishes have been completed in each area. Verify that clearances are adequate to properly operate.
- C. Utilities: Comply with Plumbing Code and Electrical Code requirements.

3.2 FIELD QUALITY CONTROL

A. Perform tests and inspections.

1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, furnishings installation, including connections, and to assist in testing, alignment and operation.

B. Tests and Inspections:

1. Perform visual, mechanical, and electrical inspection and testing for each piece of equipment according to manufacturers' written recommendations. Certify compliance with each manufacturer's equipment-performance parameters.
2. Leak Test: After installation, test for leaks. Repair leaks and retest until no leaks exist.
3. Operational Test: After installation, start units to confirm proper operation.
4. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and components.

C. Prepare test and inspection reports.

END OF SECTION 113150

**SECTION 122113**  
**HORIZONTAL LOUVER BLINDS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

**A. Section Includes:**

1. Horizontal louver blinds with aluminum slats.

**1.2 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
- B. Shop Drawings: For horizontal louver blinds, include fabrication and installation details.
- C. Samples: For each exposed product and for each color and texture specified, 12 inches long.

**1.3 CLOSEOUT SUBMITTALS**

- A. Maintenance data.

**PART 2 - PRODUCTS**

**2.1 HORIZONTAL LOUVER BLINDS, ALUMINUM SLATS**

- A. Levolor, Riviera Complete, or approved equal.
- B. Slats: Aluminum; alloy and temper recommended by producer for type of use and finish indicated; with crowned profile and radius corners.
  1. Width: 1 inch
  2. Thickness: 8 gauge.
  3. Features:
    - a. Lift-Cord Rout Holes: Minimum size required for lift cord and located near back (outside) edge of slat to maximize slat overlap and minimize light gaps between slats.
  4. Manual Lift Mechanism:

- a. Lift-Cord Lock: Variable; stops lift cord at user-selected position within blind full operating range.
  - b. Operator: Extension of lift cord(s) through lift-cord lock mechanism to form cord pull.
- 5. Manual Tilt Mechanism: Enclosed worm-gear mechanism and linkage rod that adjusts ladders.
  - a. Tilt: Full.
  - b. Operator: Clear-plastic wand.
- 6. Manual Lift-Operator and Tilt-Operator Lengths: 60".
- 7. Manual Lift-Operator and Tilt-Operator Locations: Right side and left side of headrail, respectively, unless otherwise indicated.
- C. Bottom Rail: Formed-steel or extruded-aluminum tube that secures and protects ends of ladders and lift cords and has plastic- or metal-capped ends.
  - 1. Type: Manufacturer's standard
- D. Valance: Manufacturer's standard integrated valance.
- E. Mounting Brackets: With spacers and shims required for blind placement and alignment indicated.
  - 1. Manufacturer's hidden bracket.
- F. Side Channels and Perimeter Light Gap Seals: Manufacturer's standard.
- G. Colors, Textures, Patterns, and Gloss:
  - 1. Slats: As selected by State's Representative from manufacturer's full range.
  - 2. Components: Provide rails, cords, ladders, and materials exposed to view matching or coordinating with slat color unless otherwise indicated.

## 2.2 HORIZONTAL LOUVER BLIND FABRICATION

- A. Product Safety Standard: Fabricate horizontal louver blinds to comply with WCMA A 100.1 including requirements for corded, flexible, looped devices; lead content of components; and warning labels.
- B. Unit Sizes: Fabricate units in sizes to fill window and other openings as follows, measured at 74 deg F:
  - 1. Between (Inside) Jamb Installation: Width equal to jamb-to-jamb dimension of opening in which blind is installed less 1/4 inch per side or 1/2 inch total, plus or minus 1/8 inch. Length equal to head-to-sill

dimension of opening in which blind is installed less 1/4 inch, plus or minus 1/8 inch.

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION**

- A. Install horizontal louver blinds level and plumb, aligned and centered on openings, and aligned with adjacent units according to manufacturer's written instructions.
  - 1. Locate so exterior slat edges are not closer than 2 inches from interior faces of glass and not closer than 1-1/2 inches from interior faces of glazing frames through full operating ranges of blinds.
  - 2. Install mounting and intermediate brackets to prevent deflection of headrails.
  - 3. Install with clearances that prevent interference with adjacent blinds, adjacent construction, and operating hardware of glazed openings, other window treatments, and similar building components and furnishings.
- B. Adjust horizontal louver blinds to operate free of binding or malfunction through full operating ranges.
- C. Clean horizontal louver blind surfaces after installation according to manufacturer's written instructions.

**END OF SECTION 122113**

## **SECTION 220000 PLUMBING**

### **PART 1 - GENERAL**

#### **1.1 DESCRIPTION**

##### **A. Related Documents:**

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
2. Where the requirements of the Section exceed those in other Contract Documents, Contractor shall comply with the requirements of this Section.

##### **B. Codes and Regulations:**

1. In addition to complying with the specified requirements, comply with pertinent regulations of the Authority Having Jurisdiction. All work must comply with the version of the code that was in effect at the time of the initial permit application date.
  - a. CALGreen – California Green Building Standards Code
  - b. CBC – California Building Code
  - c. CEBC – California Existing Building Code
  - d. CEC – California Electrical Code
  - e. CEnC – California Energy Code
  - f. CFC – California Fire Code
  - g. CMC – California Mechanical Code
  - h. CPC – California Plumbing Code
  - i. CRC – California Residential Code
  - j. DPH – Department of Public Health
  - k. DWR – Department of Water Resources
  - l. DSA – Division of the State Architect
  - m. HCD – Housing and Community Development
  - n. NFPA – National Fire Protection Association
  - o. SFM – Office of the State Fire Marshal
  - p. Reach Codes that have been adopted by the Authority Having Jurisdiction
  - q. Local Building Department
  - r. Local Fire Marshall

##### **C. Included: Work includes, but is not limited to, the following.**



1. The Work covered by this Specification shall include furnishing labor, material, equipment, and services to construct, install and place in operation, the complete Plumbing Systems to the extent as indicated, and as shown on the Drawings and specified herein. The Work covered under this Section shall hereinafter be referred to as the Plumbing System.
  - a. WASTE AND VENT
    - 1) DWV - Drain Waste and Vent Piping
    - 2) Indirect waste piping
    - 3) Floor drains.
    - 4) Traps.
    - 5) Vent flashings.
  - b. SEWERS (To five feet beyond building)
    - 1) Including metallic or non-metallic piping used to convey sewage and other waste to, and including, connection with offsite utility or onsite treatment and disposal system.
  - c. WATER
    - 1) Potable water piping systems including above and below grade tanks, pressure reducing valves, relief valves, balancing valves, water hammer shock absorbers, air chambers.
    - 2) Isolation, Zone and Control Valves.
    - 3) Hot water systems including heaters and storage tanks.
    - 4) Disinfecting of water systems.
    - 5) Insulation of piping and equipment for heat, sound, and vibration.
    - 6) Backflow preventers.
  - d. ALL PLUMBING FIXTURES AND SUPPORTS
    - 1) Including, but not limited to:
      - a) Sinks, lavatories, water closets, urinals, tubs, service sinks, etc., - all materials
      - b) Supports (backing) for all plumbing fixtures and accessories
      - c) Installation of sinks in or part of drainboards - all materials
  - e. FUEL GAS PIPING
    - 1) Natural and manufactured gas distribution, liquefied petroleum distribution, meters, regulators and connections to all gas fired equipment.
  - f. AIR PIPING

- 1) Compressed air piping
- g. PIPE IDENTIFICATION
- h. Refer to section 23 00 13
- i. CONNECTIONS
  - 1) Utilities-Sanitary sewer, storm drain, water, gas
  - 2) Hot water tanks
  - 3) Temporary water, waste and air lines
  - 4) The joining of pipe by any mode or method including, but not limited to, acetylene and arc welding, brazing, lead burning, plastics welding, soldering, wiped joints, caulked joints expanded or rolled joints, etc., used in connection with any of the work listed herein.
- j. LAYOUT AND CUTTING
  - 1) Holes, chases, channels, the setting and erection of bolts, inserts, stands, brackets, stanchions, supports, sleeves, escutcheon plates, thimbles, hangers, conduits, and boxes.
- k. EXCAVATION, TRENCHING AND BACKFILL
  - 1) In connection with plumbing and piping work shown herein
- l. TEMPORARY PIPING in connection with:
  - 1) Building and construction work
  - 2) Excavating and underground construction
  - 3) Demolition work
- m. PIPE HANGERS, SUPPORTS, ANCHORS, GUIDES, EXPANSION JOINTS
  - 1) Including:
    - a) Supports for equipment to which pipe is connected, such as tank supports
    - b) Isolators-dielectric and vibration
    - c) Anchors and thrust blocks of concrete, metal, etc.
    - d) Seismic bracing
      - (1) Anvil/Badger, Mason Industries, B-Line/TOLCO or approved equal.
      - (2) Seismic hanger system design shall comply with the 2022 CBC requirements and ASCE 7-16.
- n. SIGNS AND NOTICES

- o. ROOF FLASHINGS FOR PIPING PENETRATIONS
- p. TESTS
  - 1) Piping, for tightness
  - 2) Equipment for performance
  - 3) Operating instructions
  - 4) Final operation

## 1.2 ACCESSIBLE PLUMBING FIXTURES

- A. Accessible plumbing fixtures shall comply with all of the requirements of the 2022 CBC 11B-213, 11B-305, &11B-308.

## 1.3 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workers who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the Work of this Section.
- B. Without additional cost to the Owner, provide such other labor and materials as are required to complete the Work of this Section in accordance with the requirements of governmental agencies having jurisdiction, regardless of whether such materials and associated labor are called for elsewhere in these Contract Documents.
- C. Welder's Qualifications: Comply with ASME B31.8. The pipe welder shall have a copy of a certified ASME B31.8 qualification test report. Contractor shall also conduct a qualification test. Submit each welder's identification symbols, assigned number, or letter, used to identify work of the welder. Affix symbols immediately upon completion of welds. Welders making defective welds after passing a qualification test shall be given a requalification test and, upon failing to pass this test, shall not be permitted to work this contract.

## 1.4 SUBMITTALS

- A. Comply with pertinent provisions of Architectural Sections.
- B. Product Data: Within 35 calendar days after the Contractor has received the Notice to Proceed, submit to the Architect for approval prior to acquisition:
  - 1. Materials list of items proposed to be provided under this Section.
  - 2. Manufacturer's specifications, cut sheets, and other data needed to prove compliance with the specified requirements. All pieces of equipment shall

be clearly identified on corresponding manufacturer's literature being submitted. All information for each item shall be correlated.

3. Shop Drawings or other data as required to indicate method of installing and attaching equipment and piping, except where such details are fully shown on the Drawings.
4. Submittals for the entire Project shall be submitted at the same time. Incomplete or noncompliant submittals may be rejected.
5. Submittals shall be provided in PDF format.

#### 1.5 DESIGN CHANGES CAUSED BY PRODUCT SUBSTITUTIONS

- A. If the domestic water heater is substituted with a different brand or model than what is specified on the Drawings the Authority Having Jurisdiction may require the energy compliance calculations to be updated. The contractor shall be responsible for all costs related to updating the calculations. If the substituted equipment does not comply, the contractor shall be responsible for providing equipment that meets or exceeds the performance of the specified equipment at no additional cost to the owner.
- B. Contractor shall pay costs of design and installation for changes resulting from substitution of alternate products.
- C. Acceptance of alternate products by Architect does not change this requirement.

#### 1.6 PRODUCT HANDLING

- A. Comply with pertinent provisions of Architectural Sections.

### PART 2 - PRODUCTS

#### 2.1 WASTE, VENT, SEWER AND STORM DRAINAGE

##### A. Above Grade

1. All waste, vent, sewer and storm lines shall be of cast iron soil pipe and fittings and shall conform to the requirements of CISPI Standard 301, ASTM A-888 or ASTM A-74 for all pipe and fittings. Pipe and fittings shall be marked with the collective trademark of the Cast Iron Soil Pipe Institute and be listed by NSF International.
  - a. Acceptable Manufacturers:
    - 1) AB&I Foundry
    - 2) Charlotte Pipe and Foundry

3) Tyler Pipe Company

b. Joints

- 1) Joints for hubless pipe and fittings shall conform to the manufacturer's installation instructions and local code requirements. Hubless coupling gaskets shall conform to ASTM Standard C-564 and be listed with NSF International. Couplings shall consist of a 304 stainless steel shields, clamp assembly and a high quality elastomeric gasket conforming to ASTM 564. Clamp shall be 4 band construction, Husky HD 4000 or approved equal.

c. Mandatory Referenced Standards

- 1) Cast Iron Soil Pipe Institute Standard Specifications - Latest Issue
  - a) CISPI 301: Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications.
  - b) CISPI 310: Couplings for use in connection with Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications.
- 2) ASTM Standard Specifications - Latest Issue
  - a) A-888: Standard Specifications for Hubless Cast Iron Soil Pipe and Fittings.
  - b) C-564: Standard Specifications for Rubber Gaskets for Cast Iron Soil Pipe and Fittings.

B. Below Grade:

1. Schedule 40 Solid wall PVC plastic DWV pipe with solvent-cemented drainage pattern fittings complying with ASTM D 1785 - Latest Issue.
  - a. SCH. 40 Solid Core PVC plastic DWV pipe with solvent-cemented drainage pattern fittings complying with ASTM D 4396 may be used at Contractor's option for vent piping. -Latest Issue.
2. Schedule 40 Solid wall ABS plastic DWV pipe with solvent-cemented fittings complying with ASTM D-2661 - Latest Issue.
  - a. SCH. 40 Solid Core ABS plastic DWV pipe with solvent-cemented drainage pattern fittings complying with ASTM D 3965 may be used at Contractor's option for vent piping. -Latest Issue.

## 2.2 DOMESTIC WATER PIPING

### A. Above Grade (Distribution System)

#### 1. Piping

- a. For soldered, brazed and mechanical joints, 4" and smaller Copper Water Tube Type L Annealed Temper (Hard Drawn) ASTM B75 or ASTM B88.

#### 2. Fittings

- a. Wrought Copper Pressure Solder Fittings, ASME B16.22 or ASME B16-25, 95-5 Tin-Antimony Filler Metal.
- b. Bronze Flanges: ASME B16.24, Class 150, with solder-joint ends.
- c. Copper Unions: MSS SP-123, cast-copper alloy, hexagonal-stock body, with ball-and-socket, met-to-metal seating surfaces, and solder-joint or threaded ends.
- d. Press Fitting: Copper press fittings shall conform to the material and sizing requirements of ASME B16.18 or ASME B16.22. O-rings for copper press fittings shall be EPDM. Press fittings shall have an inboard bead design.
  - 1) Copper Press Fittings: Viega/Rigid Tool Company, NIBCO, Elkhart/Apollo Xpress or approved equal.
  - 2) 2"NPS and smaller: Wrought copper fitting with EPDM-rubber O-ring seal in each end.
  - 3) 2-1/2" to 4"NPS: Cast-bronze or wrought copper fitting with EPDM-rubber O-ring seal in each end.

### B. Below Grade (Distribution System)

#### 1. Piping

- a. All underground water piping within the building boundaries shall be ASTM B88-93a Type "L" annealed (soft) copper tube made up without fittings below the floor level.

## 2.3 GAS PIPING

### A. Above Ground

- 1. Schedule 40, Seamless Black Steel Pipe ASTM A 120 2 1/2" and smaller with Malleable Iron Threaded fittings ANSI B16.3 Class 150.
- 2. Schedule 40, Seamless Steel Pipe 3" and larger. ASTM A53 with Buttweld Steel fittings ASTM A 234.

## 2.4 COMPRESSED AIR PIPING

- A. Compressed air piping shall be Type L Copper, hard drawn with wrought copper pressure fittings and 95-5 tin antimony filler metal.

## 2.5 VALVES

- A. Acceptable Manufacturers: Milwaukee, Hammond, NIBCO, Jomar, Watts, others as noted.

| <b>Type</b>                                                                                                                                                                                                                                                                    | <b>Size Range</b>              | <b>Part Number</b>                                       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|----------------------------------------------------------|
| Ball                                                                                                                                                                                                                                                                           | 2" and smaller<br>(2 piece)    | Milwaukee UPBA400<br>Hammond UP8301A<br>NIBCO 585-80-LF  |
| Ball                                                                                                                                                                                                                                                                           | 2-1/2" and larger<br>(3 piece) | Milwaukee UPBA300<br>Hammond UP8604<br>NIBCO 595Y-LF     |
| Note: Stem extensions of non-thermal-conductive material and protective sleeve that meets UL 2043 approved for inside air plenum and allows operation of the valve without breaking the vapor seal shall be used on insulated pipe. NIBCO NIB-Seal handle or acceptable equal. |                                |                                                          |
| Gate                                                                                                                                                                                                                                                                           | 2" and smaller                 | Milwaukee UP115<br>Hammond UP645<br>NIBCO T-113-LF       |
| Gate                                                                                                                                                                                                                                                                           | 2-1/2" or larger               | NIBCO F-619-RW                                           |
| Gate-<br>Underground                                                                                                                                                                                                                                                           | 3" and larger                  | Mueller A-2362<br>NIBCO F-619-RW                         |
| Check-Swing                                                                                                                                                                                                                                                                    | 2" and smaller                 | Milwaukee UP509<br>Hammond UP943<br>NIBCO 413Y-LF        |
| Check-Spring                                                                                                                                                                                                                                                                   | 2" and smaller                 | Milwaukee UP548T<br>NIBCO 480Y-LF                        |
| Check-Swing                                                                                                                                                                                                                                                                    | 2½" and larger                 | Apollo 61YLF<br>NIBCO F-910-B-LF                         |
| Check-Spring                                                                                                                                                                                                                                                                   | 2-1/2" and larger              | NIBCO F-938--33                                          |
| Gas Cock (ball)                                                                                                                                                                                                                                                                | 2" and smaller                 | Milwaukee BA475B<br>Hammond 8901<br>NIBCO FP600          |
| Gas Cock (plug)                                                                                                                                                                                                                                                                | 1/2" to 4"                     | Homestead 611/612<br>Walworth 1796/1797<br>(with wrench) |

- B. All compressed air valves shall be ball valves specially made for compressed air service.

## 2.6 HANGERS AND SUPPORTS

- A. In general, all pipe hangers and supports shall conform to the following except where special pipe hangers and supports are detailed on the Drawings. In all cases hanger and support details on the Drawings shall take precedent over the following:

| Items                                  | TOLCO            | Anvil             |
|----------------------------------------|------------------|-------------------|
| Pipe Hanger                            | 1; 2; 200        | 260               |
| Side Beam Clamp for Wood Joist         | 58               | 207               |
| Beam Coupling for Steel Beams          | 65               | 92                |
| Rod Coupling for Connection to "Hilti" | 70               | 135               |
| Inserts in Concrete Decks              | 107;109A;109AF   | N/A               |
| Trapeze Hangers                        | Tolstruct A12    | AS200             |
| Pipe Clamp                             | Tolco Cush Clamp | AS004OD – AS098OD |

- B. Similar items by Anvil International, Erico-Caddy, or TOLCO/B-Line will be acceptable.
- C. Hanger Rods shall conform to the following table:

| Tube/Pipe Size | Rod Diameter |
|----------------|--------------|
| 1/2" to 4"     | 3/8"         |
| 5" to 8"       | 1/2"         |
| 10" to 12"     | 5/8"         |

- D. Trapeze hangers may be used where parallel runs of pipe occur. All rods on trapeze hangers shall be 1/2" minimum size.
- E. Hanger Support Spacing shall be as follows unless shown otherwise on the Drawings:
1. Horizontal:
    - a. Cast Iron: Every other joint unless over 4 feet, then at every joint.
    - b. Copper: Every 6 feet for 1-1/2 inch and smaller, and 10 feet for 2 inch and larger.
    - c. Steel, Gas: Every 6 feet for 1/2 inch, 8 feet for 3/4 inch and 1 inch, and 10 feet for 1-1/4 inch and larger.
    - d. Schedule 40 PVC or ABS DWV: Every 4 feet for all sizes. Provide for expansions every 30 feet.
  2. Vertical:
    - a. Cast Iron: Base and every floor not to exceed 15 feet.
    - b. Copper: Every floor not to exceed 10 feet.



- c. Steel, Gas: Same as horizontal spacing except 1-1/4" and larger at every floor.
  - d. Schedule 40 PVC or ABS DWV: Base and every floor with mid-floor guides. Provide for expansion every 30 feet.
- F. Refer to the plumbing code for materials not listed above.
- G. At all points where insulated pipe contacts a hanger or support, the point of contact shall be protected by a metal insulation pipe shield #B3153 as manufactured by B-Line. Equivalent pipe protectors will be considered provided the substitute item meets the same standard of quality and performance as the specified item.
- H. Seismic restraint devices
  - 1. Available Manufacturers:
    - a. Anvil/Badger
    - b. Mason Industries
    - c. B-Line Tolco Division of Eaton
  - 2. Seismic hanger system design shall meet the requirements of IBC, the 2022 CBC and ASCE 7-16.

## 2.7 WALL AND FLOOR PENETRATIONS

- A. Fire walls and floors:
  - 1. Wall and floor penetrations shall be protected with a U.L. approved fire rated system. The system shall be per the Drawing Details, or other manufacturer's installation instructions.
  - 2. Fire stopping materials by Hilti, Metacaulk, or 3M are considered equal. The material shall be the same as called out for in the U.L. approved system.
- B. Poured concrete walls and floors.
  - 1. Pipes penetrating poured concrete walls and floors shall be protected by providing the following:
    - a. A Schedule 40 PVC sleeve one (1) size larger than the pipe or one quarter (1/4) inch of foam material wrapped around and secured to the pipe or packed and caulked with mineral wool.
    - b. Protection shall end flush with the wall or floor surface.
- C. All walls and floors:

1. Piping passing through walls and floors exposed to view shall be provided with chrome plated split-ring escutcheon plates in finished areas. Brass or galvanized escutcheon plates may be used elsewhere.

## **2.8 FLASHING**

- A. All flashing shall be 4 lb. sheet lead and all vents penetrating the roof shall be flashed and counter-flashed. Stoneman Co. roof flashing assembly with 10" skirt or equal may be used.
- B. The flashing for vents penetrating a metal roof shall have a corrosion resistant aluminum base compatible with the roofing system. A rubber type flashing by "Tech Specialties" shall be installed between the flashing and pipe.
- C. For single ply roofing, provide flashing per roofing manufacturer recommendations or installation instructions.

## **2.9 VALVE BOXES**

- A. Brooks Products Inc., Christy Co., or equal with the word "Water" or "Gas" cast in cover as applicable.

## **2.10 CLEANOUTS**

- A. Provide cleanouts per Drawings and details on Drawings. Cleanouts as manufactured by J. R. Smith, Mifab, Wade, or Zurn are approved equals.
- B. Cleanout tops to be installed with tamper-proof screws.

## **2.11 FLOOR DRAINS, FLOOR SINKS**

- A. Provide drains as specified on the Plumbing Schedule. However, drains as manufactured by Watts, J.R. Smith, Mifab, Wade, or Zurn will be acceptable provided they are equal.
- B. Floor sinks by Watts, J.R. Smith, Mifab, Wade, Zurn, or Commercial Enameling are acceptable provided they are equal.

## **2.12 AUTOMATIC TRAP PRIMERS**

- A. Provide Precision Plumbing Products, J.R. Smith, Mifab or Sloan as specified on the Drawings. Install per manufacturer's instructions.

## **2.13 PLUMBING FIXTURES**

- A. Fixture locations, quantities, types, sizes and connections shall be as shown on both the Plumbing and Architectural Drawings. If a conflict in fixture location is noted between the Plumbing and Architectural Drawings, the Architectural Drawings shall take precedence.
- B. Fixtures shall be thoroughly protected against damage to the chrome plate or enamel, by chipping, scratching or other damage during the entire period of construction. Roof drains, floor sinks and drains, toilet and sink drains, plumbing vents, and all other similar fixtures shall be covered to prevent trash from entering the pipes until final installation of grates, domes, fixtures or other protective devices.
- C. Provide fixtures as specified in the Plumbing Schedule. American Standard, Crane, Kohler, or Just are acceptable substitutes as equal if approved by Engineer.
- D. Fixture carrier numbers listed are as specified on the Plumbing Schedule; however, carriers as manufactured by J.R. Smith, Mifab, Wade, or Zurn, are acceptable provided they are equal.

## **2.14 CONNECTORS**

- A. Provide Brass Craft "Speedway" or equal heavy pattern iron pipe size brass stops, rigid or flexible supplies and chrome plated brass "P" traps. Stops in "Public" areas to have screwdriver slots and those in "Private" areas to have all cross handles.
- B. Provide Brass Craft or equal flexible stainless steel braided water supplies to appliances. They may also be used to fixtures as an option to rigid supplies. Aquaflo is an acceptable substitute.
- C. Provide Brass Craft flexible or equal, stainless steel gas appliance connectors. Dormont is an acceptable substitute. Diameter of connector to be as recommended by manufacturer based on connector length and rated capacity of equipment.

## **2.15 ACCESS PANELS**

- A. See section 23 00 13 for access panels.

## **2.16 PRESSURE GAGES AND THERMOMETERS**

- A. Provide Marsh Quality gages or equal with 3-1/2" dial, gage cock, in type required. For pump suction, provide compound type.
- B. Provide Terrice 7" BX or 3" Bimetal Dial series thermometers or equal, straight, angle, or oblique as required, equipped with separable sockets and well. Provide extension necks as required on insulated line.
- C. Arrange gages and thermometers for easy reading.

#### 2.17 PRESSURE REGULATORS AND BACKFLOW PREVENTORS

- A. Provide the pressure regulator(s) and backflow preventer(s) as specified on the drawings and/or as required by the governmental authority having jurisdiction.
- B. Pressure regulators and/or backflow preventers by Febco, Hersey, Watts or Wilkins are considered equal when their pressure fall-off/loss is equal to or less than the specified regulators/preventer's loss for the given flow rate.
- C. Provide all potable water outlets with hose attachments with non-removable hose bibb backflow preventers per the C.P.C.

#### 2.18 WATER HEATERS

- A. Provide water heaters as specified in Plumbing Schedule or approved equal of size, capacity, recovery, and KW/BTUH input. American, A.O. Smith and State are considered equal. Heater shall be A.G.A. or U.L. listed.
  - 1. Gas heaters shall be provided with an A.G.A. approved 100% safety shut-off.
  - 2. Provide approved flexible copper supplies for the water heater water connections.
  - 3. Instantaneous tankless water heaters shall be with water flow activated switch to energize the electrical/gas power source, a safety high water temperature limit, and all standard factory trim.

#### 2.19 PRESSURE-TEMPERATURE RELIEF VALVE

- A. Pressure-temperature relief valve shall be Wilkins TP220, or TP3000 Series or equal.

#### 2.20 EXPANSION TANK

- A. Expansion tank shall be Wilkins WXTP series as specified on the Drawings or approved equal in size and capacity. Amtrol and Watts expansion tanks are considered equal.

#### 2.21 PROTECTIVE INSULATION (ADA FIXTURES)

- A. Provide approved manufactured, EVA foam antimicrobial material protective pipe and fitting covering for exposed waste and drain assembly and for hot and cold water supplies and stops. Protective system shall consist of pre-formed pipe or tubing sleeve and pre-formed fitting patterns for trap and stops.
- B. Provide protective covering for off-set drain assembly and disposer at kitchen sinks.
- C. Foam pipe wrap, duct tape, baggy-type covers, tie-strap fasteners are not acceptable.
- D. Acceptable manufacturers:
  - 1. Oatey Dearborn "Safety Series"
  - 2. Truebro "Lav-Guard"
  - 3. Plumberex "Pro-Xtreme"

#### 2.22 PIPE INSULATION

- A. Article includes insulating the following plumbing piping services:
  - 1. Domestic hot-water piping.
  - 2. Domestic hot-water return piping, including the piping between where the return piping intercepts the domestic cold water supply piping and the water heater.
  - 3. Domestic cold-water piping where the following conditions occur:
    - a. Last 8 feet of piping to the water heater including piping between a storage tank and a heat trap, for a nonrecirculating storage system.
    - b. Piping in unheated areas of the building.
    - c. Piping exposed outside the building.
- B. Domestic cold-water piping in unheated areas of the building and where exposed outside the building shall be insulated with 1" insulation. Where insulation is required in other areas the insulation shall conform to the requirements for domestic hot water supply and return piping.
- C. Insulation material shall meet requirements of flame spread not to exceed 25 and smoke developed not to exceed 50 as tested by Procedure ASTM-E-84, NFPA 225 or UL 723.

- D. Domestic hot water supply and return piping shall be insulated with Owens-Corning Fiberglass heavy density pipe insulation 25 ASJ/SSL-II (All Service Jacket/Double/ Self-Sealing Lap). Insulation shall have a k-factor of 0.24 @ 100 degrees F mean temperature, an embossed vapor barrier laminated and pressure sealing lap adhesive. All lap and butt strips shall have integral pressure-sensitive strips and shall be applied in strict accordance with manufacturer's instructions. Insulation thickness shall be as follows:

| PIPE INSULATION THICKNESS                     |                         |                                  |         |                                                                     |            |            |          |
|-----------------------------------------------|-------------------------|----------------------------------|---------|---------------------------------------------------------------------|------------|------------|----------|
| FLUID<br>OPERATING<br>TEMPERATURE<br>RANGE °F | INSULATION CONDUCTIVITY |                                  |         | NOMINAL PIPE DIAMETER IN INCHES                                     |            |            |          |
|                                               | k FACTOR                | MEAN RATING<br>TEMPERATURE<br>°F |         | < 1                                                                 | 1 to < 1.5 | 1.5 to < 4 | 4 to < 8 |
| Service Water Heating Systems                 |                         |                                  |         | Minimum Pipe Insulation Require<br>(Thickness in inches or R-value) |            |            |          |
| 141-200                                       | .25-.29                 | 125                              | Inches  | 1.5                                                                 | 1.5        | 2.0        | 2.0      |
|                                               |                         |                                  | R-Value | R-11.5                                                              | R-11       | R-14       | R-11     |
| 105-140                                       | .22-.28                 | 100                              | Inches  | 1.0                                                                 | 1.5        | 1.5        | 1.5      |
|                                               |                         |                                  | R-Value | R-7.7                                                               | R-12.5     | R-11       | R-9      |

- E. Insulation materials not meeting the specified conductivity range shall be submitted for approval. Submittal shall clearly identify compliance with this article.

## PART 3 - EXECUTION

### 3.1 GENERAL CONDITIONS

- A. Examine the areas and conditions under which Work of this Section will be performed. Conditions detrimental to timely and proper completion of the Work shall be brought to the attention of the Architect before the installation of materials. Do not proceed until unsatisfactory conditions are corrected. Incorrectly installed materials requiring changes will be at Contractor's expense.
- B. All plumbing fixtures, appliances, and appurtenances furnished with manufacturer's installation instructions shall be installed per those instructions.

### 3.2 PLUMBING SYSTEM LAYOUT

- A. Lay out the plumbing system in careful coordination with the Drawings. Determine proper elevations for all components of the system and use only the minimum number of bends to produce a satisfactorily functioning system.
- B. Follow the general layout shown on the Drawings in all cases except where other Work may interfere.

- C. Lay out pipes to fall within partitions, walls, or roof cavities, and to not require furring other than as shown on the Drawings.

### 3.3 PIPING INSTALLATION

- A. Pipe sizes as shown on drawings are Nominal Pipe Size (NPS) or Iron Pipe Size (IPS). Drawings and fixture schedule indicate pipe sizing per the 2022 CPC and Standard Engineering Practice. Pipe sizes shall be maintained to fixtures, appliances and equipment. Approved reducing fittings shall be installed at all points of connections.
- B. Install piping generally square with building, free of traps or air pockets, and true to line and grade. Keep all piping tight to the building structure, unless pipe slope is required. Do not install piping in any locations where, in the Architect's opinion, it will interfere with the use of the building or create a safety hazard. Where space is inadequate, notify the Architect in time to avoid unnecessary Work. Install all exposed piping as high as possible without interfering with other trades.
- C. Make changes in direction with manufactured fittings; use long radius elbows. Street elbows, bushings, close nipples and bending of pipe or tubing will not be allowed.
- D. Provide "P" traps at sanitary sewer drainage devices without integral traps.
- E. Gas piping shall be tapped off the top or side of pipe and ends of mains shall be provided with dirt legs.
- F. Underground plastic pipe will horizontally transition to metal pipe 5 feet before the above ground riser. Install plastic pipe with a minimum of 36" of cover when located under areas of possible vehicle traffic. Approved metallic pipe must be used if the minimum depth is not met. A tracer wire, terminating at each end at an exposed location, will be installed with all underground plastic pipe. Gas piping will also have a continuous tape marked "Gas" laid 6" above it.
  - 1. Piping may terminate a maximum of one foot above ground when encased in a listed metallic transition riser.
- G. Use friction wrenches when installing brass, polished, or soft metal piping, and when installing piping exposed in finished areas. Replace piping showing wrench marks.
- H. Attach escutcheon plates to pipes with set screws or spring clamps with concealed hinges. Continue insulation through escutcheon plates.
- I. Compressed air piping shall be adequately supported in a manner that eliminates all sags and bowing of the line. All horizontal runs shall be straight and sloped at

1% to the indicated drain. All branch or individual drop lines shall be taken off the top of their supply line.

J. General:

1. Proceed as rapidly as the building construction will permit.
2. Thoroughly clean items before installation. Cap pipe openings to exclude dirt until fixtures are installed and final connections have been made.
3. Cut pipe accurately, and work into place without springing or forcing, properly clearing windows, doors, and other openings. Excessive cutting or other weakening of the building will not be permitted.
4. Show no tool marks or threads on exposed plated, polished, or enameled connections from fixtures. Tape all finished surfaces to prevent damage during construction.
5. Provide sufficient swing joints, ball joints, expansion loops, and devices necessary for a flexible piping system, whether or not shown on the Drawings.
6. Support piping independently at pumps, coils, tanks, and similar locations, so that weight of pipe will not be supported by the equipment. Support the equipment independently from the pipe.
7. Pipe the drains from mechanical equipment, drip pans, relief valves, air vents and similar locations, to an open sight drain, floor drain, or other acceptable discharge point, and terminate with an air break or air gap per the 2022 CPC.
8. Securely bolt all equipment, isolators, hangers, and similar items in place.

### 3.4 PIPE SUPPORT INSTALLATION

- A. Support pipes from structure with assemblies specified. Provide auxiliary members, anchors, guides, and sway braces necessary to maintain pipe alignment and prevent excessive movement or strain on piping system or components; allow for expansion and contraction of piping. Provide at least one hanger for each branch. Do not use powder driven fasteners, wire, perforated tape, nails, wood blocking, or other makeshift devices to support pipe.
- B. Attach supports to structure with bolts, screws or concrete anchors, per support manufacturer's requirements.

### 3.5 JOINTS AND CONNECTIONS

- A. Cut pipe shall be reamed to full inside diameter of pipe. Cut threads straight and true. Insure all filings have been removed from inside of the pipe. Apply liquid Teflon to male pipe threads and not inside fittings. Use graphite on cleanout plug threads.



- B. Joints in cast iron "No-Hub" soil/waste pipe and fittings shall be made up with neoprene gaskets and stainless steel bands conforming to CISPI 310, torque to the manufacturer's specification with an approved torque wrench.
- C. Joints in copper tube shall be made with 95-5 tin-antimony or lead-free solder, applied in strict accordance with the manufacturer's directions.
- D. Dissimilar metals shall be isolated with dielectric couplings, "EPCO" or approved equal. Provide access panels at all hidden couplings.
- E. All plastic pipe shall be joined in accordance with the manufacturer's recommendations for their pipe and IAPMO Installation Standard per the 2022 CPC.
- F. Press Connections: Copper press fittings shall be made in accordance with the manufacturer's installation instructions. The tubing shall be fully inserted into the fitting and the tubing marked at the shoulder of the fitting. The fitting alignment shall be checked against the mark on the tubing to assure the tubing is fully engaged (inserted) in the fitting. The joints shall be pressed using the tool approved by the manufacturer.
- G. Pipe Protection: Provide protection against abrasion where copper tubing is in contact with other building members by wrapping with an approved tape, pipe insulation or otherwise suitable method of isolation.
- H. Penetration Protection: Provide allowance for thermal expansion and contraction of copper tubing passing through a wall, floor, ceiling or partition by wrapping with an approved tape or pipe insulation, or by installing through an appropriately sized sleeve. Penetrations of fire resistance rated assemblies shall maintain the rating of the assembly

### 3.6 SANITARY SEWER, VENT AND INDIRECT WASTE SYSTEM INSTALLATION

- A. Install horizontal drainage piping at a minimum 2%, condensate 1%, slope unless otherwise noted. Where this is impractical notify the Architect before installing the pipes.
- B. Install vent piping to drain back into the sewer system.
- C. Provide cleanouts where shown on Drawings and where required by governmental agencies having jurisdiction.
  - 1. All cleanouts to grade shall be firmly secured by means of a concrete block 20" square by 5" thick, and shall be flush with finished grade, unless otherwise noted on the plans.

- D. Provide automatic trap primers as specified at floor sinks and drains as indicated on Drawings or where required by governmental agencies having jurisdiction. Provide access panels for all hidden mechanical trap primers.

### 3.7 VALVE INSTALLATION

- A. Provide valves in the water, air, and gas systems. Locate and arrange so as to give a complete regulation of apparatus, equipment, and fixtures.
- B. Provide valves in at least the following locations:
  - 1. In branches and/or headers of water piping serving a group of fixtures.
  - 2. On both sides of apparatus and equipment.
  - 3. For shutoff of risers and branch mains.
  - 4. For flushing and sterilizing the system.
  - 5. Where shown on the Drawings.
- C. Locate valves for easy accessibility and maintenance. Provide access panels for all hidden valves.
- D. Unions shall be installed downstream of all screwed valves.
- E. All gas pressure regulating valves shall be vented to the atmosphere.

### 3.8 CLEANOUTS:

- A. Horizontal drainage pipe shall be provided with a cleanout at its upper terminal, and each run of piping, that is more than 100 feet in total developed length, shall be provided with a cleanout for each 100 feet, or fraction thereof, in length of such piping. An additional cleanout shall be provided in a drainage line for each aggregate horizontal change in direction exceeding 135 degrees. A cleanout shall be installed above the fixture connection fitting, serving each urinal, regardless if the location of the urinal in the building.
  - 1. Exceptions – See 2022 CPC 707.4

### 3.9 WATER HAMMER ARRESTOR INSTALLATION

- A. Provide water hammer arrestor on hot and cold water lines.
  - 1. Install at all quick closing valves, solenoids, and supply headers at plumbing fixture groups.
  - 2. Locate and size as shown on Drawings, and where not shown, locate in accordance with Plumbing and Drainage Institute Standard WH-201.
  - 3. Install water hammer arrestor behind access panels.

### 3.10 BACKFLOW PREVENTION INSTALLATION

- A. Protect plumbing fixtures, faucets, hose connections, and other equipment having plumbing connection, against possible back-siphonage.
- B. Arrange for testing of backflow devices as required by the governmental agencies having jurisdiction.

### 3.11 PLUMBING FIXTURE INSTALLATION

- A. Connect plumbing services to fixtures as shown on Drawings and as specified.
- B. Install compression stops and flexible supplies per fixture manufacturer's recommendation or as high as possible on wall directly below fixtures.
- C. Install fixtures at right angles to, and tightly against, building surfaces, and in proper alignment. Fill gaps between fixtures and building surfaces with white grout. Mounting heights and locations shall be as shown on the Drawings, or, if not shown, as directed by the Architect.

### 3.12 INSULATION INSTALLATION

- A. Clean and dry surfaces prior to application of insulation or adhesives.
- B. Insulate piping, fittings, valves, and strainers. Leave unions exposed. Where insulation terminates, bevel ends of insulation and continue jacket over insulation and secure to pipe. Do not interrupt insulation at hangers, supports, clamps, or penetrations through structure. Fittings shall be finished with "Zeston" or approved equal fitting closures. If fitting closures not available, use 8 oz. canvas dipped in "Seal-Fas".
- C. Attach longitudinal jacket laps and butt strips with factory applied pressure sensitive adhesive. On concealed piping only, outward clinching coated staples at two inch spacing may be used. Cover elbows with one piece polyvinyl chloride covers. Secure with tack fasteners. Tape ends of covers with matching tape on exposed piping. Seal off all cut ends with canvas and Benjamin Foster 30-36.
- D. Install closed cell polyethylene foam per manufacturers instructions.

### 3.13 TESTING AND ADJUSTING

- A. Provide personnel and equipment, and arrange for and pay the costs of, all required tests and inspections required by governmental agencies having jurisdiction. See Section 23 00 13 for test requirements.

- B. Where tests show materials or workmanship to be deficient, replace or repair as necessary, and repeat the tests until the specified standards are achieved.
- C. Adjust the system to optimum standards of operation.

#### 3.14 CLEANING (FOR POTABLE WATER SYSTEMS.)

- A. Disinfection: The hot and cold water distribution system shall be disinfected prior to being placed in service. The system shall be disinfected within 3 weeks of occupancy in accordance with AWWA C651 or the following requirements:
  - 1. The piping system shall be flushed with potable water until discolored water does not appear at any of the outlets.
  - 2. The system shall be filled with a water chlorine solution containing at least 50 parts per million of chlorine. The system shall be valved off and allowed to stand for 24 hours. Or, the system shall be filled with a water chlorine solution containing at least 200 parts per million of chlorine. The system shall be valved off and allowed to stand for 3 hours.
    - a. To prevent reduced service life of system components, disinfection solutions should not stand in the system longer than 24 hours.
  - 3. Following the standing time, the system shall be flushed with water until the chlorine is purged from the system.
  - 4. Provide bacteriological sampling and analysis results to the Engineer for review.

#### 3.15 WARRANTY

- A. The contractor shall warranty all of the systems for proper operation installed by the contractor for not less than one calendar year from date of project completion. This completion date shall be set by the Architect or owner.

END OF SECTION 220000

**SECTION 23 00 00**  
**HEATING, VENTILATION, AND AIR CONDITIONING**

**PART 1 - GENERAL**

**1.1 DESCRIPTION:**

**A. Related Documents:**

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
2. Where the requirements of the Section exceed those in other Contract Documents, Contractor shall comply with the requirements of this Section.

**B. Codes and Regulations:**

1. In addition to complying with the specified requirements, comply with pertinent regulations of the Authority Having Jurisdiction. All work must comply with the version of the code that was in effect at the time of the initial permit application date.
  - a. CALGreen – California Green Building Standards Code
  - b. CBC – California Building Code
  - c. CEBC – California Existing Building Code
  - d. CEC – California Electrical Code
  - e. CEnC – California Energy Code
  - f. CFC – California Fire Code
  - g. CMC – California Mechanical Code
  - h. CPC – California Plumbing Code
  - i. CRC – California Residential Code
  - j. DPH – Department of Public Health
  - k. DWR – Department of Water Resources
  - l. DSA – Division of the State Architect
  - m. HCD – Housing and Community Development
  - n. NFPA – National Fire Protection Association
  - o. SFM – Office of the State Fire Marshal
  - p. Reach Codes that have been adopted by the Authority Having Jurisdiction
  - q. Local Building Department
  - r. Local Fire Marshall

2. In the event of conflict between or among specified requirements and pertinent regulations, the more stringent requirements will govern when so directed by the Architect.

C. Included: Work includes, but is not limited to, the following.

1. The Work covered by this Specification shall include furnishing labor, material, equipment, and services to construct, install and place in operation, the complete Heating, Ventilating and Air Conditioning Systems to the extent as indicated, and as shown on the Drawings and specified herein. The Work covered under this Section shall hereinafter be referred to as the Mechanical System.
  - a. Centrifugal Exhaust Fans and Roof Exhausters
  - b. Duct systems complete with supports, dampers, grilles, registers, diffusers and louvers.
    1. Supply Air
    2. Return Air
    3. Exhaust Air
  - c. Duct, Pipe and Equipment Insulation
  - d. Low Voltage Controls
2. A system of temperature controls shall be furnished and installed complete as hereinafter described. Low voltage wiring and conduit, complete with electrical accessories and materials as required for the installation of the temperature control system shall be furnished and installed under this Section of the Contract but shall conform to the Specification requirements as set forth under Division 26.

D. Work Not Included In This Section:

1. Blocking, framing and wood supports required for the purpose of accommodating the Mechanical System unless specifically called for under this Division. The contractor is responsible for the correct location of such items and shall bear the expenses covering their omission or improper location.
2. Electrical connections to motors, electric starters, disconnect and over-current protective devices, unless specifically called for by this Section, or unless the equipment is furnished as an integral part of the Mechanical System Equipment, as hereinafter specified, or noted on the Drawings.
3. Line voltage electrical wiring and conduit, except where specifically called for on the Drawings or hereinafter in this Section.
4. Painting, except when supplied as factory finish, or specifically called for in this Section or on Drawings.

## 1.2 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workers who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the Work of this Section.
- B. Without additional cost to the Owner, provide such other labor and materials as are required to complete the Work of this Section in accordance with the requirements of governmental agencies having jurisdiction, regardless of whether such materials and associated labor are called for elsewhere in these Contract Documents.

## 1.3 SUBMITTALS

- A. Comply with pertinent provisions of Architectural Section.
- B. Product data: Within 35 calendar days after the Contractor has received the Notice to Proceed, submit the following to the Architect for approval prior to acquisition:
  - 1. Materials list of items proposed to be provided under this Section.
  - 2. Manufacturer's specifications, cut sheets, and other data needed to prove compliance with the specified requirements. All pieces of equipment shall be clearly identified on corresponding manufacturer's literature being submitted. All information for each item shall be correlated.
  - 3. Shop Drawings or other data as required to indicate method of installing and attaching equipment, ductwork and piping except where such details are fully shown on the Drawings.
  - 4. Submittals for the entire Project shall be submitted at the same time. Incomplete or noncompliant submittals may be rejected.
  - 5. Submittals shall be provided in pdf format.

## 1.4 DESIGN CHANGES CAUSED BY PRODUCT SUBSTITUTIONS

- A. If the heating and/or air conditioning equipment is substituted with a different brand or model than that specified on the Drawings the Authority Having Jurisdiction may require the energy compliance calculations to be updated. The contractor shall be responsible for all cost related to updating the calculations. If the substituted equipment does not comply the contractor shall be responsible for providing equipment that meets or exceeds the performance of the specified equipment at no additional cost to the Owner.
- B. Contractor shall pay costs of design and installation for changes resulting from substitution of alternate products.

- C. Acceptance of alternate products by Architect does not change this requirement.

## 1.5 PRODUCT HANDLING

- A. Comply with pertinent provisions of Architectural Sections.

## PART 2 - PRODUCTS

### 2.1 AIR DISTRIBUTION EQUIPMENT

- A. Grilles, registers and ceiling diffusers and other accessory equipment shown on the Drawings and "Grille, Register and Diffuser Schedule" shall be manufactured by Titus unless shown otherwise.
- B. Any substitutions of the above equipment which may be proposed by the Contractor shall be re-sized to suit his equipment by the proposed manufacturer and submitted in tabular form listing components proposed for each location in the System, identifying each as to location, design, air quantity passing through the devices, pressure drop, noise criteria data, velocities of air leaving the device and "K" flow factors for each item. Manufacturer's data sheets showing dimensions and recommended method of installation for each component must also be included.

### 2.2 RECTANGULAR SHEET METAL DUCTWORK

- A. Rectangular supply, return, outside air and exhaust ducts, single leaf dampers and plenums shall be fabricated from prime grade galvanized steel sheets of lock form quality and shall be constructed in accordance with appropriate tables of the latest ASHRAE "Guide and Data Book" and SMACNA "HVAC Duct Construction Standards" handbook and Chapter 6 of the 2022 CMC.
- B. Transverse Duct Joints shall be made with The Ductmate System. When using The Ductmate System, construction of the duct such as gage, reinforcing, etc. shall be as indicated in the latest addition of the applicable SMACNA standards. With proper data, an equal may be submitted, providing the corners have a downset and corner clips to insure airtight integrity. Testing must be done by a nationally recognized testing laboratory. The standard Ductmate 35 System joint is the equivalent of a SMACNA "J" connection. The Ductmate 25 System joint is the equivalent of a SMACNA "F" connection. The installation of the Ductmate System shall be in accordance with the latest manufacturer's printed Assembly and Installation Instructions.



- C. Each duct or plenum shall be diagonally cross-broken for rigidity.
- D. Duct bends, fittings, transitions, etc. shall be fabricated in accordance with Fabrication Standards as shown on the Drawings or in accordance with latest SMACNA "HVAC Duct Construction Standards" where not shown on Drawings.
- E. Support ducts to joists or similar structural members. Except where indicated otherwise, ducts with a side of 24" or more shall be supported on Ductmate trapeze duct hangers consisting of 2" high x 1-1/2" wide x 18" gauge channel and 3/8" diameter hanger rods hung from support brackets bolted to structural members. See also Special Fabrications as shown on the Drawings. Duct supports shall be eight (8) feet maximum on center.
- F. At branch ducts, provide manually operated dampers of the type and arrangement shown on the Drawings, two gages heavier than the duct (if single leaf type) in which installed, and equipped with locking quadrants and closed end bearings.
- G. Sizes shown on Drawings are net inside dimensions. Enlarge duct to accommodate lining.

### 2.3 ROUND DUCTWORK AND FITTINGS

- A. 2-10" w.g. round duct through 61" in diameter shall be United Sheet Metal spiral lockseam unseal duct, or approved equal, manufactured from galvanized steel meeting the ASTM A-527-71 in the following gages:

| <b>Diameter</b> | <b>Metal Thickness</b> |
|-----------------|------------------------|
| 3-13"           | 26 ga.                 |
| 14-23"          | 24 ga.                 |
| 24-37"          | 22 ga.                 |
| 38-51"          | 20 ga.                 |
| 52-61"          | 18 ga.                 |

- B. Round duct shall be new and exclusively obtained for this project. Each piece shall be in 20' lengths. Ducts shall be cut to length required with joints only at fitting locations, except on duct runs longer than 20 feet.
- C. Spiral duct and fitting connections, 15" diameter and larger shall be Ductmate Spiralmate round duct connectors. The connector system shall consist of two mating round duct connector flanges roll-formed from hot dipped galvanized steel with an integral sealant and closure ring roll-formed from hot dipped galvanized steel.

- D. Fittings shall be United Sheet Metal galvanized fittings in the following gauges:

| <b>Diameter</b> | <b>Metal Thickness</b> |
|-----------------|------------------------|
| 3-13"           | 24 ga.                 |
| 14-23"          | 22 ga.                 |
| 24-37"          | 20 ga.                 |
| 38-51"          | 18 ga.                 |
| 52-61"          | 16 ga.                 |

- E. Spiral duct fittings must be manufactured as separated fittings and shall not be saddle taps, stubs or tap-in fittings tapped into spiral duct, nor may they be dove-tailed tap-ins into pipe or fittings.
- F. Reducers shall occur after a branch tap occurs on the main portion of the fitting. Divided-flow fittings shall be used unless shown otherwise on the Drawings.
- G. Joints on ducts and fittings shall be covered and sealed with 4" wide, 6 oz. canvas saturated with Arabol lagging adhesive, or Hardcast DT tape in conjunction with Hardcast FTA-20, non flammable, non-toxic adhesive, or GlenKote duct sealer or other approved mastic type sealer. Duct tape will not be allowed. Where exposed to weather, paint lagging strips with two coats of silver enamel paint.
- H. All ductwork shall be constructed and supported in accordance with appropriate tables of the latest SMACNA "HVAC Duct Construction Standards" handbook and Chapter 6 of the 2022 CMC. Duct gauges to be in accordance with this section.
- I. At branch ducts, provide manually operated dampers of the type and arrangement shown on the Drawings, two gages heavier than the duct (if single leaf type) in which installed and equipped with locking quadrants and closed end bearings.

## 2.4 FLEXIBLE DUCT

- A. Flexible air duct shall be Hart & Cooley Model F218. Duct shall consist of an inner core having two layers of polyester film encapsulating a steel wire helix surrounded by a blanket of fiberglass insulation and sheathed in a metalized polyester vapor barrier reinforced with fiberglass scrim. All air ducts shall be UL listed under the UL-181 standard as a Class 1 Air Duct also conforming to NFPA standards 90A and 90B. This air duct shall have a certified thermal resistance rating of R-8 in accordance with ASTM C518 at 75°F and carry the ADC "Thermal Performance" seal.

1. Products listed as Air Connectors are not allowed to be used in lieu of products listed as Flexible Duct.
- B. Flexible air duct shall be JP Lamborn Co., AMF-07. Flexible duct shall be factory made with a sound absorbing, spun-bonded, non-woven inner core. R-4.2 insulation to encompass core and a metalized polyester reinforced vapor barrier surrounding entire duct. Ends shall have factory attached sheet metal collars secured with UL-181 FX tape. Length to be 5 feet. Duct shall be Class I, UL approved, and meet NFPA 90A, 90B and CMC minimum requirements.
  1. Products listed as Air Connectors are not allowed to be used in lieu of products listed as Flexible Duct.
- C. Use only the minimum length required to make the connection. In no case shall any section of flexible duct exceed 5 feet in length.
- D. Use two layers of UL listed 181 duct tape to connect flexible duct to the metal duct if flexible duct does not have S.M. collars.
- E. The number of bends shall not exceed a combined total of 90 degrees. 90 degree bends will not be allowed at diffuser connections.

## 2.5 DUCT SPECIALTIES

- A. Damper Regulators and Bearings: Duro-Dyne "Specline" SR-Series or approved equal, lever type with matching end bearing. Regulator set shall include rubber gasket between regulator and duct, spring washer between core and housing, wedge pin, dial indicator and handle. Matching end bearing shall be closed end with rubber gasket:

| Model | Size          |
|-------|---------------|
| 148   | 10" and Under |
| 388   | 20" and Under |
| 128   | 21" and Above |

- B. Access Panels: Access panels shall be located at all points where adjustable mechanisms are installed internal to or on the surfaces of the ductwork. Where adjustable mechanisms are concealed by walls or ceilings, "Elmdor" or approved equal access doors shall be installed. Size shall be suitable for convenient servicing. Tile Walls: Doors and Frame: Stainless Steel. Other areas: recess type to receive ceiling or wall finish in order to provide "Blind Finish".
- C. Volume Dampers:

1. In rectangular ducts greater than 1.5 sq. ft., provide Pottorff Model CD42, or equal, factory fabricated opposed blade damper, 16 gauge blades, and brass bearings. Blade width shall not exceed six inches.
  2. In rectangular ducts 1.5 sq. ft. and less, provide single leaf dampers as described in Section 23 00 00, 2.3 (a. and g.).
  3. In round ducts 15" in diameter and less, provide shop fabricated galvanized sheet metal plate dampers. Plate shall be 18 gauge or shall be two even gauges heavier than duct; minimum thickness 22 gauge. Provide stiffening beads at 1/3 points in dampers lighter than 18 gauge.
  4. In round ducts 16" and greater, provide Pottorff opposed blade damper Model CD22R or approved equal.
  5. In round ducts 4" – 24" in diameter, above "hard" ceilings, provide DuroZone Cable Operated Damper. Cable length to be between 3 and 15 FT long. Contractor to determine proper length to be use. Cable shall be routed inside the duct to the face of the grille or diffuser. Tuck cable up behind diffuser after balancing.
- D. Provide 20 gauge galvanized sheet metal escutcheon plates at duct penetrations of finished building surfaces. Install tight against surface and securely attached to duct. Continue insulation through openings.

## 2.6 FLEXIBLE CONNECTIONS

- A. Provide fireproof, insulated, non-porous, flexible connections between fans and ducts or casings and where ducts are of dissimilar metals. For round ducts, securely fasten flexible connections by zinc coated steel clinch-type drawbands. Flexible connections shall be DuroDyne "Insulfab" or "Insulflex" or approved equal.
- B. Provide a duct support next to each flex connector to prevent any strain on connection.

## 2.7 PIPE HANGERS AND SUPPORTS

- A. In general, pipe hangers and supports shall conform to the following except where special pipe hangers and supports are detailed on the Drawings. In cases hanger and support details on the Drawings shall take precedent over the following:

| <b>Pipe 6" Size and Smaller</b> |                   |
|---------------------------------|-------------------|
| Items                           | Superstrut Number |
| Pipe Hanger                     | 710               |
| Side Beam Clamp for Wood Joist  | 540               |
| Beam Coupling for Steel Beams   | U563-U562         |

|                                        |                    |
|----------------------------------------|--------------------|
| Rod Coupling for Connection to "Hilti" | H-119              |
| Inserts in Concrete Decks              |                    |
| Trapeze Hangers                        | A1200-A1202        |
| Pipe Clamp                             | A716 or 701W/S-716 |

- B. Similar items by Unistrut, Securstrut, Michigan, or B-Line will be acceptable.
- C. Hanger Rods shall conform to the following table:

| Tube/Pipe Size | Rod Diameter |
|----------------|--------------|
| 1/2 to 4"      | 3/8"         |

- D. Hanger Support Spacing shall be as follows unless shown otherwise on the Drawings:
1. Horizontal:
    - a. Copper: Every 6 feet for 1-1/2 inch and smaller, and 10 feet for 2 inch and larger.
    - b. Steel, Gas: Every 6 feet for 1/2 inch, 8 feet for 3/4 inch and 1 inch, and 10 feet for 1-1/4 inch and larger.
  2. Vertical:
    - a. Copper: Every floor not to exceed 10 feet.
    - b. Steel, Gas: Same as horizontal spacing except 1-1/4" and larger at every floor.

## 2.8 ELECTRICAL EQUIPMENT

- A. Motor starters shall be provided complete with properly sized thermal overload protection and other appurtenances necessary for motor control specified. Mount starter adjacent to equipment. See electrical drawing. Maintain minimum of 3' clearance to front of device.
- B. Motor Starters: Shall be NEMA I or III as appropriate, general purpose, weather-resistant, with watertight enclosure where required.

## 2.9 INSULATION

- A. General: Insulation and lining material shall meet requirements of flame spread not to exceed 25 and smoke developed not to exceed 50 as tested by Procedure ASTM-E-84, NFPA 255 or U.L. 723 and shall conform to NFPA 90A and 90B.

- B. Heating and cooling duct and related heating and cooling equipment insulation shall conform to 2015 Building Energy Efficiency Standards, Administrative Regulations, Title 24, Part I, Section 124, except to the extent that this Specification supersedes the minimum standards as established by the Code, in which case this Specification shall take precedent.
- C. Unless noted otherwise, insulation shall be Fiberglass, or approved equal material. Application Work shall be performed in accordance with the best accepted practice of the trade and the manufacturer's recommendations. The performance of insulation Work shall be by experienced insulation applicators. Insulation shall be installed after the specified tests have been applied to the piping and duct systems, and the systems have been inspected and approved. Fiberglass trade names and/or numbers have been used to establish a standard of quality.
- D. External Duct Insulation – All other locations not listed above: Shall be applied to concealed heating and cooling, supply and return duct except duct that is internally lined. Insulation on duct shall be Manville Microlite FSK duct insulation, 2" thick, type 100, minimum installed R value of 6.0 or greater, FSK aluminum foil reinforced with fiberglass, scrim laminated to U.L. rated Kraft, or approved equal. Adhere to duct surfaces with Foster's 85-62 or approved equal, adhesive applied in strips of 6" wide on approximately 12" centers. Circumferential seams shall be butted together and sealed over joints with 3" wide pressure sensitive foil vapor barrier tape. Longitudinal edges shall be lapped 2" and secured with outward clinching staple 6" on center then sealed with pressure sensitive foil vapor barrier tape. Duct wrap shall be installed to allow maximum fullness at corners (avoid excessive compression) minimum thickness at corners shall be 1". Where ducts are over 24" in width, the duct wrap shall be additionally secured to the bottom of the rectangular ducts with mechanical fasteners spaced on 18" centers (Max.) to prevent sagging insulation
- E. Internal Duct Insulation – All other spaces not listed above: Shall be applied to all heating and cooling supply and return duct and plenums where shown on Drawings. Manufacturer shall be Manville Microlite, or approved equal. Duct Liner shall be Linacoustic R, 1 ½" thick, 1.5 pcf, with a "K" value of 2.2 in. for a total "R" installed value of 6 or greater. Insulation shall withstand velocities of up to 5000 FPM and temperatures up to 250 degrees F
- F. Portions of duct receiving Duct Liner shall be completed with transverse joints neatly butted with no gaps or interruptions. The duct liner shall be adhered to the sheet metal with 100% coverage of adhesive and exposed leading edges and transverse joints coated with adhesive. Adhesive shall be a water based product. In addition, this shall be secured with mechanical fasteners which shall compress the liner sufficiently in place. The liner shall be cut to assure overlapped and compressed longitudinal corner joints. Application procedures shall comply with the recommendations of the Sheet

Metal and Air Conditioning Contractor's National Association's Duct Liner Application Standard, Second Edition.

- G. Ducts: Ducts shall be constructed, installed, sealed and insulated in accordance with the 2022 CMC. The above paragraph(s) shall supersede if more stringent.

## 2.10 TEMPERATURE CONTROLS

- A. Temperature controls shall be furnished as indicated in schematic Drawing on Plans including room thermostats, relays and other necessary combustion, operating and safety controls.
- B. Wiring and Conduit
1. Control wiring and conduit shall be the responsibility of this section and be installed as follows:
    - a. In equipment rooms/attics – Conductors shall be run in conduit. Final connection to equipment shall be flexible conduit.
    - b. Concealed in building construction (wall/inaccessible ceilings) - Conductors shall be run in conduit.
    - c. Roof mounted/exterior equipment yards – Conductors shall be in conduit. All flexible conduit shall be seal-tite with weatherproof connections. Equipment on grade and detached from the building a distance greater than 36" shall have underground control conduit routed to equipment.
    - d. Above accessible ceiling spaces – Control cable will be allowed to be installed without conduit in accessible areas above ceilings as follows:
      1. Cable is an approved type for the application.
      2. Cable is bundled/organized in management devices routed square with building lines (no diagonals) and kept clear of electrical devices (i.e., ballasts, transformers, etc.) that could cause interference.
      3. Conduit sleeves are provided between accessible ceiling spaces (i.e., across soffits, gypboard ceilings, etc.) as required to maintain future access to cable.
    - e. Cable routed in accessible ceiling spaces shall comply with EIA/TIA standards for communications cabling. Communication bus wire shall be W183C-2058Y Connect Air, yellow shielded cable.

- C. Electric wiring, conduit and other electric devices required to complete the installation of the temperature control systems shall comply with requirements as set forth in the Electrical Section of this Specification.
- D. After completion of the installation, the Contractor shall adjust thermostats, motors and other equipment provided under this Contract. He shall place them in complete operating condition subject to approval of the Architect.
- E. The Control System herein specified shall be free from defects in workmanship and material under normal use and service. If, within twelve (12) months from date of acceptance by the Architect, any of the equipment herein described is proved to be defective in workmanship or material, it will be adjusted, repaired or replaced free of charge by the Contractor.
- F. The final connections and supervision of control wiring and interlock wiring shall be the responsibility of this Contractor.
- G. The Contractor shall submit to the Architect for approval, the required number of shop drawings of the entire control system before starting Work.
- H. Upon completion of the Work, the Contractor will provide diagrammatic layouts of the Automatic Control Systems specified herein. Layouts shall show control equipment and the function of each item shall be indicated.
- I. The temperature control system shall be installed by persons in the direct employment of the temperature controls manufacturer(s) exclusive contracting representative. The Mechanical Contractor shall not install the temperature controls unless pre-approved by the Mechanical Engineer.

### **PART 3 - EXECUTION**

#### **3.1 SURFACE CONDITIONS**

- A. Examine the areas and conditions under which Work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

#### **3.2 COORDINATION**

- A. Coordinate as required with other trades to assure proper and adequate provision in the Work of those trades for interface with the Work of this Section.

#### **3.3 PREPARATION**



- A. Holes in concrete:
  - 1. Provide sleeves, accurately dimensioned and shaped to permit passage of items of this Section.
  - 2. Deliver such sleeves, with accurate setting drawings and setting information, to the trades providing the surfaces through which such items must penetrate, and in a timely manner to assure inclusion in the Work.
- B. Flashing:
  - 1. Where items of this Section penetrate the roof, outer walls, or waterproofing of any kind, provide under this Section base flashing and counterflashing required at such penetration.
  - 2. Provide on each pipe passing through the roof a 4 pound seamless lead flashing and counterflashing assembly.

### 3.4 GENERAL INSTALLATION REQUIREMENTS

- A. Conceal piping, ductwork, and equipment in spaces provided unless specifically shown otherwise. If spaces are inadequate, notify Architect in time to avoid unnecessary Work. Do not cut or notch structural members without specific approval of the Architect.
- B. Follow manufacturer's instructions on items not specifically covered in drawings and specifications. Report discrepancies to Architect for clarification before starting Work.

### 3.5 EQUIPMENT INTERFACE

- A. Provide required shut off valves, unions, and final connections of piping to the Work of this Section.
- B. For electrically operated equipment, verify the electrical characteristics actually available for the Work of this Section and provide equipment meeting those characteristics.

### 3.6 PAINTING

- A. Paint inside of air outlets and connecting plenums with one coat of flat black paint, or provide all such items factory prepainted.
- B. For roof-mounted equipment, provide factory pre-finish on exposed surfaces.

- C. Touch-up scratches and abrasions to be invisible to the unaided eye from a distance of 5 feet.

### 3.7 INSTALLATION OF DUCTWORK

- A. Ductwork shall be delivered to the Project site with surfaces clean and free of loose dirt and rust. Special care shall be exercised by the Contractor to store the duct in a clean area to prevent the accumulation of dirt prior to installation. Fabricated or partially fabricated duct sections shall not be stored in open fields or on dirt areas surrounding the construction site. Paved areas may be used, if available, provided adequate protection is provided to prevent the accumulation of dirt on duct surfaces. If possible, the Contractor should arrange to deliver duct to the project site and store on the floor of the area in which it is to be installed.
- B. Before installation of ductwork, the Contractor shall inspect each section of duct and wipe internal surfaces clean. At the end of each Work period, or when ends of duct are left installed for future extension, the open ends shall be tightly closed off with a plastic sheet and taped securely to the open end of the duct.
- C. Construct and install sheet metal in accordance with latest SMACNA recommendations. Provide variations in duct size and additional duct fittings as required and approved by the Architect at no extra cost to the owner.
- D. The throat radius of bends shall be 1-1/2 times the width of the duct. Provide turning vanes in any mitered turn greater than 45 degrees.
- E. Transition slopes shall be no less than one to five where space permits.
- F. Abrupt offsets in the duct system greater than 30 degrees will not be allowed.

### 3.8 TEMPERATURE CONTROL INSTALLATION

- A. Install wiring and tubing parallel to walls and floors and securely clipped to structure or mechanical system components. Group parallel runs for neat appearance.
- B. Install room thermostats and other control devices at 48 inches above finished floor unless a lower mounting height is required for access by handicapped.
- C. Upon completion of the installation calibrate all equipment and adjust controls for proper operation.

### 3.9 CONTROL DEVICE IDENTIFICATION LABELS

- A. Thermostats and Exhaust fan switches shall have labels mounted on or just above the control device labeled with the equipment being controlled. As an example, for a exhaust fan controlled by a switch the label would read “EXHAUST FAN # 1” or if a thermostat the label would read “AC-1”.
  - 1. Labels shall be 2" x 1" x 1/8" thick Formica/plastic engraving stock beveled on both sides and with two 3/16" diameter holes near the top uppermost tag corners.
  - 2. Labels shall be white with 3/8" high red engraved letters.
  - 3. Labels shall be attached to the equipment with adhesive.

### 3.10 WARRANTY

- A. The contractor shall warranty all of the systems for proper operation installed by the contractor for not less than one calendar year from date of project completion. This completion date shall be set by the Architect or owner.

### 3.11 SHOP DRAWINGS

- A. The Contractor shall prepare shop drawings covering duct systems, equipment and Mechanical Room piping systems. The drawings shall be prepared in 3/8" scale and shall be submitted to the Architect for approval prior to any fabrication. In preparing the shop drawings, the Contractor shall coordinate the location of duct, piping and equipment with the Work of other trades.

### 3.12 MECHANICAL SYSTEM START-UP RESPONSIBILITY

- A. Start up Mechanical Systems, and perform any such Work as may be required to adjust the systems to meet the requirements of the Contract Documents. Air distribution balancing shall be performed in accordance with Article "MECHANICAL SYSTEMS BALANCING".
- B. Install new clean specified filters in equipment containing filters immediately prior to owner occupancy. Contractor to bear all costs for this work.

### 3.13 MECHANICAL SYSTEMS BALANCING

- A. Testing and air balancing shall be performed by an independent balancing company certified by Associated Air Balance Council (AABC), National Environmental Balancing Bureau (NEBB) or Testing, Adjusting, and

Balancing Bureau (TABB). Testing and balancing shall be performed by a company other than the mechanical system installers/contractor. The name of the firm that the Contractor proposes to engage to perform this Work of balancing the system shall be submitted to the Engineer for approval prior to commencing the Work.

- B. After Systems have been tested as outlined, air and water flow rates shall be balanced, and control devices adjusted. Balance and testing shall not begin until systems have been completed and are in full working order. Upon completion of the balancing operation and prior to final acceptance of the systems, the balancing firm shall submit a report, with six (6) copies, certifying to the proper performance of the system for approval by the Mechanical Engineer.

1. The following information shall be included in the Air Side Report:

- a. Fan speeds.
- b. Motor current readings and voltage readings.
- c. Air quantities in CFM at supply, return, exhaust terminals, and outside air intakes, both at design value and actual measured value. Test and adjust each terminal to within +10% of design requirements.
- d. Air velocities in FPM at supply, return, and exhaust terminals at design value and actual measured value.
- e. Positive static pressure, negative and total pressures and total air quantities for each fan system.
- f. Equipment nameplate data.

END OF SECTION 23 00 00

**SECTION 23 00 13**  
**GENERAL MECHANICAL REQUIREMENTS**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

**A. Related Documents:**

1. The other Contract Documents complement the requirements of this Section.
2. Division 1 - General Requirements applies to the Work of this Section.
3. Where requirements of this Section exceed those in other Contract Documents, Contractor shall comply with the requirements of this Section.

**B. Codes and Regulations:**

1. In addition to complying with the specified requirements, comply with pertinent regulations of governmental agencies having jurisdiction.

**C. Included: Work includes, but is not limited to the following:**

1. Heating, Ventilating, Air Conditioning and System Balancing
2. Plumbing
3. Fire Protection
4. Carpentry and metal Work required for Work of this Section and not specifically shown under another Section. Openings in concrete or masonry construction shall be either core drilled or saw cut unless indicated otherwise on Drawings.
5. Excavation and Backfill
6. Coordination Drawings
7. Demolition:
  - a. The Demolition Plans were prepared for the convenience of the Contractor. The Engineer does not represent that all items, which may require demolition, have been shown. It shall be the responsibility of the Contractor to carefully examine the site and the Contract Documents and to perform all demolition and reconstruction, which may be required for the proper execution, and completion of work.

**D. Related Work:**

1. Painting (Division 9)
2. Cutting and Patching (Division 1)

3. Low voltage electrical control (Division 16)

1.2 DEFINITIONS

- A. Furnish: Purchase and deliver to job site in new condition.
- B. Install: Receive and store at job site until required; place secure and connect; furnish required appurtenances.
- C. Provide: Furnish and install as defined above.
- D. Section: Refers to a Section of these Specifications.
- E. Standards: The issue in effect as of the date of the contract documents.

1.3 PROJECT RECORD DRAWINGS

- A. Comply with pertinent provisions of Architectural Sections (Division 1).

1.4 SERVICE INTERRUPTIONS

- A. When Work of this Section requires temporary shutdown of existing systems for connections, the shutdown shall be made only during pre-arranged time agreeable to the Owner.

1.5 CORRELATION, INTERPRETATION AND INTENT OF CONTRACT DOCUMENTS

- A. The Mechanical Drawings are, in general, made to scale and the Contractor may obtain approximate distances and dimensions by scaling the Plans. It is distinctly understood, however, that it is done entirely at the Contractor's responsibility. Refer to Architect's Plans and Specifications for construction details, which will affect the Work and equipment. Examine the Architectural, Civil, Structural, Mechanical, Electrical, Landscape, Irrigation, Data, Fire Protection and Plumbing Plans and Specifications to ensure that this work does not conflict with the above trades. Plumbing, Mechanical and Electrical Plans are diagrammatic and, therefore, do not necessarily represent the exact installation. However, pipe sizing for utility services and ductwork are calculated per their respective codes and Standard Engineering Practice and shall be installed as sized from point of origin to terminal point. It shall remain the Contractor's responsibility to submit Shop Drawings if he/she has any questions about the final arrangement. Nothing on these Plans or Specifications shall be construed to permit work not conforming to all applicable codes and regulations.

## **PART 2 - PRODUCTS**

### **2.1 ACCESS PANELS**

- A. If not called for under other Sections, furnish Milcor, Elmdor, or Jay R. Smith access panels where shown on the Drawings or required for maintenance access to completed Work of this Section. Submit size, type, and location of proposed access panels not specifically shown, for review by Architect.
- B. Access panels shall be constructed of 16 gauge prime coated steel or stainless steel with screwdriver operated cam latch, concealed hinges, and fire rating equal to adjacent construction.
- C. Provide flush type doors with:
  - 1. Stainless steel finish for tiled surfaces.
  - 2. Prime coated finish for other surfaces.

### **2.2 FLASHING**

- A. Provide watertight flashing at all openings through exterior walls and roof. Refer to Architectural Drawings.

### **2.3 BELT DRIVES**

- A. All belts shall be "Vee" type, or approved equal. Sheaves shall be adjustable and shall be sized to drive fan at scheduled RPM when set at midpoint of adjustment range. All belt drive assemblies shall be rated at 150% of drive motor horsepower. OSHA approved belt guards shall be provided over all drive assemblies. The Contractor shall change any belts and drives as required to produce the specified CFM.

### **2.4 VIBRATION ISOLATION AND NOISE CONTROL**

- A. All fans, heating and ventilating units, air conditioning units, blowers and similar equipment shall be securely mounted to and/or supported from the structure.
- B. Isolate all bare water piping from structural members or hangers with "Trisolators" or submitted and approved equal insulating sleeves. Install hangers on outside of insulated jacket on all insulated lines.

### **2.5 WEATHERPROOFING**

- A. All equipment exposed to weather shall be protected by means of a suitable finish (i.e. paint). All fan cabinets, roof-mounted equipment, and ductwork shall be fabricated in such a manner to prevent leakage through seams and joints. Water rated, exterior hoods shall be provided over motors, belts, and other devices to insure against damage by water. At all locations where pipes and/or ducts penetrate exterior walls, or roofs, suitable rain tight flashing shall be provided.

## 2.6 PIPE WRAPPING

- A. All pipe, metal components, and joints buried in ground shall be primed and protected with 10-mil tape double wrapped or approved equal per IAPMO IS 13-2006. Before tape application, all bare pipe and fittings to be wrapped must be coated with pipe wrap primer. Stretch first layer of tape to conform to the surface while spirally half-lapping, apply a second layer, half-lapped and spiraled as the first layer with spirals perpendicular to first wrapping. In lieu of tape wrap, heat shrinkable 10-mil minimum thick polyethylene sleeve may be used.
- B. When applying tape, use only enough pull to cause the tape to properly conform to the irregular surfaces of the item. The proper amount of pull is reached when the tape surface is smooth without any wrinkles. Continue tape 4" above grade. End overlaps should point down. Tape shall be applied per manufacturer's installation instructions.

## 2.7 ELECTRIC MOTORS AND ELECTRICAL DEVICES

- A. All Electric motor current characteristics are as shown in equipment schedules on drawings and as specified hereinafter in this Specification. The Contractor shall refer to the Electrical Plans and shall confirm all motor voltage, amperage and phase characteristics before processing submittals or ordering equipment. If any equipment is installed different from the supplied electrical power, it is the contractor's responsibility to correct equipment to the required electrical characteristics.
- B. All electrical devices of a type normally listed by Underwriters Laboratories, Inc. shall bear U.L. label of approval.
- C. Motor starters shall be provided complete with properly sized thermal overload protection and other appurtenances necessary for motor control specified. Mount starter adjacent to equipment. See electrical drawing. Maintain minimum of 3' clearance to front of device.
- D. Motor Starters: Shall be NEMA I or III as appropriate, general purpose, weather-resistant, with watertight enclosure where required.



## 2.8 PAINTING AND FINISHING

- A. Provide the coating specified below unless otherwise specifically called for under Painting, Division 09900. Exclude non-ferrous items, stainless steel, items to be insulated, and factory-finished items. Conform to requirements of the Painting Section where requirements are not specified in this Section.
- B. All materials used, except as otherwise specified in carrying out the provisions of the contract, are to be Fuller-O'Brien manufacturer or approved equal. Numbers given below are Fuller-O'Brien Company designation unless noted otherwise.
1. Primer coat for all exterior and interior materials: 1 Coat - Primer #66850
  2. Finish coats as listed below:

|                                               |                              |
|-----------------------------------------------|------------------------------|
| Exterior concrete and concrete block          | 2 Coats – Semi-Gloss #664XX  |
| Interior concrete and concrete block          | 2 Coats – Semi-Gloss #214XX  |
| Exterior metal                                | 2 Coats – Semi-Gloss #664XX  |
| Interior metal                                | 2 Coats – Semi-Gloss #214XX  |
| Exterior galvanized metal                     | 2 Coats – Semi-Gloss #664XX  |
| Exterior stucco                               | 2 Coats – Flat #668XX        |
| Interior of Grilles, Diffusers, and Registers | 1 Coat – Flat (black) #31202 |

3. Furnish equipment with factory or field-applied prime coat and finish coat of enamel. Restore damaged finishes to match original.

## PART 3 - EXECUTION

### 3.1 DEMOLITION

- A. Remove all heating, ventilation, and air conditioning equipment, fans, ductwork, supply, return and exhaust grilles, supports, controls including thermostats, control wire, conduits, control panels and any related equipment as indicated or noted on plans. Dispose of as directed by Owner.
- B. Remove all plumbing fixtures and fittings, water piping, gas piping, equipment, and supports as indicated on plans. Dispose of as directed by Owner.
- C. Any piping or ductwork to be reused to complete the project shall be capped immediately after removal of the demolished piping or ductwork.
- D. All existing piping and ductwork "to remain" shall be firmly secured with temporary supports approved by the Architect until final supports or installation is complete.

- E. Any waste piping including vents and drains, to be reused to complete the project shall be capped immediately after removal of the demolished piping. Cap or cover any open drains "to remain" prior to demolition work.
- F. All existing water and waste pipe "to remain" shall be flushed out prior to connection to any new work. All ductwork shall be blown out prior to the installation of new diffusers and grilles.
- G. All mechanical or plumbing equipment or fixtures to be reused shall be stored and protected in a clean area. The items shall be thoroughly cleaned before reinstallation.
- H. Any existing piping in a demolished area, and not shown on the plans, shall be rerouted and reconnected to piping outside of the demolished area.

### 3.2 GENERAL EQUIPMENT INSTALLATION REQUIREMENTS

- A. Install equipment to provide neat appearance, required manufacturer's access, and required space to allow replacement or maintenance. Provide bases, supports, anchor bolts, and other items required to install equipment. Installation shall be level and braced per CBC.
- B. Equipment shall operate quietly and without objectionable vibration. Excessive vibration, other than from specified equipment operating at optimum conditions, shall be the Contractor's responsibility and shall be eliminated as directed by Architect.

### 3.3 COORDINATION OF WORK

- A. Coordinate Work of this Section with Work of other Sections to avoid conflicts. If required, provide shop drawings and submit to Architect for approval.
- B. Insure that Work of other Sections is suitable to accommodate Work of this Section.

### 3.4 ADEQUACY OF FURRING

- A. Conceal piping and ductwork in spaces provided unless specifically shown otherwise. If spaces are inadequate, notify Architect prior to ordering materials and fabrication of components.

### 3.5 PROTECTION AND CLEANING

- A. Protect equipment from dirt, moisture, and mechanical damage during construction. Restore or replace damaged equipment to original condition.
- B. Keep interior of piping and ductwork free of foreign material during construction. Flush piping systems with test medium specified under Piping Tests before installing equipment and appurtenances or making final connections.

### 3.6 CLOSING-IN OF UNINSPECTED WORK

- A. Do not conceal or cover Work before tests and observations are completed. Uncover Work prematurely closed in and repair resulting damage to all Work, if requested by Architect, Engineer, or Project Inspector.

### 3.7 DAMAGE

- A. Repair or replace items damaged by leaks or overflow from Work provided under this Section and for any damage to any part of the project site, for a period of 1 year after notice of completion date. This is in addition to and not a limitation of other rights the Owner may have against the contractor under the Contract Documents.

### 3.8 PAINTING AND FINISHING

- A. The contractor shall examine carefully all surfaces to be finished under the contract; and before beginning any of his work shall see that the work of other trades has been left or installed in a workmanlike condition to receive paint, or a particular finish.
- B. The contractor shall take the necessary steps to protect his work and the work of other contractors during the time his work is in process and the contractor shall be responsible for any and all damage to the work or property of other contractors caused by his employees or by himself.
- C. Provide protective covers or drop cloths to protect floors, fixtures, and equipment. Exercise care to prevent paint being spattered on to surfaces which is not to be painted. Surfaces, from which such paint cannot be satisfactorily removed, shall be painted or repainted, as required to produce a finish satisfactory to the Architect.
- D. Cracks, holes, or imperfections in concrete or plaster are to be filled with patching plaster and smoothed off to match adjoining surfaces.

- E. All surfaces shall be in a proper condition to receive finish. Clean surfaces as necessary to receive paint. Remove all grease from metal surfaces before painting.
- F. Each coat of paint shall be applied at proper consistency and brushed evenly, free of brush marks, sags, runs, and with no evidence of poor workmanship. Color between coats of paint shall differ; (Color variations between coats should be enough to impair hiding.) Care shall be exercised to avoid lapping of paint on glass or hardware. Paint to be sharply cut to lines. Finished paint surfaces to be free from defects or blemishes.
- G. Exposed piping, ducts, and mechanical equipment (except for factory finished items) shall be painted. Exposed piping, except for identification banding, shall be painted to match surfaces adjacent. Each coat to be inspected when dry and subsequent coat not to be applied until approval received.
- H. Paint all surfaces visible through grille, diffuser and register faces, flat black.
- I. The contractor shall store all painting materials and equipment outside of the building. The receiving and moving of all paint materials and mixing shall be done outside of the building. Any other arrangements shall be made only with Architects approval.
- J. All necessary precautions shall be taken to prevent fire. Rags, waste, etc., soiled with paint or cleaning material, shall be removed from the premises at the end of each day's work.

### 3.9 MECHANICAL SYSTEM TESTING

- A. Furnish all test pumps, gauges, and equipment. Test all safety controls and devices.
- B. For air tests, install a calibrated test pressure gauge in the piping system to observe any loss in pressure. Calibrate the test pressure gauge with a dead weight tester within 15 days before use and certify by initial and date on a sticker applied to the dial face. Maintain the required test pressure for the time indicated. Brush joints with a soapy water solution to check for leaks if the required pressure cannot be maintained.
- C. After any test, repair all leaks found as directed and re-test as necessary until the system is proven tight.
- D. Before applying test pressure to any piping systems the Contractor shall be responsible for isolating all equipment e.g. control valves, regulators, relief devices, tanks and any other line accessories, which would otherwise be damaged by the test pressure.

1. Soil, Waste, Vent, and Condensate Drainage:
    - a. Entire System: Tightly close all openings except the highest one. Fill to overflowing with water.
    - b. Sections of System: Tightly close all openings except the highest opening of the section under test. Fill section with water to test each section with a minimum 10-foot head of water except for the uppermost 10 feet of the system.
    - c. Allow to stand for (4) hours or longer, as required to complete the inspection.
  2. Domestic Water: Fill with water and test at 150 psig. Retain for (4) hours.
  3. Gas Piping: Air test to pressure equal to one and one-half times the design pressure, but in no case less than 50 psig. Retain for four hours.
- E. After all Systems have been tested as outlined, all flow rates shall be balanced, and all control devices adjusted. See Section 23 00 00.
- F. The equipment and installations shall be operated by the Contractor and he shall demonstrate that all Systems are performing according to the requirements of the Plans and Specifications and to the satisfaction of the Architect, Engineer and Owner.
- G. Acceptance Testing Requirements: For applicable acceptance tests see the energy compliance documentation. Acceptance testing shall be the responsibility of the mechanical contractor and shall be performed by an Acceptance Testing Technician who has been certified by a California Energy Commission approved Acceptance Test Technician Certification Provider Program. The Test and Balance Contractor can also be the Acceptance Testing Technician

### 3.10 CUTTING AND PATCHING

- A. The Contractor shall do all cutting and patching which may be required for the installation of the Work under this Division of the Specifications. Patching shall be of the same quality, materials and finish as, and shall match accurately, all surrounding construction. No cutting of the Structure shall be permitted without the approval of the Architect.
- B. Wherever concrete or paved surfaces are cut to provide for the installation under this Section, the Contractor shall restore the surfaces to their original condition. Subgrade materials, concrete, and paving materials, along with

the placement of same, shall be in accordance with the respective Sections of this Specification as they apply to the installation of such material.

**3.11 EXCAVATION AND BACKFILL: (BURIED PIPES WITHIN THE BUILDING WALLS AND TO 5 FEET FROM THE BUILDING.)**

- A. Dig trenches straight and true to line and grade; bottom shall be left smoothed of rock points. Pipe shall be supported for the entire length on undisturbed, original earth. The minimum trench width shall be 16" and all pipe shall be 2 feet below the finished grade, minimum, wherever conditions permit. Sewer pipes to be below grade as necessary to meet the slope and invert on the Drawing. Whenever substantial variations of pipe bury is indicated by field conditions, the proposed changes in depth of bury shall be submitted, in writing, to the Architect for approval.
- B. All piping shall be laid on a bed of clean dry sand not less than 6" thick. The space between the pipe and the sides of the trench shall be backfilled with clean dry sand to a point 6" above the crown of the pipe. Both sides of the pipe shall be filled at the same time.
- C. The remainder of the trench shall be backfilled with native soil in lifts no greater than 12" and shall be mechanically compacted by tamping so to maintain a minimum relative dry density of 95%, determined by California Impact Test Method No. 216.
- D. All backfilling shall be brought flush with finished subgrade.
- E. Excess material shall be removed from the site. Trenches shall be backfilled immediately after approval.

**3.12 INSTALLATION OF PIPING, DUCTWORK AND EQUIPMENT**

- A. The installation of piping, ductwork, and equipment shall be made in such a manner to clear beams and obstructions. Do not cut into or reduce the size of plates or any load carrying members without approval of the Architect. Check Drawings and Work of others to prevent interference. Deviations of the Work determined by the Architect shall be installed by the Contractor without additional cost.
- B. Install piping and ductwork promptly, cap or plug open ends of pipe. No piping shall be permanently covered by construction before inspection and approval. Piping and ductwork shall be installed in accordance with best practice and recommendations of the manufacturer.
- C. Conceal piping and ductwork unless indicated otherwise. Inspect each piece of pipe, tubing, fittings, and equipment for defects and obstructions.

Remove defective material from site. Install piping generally level, free of traps and unnecessary bends to conform with building requirements, and provide space for other work. Piping to be free of unusual noises. Avoid any possible galvanic action by isolating dissimilar metals with suitable Dielectric Insulating Fittings.

- D. Unless called for otherwise, hereinafter in this Specification or by specific detail on the Drawings, all water pipes in contact with structure and/or hangers shall be suitably isolated. In the case of uninsulated pipe, "Trisolators" or equal shall be used.
- E. Protect enameled or polished equipment from damage, tool marks, etc.

### 3.13 STERILIZATION OF PIPES

- A. After preliminary purging of the Systems, the entire domestic potable water system pertaining to Work under this Contract shall be chlorinated in accordance with American Water Works Association, State of California Health and Safety Code procedure for disinfecting water mains. A thorough flushing operation shall be run upon completion of sterilization. Contractor shall then arrange with local health authority for test on mains and water systems and provide three (3) copies of test results to the Architect.

### 3.14 EQUIPMENT IDENTIFICATION TAGS

- A. Major pieces of equipment shall include, but are not limited to: water heaters, air conditioners, unit heaters, supply and exhaust fans, and shall be tagged.
  - 1. Tags shall be 2" x 2" x 1/8" thick Formica/plastic engraving stock beveled on both sides and with two 3/16" diameter holes near the top uppermost tag corners.
  - 2. Tags shall be white with 3/8" high red engraved letters.
  - 3. Tags shall be attached to the equipment with bolts, screws or chains as per valves.
  - 4. Tags shall have the following information:
    - a. Equipment number and nomenclature corresponding to the information on the mechanical contract drawings.
    - b. Examples:

|    |    |    |
|----|----|----|
| WH | EF | AC |
| 1  | 2  | 3  |

### 3.15 IDENTIFICATION OF PIPING SYSTEMS

**A. Building Systems:**

1. Piping systems installed anywhere within the scope of the Work shall be identified as to contents using a color banding and marking system as outlined and in compliance with Federal OSHA requirements.
2. This Work includes furnishing and application of all snap-around and/or self-sticking pipe markers. Formica valve tags, chains, wires, and related materials proper for the completion of the Work.
3. Pipe markers shall be permanently shaped vinylite plastic snap-around pipe markers as manufactured by Seton Nameplate Corporation, Wilmington Plastic Company, or approved equal.
4. A maximum of four basic background colors shall be used and they shall conform to the American Standards Association Standard A13.1, "Scheme For Identification of Piping Systems" The names of materials (pipe contents) shall be superimposed on these ANSI background colors. Work legends shall conform to ANSI A13.1 to avoid confusion and mistakes. Basic background colors and content classification are:

|             |                      |
|-------------|----------------------|
| Yellow      | Dangerous Materials  |
| Red         | Fire Protection      |
| Bright Blue | Protective Materials |
| Green       | Safe Materials       |

5. Pipe marking and installation shall be as follows:
  - a. Apply "Plastic Pipe Marker" at each valve to show proper identification of pipe contents.
  - b. Use an "Arrow Marker" with each "Pipe Content Marker". The Arrow shall always point away from the "Pipe Marker" and in the direction of the flow.
  - c. If flow can be in both directions, use a double-header "Arrow Marker".
  - d. Apply "Pipe Marker" and "Arrow Marker" at every point of pipe entry and exit where the line goes through the wall, floor or roof.
  - e. Apply "Pipe Marker" and "Arrow Marker" on each riser and "T" joint.
  - f. Apply "Pipe Marker" and "Arrow Marker" every 50 feet on long continuous lines.
  - g. Identifying long continuous lines with "Pipe Marker and "Arrow Marker at every bay or aisle within the building. All branch runs from mains on the roof shall be identified with "Pipe Marker" and "Arrow Marker" at the point of takeoff.
  - h. Apply "Markers" on the two lower quarters of the pipe where view is unobstructed. In this position "Markers" are read at a



glance from ground floor level and dust will not obscure the "Marker". Roof-mounted piping "Markers" shall be so located that they can be read from a standing position on the roof.

- i. All identification markers located out of doors and exposed to the sun and the elements shall receive one coat of clear lacquer after application to the pipe, to seal edges and to act as a protective coating.
- j. Each "Arrow Marker" must have the same ANSI background color as its companion "Pipe Marker". Arrow must point away from "Pipe Marker" and indicate direction of flow.
- k. "Pipe Markers" shall be guaranteed to stay on pipe systems for a period of not less than five years.

6. Following is a list of, but not necessarily limited to, the more commonly used piping systems that require identification "Pipe Markers" and "Arrow Markers".

| <b>Abbreviations<br/>on Drawings</b>                                                     | <b>Wording to Put on Pipe<br/>Marker</b> | <b>ANSI Color<br/>Background</b> |
|------------------------------------------------------------------------------------------|------------------------------------------|----------------------------------|
| CW                                                                                       | Domestic Cold Water                      | Green                            |
| DHWS                                                                                     | Domestic Hot Water Supply                | Yellow                           |
| DHWR                                                                                     | Domestic Hot Water Return                | Yellow                           |
| S                                                                                        | Gravity Sewer or Drain                   | Green                            |
| V                                                                                        | Vent                                     | Green                            |
| G                                                                                        | Natural Gas                              | Yellow                           |
| A                                                                                        | Compressed Air                           | Blue                             |
| All lettering shall be black on the yellow background and white on all other background. |                                          |                                  |

### 3.16 SEISMIC BRACING

- A. It shall be required that pipes, ducts and conduits be supported and braced per the SMACNA "Seismic Restraints Manual Guidelines for Mechanical Systems", 2006 Edition.
- B. When the SMACNA "Seismic Restraint Manual Guidelines for Mechanical Systems" does not specifically address the size of duct or pipe to be braced, the following shall apply:
  - 1. All ducts shall be braced and guyed to prevent lateral or horizontal swing to the satisfaction of the Architect, Engineer, and State Inspector.
  - 2. All pipes shall be braced and guyed to prevent lateral or horizontal swing to the satisfaction of the Architect, Engineer, and State Inspector. Absolutely, no "Plumber's Tape" shall be used anywhere on this project.

**3.17 OPERATION AND INSTRUCTION**

- A. The Contractor shall furnish competent Technicians to supervise start-up operations of equipment specified by the Architect or Engineer and to instruct Owner's operators. The Contractor shall furnish six complete sets of operating instructions and service manuals to the Architect.
- B. Instruction period shall be started after instruction books and service manuals have been submitted to and approved by the Architect and shall be at hours (regular and non-regular) arranged by the Architect.
- C. Service manuals shall include oiling, cleaning, and servicing data, compiled in clearly and easily understood form and in a durable binder. Data shall show all serial numbers of every piece of equipment and complete list of replacement parts.

**3.18 WARRANTY**

- A. The contractor shall warranty all of the systems for proper operation installed by the contractor for not less than one calendar year from date of project completion. This completion date shall be set by the Architect or Owner.

END OF SECTION 23 00 13

## **SECTION 260010**

### **BASIC ELECTRICAL REQUIREMENTS**

#### **PART 1 - GENERAL**

##### **1.1 SUMMARY:**

- A. This section covers general work of all sections under Division 26.
- B. Provide a complete working electrical installation with all equipment called for in proper operating condition. Documents do not undertake to show or list every item to be provided. When an item not shown or listed is clearly necessary for proper operation of equipment which is shown or listed, provide the item which will allow the system to function properly at no increase in contract price.
- C. Furnish and install all required in-place equipment, conduits, conductors, cables and any miscellaneous materials for the satisfactory interconnection and operation of all associated electrical systems.
- D. The Division 26 Specifications and drawings are complementary; what is called for by one is binding, as if called for by both. Items shown on the drawings are not necessarily included in the specifications and vice versa.
- E. Use the more stringent requirement when specified materials or methods exceed the applicable code standards.
- F. The drawings that accompany the division 26 specifications are diagrammatic. They do not show every offset, bend, conduit body, elbow or junction box that may be required to install work in the space provided and avoid conflicts. Follow the drawings as closely as is practical and install additional bends, offsets and elbows where needed by local job site conditions. Provide necessary junction boxes to meet code regulations for the allowed number conduit bends. The right is reserved to make minor field order changes in outlet location prior to roughing-in without additional cost to the owner.
- G. All sections of Division 26, Electrical Specifications, are interrelated. Use Division 26, in its entirety, when interpreting any material, method or direction listed in any section.
- H. When specified materials or methods exceed the applicable code standards, use the materials or methods specified. When materials or methods specified fall below applicable code standards, replace or modify materials or methods to meet applicable code standards. Do not provide materials or employ methods that do not conform to applicable codes and standards.

##### **1.2 RELATED WORK:**

**Section 260010 - Page 2**  
**Basic Electrical Requirements**

- A. This Section provides the basic Electrical Requirements which supplement the General Requirements of Division 01 and apply to all Sections of Division 26.

**1.3 SUBMITTALS:**

- A. As specified in Division 01. Submit to the State Representative shop drawings, manufacturer's data and certificates for equipment, materials and finish, and pertinent details for each system specified. Information to be submitted includes manufacturer's descriptive literature of cataloged products, equipment, drawings, diagrams, performance and characteristic curves as applicable, test data and catalog cuts. Obtain written approval before procurement, fabrication, or delivery of the items to the job site. Partial submittals are not acceptable and will be returned without review. Furnish manufacturer's name, trade name, catalog model or number, nameplate data, size, layout dimensions, capacity, project specification and paragraph reference, applicable Federal, Industry and Technical Society Publication References, and years of satisfactory service of each item required to establish contract compliance. Photographs of existing installations and data submitted in lieu of catalog data are not acceptable and will be returned without approval.
- B. Forward all submittals in related groups. Individual or incomplete submittals are not acceptable.
- C. Identify each item by manufacturer, brand, trade name, number, size, rating, or whatever other data is necessary to properly identify and check materials and equipment.
- D. Identify each submittal item by reference to specification section paragraph in which item is specified or drawing and detail number.
- E. Organize submittals in same sequence as they appear in specification sections, articles or paragraphs.
- F. Electronic submittals shall be allowed provided they are acceptable per Division 01 and are formatted, organized and coordinated per this section. PDF format is acceptable. Interconnection drawings, training documents, test procedures, and O&M manuals as applicable shall be submitted timely as to not delay the project.
- G. Internal wiring diagrams of equipment shall show wiring as actually furnished for this project with all optional items clearly identified as included or excluded. Clearly identify external wiring connections. Identify and obliterate superfluous material.
- H. Organize submittals for equipment and items related to each specification section together as a package.

- I. Proposed substitutions of products will not be reviewed or approved prior to awarding of the Contract.
- J. Substitutions shall be proven to the State's Representative to be equal or superior to the specified product. State's Representative decision is final. The Contractor shall pay all costs incurred by the State's Representative in reviewing and processing any proposed substitutions whether or not a proposed substitution is accepted.
- K. If a proposed substitution is rejected, the contractor shall furnish the specified product at no increase in contract price.
- L. If a proposed substitution is accepted, the contractor shall be completely responsible for all dimensional changes, electrical changes, or changes to other work which are a result of the substitution. The accepted substitution shall be made at no additional cost to the owner or design consultants.
- M. Re-submittals will be reviewed for compliance with comment made on the original submittal only and should be marked with a resubmittal number and dated. Contractor shall respond in writing to all comments made on submittal review and identify how comment was resolved. Partial re-submittals (that do not address all comments) may be returned without review at the discretion of the State's Representative.
- N. The contractor shall coordinate submittals with the work so that the project will not be delayed. This coordination shall include scheduling the different categories of submittals, so that one will not be delayed for lack of coordination with another. Time extensions will not be allowed due to failure to properly schedule submittals.

**1.4 QUALITY ASSURANCE:**

- A. Codes: All electrical equipment and materials, including installation and testing, shall conform to the latest editions following applicable codes:
  - 1. California Electrical Code (CEC).
  - 2. Occupational Safety and Health Act (OSHA) standards.
  - 3. California Building Code (CBC)
  - 4. California Fire Code (CFC)
  - 5. National Fire Protection Association (NFPA)
  - 6. All applicable local codes, rules and regulations.
  - 7. Electrical Contractor shall possess a C-10 license and all other licenses as may be required. Licenses shall be in effect at start of this contract and be maintained throughout the duration of this contract.
- B. Variances: In instances where two or more codes are at variance, the most restrictive requirement shall apply.

**Section 260010 - Page 4**  
**Basic Electrical Requirements**

- C. Standards: Equipment shall conform to applicable standards of American National Standards Institute (ANSI), Electronics Industries Association (EIA), Institute of Electrical and Electronics Engineers (IEEE), and National Electrical Manufacturers Association (NEMA).
  - D. Underwriter Laboratories (UL) listing is required for all equipment and materials where such listing is offered by the Underwriters Laboratories. Provide service entrance labels for all equipment required by the CEC to have such labels.
  - E. The electrical contractor shall guarantee all work and materials installed under this contract for a period of one (1) year from date of acceptance by owner. Any electrical gear that is set early and used during construction shall not reduce the warranty in any form. The warranty shall begin when the equipment is turned over to the owner at substantial completion.
  - F. All work and materials covered by this specification shall be subject to inspection at any and all times by representatives of the owner. Work shall not be closed in or covered before inspection and approval by the owner or his representative. Any material found not conforming with these specifications shall, within 3 days after being notified by the owner, be removed from premises; if said material has been installed, entire expense of removing and replacing same, including any cutting and patching that may be necessary, shall be borne by the contractor.
- 1.5 CONTRACT DOCUMENTS:
- A. Drawings and Specifications:
    - 1. In the case of conflict between the drawings and specifications, the specifications shall take precedence.
    - 2. Drawings and specifications are intended to comply with all law, ordinances, rules and regulations of constituted authorities having jurisdiction, and where referred to in the Contract Documents, said laws, ordinance, rules and regulations shall be considered as a part of said Contract Documents within the limits specified. The Contractor shall bear all expenses of correcting work done contrary to said laws, ordinance, rules and regulations if the Contractor knew or should have known that the work as performed is contrary to said laws, ordinances, rules and regulations and if the Contractor performed same (1) without first consulting the State's Representative for further instructions regarding said work and/or (2) disregarded the State's Representative instructions regarding said work.
  - B. Drawings: The Electrical Drawings shall govern the general layout of the completed construction.

1. Locations of equipment, panels, pullboxes, conduits, stub-ups, ground connections are approximate unless dimensioned; verify locations with the State's Representative prior to installation. For purposes of clarity, legibility, drawings are essentially diagrammatic.
2. Review the Drawings and Specification Divisions of other trades and perform the electrical work that will be required for those installations.
3. Should there be a need to deviate from the Electrical Drawings and Specifications, submit written details and reasons for all changes to the State Representative for approval.
4. The general arrangement and location of existing conduits, piping, apparatus, etc., is approximate. The drawings and specifications are for the assistance and guidance of the contractor, exact locations, distances and elevations are governed by actual field conditions. Accuracy of data given herein and on the drawings is not guaranteed. Minor changes may be necessary to accommodate work. The contractor is responsible for verifying existing conditions. Should it be necessary to deviate from the design due to interference with existing conditions or work in progress, claims for additional compensation shall be limited to those for work required by unforeseen conditions as determined by the State Representative.
5. Dimensions, location of doors, partitions, and similar physical features shall be taken from architectural drawings for exact location of outlets to center with Architectural features, panels, etc., at the approximate location shown on Electrical drawings.
6. Verify dimensions and the correct location of equipment and coordinate with other trades for any requirement before proceeding with the roughing-in of connection.
7. Mounting heights of brackets, outlets, etc., shall be as required to suit equipment served.
8. Drawings indicate, generally, routes of all branch circuits. All runs to panels are indicated as starting from nearest outlet, pointing in direction of panel. Continue all such circuits to panel as though routes were indicated in their entirety.
9. All scaled and figured dimensions are approximate of typical equipment of the class indicated. Before proceeding with any work, carefully check and verify all dimensions, sizes, etc., with the drawings to see that the equipment being installed will fit into the spaces provided.
10. Access to Equipment: Locate starters, switches, receptacles, and pull boxes to provide easy access for operation, repair, and maintenance, and if concealed, provide layout of access doors.
11. Circuit "tags" on the electrical drawings in the form of arrows are used to indicate home runs of raceways to electrical distribution points. These tags show the circuits in each home run and the panel designation. Do not combine circuits other than those shown on the drawings without approval by the States Representative. Show the actual circuit numbers

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on the finished record drawing, and on the panel directory card. Provide an insulated grounding conductor in every power circuit.

12. All drawings and divisions of these specifications shall be considered as whole. The contractor shall report any apparent discrepancies to the State Representative prior to submitting bids.
13. The contractor shall be held responsible to have examined the site and compared it with the specifications and plans and to have satisfied himself as to the conditions under which the work is to be performed. He shall be held responsible for knowledge of all existing conditions whether or not accurately described. No subsequent allowance shall be made for any extra expense due to failure to make such examination.

**1.6 COORDINATION:**

- A. Coordinate the electrical work with the other trades, code authorities, utilities and the State's Representative.
- B. Contractor shall pay all inspection and other applicable fees and procure all permits necessary for the completion of this work.
- C. Where connections must be made to existing installations, properly schedule all the required work, including the power shutdown periods.
- D. When two trades join together in an area, make certain that no electrical work is omitted.
- E. Verify the physical dimension of each item of electrical equipment to fit the available space. Contractor is responsible for coordinating electrical equipment space requirements with the allotted space provisions, and access routes through the construction area.
- F. Coordinate underground work with other contractors working on the site. Perform coordination with contractors installing storm sewer, sanitary sewer, water and irrigation lines, etc., to avoid conflicts. Common trenches may be used with other trades, provided clearances required by codes and ordinances are maintained.

**1.7 JOB CONDITIONS:**

- A. Operations: Perform all work in compliance with Division 01.
  1. Keep the number and duration of power shutdown periods to a minimum.
  2. Show all proposed shutdowns and their expected duration on the construction schedule. Schedule and carry out shutdowns so as to cause the least disruption to operation of the Owner's facilities.



3. Carry out shutdown only after the schedule has been approved, in writing, by the owner. Submit power interruption schedule 15 days prior to date of interruption.
  - B. Construction Power: The contractor shall make all arrangements and pay the costs thereof for temporary services required during construction of the project, such as temporary electrical power and telephone service.
  - C. Upon completion of the project, remove all temporary services, equipment, material and wiring from the site as the property of the contractor.
  - D. Storage: Provide adequate storage for all equipment and materials which will become part of the completed facility so that it is protected from weather, dust, water, or construction operations.
- 1.8 DAMAGED PRODUCTS:
- A. Notify the State's Representative in writing in the event that any equipment or material is damaged. Obtain approval from the State's Representative before making repairs to damaged products.
  - B. Protect from loss or damage. Replace lost or damaged materials and equipment with new at no increase in contract sum.
  - C. Protect equipment from weather, moisture and dust by appropriate covering. Provide and maintain heating within equipment environment to prevent condensation.
- 1.9 LOCATIONS:
- A. General: Use equipment, materials and wiring methods suitable for the types of locations in which they are located.
  - B. Dry Locations: All those indoor areas which do not fall within the definition below for Wet Locations and which are not otherwise designated on the Drawings.
  - C. Wet Locations: All locations exposed to the weather, whether under a roof or not, unless otherwise designated on the Drawings.
- 1.10 SAFETY AND INDEMNITY:
- A. The Contractor is solely and completely responsible for conditions of the job site including safety of all persons and property during performance of the work. This requirement will apply continually and not be limited to normal working hours. The contractor shall provide and maintain throughout the work site proper safeguards including, but not limited to, enclosures, barriers, warning signs, lights, etc. to prevent accidental injury to people or damage to property.

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- B. No act, service, drawing review or construction review by the State, the State's Representative or their Consultants is intended to include reviews of the adequacy of the Contractors safety measures in or near the construction site.
- C. The Contractor performing work under this Division of the Specifications shall hold harmless, indemnify, and defend the Owner, the Engineer, their consultants, and each of their officers, agents and employees from any and all liability claims, losses, or damage arising out of or alleged to arise from bodily injury, sickness, or death of a person or persons and for all damages arising out of injury to or destruction of property arising directly or indirectly out of or in connection with the performance of the work under this Division of the Specifications, and from the Contractor's negligence in the performance of the work described in the construction contract documents, but not including liability that may be due to the sole negligence of the State, the State's Representative, their Consultants or their officers, agents and employees.
- D. If a work area is encountered that contains hazardous materials, the contractor is advised to coordinate with the State and it's abatement consultant for abatement of hazardous material by the State's Representative. "Hazardous materials" means any toxic substance regulated or controlled by OSHA, EPA, State of California or local rules, regulations and laws. Nothing herein shall be construed to create a liability for the State's Representative regarding hazardous materials abatement measures, or discovery of hazardous materials.

**1.11 ACCESS DOORS:**

- A. The contractor shall install access panels as required where floors, walls or ceilings must be penetrated for access to electrical, control, fire alarm or other specified electrical devices. The minimum size panel shall be 14" x 14" in usable opening. Where access by a service person is required, minimum usable opening shall be 18" x 24".
- B. All access doors installed lower than 7'-0" above finished floor and exposed to public access shall have keyed locks.
- C. Where specific information or details relating to access panels differ from Division 26 paragraph 1.11 of these specifications, or shown on the electrical drawings and details or under other Divisions of work, those requirements shall supersede these specifications.

**1.12 ARC FLASH:**

- A. The contractor shall install a clearly visible arc flash warning to the inside door of all panelboards and industrial control panels, as well as to the front of all switchboards and motor control centers that are a part of this project.

- B. The warning shall have the following wording: line 1 "WARNING" (in large letters), line 2 "Potential Arc Flash Hazard" (in medium letters), line 3 & 4 "Appropriate Personal Protective Equipment and Tools required when working on this equipment".

## **PART 2 - PRODUCTS**

### **2.1 STANDARD OF QUALITY:**

- A. Products that are specified by manufacturer, trade name or catalog number establish a standard of quality and do not prohibit the use of equal products of other manufacturers provided they are established to be equal to the specified product and approved by the State Representative prior to installation.
- B. Material and Equipment: Provide materials and equipment that are new and are current products of manufacturers regularly engaged in the production of such products. The standard products shall have been in satisfactory commercial or industrial use for two years prior to bid opening. The two-year period includes use of equipment and materials of similar size under similar circumstances. For uniformity, only one manufacturer will be accepted for each type of product.
- C. Service Support: Submit a certified list of qualified permanent service organizations including their addresses and qualification for support of the equipment. These service organizations shall be convenient to the equipment installation and able to render service to the equipment on a regular and emergency basis during the warranty period of the contract.
- D. Manufacturer's Recommendations: Where installation procedures are required to be in accordance with manufacturer's recommendations, furnish printed copies of the recommendations prior to installation. Installation of the item shall not proceed until recommendations are received. Failure to furnish recommendation shall be cause for rejection of the equipment or material.

### **2.2 NAMEPLATES:**

- A. For each piece of electrical equipment, provide a manufacturer's nameplate showing his name, location, the pertinent ratings, the model designation, and shop order number.
- B. Identify each piece of equipment and related controls with a rigid laminated engraved plastic nameplate. Unless otherwise noted, nameplates shall be melamine plastic 0.125 inch thick, white with black center core. Surface shall be matte finish. Corners shall be square. Accurately align lettering and engrave into the core. Minimum size of nameplates shall be 0.5 by 2.5 inches unless otherwise noted. Where not otherwise specified, lettering shall be a minimum of 0.25 inch high normal block style. Engrave nameplates with the

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inscriptions indicated on the Drawings and, if not so indicated, with the equipment name. Securely fasten nameplates in place using two stainless steel or brass screws.

**2.3 FASTENERS:**

- A. Fasteners for securing equipment to walls, floors and the like shall be either hot-dip galvanized after fabrication or stainless steel.

**2.4 FINISH REQUIREMENTS:**

- A. Equipment: Refer to each electrical equipment section of these Specifications for painting requirements of equipment enclosures. Repair any final paint finish which has been damaged or is otherwise unsatisfactory, to the satisfaction of the State's Representative.
- B. Wiring System: In finished areas, paint all exposed conduits, boxes and fittings to match the color of the surface to which they are affixed.

**PART 3 – EXECUTION**

**3.1 GENERAL METHODS**

- A. Examine site related work and surfaces before starting work on any section.
- B. Report to the State's Representative, in writing, conditions which will prevent proper execution of this work.
- C. Beginning work of any section without reporting unsuitable conditions to the State's Representative constitutes acceptance of conditions by the contractor.
- D. Perform any required removal, repair or replacement of this work caused by unsuitable conditions at no additional cost to owner.

**3.2 WORKMANSHIP:**

- A. Ensure that all equipment and materials fit properly in their installation.
- B. Perform any required work to correct improperly fit installation at no additional expense to the State.
- C. All electrical equipment and materials shall be installed in a neat and workmanship manner in accordance with the "NECA-1 Standard Practices for Good Workmanship in Electrical Contracting". Workmanship of the entire job shall be first class in every respect.

- D. Provide a complete properly operating system for each item of equipment called for under this work. Installation shall be in accordance to equipment manufacturer's instructions, the best industry practices and the contract documents.
- E. Review shop drawings for work done by other trades.
- F. The electrical drawings are diagrammatic and do not represent exact dimensions. Verify all dimensions by field measurements where indicated on plan or where exact dimensions are shown.

**3.3 EQUIPMENT INSTALLATIONS:**

- A. Provide the required inserts, bolts and anchors, and securely attach all equipment and materials to their supports.
- B. Do all the cutting and patching necessary for the proper installation of work and repair any damage done.
- C. Where mounting heights are not detailed or dimensioned, install systems, materials, and equipment to provide the maximum headroom possible.
- D. Install systems, materials, and equipment giving right-of-way priority to systems required to be installed at a specified slope.
- E. Provide complete electrical connections for all items of equipment requiring such connections, including incidental wiring, materials, devices and labor necessary for a finished working installation.
- F. Verify the location and method for connecting to each item of equipment prior to roughing in. Check voltage and phase of each item of equipment before connection.
- G. Make motor connections for the proper direction of rotation.
- H. Furnish all code required disconnects under this work, whether specifically shown or not.
- I. Restore existing disturbed work to original condition including maintenance of wiring and continuity as required.
- J. Conduit Systems:
  - 1. Worked into complete, integrated arrangement with like elements to make work neat appearing, finished.
  - 2. Run concealed, except as shown or noted otherwise. Where exposed, install parallel with walls or structural elements: vertical runs plumb;

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horizontal runs level or parallel with structure as appropriate: groups racked together neatly with straight runs and bends both parallel and uniformly spaced.

3. Install as high as practicable to maintain adequate headroom shown or required. Coordinate with work of other Divisions to achieve proper headroom.
4. Clearance: Do not obstruct spaces required by code in front of electrical equipment, access doors, etc.

**3.4 FIELD TEST:**

- A. Test shall be in accordance with Acceptance testing specifications issued by the National Electrical Testing Association (NETA).
- B. Perform equipment field tests and adjustments. Properly calibrate, adjust and operationally check all circuits and components, and demonstrate as ready for service. Make additional calibration and adjustments if it is determined later that the initial adjustments are not satisfactory for proper performance. Perform equipment field test for equipment where equipment field tests are specified in the equipment Specifications. Give sufficient notice to the State's Representative prior to any test so that the tests may be witnessed.
- C. Provide instruments, other equipment and material required for the tests. These shall be of the type designed for the type of tests to be performed. Test instrument shall be calibrated by a recognized testing laboratory within three months prior to performing tests.
- D. Operational Tests: Operationally test all circuits to demonstrate that the circuits and equipment have been properly installed and adjusted and are ready for full-time service. Demonstrate the proper functioning of circuits in all modes of operation, including alarm conditions.
- E. Re-testing will be required for all unsatisfactory tests after the equipment or system has been repaired. Re-test all related equipment and systems if required by the State's Representative. Repair and re-test equipment and systems which have been satisfactorily tested but later fail, until satisfactory performance is obtained.
- F. Maintain records of each test and submit five copies to the State's Representative when testing is complete. All tests shall be witnessed by the State's Representative. These records shall include:
  1. Name of equipment tested.
  2. Date of report.

3. Date of test.
4. Description of test setup.
5. Identification and rating of test equipment.
6. Test results and data.
7. Name of person performing test.
8. State Representative's initials.

- G. Items requiring testing shall be as noted in the additional electrical sections of these specifications.

### 3.5 PROTECTION OF WORK

- A. Protect all electrical work and equipment against damage by other trades, weather conditions or any other causes. Equipment found damaged or in other than new condition will be rejected as defective.
- B. Keep transformers, panels, luminaires and all electrical equipment covered or closed to exclude dust, dirt and splashes of plaster, cement or paint and shall be free of all such contamination before acceptance. Keep enclosures and trims in new condition, free of rust, scratches and other finish defects. If damaged, properly refinish in a manner acceptable to the State's Representative.

### 3.6 CUTTING AND PATCHING

- A. The contractor shall do all cutting and patching required for installing his work. Any cutting which may impair the structure shall require prior approval by the State's Representative. Cutting and patching shall be done only by skilled labor of the respective trades. All surfaces shall be restored to their original condition after cutting and patching.

### 3.7 CLEANING EQUIPMENT:

- A. At the completion of the work, all parts of the installation, including all equipment, exposed conduit, and fittings, shall be thoroughly cleaned of grease and metal cuttings. Any discoloration or other damage to parts of the building, finish, or the furnishings, due to the contractor's failure to properly clean the system, shall be repaired by the contractor.
- B. The contractor shall thoroughly clean any of his exposed work requiring same.
- C. Vacuum and clean the inside of all electrical and instrumentation enclosures prior to applying power.
- D. The contractor shall paint scratched or blemished surfaces with the necessary coats of quick drying paint to match existing color, texture and thickness. This shall include all prime painted electrical equipment including but not limited to enclosures, poles, boxes, etc.

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**3.8 PAINTING OF EQUIPMENT:**

- A. Factory Applied: Electrical equipment shall have factory applied painting system which shall, as a minimum, meet the requirements of NEMA ICS 6 corrosion-resistance test and the additional requirements specified in the technical section.
- B. Field Applied: Paint electrical equipment as required to match finish of adjacent surfaces.

**3.9 RECORDS:**

- A. Maintain one copy of the contract Drawing Sheets on the site of the work for recording the "as built" condition. Maintain up to date record set of electrical prints during the course of construction. Drawings shall be subject to the inspection by the State's Representative at all times. After completion of the work, the Contractor shall carefully mark the work as actually constructed, revising, deleting and adding to the Drawing Sheets as required. The following requirements shall be complied with:
  - 1. Cable Size and Type: Provide the size and type of each cable installed on project.
  - 2. Substructure: Where the location of all underground conduits, pull boxes, stub ups and etc. where are found to be different than shown, carefully mark the correct location on the Drawings. Work shall be dimensioned from existing improvements.
  - 3. Size of all conduit runs.
  - 4. Routes of concealed conduit runs and conduit runs below grade.
  - 5. Homerun points of all branch circuit.
  - 6. Location of all switchgear, panels, MCC, lighting control panels, pullcans, etc.
  - 7. Changes made as a result of all approved change orders, addendums, or field authorized revisions.
  - 8. As Builts: At the completion of the Work the Contractor shall review, certify, correct and turn over the marked up Drawings to the State's Representative for his use in preparing "as built" plans.
  - 9. As built Drawings shall be delivered to the State's Representative within ten (10) days of completion of construction.

**3.10 OPERATING AND MAINTENANCE INSTRUCTIONS**

- A. At time of completion, the contractor shall provide a period of not less than 6 hours training for instruction of operation and maintenance personnel in the use of systems. Instruct all personnel at one time in one session. Make necessary arrangements with manufacturer's representative. Provide product literature and application guides for user's reference during instruction.



**B. Operations and Maintenance Manuals**

1. Provide operation and maintenance manuals per specifications as described in SUBMITTALS in this section with the following additional requirements:
  - a. A comprehensive index.
  - b. A complete "Record" set of favorably reviewed electrical submittals as provided under section SUBMITTALS illustrating all components, piping, and electrical connections.
  - c. A complete list of the equipment supplied, including serial numbers, ranges, catalog cuts, and pertinent data.
  - d. Full specification on each item.
  - e. Detailed service, maintenance and operation instructions for each item supplied. Schematic diagrams of all electronic devices shall be included. A complete parts list with stock numbers shall be provided for the components that make up the assembly. All of these shall be originals, no copies.
  - f. Special maintenance requirements particular to this system shall be clearly defined, along with special calibration and test procedures.
2. Submit electronic readable PDF file format (CD disk copies (2) or email attachments) of the proposed O&M manuals for review by the State's Representative. Submittals shall be delivered timely to the State's Representative to allow for review period, corrections, and re-submissions as necessary
  - a. General contractor supervision must not be circumvented by sending submittals direct to State's Representative.
  - b. O&M submittals shall be published 1<sup>st</sup> electronically and 2<sup>nd</sup> on hard copy paper stock.
  - c. Electronic submittals shall be transmitted with the hard copy submittals and be viewable using a PDF reader.
  - d. Electronic submittals shall be assembled in accordance with the specifications for hard copy submittals with table of contents, bookmarks, tabs, subtabs, etc. utilizing the electronic bookmarks feature available in the PDF assembler.

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- e. Electronic (PDF) submittals must follow all applicable requirements for hard copy submittals including indexing, item selection indication, bookmarks, etc.
- 3. Provide four (4) hard copy O&M manuals per specifications as described in SUBMITTALS in this section.
  - a. Deliver approved hard-copy O&M manuals to the project site and State prior to pre-operational testing or equipment start-up
- C. At the end of the project, hard copy and soft copy electronic PDF files, shall be updated to “as-built” conditions.
- D. Provide two (2) sets of compact disk (CD) containing all drawings, programs, documents or other computer electronic files prepared for this project in native file format and updated to reflect as-built conditions.
- 3.11 CLEAN UP:
  - A. Upon completion of electrical work, remove all surplus materials, rubbish, and debris that accumulated during the construction work. Leave the entire area neat, clean, and acceptable to the State’s Representative.
- 3.12 PROJECT CLOSEOUT
  - A. Coordinate with the requirements of Division 01.
  - B. Special tools or safety equipment: Provide one of each tool or piece of safety equipment required for proper operation and maintenance of equipment installed under this work. Coordinate equipment required with equipment manufacturer and facility engineer/representative.
  - C. Keying: Provide two keys for each lock furnished under this work.

END OF SECTION 260010

## **SECTION 260519**

### **LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES**

#### **PART 1 - GENERAL**

##### **1.1 SUMMARY**

###### **A. Section Includes:**

1. Copper building wire rated 600 V or less.
2. Metal-clad cable, Type MC, rated 600 V or less.
3. Fire-alarm wire and cable.
4. Connectors, splices, and terminations rated 600 V and less.

##### **1.2 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
- B. Product Schedule: Indicate type, use, location, and termination locations.

##### **1.3 INFORMATIONAL SUBMITTALS**

- A. Field quality-control reports.

#### **PART 2 - PRODUCTS**

##### **2.1 COPPER BUILDING WIRE**

- A. Description: Flexible, insulated and uninsulated, drawn copper current-carrying conductor with an overall insulation layer or jacket, or both, rated 600 V or less.
- B. Manufacturers: Available manufacturers subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the manufacturers specified.
  1. American Insulated Wire Corp.; A Leviton Company
  2. General Cable Corporation.
  3. Okonite
  4. Southwire Company
  5. AFC
  6. Alcan
  7. CME

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### **Low-Voltage Electrical Power Conductors and Cables**

8. Encore
9. Or Equal

C. Standards:

1. Listed and labeled as defined in the CEC, by a qualified testing agency, and marked for intended location and use.
2. RoHS compliant.
3. Conductor and Cable Marking: Comply with wire and cable marking according to UL's "Wire and Cable Marking and Application Guide."

D. Conductors: Copper, complying with ASTM B3 for bare annealed copper and with ASTM B8 for stranded conductors.

E. Conductor Insulation:

1. Type RHH and Type RHW-2: Comply with UL 44.
2. Type THHN and Type THWN-2: Comply with UL 83.
3. Type XHHW-2: Comply with UL 44.

## **2.2 METAL-CLAD CABLE, TYPE MC**

A. Description: A factory assembly of one or more current-carrying insulated conductors in an overall metallic sheath.

B. Manufacturers:

1. AFC
2. Southwire
3. Alflec
4. Or equal.

C. Standards:

1. Listed and labeled as defined in the CEC, by a qualified testing agency, and marked for intended location and use.
2. Comply with UL 1569.
3. RoHS compliant.
4. Conductor and Cable Marking: Comply with wire and cable marking according to UL's "Wire and Cable Marking and Application Guide."

D. Circuits:

1. Single circuit.
2. Power-Limited Fire-Alarm Circuits: Comply with UL 1424.

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**Low-Voltage Electrical Power Conductors and Cables**

- E. Conductors: Copper, complying with ASTM B3 for bare annealed copper and with ASTM B8 for stranded conductors.
- F. Ground Conductor: Insulated.
- G. Conductor Insulation:
  - 1. Type TFN/THHN/THWN-2: Comply with UL 83.
  - 2. Type XHHW-2: Comply with UL 44.
- H. Armor: Steel, interlocked.
- I. Jacket: PVC applied over armor.

### 2.3 FIRE-ALARM WIRE AND CABLE

- A. General Wire and Cable Requirements: NRTL listed and labeled as complying with NFPA 70, Article 760.
- B. Signaling Line Circuits: Twisted, shielded pair, size as recommended by system manufacturer.
  - 1. Circuit Integrity Cable: Twisted shielded pair, NFPA 70, Article 760, Classification CI, for power-limited fire-alarm signal service Type FPL. NRTL listed and labeled as complying with UL 1424 and UL 2196 for a two-hour rating.
- C. Non-Power-Limited Circuits: Solid-copper conductors with 600-V rated, 75 deg C, color-coded insulation, and complying with requirements in UL 2196 for a two-hour rating.
  - 1. Low-Voltage Circuits: No. 16 AWG, minimum, in pathway.
  - 2. Line-Voltage Circuits: No. 12 AWG, minimum, in pathway.
  - 3. Multiconductor Armored Cable: NFPA 70, Type MC, copper conductors, Type TFN/THHN conductor insulation, copper drain wire, copper armor with outer jacket with red identifier stripe, NRTL listed for fire-alarm and cable tray installation, plenum rated.

### 2.4 CONNECTORS AND SPLICES

- A. Description: Factory-fabricated connectors, splices, and lugs of size, ampacity rating, material, type, and class for application and service indicated; listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and use.
- B. Manufacturers:

**Low-Voltage Electrical Power Conductors and Cables**

1. AFC cable systems, Inc.
  2. AMP Incorporated/Tyco International
  3. Hubbell/Anderson
  4. O-Z/Gedney; EGS Electrical Group LLC.
  5. 3M Company; Electrical Products Division
  6. Burndy
  7. Thomas & Betts
  8. Or equal
- C. Jacketed Cable Connectors: For steel and aluminum jacketed cables, zinc die-cast with set screws, designed to connect conductors specified in this Section.
- D. Lugs: One piece, seamless, designed to terminate conductors specified in this Section.
1. Material: Copper.
  2. Type: Two hole with long barrels.
  3. Termination: Compression.

**PART 3 - EXECUTION**

**3.1 CONDUCTOR MATERIAL APPLICATIONS**

- A. Feeders: Copper; solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.
- B. Branch Circuits: Copper. Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.
- C. Power-Limited Fire Alarm and Control: Solid for No. 12 AWG and smaller.

**3.2 CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS**

- A. Exposed Feeders: Type THHN/THWN-2, single conductors in raceway.
- B. Feeders Concealed in Ceilings, Walls, Partitions, and Crawlspace: Type THHN/THWN-2, single conductors in raceway.
- C. Exposed Branch Circuits, Including in Crawlspace: Type THHN/THWN-2, single conductors in raceway.
- D. Branch Circuits Concealed in Ceilings, Walls, and Partitions: Type THHN/THWN-2, single conductors in raceway.

### 3.3 INSTALLATION OF CONDUCTORS AND CABLES

- A. Conceal cables in finished walls, ceilings, and floors unless otherwise indicated.
- B. Complete raceway installation between conductor and cable termination points according to Section 260533 "Raceways and Boxes for Electrical Systems" prior to pulling conductors and cables.
- C. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.
- D. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.
- E. Install exposed cables parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.
- F. Support cables according to Section 260529 "Hangers and Supports for Electrical Systems."

### 3.4 INSTALLATION OF FIRE-ALARM WIRING

- A. Comply with NECA 1 and NFPA 72.
- B. Wiring Method: Install wiring in metal pathway according to Section 260533 "Raceways and Boxes for Electrical Systems."
  - 1. Install plenum cable in environmental airspaces, including plenum ceilings.
  - 2. Fire-alarm circuits and equipment control wiring associated with fire-alarm system shall be installed in a dedicated pathway system. This system shall not be used for any other wire or cable.
- C. Wiring Method:
  - 1. Cables and pathways used for fire-alarm circuits, and equipment control wiring associated with fire-alarm system, may not contain any other wire or cable.
  - 2. Fire-Rated Cables: Use of two-hour, fire-rated fire-alarm cables, NFPA 70, Types MI and CI, is permitted.
  - 3. Signaling Line Circuits: Power-limited fire-alarm cables shall not be installed in the same cable or pathway as signaling line circuits.
- D. Wiring within Enclosures: Separate power-limited and non-power-limited conductors as recommended by manufacturer. Install conductors parallel with or at right angles to sides and back of the enclosure. Bundle, lace, and train

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conductors to terminal points with no excess. Connect conductors that are terminated, spliced, or interrupted in any enclosure associated with fire-alarm system to terminal blocks. Mark each terminal according to system's wiring diagrams. Make all connections with approved crimp-on terminal spade lugs, pressure-type terminal blocks, or plug connectors.

- E. Cable Taps: Use numbered terminal strips in junction, pull, and outlet boxes, cabinets, or equipment enclosures where circuit connections are made.
- F. Color-Coding: Color-code fire-alarm conductors differently from the normal building power wiring. Use one color-code for alarm circuit wiring and another for supervisory circuits. Color-code audible alarm-indicating circuits differently from alarm-initiating circuits. Use different colors for visible alarm-indicating devices. Paint fire-alarm system junction boxes and covers red.
- G. Wiring to Remote Alarm Transmitting Device: 1-inch conduit between the fire-alarm control panel and the transmitter. Install number of conductors and electrical supervision for connecting wiring as needed to suit monitoring function.

**3.5 CONNECTIONS**

- A. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A-486B.
- B. Make splices, terminations, and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.
- C. Wiring at Outlets: Install conductor at each outlet, with at least 6 inches of slack.
- D. Comply with requirements in Section 284621.11 "Addressable Fire-Alarm Systems" for connecting, terminating, and identifying wires and cables.

**3.6 IDENTIFICATION**

- A. Identify and color-code conductors and cables according to Section 260553 "Identification for Electrical Systems."
- B. Identify each spare conductor at each end with identity number and location of other end of conductor, and identify as spare conductor.

**END OF SECTION 260519**



## **SECTION 260526**

### **GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS**

#### **PART 1 - GENERAL**

##### **1.1 SUMMARY**

- A. Section includes grounding and bonding systems and equipment.

##### **1.2 ACTION SUBMITTALS**

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

##### **1.3 INFORMATIONAL SUBMITTALS**

- A. Coordination Drawings: Plans showing dimensioned as-built locations of grounding features specified in "Field Quality Control" Article.
- B. Qualification Data: For testing agency and testing agency's field supervisor.
- C. Field quality-control reports.

##### **1.4 QUALITY ASSURANCE**

- A. Testing Agency Qualifications: Certified by NETA.

#### **PART 2 - PRODUCTS**

##### **2.1 SYSTEM DESCRIPTION**

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Comply with UL 467 for grounding and bonding materials and equipment.

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**2.2 MANUFACTURERS**

- A. 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. Burndy; Part of Hubbell Electrical Systems
  - 2. Erico International Corporation
  - 3. Ilsco
  - 4. O-Z/Gedney; an EGS electrical group brand
  - 5. Thomas & Betts Corporation
  - 6. Blackburn
  - 7. Or equal.

**2.3 CONDUCTORS**

- A. Insulated Conductors: Copper or tinned-copper wire or cable insulated for 600 V unless otherwise required by applicable Code or authorities having jurisdiction.
- B. Bare Copper Conductors:
  - 1. Solid Conductors: ASTM B3.
  - 2. Stranded Conductors: ASTM B8.
  - 3. Tinned Conductors: ASTM B33.
  - 4. Bonding Cable: 28 kcmil, 14 strands of No. 17 AWG conductor, 1/4 inch in diameter.
  - 5. Bonding Conductor: No. 4 or No. 6 AWG, stranded conductor.
  - 6. Bonding Jumper: Copper tape, braided conductors terminated with copper ferrules; 1-5/8 inches wide and 1/16 inch thick.
  - 7. Tinned Bonding Jumper: Tinned-copper tape, braided conductors terminated with copper ferrules; 1-5/8 inches wide and 1/16 inch thick.
- C. Grounding Bus: Predrilled rectangular bars of annealed copper, 1/4 by 4 inches in cross section, with 9/32-inch holes spaced 1-1/8 inches apart. Stand-off insulators for mounting shall comply with UL 891 for use in switchboards, 600 V and shall be Lexan or PVC, impulse tested at 5000 V.

**2.4 CONNECTORS**

- A. Listed and labeled by an NRTL acceptable to authorities having jurisdiction for applications in which used and for specific types, sizes, and combinations of conductors and other items connected.

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- B. Welded Connectors: Exothermic-welding kits of types recommended by kit manufacturer for materials being joined and installation conditions.
- C. Bus-Bar Connectors: Compression type, copper or copper alloy, with two wire terminals.
- D. Beam Clamps: Mechanical type, terminal, ground wire access from four directions, with dual, tin-plated or silicon bronze bolts.
- E. Cable-to-Cable Connectors: Compression type, copper or copper alloy.
- F. Conduit Hubs: Mechanical type, terminal with threaded hub.
- G. Ground Rod Clamps: Mechanical type, copper or copper alloy, terminal with hex head bolt.
- H. Lay-in Lug Connector: Mechanical type, copper rated for direct burial terminal with set screw.
- I. Straps: Solid copper, copper lugs. Rated for 600 A.
- J. U-Bolt Clamps: Mechanical type, copper or copper alloy, terminal listed for direct burial.

## **PART 3 - EXECUTION**

### **3.1 APPLICATIONS**

- A. Conductors: Install solid conductor for No. 8 AWG and smaller, and stranded conductors for No. 6 AWG and larger unless otherwise indicated.
- B. Conductor Terminations and Connections:
  - 1. Pipe and Equipment Grounding Conductor Terminations: Bolted connectors.
  - 2. Connections to Structural Steel: Welded connectors.

### **3.2 EQUIPMENT GROUNDING**

- A. Install insulated equipment grounding conductors with all feeders and branch circuits.
- B. Install insulated equipment grounding conductors with the following items, in addition to those required by NFPA 70:
  - 1. Feeders and branch circuits.

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2. Lighting circuits.
  3. Receptacle circuits.
  4. Single-phase motor and appliance branch circuits.
  5. Three-phase motor and appliance branch circuits.
  6. Flexible raceway runs.
  7. Armored and metal-clad cable runs.
- C. Air-Duct Equipment Circuits: Install insulated equipment grounding conductor to duct-mounted electrical devices operating at 120 V and more, including air cleaners, heaters, dampers, humidifiers, and other duct electrical equipment. Bond conductor to each unit and to air duct and connected metallic piping.
- D. Water Heater, Heat-Tracing, and Antifrost Heating Cables: Install a separate insulated equipment grounding conductor to each electric water heater and heat-tracing cable. Bond conductor to heater units, piping, connected equipment, and components.

**3.3 INSTALLATION**

- A. Grounding Conductors: Route along shortest and straightest paths possible unless otherwise indicated or required by Code. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.
- B. Bonding Straps and Jumpers: Install in locations accessible for inspection and maintenance except where routed through short lengths of conduit.
1. Bonding to Structure: Bond straps directly to basic structure, taking care not to penetrate any adjacent parts.
  2. Bonding to Equipment Mounted on Vibration Isolation Hangers and Supports: Install bonding so vibration is not transmitted to rigidly mounted equipment.
  3. Use exothermic-welded connectors for outdoor locations; if a disconnect-type connection is required, use a bolted clamp.

**3.4 FIELD QUALITY CONTROL**

- A. Perform tests and inspections.
- B. Tests and Inspections:
1. After installing grounding system but before permanent electrical circuits have been energized, test for compliance with requirements.
  2. Inspect physical and mechanical condition. Verify tightness of accessible, bolted, electrical connections with a calibrated torque wrench according to manufacturer's written instructions.

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- C. Grounding system will be considered defective if it does not pass tests and inspections.
- D. Prepare test and inspection reports.
- E. Report measured ground resistances that exceed the following values:
  - 1. Power and Lighting Equipment or System with Capacity of 500 kVA and Less: 10 ohms.
  - 2. Power and Lighting Equipment or System with Capacity of 500 to 1000 kVA: 5 ohms.
  - 3. Power Distribution Units or Panelboards Serving Electronic Equipment: 1 ohm(s).
  - 4. Substations and Pad-Mounted Equipment: 5 ohms.
- F. Excessive Ground Resistance: If resistance to ground exceeds specified values, notify State's Representative promptly and include recommendations to reduce ground resistance.

END OF SECTION 260526

## **SECTION 260529**

### **HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS**

#### **PART 1 - GENERAL**

##### **1.1 SUMMARY**

###### **A. Section Includes:**

1. Steel slotted support systems.
2. Conduit and cable support devices.
3. Support for conductors in vertical conduit.
4. Structural steel for fabricated supports and restraints.
5. Mounting, anchoring, and attachment components, including powder-actuated fasteners, mechanical expansion anchors, concrete inserts, clamps, through bolts, toggle bolts, and hanger rods.
6. Fabricated metal equipment support assemblies.

##### **1.2 ACTION SUBMITTALS**

###### **A. Product Data:** For each type of product.

###### **B. Shop Drawings:** For fabrication and installation details for electrical hangers and support systems.

1. Hangers. Include product data for components.
2. Slotted support systems.
3. Equipment supports.
4. Vibration Isolation Base Details: Detail fabrication including anchorages and attachments to structure and to supported equipment. Include adjustable motor bases, rails, and frames for equipment mounting.

###### **C. Delegated-Design Submittal:** For hangers and supports for electrical systems.

1. Include design calculations and details of hangers.
2. Include design calculations for seismic restraints.

##### **1.3 INFORMATIONAL SUBMITTALS**

###### **A. Coordination Drawings:** Reflected ceiling plan(s) and other details, drawn to scale, and coordinated with each other, using input from installers of the items involved.

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- B. Seismic Qualification Data: Certificates, for hangers and supports for electrical equipment and systems, accessories, and components, from manufacturer.
- C. Welding certificates.

**1.4 QUALITY ASSURANCE**

- A. Welding Qualifications: Qualify procedures and personnel according to the following:
  - 1. AWS D1.1/D1.1M.
  - 2. AWS D1.2/D1.2M.

**PART 2 - PRODUCTS**

**2.1 PERFORMANCE REQUIREMENTS**

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design hanger and support system.
- B. Seismic Performance: Hangers and supports shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.
  - 1. The term "withstand" means "the supported equipment and systems will remain in place without separation of any parts when subjected to the seismic forces specified."
  - 2. Component Importance Factor: 1.0.
- C. Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
  - 1. Flame Rating: Class 1.
  - 2. Self-extinguishing according to ASTM D635.

**2.2 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS**

- A. Steel Slotted Support Systems: Preformed steel channels and angles with minimum 13/32-inch-diameter holes at a maximum of 8 inches o.c. in at least one surface.
  - 1. Manufacturers:
    - a. Cooper B-Line

- b. Erico International
    - c. Unistrut
    - d. Thomas & Betts
    - e. Or equal
  - 2. Standard: Comply with MFMA-4 factory-fabricated components for field assembly.
  - 3. Material for Channel, Fittings, and Accessories: Galvanized steel.
  - 4. Channel Width: Selected for applicable load criteria.
  - 5. Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA-4.
  - 6. Nonmetallic Coatings: Manufacturer's standard PVC, polyurethane, or polyester coating applied according to MFMA-4.
  - 7. Painted Coatings: Manufacturer's standard painted coating applied according to MFMA-4.
  - 8. Protect finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- B. Conduit and Cable Support Devices: Steel hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.
- C. Support for Conductors in Vertical Conduit: Factory-fabricated assembly consisting of threaded body and insulating wedging plug or plugs for nonarmored electrical conductors or cables in riser conduits. Plugs shall have number, size, and shape of conductor gripping pieces as required to suit individual conductors or cables supported. Body shall be made of malleable iron.
- D. Structural Steel for Fabricated Supports and Restraints: ASTM A36/A36M steel plates, shapes, and bars; black and galvanized.
- E. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:
- 1. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete, steel, or wood, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.
    - a. Hilti Inc.
    - b. ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.
    - c. MKT Fastening, LLC
    - d. Simpson Strong-Tie Co., Masterset Fastening System Unit
  - 2. Mechanical-Expansion Anchors: Insert-wedge-type, stainless steel, for use in hardened portland cement concrete, with tension, shear, and



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pullout capacities appropriate for supported loads and building materials where used.

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

- 1) Cooper B-Line, Inc.; a division of Cooper Industries
- 2) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.
- 3) Empire Tool and Manufacturing Co., Inc.
- 4) MKT Fastening, LLC

3. Concrete Inserts: Steel or malleable-iron, slotted support system units are similar to MSS Type 18 units and comply with MFMA-4 or MSS SP-58.
4. Clamps for Attachment to Steel Structural Elements: MSS SP-58 units are suitable for attached structural element.
5. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM F3125/F3125M, Grade A325.
6. Toggle Bolts: Stainless-steel springhead type.
7. Hanger Rods: Threaded steel.

**2.3 FABRICATED METAL EQUIPMENT SUPPORT ASSEMBLIES**

- A. Description: Welded or bolted structural-steel shapes, shop or field fabricated to fit dimensions of supported equipment.

**PART 3 - EXECUTION**

**3.1 APPLICATION**

- A. Comply with the following standards for application and installation requirements of hangers and supports, except where requirements on Drawings or in this Section are stricter:
1. NECA 1.
  2. NECA 101
  3. NECA 102.
  4. NECA 105.
  5. NECA 111.
- B. Comply with requirements for raceways and boxes specified in Section 260533 "Raceways and Boxes for Electrical Systems."

- C. Maximum Support Spacing and Minimum Hanger Rod Size for Raceways: Space supports for EMT, IMC, and RMC as required by NFPA 70. Minimum rod size shall be 1/4 inch in diameter.
- D. Multiple Raceways or Cables: Install trapeze-type supports fabricated with steel slotted or other support system, sized so capacity can be increased by at least 25 percent in future without exceeding specified design load limits.
  - 1. Secure raceways and cables to these supports with two-bolt conduit clamps.
- E. Spring-steel clamps designed for supporting single conduits without bolts may be used for 1-1/2-inch and smaller raceways serving branch circuits and communication systems above suspended ceilings, and for fastening raceways to trapeze supports.

### 3.2 SUPPORT INSTALLATION

- A. Comply with NECA 1 and NECA 101 for installation requirements except as specified in this article.
- B. Raceway Support Methods: In addition to methods described in NECA 1, EMT and RMC may be supported by openings through structure members, according to NFPA 70.
- C. Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb.
- D. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods unless otherwise indicated by code:
  - 1. To Wood: Fasten with lag screws or through bolts.
  - 2. To New Concrete: Bolt to concrete inserts.
  - 3. To Masonry: Approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.
  - 4. To Existing Concrete: Expansion anchor fasteners.
  - 5. Instead of expansion anchors, powder-actuated driven threaded studs provided with lock washers and nuts may be used in existing standard-weight concrete 4 inches thick or greater. Do not use for anchorage to lightweight-aggregate concrete or for slabs less than 4 inches thick.
  - 6. To Steel: Beam clamps (MSS SP-58, Type 19, 21, 23, 25, or 27), complying with MSS SP-69.
  - 7. To Light Steel: Sheet metal screws.

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- 8. Items Mounted on Hollow Walls and Nonstructural Building Surfaces: Mount cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices on slotted-channel racks attached to substrate by means that comply with seismic-restraint strength and anchorage requirements.
- E. Drill holes for expansion anchors in concrete at locations and to depths that avoid the need for reinforcing bars.

**3.3 INSTALLATION OF FABRICATED METAL SUPPORTS**

- A. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor electrical materials and equipment.
- B. Field Welding: Comply with AWS D1.1/D1.1M.

**END OF SECTION 260529**

## **SECTION 260533**

### **RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS**

#### **PART 1 - GENERAL**

##### **1.1 SUMMARY**

###### **A. Section Includes:**

1. Metal conduits and fittings.
2. Metal wireways and auxiliary gutters.
3. Surface raceways.
4. Boxes, enclosures, and cabinets.

##### **1.2 ACTION SUBMITTALS**

###### **A. Product Data:** For each type of product.

###### **B. Shop Drawings:** For custom enclosures and cabinets. Include plans, elevations, sections, and attachment details.

##### **1.3 INFORMATIONAL SUBMITTALS**

###### **A. Coordination Drawings:** Conduit routing plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of items involved:

1. Structural members in paths of conduit groups with common supports.
2. HVAC and plumbing items and Architectural features in paths of conduit groups with common supports.

###### **B. Seismic Qualification Data:** Certificates, for enclosures, cabinets, and conduit racks and their mounting provisions, including those for internal components, from manufacturer.

#### **PART 2 - PRODUCTS**

##### **2.1 METAL CONDUITS AND FITTINGS**

###### **A. Metal Conduit:**

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1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Allied Tubing & Conduit
    - b. Picoma Industries
    - c. Republic Conduit
    - d. Western Tube and Conduit Corporation
    - e. Wheatland Tube Company
    - f. Or equal
  2. Listing and Labeling: Metal conduits, tubing, and fittings shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
  3. GRC: Comply with ANSI C80.1 and UL 6.
  4. ARC: Comply with ANSI C80.5 and UL 6A.
  5. IMC: Comply with ANSI C80.6 and UL 1242.
  6. PVC-Coated Steel Conduit: PVC-coated rigid steel conduit.
    - a. Comply with NEMA RN 1.
    - b. Coating Thickness: 0.040 inch, minimum.
  7. EMT: Comply with ANSI C80.3 and UL 797.
  8. FMC: Comply with UL 1; zinc-coated steel.
  9. LFMC: Flexible steel conduit with PVC jacket and complying with UL 360.
- B. Metal Fittings: Comply with NEMA FB 1 and UL 514B.
1. Listing and Labeling: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
  2. Fittings, General: Listed and labeled for type of conduit, location, and use.
  3. Conduit Fittings for Hazardous (Classified) Locations: Comply with UL 1203 and NFPA 70.
  4. Fittings for EMT:
    - a. Material: Steel.
    - b. Type: Setscrew or compression.
  5. Expansion Fittings: PVC or steel to match conduit type, complying with UL 651, rated for environmental conditions where installed, and including flexible external bonding jumper.
  6. Coating for Fittings for PVC-Coated Conduit: Minimum thickness of 0.040 inch, with overlapping sleeves protecting threaded joints.
- C. Joint Compound for IMC, GRC, or ARC: Approved, as defined in NFPA 70, by authorities having jurisdiction for use in conduit assemblies, and compounded

for use to lubricate and protect threaded conduit joints from corrosion and to enhance their conductivity.

## 2.2 METAL WIREWAYS AND AUXILIARY GUTTERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Cooper B-Line Inc.; a division of Cooper Industries
  - 2. Hoffman; a brand of Pentair Equipment Protection
  - 3. Or equal.
- B. Description: Sheet metal, complying with UL 870 and NEMA 250, Type 1 or Type 3R unless otherwise indicated, and sized according to NFPA 70.
  - 1. Metal wireways installed outdoors shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- C. Fittings and Accessories: Include covers, couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireways as required for complete system.

## 2.3 BOXES, ENCLOSURES, AND CABINETS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Cooper Technologies Company
  - 2. EGS/Appleton Electric
  - 3. Erickson Electric Equipment Company
  - 4. Hoffman; a brand of Pentair Equipment Protection
  - 5. Hubbell Incorporated
  - 6. Kraloy
  - 7. Milbank Manufacturing Co.
  - 8. Oldcastle Enclosure Solutions
  - 9. O-Z/Gedney; and EGS Electrical Group Brand
  - 10. RACO; Hubbell
  - 11. Robroy Industries
  - 12. Wiremold/Legrand
  - 13. Or equal.
- B. General Requirements for Boxes, Enclosures, and Cabinets: Boxes, enclosures, and cabinets installed in wet locations shall be listed for use in wet locations.

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- C. Sheet Metal Outlet and Device Boxes: Comply with NEMA OS 1 and UL 514A.
- D. Cast-Metal Outlet and Device Boxes: Comply with NEMA FB 1, aluminum, Type FD, with gasketed cover.
- E. Nonmetallic Outlet and Device Boxes: Comply with NEMA OS 2 and UL 514C.
- F. Metal Floor Boxes:
  - 1. Material: Cast metal.
  - 2. Type: Fully adjustable.
  - 3. Shape: Rectangular.
  - 4. Listing and Labeling: Metal floor boxes shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- G. Luminaire Outlet Boxes: Nonadjustable, designed for attachment of luminaire weighing 50 lb. Outlet boxes designed for attachment of luminaires weighing more than 50 lb shall be listed and marked for the maximum allowable weight.
- H. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.
- I. Cast-Metal Access, Pull, and Junction Boxes: Comply with NEMA FB 1 and UL 1773, cast aluminum with gasketed cover.
- J. Box extensions used to accommodate new building finishes shall be of same material as recessed box.
- K. Device Box Dimensions: 4 inches square by 2-1/8 inches deep.
- L. Gangable boxes are prohibited.
- M. Hinged-Cover Enclosures: Comply with UL 50 and NEMA 250, Type 3R with continuous-hinge cover with flush latch unless otherwise indicated.
  - 1. Metal Enclosures: Steel, finished inside and out with manufacturer's standard enamel.
  - 2. Nonmetallic Enclosures: Plastic.
  - 3. Interior Panels: Steel; all sides finished with manufacturer's standard enamel.
- N. Cabinets:
  - 1. NEMA 250, Type 1 or Type 3R galvanized-steel box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel.
  - 2. Hinged door in front cover with flush latch and concealed hinge.

3. Key latch to match panelboards.
4. Metal barriers to separate wiring of different systems and voltage.
5. Accessory feet where required for freestanding equipment.
6. Nonmetallic cabinets shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

## **PART 3 - EXECUTION**

### **3.1 RACEWAY APPLICATION**

- A. Indoors: Apply raceway products as specified below unless otherwise indicated.
  1. Exposed, Not Subject to Physical Damage: EMT.
  2. Exposed, Not Subject to Severe Physical Damage: EMT.
  3. Exposed and Subject to Severe Physical Damage: GRC. Raceway locations include the following:
    - a. Loading dock.
    - b. Corridors used for traffic of mechanized carts, forklifts, and pallet-handling units.
    - c. Mechanical rooms.
    - d. Gymnasiums.
  4. Concealed in Ceilings and Interior Walls and Partitions: EMT.
  5. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): FMC, except use LFMC in damp or wet locations.
  6. Damp or Wet Locations: GRC.
  7. Boxes and Enclosures: NEMA 250, Type 1, except use NEMA 250, Type 4 stainless steel in institutional and commercial kitchens and damp or wet locations.
- B. Minimum Raceway Size: 1/2-inch trade size.
- C. Raceway Fittings: Compatible with raceways and suitable for use and location.
  1. Rigid and Intermediate Steel Conduit: Use threaded rigid steel conduit fittings unless otherwise indicated. Comply with NEMA FB 2.10.
  2. PVC Externally Coated, Rigid Steel Conduits: Use only fittings listed for use with this type of conduit. Patch and seal all joints, nicks, and scrapes in PVC coating after installing conduits and fittings. Use sealant recommended by fitting manufacturer and apply in thickness and number of coats recommended by manufacturer.
  3. EMT: Use setscrew or compression fittings. Comply with NEMA FB 2.10.



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- 4. Flexible Conduit: Use only fittings listed for use with flexible conduit. Comply with NEMA FB 2.20.
- D. Do not install aluminum conduits, boxes, or fittings in contact with concrete or earth.
- E. Install surface raceways only where indicated on Drawings.
- F. Do not install nonmetallic conduit where ambient temperature exceeds 120 deg F.

**3.2 INSTALLATION**

- A. Comply with requirements in Section 260529 "Hangers and Supports for Electrical Systems" for hangers and supports.
- B. Comply with NECA 1 and NECA 101 for installation requirements except where requirements on Drawings or in this article are stricter. Comply with NECA 102 for aluminum conduits. Comply with NFPA 70 limitations for types of raceways allowed in specific occupancies and number of floors.
- C. Do not install raceways or electrical items on any "explosion-relief" walls or rotating equipment.
- D. Do not fasten conduits onto the bottom side of a metal deck roof.
- E. Keep raceways at least 6 inches away from parallel runs of flues and steam or hot-water pipes. Install horizontal raceway runs above water and steam piping.
- F. Comply with requirements in Section 260529 "Hangers and Supports for Electrical Systems" for hangers and supports.
- G. Arrange stub-ups so curved portions of bends are not visible above finished slab.
- H. Install no more than the equivalent of three 90-degree bends in any conduit run except for control wiring conduits, for which fewer bends are allowed. Support within 12 inches of changes in direction.
- I. Make bends in raceway using large-radius preformed ells. Field bending shall be according to NFPA 70 minimum radii requirements. Use only equipment specifically designed for material and size involved.
- J. Conceal conduit and EMT within finished walls, ceilings, and floors unless otherwise indicated. Install conduits parallel or perpendicular to building lines.

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- K. Support conduit within 12 inches of enclosures to which attached.
- L. Stub-ups to Above Recessed Ceilings:
  - 1. Use EMT, IMC, or RMC for raceways.
  - 2. Use a conduit bushing or insulated fitting to terminate stub-ups not terminated in hubs or in an enclosure.
- M. Threaded Conduit Joints, Exposed to Wet, Damp, Corrosive, or Outdoor Conditions: Apply listed compound to threads of raceway and fittings before making up joints. Follow compound manufacturer's written instructions.
- N. Coat field-cut threads on PVC-coated raceway with a corrosion-preventing conductive compound prior to assembly.
- O. Raceway Terminations at Locations Subject to Moisture or Vibration: Use insulating bushings to protect conductors including conductors smaller than No. 4 AWG.
- P. Terminate threaded conduits into threaded hubs or with locknuts on inside and outside of boxes or cabinets. Install bushings on conduits up to 1-1/4-inch trade size and insulated throat metal bushings on 1-1/2-inch trade size and larger conduits terminated with locknuts. Install insulated throat metal grounding bushings on service conduits.
- Q. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 200-lb tensile strength. Leave at least 12 inches of slack at each end of pull wire. Cap underground raceways designated as spare above grade alongside raceways in use.
- R. Surface Raceways:
  - 1. Install surface raceway with a minimum 2-inch radius control at bend points.
  - 2. Secure surface raceway with screws or other anchor-type devices at intervals not exceeding 48 inches and with no less than two supports per straight raceway section. Support surface raceway according to manufacturer's written instructions. Tape and glue are not acceptable support methods.
- S. Install raceway sealing fittings at accessible locations according to NFPA 70 and fill them with listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank cover plate having a finish similar to that of adjacent plates or surfaces.
- T. Install devices to seal raceway interiors at accessible locations. Locate seals so no fittings or boxes are between the seal and the following changes of environments. Seal the interior of all raceways at the following points:

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1. Where conduits pass from warm to cold locations, such as boundaries of refrigerated spaces.
2. Where an underground service raceway enters a building or structure.
3. Conduit extending from interior to exterior of building.
4. Conduit extending into pressurized duct and equipment.
5. Conduit extending into pressurized zones that are automatically controlled to maintain different pressure set points.
6. Where otherwise required by NFPA 70.

U. Expansion-Joint Fittings:

1. Install in each run of aboveground RNC that is located where environmental temperature change may exceed 30 deg F and that has straight-run length that exceeds 25 feet.
2. Install type and quantity of fittings that accommodate temperature change listed for each of the following locations:
  - a. Outdoor Locations Not Exposed to Direct Sunlight: 125 deg F temperature change.
  - b. Outdoor Locations Exposed to Direct Sunlight: 155 deg F temperature change.
  - c. Indoor Spaces Connected with Outdoors without Physical Separation: 125 deg F temperature change.
  - d. Attics: 135 deg F temperature change.
3. Install fitting(s) that provide expansion and contraction for at least 0.00041 inch per foot of length of straight run per degree F of temperature change for PVC conduits.
4. Install expansion fittings at all locations where conduits cross building or structure expansion joints.
5. Install each expansion-joint fitting with position, mounting, and piston setting selected according to manufacturer's written instructions for conditions at specific location at time of installation. Install conduit supports to allow for expansion movement.

V. Flexible Conduit Connections: Comply with NEMA RV 3. Use a maximum of 36 inches of flexible conduit for recessed and semirecessed luminaires, equipment subject to vibration, noise transmission, or movement; and for transformers and motors.

1. Use LFMC in damp or wet locations subject to severe physical damage.
2. Use LFMC or LFNC in damp or wet locations not subject to severe physical damage.

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**Raceways and Boxes for Electrical Systems**

- W. Mount boxes at heights indicated on Drawings. If mounting heights of boxes are not individually indicated, give priority to ADA requirements. Install boxes with height measured to center of box unless otherwise indicated.
- X. Recessed Boxes in Masonry Walls: Saw-cut opening for box in center of cell of masonry block, and install box flush with surface of wall. Prepare block surfaces to provide a flat surface for a raintight connection between the box and cover plate or the supported equipment and box.
- Y. Horizontally separate boxes mounted on opposite sides of walls so they are not in the same vertical channel.
- Z. Locate boxes so that cover or plate will not span different building finishes.
- AA. Support boxes of three gangs or more from more than one side by spanning two framing members or mounting on brackets specifically designed for the purpose.
- BB. Fasten junction and pull boxes to or support from building structure. Do not support boxes by conduits.
- CC. Set metal floor boxes level and flush with finished floor surface.
- DD. Set nonmetallic floor boxes level. Trim after installation to fit flush with finished floor surface.

### 3.3 PROTECTION

- A. Protect coatings, finishes, and cabinets from damage and deterioration.
  - 1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
  - 2. Repair damage to PVC coatings or paint finishes with matching touchup coating recommended by manufacturer.

END OF SECTION 260533

## **SECTION 260553**

### **IDENTIFICATION FOR ELECTRICAL SYSTEMS**

#### **PART 1 - GENERAL**

##### **1.1 RELATED DOCUMENTS**

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

##### **1.2 SUMMARY**

- A. Section Includes:
  - 1. Color and legend requirements for raceways, conductors, and warning labels and signs.
  - 2. Labels.
  - 3. Tapes and stencils.
  - 4. Tags.
  - 5. Signs.
  - 6. Cable ties.
  - 7. Paint for identification.
  - 8. Fasteners for labels and signs.

##### **1.3 ACTION SUBMITTALS**

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

#### **PART 2 - PRODUCTS**

##### **2.1 PERFORMANCE REQUIREMENTS**

- A. Comply with ASME A13.1 and IEEE C2.
- B. Comply with CEC.
- C. Comply with 29 CFR 1910.144 and 29 CFR 1910.145.
- D. Comply with ANSI Z535.4 for safety signs and labels.

**Identification for Electrical Systems**

- E. Comply with NFPA 70E requirements for arc-flash warning labels.
- F. Adhesive-attached labeling materials, including label stocks, laminating adhesives, and inks used by label printers, shall comply with UL 969.
- G. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.
  - 1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

**2.2 COLOR AND LEGEND REQUIREMENTS**

- A. Raceways and Cables Carrying Circuits at 600 V or Less:
  - 1. Black letters on an orange field.
  - 2. Legend: Indicate voltage.
- B. Color-Coding for Phase- and Voltage-Level Identification, 600 V or Less: Use colors listed below for ungrounded service, feeder, and branch-circuit conductors.
  - 1. Color shall be factory applied or field applied for sizes larger than No. 8 AWG if authorities having jurisdiction permit.
  - 2. Colors for 208/120-V Circuits:
    - a. Phase A: Black.
    - b. Phase B: Red.
    - c. Phase C: Blue.
  - 3. Colors for 240-V Circuits:
    - a. Phase A: Black.
    - b. Phase B: Red.
  - 4. Colors for 480/277-V Circuits:
    - a. Phase A: Brown.
    - b. Phase B: Orange.
    - c. Phase C: Yellow.
  - 5. Color for Neutral: White.
  - 6. Color for Equipment Grounds: Green.
  - 7. Colors for Isolated Grounds: Green two or more yellow stripes.
- C. Warning Label Colors:
  - 1. Identify system voltage with black letters on an orange background.

- D. Warning labels and signs shall include, but are not limited to, the following legends:
  - 1. Multiple Power Source Warning: "DANGER - ELECTRICAL SHOCK HAZARD - EQUIPMENT HAS MULTIPLE POWER SOURCES."
  - 2. Workspace Clearance Warning: "WARNING - OSHA REGULATION - AREA IN FRONT OF ELECTRICAL EQUIPMENT MUST BE KEPT CLEAR FOR 36 INCHES."
- E. Equipment Identification Labels:
  - 1. Black letters on a white field.

## 2.3 LABELS

- A. Vinyl Wraparound Labels: Preprinted, flexible labels laminated with a clear, weather- and chemical-resistant coating and matching wraparound clear adhesive tape for securing label ends.
- B. Self-Adhesive Wraparound Labels: Preprinted, 3-mil-thick, polyester flexible label with acrylic pressure-sensitive adhesive.
  - 1. Self-Lamination: Clear; UV-, weather- and chemical-resistant; self-laminating, protective shield over the legend. Labels sized such that the clear shield overlaps the entire printed legend.
  - 2. Marker for Labels: Permanent, waterproof, black ink marker recommended by tag manufacturer.
  - 3. Marker for Labels: Machine-printed, permanent, waterproof, black ink recommended by printer manufacturer.
- C. Self-Adhesive Labels: Polyester, thermal, transfer-printed, 3-mil-thick, multicolor, weather- and UV-resistant, pressure-sensitive adhesive labels, configured for intended use and location.
  - 1. Minimum Nominal Size:
    - a. 1-1/2 by 6 inches for raceway and conductors.
    - b. 3-1/2 by 5 inches for equipment.
    - c. As required by authorities having jurisdiction.

## 2.4 TAPES AND STENCILS

- A. Marker Tapes: Vinyl or vinyl-cloth, self-adhesive wraparound type, with circuit identification legend machine printed by thermal transfer or equivalent process.

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### **Identification for Electrical Systems**

- B. Self-Adhesive Vinyl Tape: Colored, heavy duty, waterproof, fade resistant; not less than 3 mils thick by 1 to 2 inches wide; compounded for outdoor use.
- C. Tape and Stencil: 4-inch-wide black stripes on 10-inch centers placed diagonally over orange background and is 12 inches wide. Stop stripes at legends.

## **2.5 SIGNS**

### **A. Baked-Enamel Signs:**

- 1. Preprinted aluminum signs, punched or drilled for fasteners, with colors, legend, and size required for application.
- 2. 1/4-inch grommets in corners for mounting.
- 3. Nominal Size: 7 by 10 inches.

### **B. Metal-Backed Butyrate Signs:**

- 1. Weather-resistant, nonfading, preprinted, cellulose-acetate butyrate signs, with 0.0396-inch galvanized-steel backing, punched and drilled for fasteners, and with colors, legend, and size required for application.
- 2. 1/4-inch grommets in corners for mounting.
- 3. Nominal Size: 10 by 14 inches.

### **C. Laminated Acrylic or Melamine Plastic Signs:**

- 1. Engraved legend.
- 2. Thickness:
  - a. For signs up to 20 sq. in., minimum 1/16 inch thick.
  - b. For signs larger than 20 sq. in., 1/8 inch thick.
  - c. Engraved legend with white letters on a black background.
  - d. Punched or drilled for mechanical fasteners with 1/4-inch grommets in corners for mounting.
  - e. Framed with mitered acrylic molding and arranged for attachment at applicable equipment.

## **2.6 CABLE TIES**

### **A. General-Purpose Cable Ties: Fungus inert, self-extinguishing, one piece, self-locking, and Type 6/6 nylon.**

- 1. Minimum Width: 3/16 inch.
- 2. Tensile Strength at 73 Deg F according to ASTM D638: 12,000 psi.
- 3. Temperature Range: Minus 40 to plus 185 deg F.
- 4. Color: Black, except where used for color-coding.



- B. UV-Stabilized Cable Ties: Fungus inert, designed for continuous exposure to exterior sunlight, self-extinguishing, one piece, self-locking, and Type 6/6 nylon.
  - 1. Minimum Width: 3/16 inch.
  - 2. Tensile Strength at 73 Deg F according to ASTM D638: 12,000 psi.
  - 3. Temperature Range: Minus 40 to plus 185 deg F.
  - 4. Color: Black.
- C. Plenum-Rated Cable Ties: Self-extinguishing, UV stabilized, one piece, and self-locking.
  - 1. Minimum Width: 3/16 inch.
  - 2. Tensile Strength at 73 Deg F according to ASTM D638: 7000 psi.
  - 3. UL 94 Flame Rating: 94V-0.
  - 4. Temperature Range: Minus 50 to plus 284 deg F.
  - 5. Color: Black.

## 2.7 MISCELLANEOUS IDENTIFICATION PRODUCTS

- A. Paint: Comply with requirements in painting Sections for paint materials and application requirements. Retain paint system applicable for surface material and location (exterior or interior).
- B. Fasteners for Labels and Signs: Self-tapping, stainless-steel screws or stainless-steel machine screws with nuts and flat and lock washers.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Verify and coordinate identification names, abbreviations, colors, and other features with requirements in other Sections requiring identification applications, Drawings, Shop Drawings, manufacturer's wiring diagrams, and operation and maintenance manual. Use consistent designations throughout Project.
- B. Install identifying devices before installing acoustical ceilings and similar concealment.
- C. Verify identity of each item before installing identification products.
- D. Coordinate identification with Project Drawings, manufacturer's wiring diagrams, and operation and maintenance manual.
- E. Apply identification devices to surfaces that require finish after completing finish work.

**Identification for Electrical Systems**

- F. Install signs with approved legend to facilitate proper identification, operation, and maintenance of electrical systems and connected items.
- G. Self-Adhesive Identification Products: Before applying electrical identification products, clean substrates of substances that could impair bond, using materials and methods recommended by manufacturer of identification product.
- H. System Identification for Raceways and Cables under 600 V: Identification shall completely encircle cable or conduit. Place identification of two-color markings in contact, side by side.
  - 1. Secure tight to surface of conductor, cable, or raceway.
- I. Auxiliary Electrical Systems Conductor Identification: Identify field-installed alarm, control, and signal connections.
- J. Elevated Components: Increase sizes of labels, signs, and letters to those appropriate for viewing from the floor.
- K. Accessible Fittings for Raceways: Identify the covers of each junction and pull box of the following systems with the wiring system legend and system voltage. System legends shall be as follows:
  - 1. "EMERGENCY POWER."
  - 2. "POWER."
  - 3. "UPS."
- L. Vinyl Wraparound Labels:
  - 1. Secure tight to surface at a location with high visibility and accessibility.
  - 2. Attach labels that are not self-adhesive type with clear vinyl tape, with adhesive appropriate to the location and substrate.
- M. Self-Adhesive Wraparound Labels: Secure tight to surface of raceway or cable at a location with high visibility and accessibility.
- N. Self-Adhesive Labels:
  - 1. On each unit of equipment, install unique designation label that is consistent with wiring diagrams, schedules, and operation and maintenance manual.
  - 2. Unless otherwise indicated, provide a single line of text with 1/2-inch-high letters on 1-1/2-inch-high label; where two lines of text are required, use labels 2 inches high.
- O. Heat-Shrink, Preprinted Tubes: Secure tight to surface at a location with high visibility and accessibility.

- P. Marker Tapes: Secure tight to surface at a location with high visibility and accessibility.
- Q. Self-Adhesive Vinyl Tape: Secure tight to surface at a location with high visibility and accessibility.
  - 1. Field-Applied, Color-Coding Conductor Tape: Apply in half-lapped turns for a minimum distance of 6 inches where splices or taps are made. Apply last two turns of tape with no tension to prevent possible unwinding.
- R. Tape and Stencil: Comply with requirements in painting Sections for surface preparation and paint application.
- S. Write-on Tags:
  - 1. Place in a location with high visibility and accessibility.
  - 2. Secure using general-purpose cable ties.
- T. Baked-Enamel Signs:
  - 1. Attach signs that are not self-adhesive type with mechanical fasteners appropriate to the location and substrate.
  - 2. Unless otherwise indicated, provide a single line of text with 1/2-inch-high letters on minimum 1-1/2-inch-high sign; where two lines of text are required, use signs minimum 2 inches high.
- U. Metal-Backed Butyrate Signs:
  - 1. Attach signs that are not self-adhesive type with mechanical fasteners appropriate to the location and substrate.
  - 2. Unless otherwise indicated, provide a single line of text with 1/2-inch-high letters on minimum 1-1/2-inch-high sign; where two lines of text are required, use signs minimum 2 inches high.
- V. Laminated Acrylic or Melamine Plastic Signs:
  - 1. Attach signs and plastic labels that are not self-adhesive type with mechanical fasteners appropriate to the location and substrate.
  - 2. Unless otherwise indicated, provide a single line of text with 1/2-inch-high letters on minimum 1-1/2-inch-high sign; where two lines of text are required, use signs minimum 2 inches high.
- W. Cable Ties: General purpose, for attaching tags, except as listed below:
  - 1. Outdoors: UV-stabilized nylon.
  - 2. In Spaces Handling Environmental Air: Plenum rated.

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**Identification for Electrical Systems**

**3.2 IDENTIFICATION SCHEDULE**

- A. Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment. Install access doors or panels to provide view of identifying devices.
- B. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, pull points, and locations of high visibility. Identify by system and circuit designation.
- C. Accessible Raceways and Metal-Clad Cables, 600 V or Less, for Service, Feeder, and Branch Circuits, More Than 30 A and 120 V to Ground: Identify with self-adhesive raceway labels.
  - 1. Locate identification at changes in direction, at penetrations of walls and floors, at 50-foot maximum intervals in straight runs, and at 25-foot maximum intervals in congested areas.
- D. Control-Circuit Conductor Termination Identification: For identification at terminations, provide heat-shrink preprinted tubes with the conductor designation.
- E. Conductors to Be Extended in the Future: Attach write-on tags to conductors and list source.
- F. Auxiliary Electrical Systems Conductor Identification: Marker tape that is uniform and consistent with system used by manufacturer for factory-installed connections.
  - 1. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, and pull points. Identify by system and circuit designation.
- G. Instructional Signs: Self-adhesive labels, including the color code for grounded and ungrounded conductors.
- H. Warning Labels for Indoor Cabinets, Boxes, and Enclosures for Power and Lighting: Self-adhesive equipment labels.
  - 1. Apply to exterior of door, cover, or other access.
  - 2. For equipment with multiple power or control sources, apply to door or cover of equipment, including, but not limited to, the following:
    - a. Controls with external control power connections.
- I. Arc Flash Warning Labeling: Self-adhesive labels.
- J. Operating Instruction Signs: Self-adhesive labels.

K. Equipment Identification Labels:

1. Indoor Equipment: Laminated acrylic or melamine plastic sign.

END OF SECTION 260553

## **SECTION 262726**

### **WIRING DEVICES**

#### **PART 1 - GENERAL**

##### **1.1 SUMMARY**

###### **A. Section Includes:**

1. Standard-grade receptacles, 125 V.
2. GFCI receptacles, 125 V, 20 A.
3. Toggle switches, 120/277 V.
4. Decorator-style devices.
5. Occupancy sensors.
6. Wall-box dimmers.
7. Wall plates.

##### **1.2 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
- B. Shop Drawings: List of legends and description of materials and process used for premarking wall plates.

##### **1.3 INFORMATIONAL SUBMITTALS**

- A. Field quality-control reports.

#### **PART 2 - PRODUCTS**

##### **2.1 GENERAL WIRING-DEVICE REQUIREMENTS**

- A. Wiring Devices, Components, and Accessories: Listed and labeled as defined in the CEC, by a qualified testing agency, and marked for intended location and use.
- B. Comply with NFPA 70.
- C. RoHS compliant.
- D. Comply with NEMA WD 1.

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### **Wiring Devices**

- E. Device Color:
  - 1. Wiring Devices Connected to Normal Power System: White unless otherwise indicated or required by NFPA 70 or device listing.
- F. Wall Plate Color: For plastic covers, match device color.
- G. Source Limitations: Obtain each type of wiring device and associated wall plate from single source from single manufacturer.

#### **2.2 STANDARD-GRADE RECEPTACLES, 125 V**

- A. Duplex Receptacles, 125 V:
  - 1. Manufacturers: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Pass & Seymour/Legrand
    - b. Hubbell Incorporated
    - c. Leviton Mfg., Company
    - d. Cooper Wiring Devices
    - e. Or equal.
  - 2. Description: Two pole, three wire, and self-grounding.
  - 3. Configuration: NEMA WD 6, Configuration 5-20R.
  - 4. Standards: Comply with UL 498 and FS W-C-596.

#### **2.3 GFCI RECEPTACLES, 125 V**

- A. Duplex GFCI Receptacles, 125 V:
  - 1. Manufacturers: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Pass & Seymour/Legrand
    - b. Hubbell Incorporated
    - c. Leviton Mfg., Company Inc.
    - d. Cooper Wiring Devices
    - e. Or equal
  - 2. Description: Integral GFCI with "Test" and "Reset" buttons and LED indicator light. Two pole, three wire, and self-grounding.
  - 3. Configuration: NEMA WD 6, Configuration 5-20R.
  - 4. Type: Non-feed through.

5. Standards: Comply with UL 498, UL 943 Class A, and FS W-C-596.

## 2.4 TOGGLE SWITCHES, 120/277 V

### A. Single-Pole Switches, 120/277 V:

1. Manufacturers: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
  - a. Pass & Seymour/Legrand
  - b. Hubbell Incorporated
  - c. Leviton Mfg., Company Inc.
  - d. Cooper Wiring Devices
  - e. Or equal.
2. Standards: Comply with UL 20 and FS W-S-896.

### B. Three-Way Switches, 120/277 V:

1. Manufacturers: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
  - a. Pass & Seymour/Legrad
  - b. Hubbell Incorporated
  - c. Leviton Mfg., Company Inc.
  - d. Cooper Wiring Devices
  - e. Or equal
2. Comply with UL 20 and FS W-S-896.

## 2.5 DECORATOR-STYLE DEVICES

### A. Decorator Duplex Receptacles, 125 V:

1. Manufacturers: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
  - a. Pass & Seymour/Legrand
  - b. Hubbell Incorporated
  - c. Leviton Mfg., Company Inc.
  - d. Cooper Wiring Devices
  - e. Or equal
2. Description: Two pole, three wire, and self-grounding. Square face.



**Wiring Devices**

3. Configuration: NEMA WD 6, Configuration 5-15R.
4. Standards: Comply with UL 498.

**2.6 OCCUPANCY SENSORS**

**A. Wall Switch Sensor Light Switch, Dual Technology:**

1. Manufacturers: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
  - a. Pass & Seymour/Legrand
  - b. Hubbell Incorporated
  - c. Leviton Mfg., Company Inc.
  - d. Cooper Wiring Devices
  - e. Or equal
2. Description: Switchbox-mounted, combination lighting-control sensor and conventional switch lighting-control unit using dual (ultrasonic and passive infrared) technology.
3. Standards: Comply with UL 20.
4. Rated 960 W at 120 V ac for tungsten lighting, 10 A at 120 V ac or 10 A at 277 V ac for fluorescent or LED lighting, and 1/4 hp at 120 V ac.
5. Adjustable time delay of five, 10, 15, 20 minutes.
6. Able to be locked to Automatic or Manual-On mode.
7. Automatic Light-Level Sensor: Adjustable from 2 to 200 fc.
8. Connections: Provisions for connection to BAS.

**B. Wall Sensor Light Switch, Passive Infrared:**

1. Manufacturers: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
  - a. Pass & Seymour/Legrand
  - b. Hubbell Incorporated
  - c. Leviton Mfg., Company Inc.
  - d. Cooper Wiring Devices
  - e. Or equal
2. Description: Switchbox-mounted, combination, lighting-control sensor and conventional switch lighting-control unit using passive infrared technology.
3. Standards: Comply with UL 20.
4. Connections: Hard wired.
5. Rated 960 W at 120 V ac for tungsten lighting, 10 A at 120 V ac or 10 A at 277 V ac for fluorescent or LED lighting, and 1/4 hp at 120 V ac.
6. Adjustable time delay of five, 10, 15, 20 minutes.

7. Able to be locked to Automatic or Manual-On mode.
8. Automatic Light-Level Sensor: Adjustable from 2 to 200 fc.

## 2.7 DIMMERS

### A. Wall-Box Dimmers:

1. Manufacturers: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
  - a. Pass & Seymour/Legrand
  - b. Hubbell Incorporated
  - c. Leviton Mfg., Company Inc.
  - d. Cooper Wiring Devices
  - e. Or equal
2. Description: Modular, full-wave, solid-state dimmer switch with integral, quiet on-off switches, with audible frequency and EMI/RFI suppression filters.
3. Control: Continuously adjustable slider; with single-pole or three-way switching.
4. Standards: Comply with UL 1472.
5. Fluorescent Lamp Dimmer Switches: Modular; compatible with dimmer ballasts; trim potentiometer to adjust low-end dimming; dimmer-ballast combination capable of consistent dimming with low end not greater than 20 percent of full brightness.
6. LED Lamp Dimmer Switches: Modular; compatible with LED lamps; trim potentiometer to adjust low-end dimming; capable of consistent dimming with low end not greater than 20 percent of full brightness.

## 2.8 WALL PLATES

- A. Single Source: Obtain wall plates from same manufacturer of wiring devices.
- B. Single and combination types shall match corresponding wiring devices.
  1. Plate-Securing Screws: Metal with head color to match plate finish.
  2. Material for Finished Spaces: Smooth, high-impact thermoplastic.
  3. Material for Unfinished Spaces: Galvanized steel.
  4. Material for Damp Locations: Cast aluminum with spring-loaded lift cover, and listed and labeled for use in wet and damp locations.
- C. Wet-Location, Weatherproof Cover Plates: NEMA 250, complying with Type 3R, weather-resistant, die-cast aluminum with lockable cover.

**Wiring Devices**

**PART 3 - EXECUTION**

**3.1 INSTALLATION**

- A. Comply with NECA 1, including mounting heights listed in that standard, unless otherwise indicated.
- B. Coordination with Other Trades:
  - 1. Keep outlet boxes free of plaster, drywall joint compound, mortar, cement, concrete, dust, paint, and other material that may contaminate the raceway system, conductors, and cables.
  - 2. Install device boxes in brick or block walls so that the cover plate does not cross a joint unless the joint is troweled flush with the face of the wall.
  - 3. Install wiring devices after all wall preparation, including painting, is complete.
- C. Device Installation:
  - 1. Connect devices to branch circuits using pigtails that are not less than 6 inches in length.
  - 2. When mounting into metal boxes, remove the fiber or plastic washers used to hold device-mounting screws in yokes, allowing metal-to-metal contact.
- D. Receptacle Orientation:
  - 1. Install ground pin of vertically mounted receptacles **[up] [down]**, and on horizontally mounted receptacles to the **[right] [left]**.
  - 2. Install hospital-grade receptacles in patient-care areas with the ground pin or neutral blade at the top.
- E. Device Plates: Do not use oversized or extra-deep plates. Repair wall finishes and remount outlet boxes when standard device plates do not fit flush or do not cover rough wall opening.
- F. Dimmers:
  - 1. Install dimmers within terms of their listing.
  - 2. Verify that dimmers used for fan-speed control are listed for that application.
  - 3. Install unshared neutral conductors on line and load side of dimmers according to manufacturers' device, listing conditions in the written instructions.

- G. Arrangement of Devices: Unless otherwise indicated, mount flush, with long dimension vertical and with grounding terminal of receptacles on top. Group adjacent switches under single, multigang wall plates.
- H. Adjust locations of floor service outlets and service poles to suit arrangement of partitions and furnishings.

### 3.2 FIELD QUALITY CONTROL

- A. Perform the following tests and inspections:
  - 1. Test Instruments: Use instruments that comply with UL 1436.
  - 2. Test Instrument for Receptacles: Digital wiring analyzer with digital readout or illuminated digital-display indicators of measurement.
- B. Tests for Receptacles:
  - 1. Line Voltage: Acceptable range is 105 to 132 V.
  - 2. Percent Voltage Drop under 15-A Load: A value of 6 percent or higher is unacceptable.
  - 3. Ground Impedance: Values of up to 2 ohms are acceptable.
  - 4. GFCI Trip: Test for tripping values specified in UL 1436 and UL 943.
  - 5. Using the test plug, verify that the device and its outlet box are securely mounted.
- C. Wiring device will be considered defective if it does not pass tests and inspections.
- D. Prepare test and inspection reports.

END OF SECTION 262726

## **SECTION 262816**

### **ENCLOSED SWITCHES AND CIRCUIT BREAKERS**

#### **PART 1 - GENERAL**

##### **1.1 SUMMARY**

**A. Section Includes:**

1. Nonfusible switches.
2. Molded-case circuit breakers (MCCBs).
3. Enclosures.

##### **1.2 ACTION SUBMITTALS**

**A. Product Data:** For each type of enclosed switch, circuit breaker, accessory, and component indicated. Include nameplate ratings, dimensioned elevations, sections, weights, and manufacturers' technical data on features, performance, electrical characteristics, ratings, accessories, and finishes.

1. Include time-current coordination curves (average melt) for each type and rating of overcurrent protective device; include selectable ranges for each type of overcurrent protective device. Provide in PDF electronic format.

**B. Shop Drawings:** For enclosed switches and circuit breakers.

1. Include plans, elevations, sections, details, and attachments to other work.
2. Include wiring diagrams for power, signal, and control wiring.

##### **1.3 INFORMATIONAL SUBMITTALS**

**A. Qualification Data:** For qualified testing agency.

**B. Seismic Qualification Certificates:** For enclosed switches and circuit breakers, accessories, and components, from manufacturer.

**C. Field quality-control reports.**

##### **1.4 CLOSEOUT SUBMITTALS**

**A. Operation and maintenance data.**

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### **Enclosed Switches and Circuit Breakers**

#### **1.5 QUALITY ASSURANCE**

##### **A. Testing Agency Qualifications: Accredited by NETA.**

1. Testing Agency's Field Supervisor: Currently certified by NETA to supervise on-site testing.

#### **1.6 WARRANTY**

##### **A. Manufacturer's Warranty: Manufacturer and Installer agree to repair or replace components that fail in materials or workmanship within specified warranty period.**

1. Warranty Period: One year(s) from date of Substantial Completion.

### **PART 2 - PRODUCTS**

#### **2.1 PERFORMANCE REQUIREMENTS**

##### **A. Seismic Performance: Enclosed switches and circuit breakers shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.**

1. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified."

#### **2.2 GENERAL REQUIREMENTS**

##### **A. Source Limitations: Obtain enclosed switches and circuit breakers, overcurrent protective devices, components, and accessories, within same product category, from single manufacturer.**

##### **B. Product Selection for Restricted Space: Drawings indicate maximum dimensions for enclosed switches and circuit breakers, including clearances between enclosures, and adjacent surfaces and other items. Comply with indicated maximum dimensions.**

##### **C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in the CEC, by an NRTL, and marked for intended location and application.**

##### **D. Comply with NFPA 70.**

## 2.3 NONFUSIBLE SWITCHES

- 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. Eaton Electrical Inc.; Cutler-Hammer
  - 2. General Electric Company; GE Consumer & Industrial – Electrical Distribution.
  - 3. Square D; a brand of Schneider Electric
  - 4. Siemens Energy & Automation, Inc.
  - 5. Or equal.
- B. Type GD, General Duty, Three Pole, Single Throw, 240-V ac, 600 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, lockable handle with capability to accept two padlocks, and interlocked with cover in closed position.
- C. Type HD, Heavy Duty, Three Pole, Single Throw, 600-V ac, 1200 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, lockable handle with capability to accept three padlocks, and interlocked with cover in closed position.
- D. Accessories:
  - 1. Equipment Ground Kit: Internally mounted and labeled for copper and aluminum ground conductors.
  - 2. Neutral Kit: Internally mounted; insulated, capable of being grounded and bonded; labeled for copper and aluminum neutral conductors.
  - 3. Isolated Ground Kit: Internally mounted; insulated, labeled for copper and aluminum neutral conductors.
  - 4. Class R Fuse Kit: Provides rejection of other fuse types when Class R fuses are specified.
  - 5. Service-Rated Switches: Labeled for use as service equipment.

## 2.4 MOLDED-CASE CIRCUIT BREAKERS

- 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. Eaton Electrical Inc.; Cutler-Hammer
  - 2. General Electric Company; GE Consumer & Industrial – Electrical Distribution
  - 3. Square D; a brand of Schneider Electric
  - 4. Siemens Energy & Automation, Inc.
  - 5. Or Equal

**Enclosed Switches and Circuit Breakers**

- B. Circuit breakers shall be constructed using glass-reinforced insulating material. Current carrying components shall be completely isolated from the handle and the accessory mounting area.
- C. Circuit breakers shall have a toggle operating mechanism with common tripping of all poles, which provides quick-make, quick-break contact action. The circuit-breaker handle shall be over center, be trip free, and reside in a tripped position between on and off to provide local trip indication. Circuit-breaker escutcheon shall be clearly marked on and off in addition to providing international I/O markings. Equip circuit breaker with a push-to-trip button, located on the face of the circuit breaker to mechanically operate the circuit-breaker tripping mechanism for maintenance and testing purposes.
- D. The maximum ampere rating and UL, IEC, or other certification standards with applicable voltage systems and corresponding interrupting ratings shall be clearly marked on face of circuit breaker. Circuit breakers shall be 100 percent rated combinations for series connected interrupting ratings shall be listed by UL as recognized component combinations. Any series rated combination used shall be marked on the end-use equipment along with the statement "Caution - Series Rated System. \_\_\_\_\_ Amps Available. Identical Replacement Component Required."
- E. MCCBs shall be equipped with a device for locking in the isolated position.
- F. Lugs shall be suitable for 140 deg F rated wire on 125-A circuit breakers and below.
- G. Standards: Comply with UL 489 with interrupting capacity to comply with available fault currents.
- H. Thermal-Magnetic Circuit Breakers: Inverse time-current thermal element for low-level overloads and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.
- I. Adjustable, Instantaneous-Trip Circuit Breakers: Magnetic trip element with front-mounted, field-adjustable trip setting.
- J. Features and Accessories:
  - 1. Standard frame sizes, trip ratings, and number of poles.
  - 2. Application Listing: Appropriate for application; Type SWD for switching fluorescent lighting loads; Type HID for feeding fluorescent and high-intensity discharge lighting circuits.



## 2.5 ENCLOSURES

- A. Enclosed Switches and Circuit Breakers: UL 489, NEMA KS 1, NEMA 250, and UL 50, to comply with environmental conditions at installed location.
- B. Enclosure Finish: The enclosure shall be finished with gray baked enamel paint, electrodeposited on cleaned, phosphatized steel (NEMA 250 Type 1).
- C. Conduit Entry: NEMA 250 Types 4, 4X, and 12 enclosures shall contain no knockouts. NEMA 250 Types 7 and 9 enclosures shall be provided with threaded conduit openings in both endwalls.
- D. Operating Mechanism: The circuit-breaker operating handle shall be directly operable through the front cover of the enclosure (NEMA 250 Type 1). The cover interlock mechanism shall have an externally operated override. The override shall not permanently disable the interlock mechanism, which shall return to the locked position once the override is released. The tool used to override the cover interlock mechanism shall not be required to enter the enclosure in order to override the interlock.
- E. Enclosures designated as NEMA 250 Type 4, 4X stainless steel, 12, or 12K shall have a dual cover interlock mechanism to prevent unintentional opening of the enclosure cover when the circuit breaker is ON and to prevent turning the circuit breaker ON when the enclosure cover is open.

## PART 3 - EXECUTION

### 3.1 ENCLOSURE ENVIRONMENTAL RATING APPLICATIONS

- A. Enclosed Switches and Circuit Breakers: Provide enclosures at installed locations with the following environmental ratings.
  - 1. Indoor, Dry and Clean Locations: NEMA 250, Type 1.
  - 2. Outdoor Locations: NEMA 250, Type 3R.
  - 3. Wash-Down Areas: NEMA 250, Type 4X, stainless steel.
  - 4. Other Wet or Damp, Indoor Locations: NEMA 250, Type 4.
  - 5. Indoor Locations Subject to Dust, Falling Dirt, and Dripping Noncorrosive Liquids: NEMA 250, Type 12.

### 3.2 INSTALLATION

- A. Interruption of Existing Electric Service: Do not interrupt electric service to facilities occupied by State or others unless permitted under the following conditions and then only after arranging to provide temporary electric service according to requirements indicated:

**Enclosed Switches and Circuit Breakers**

1. Notify State's Representative no fewer than seven days in advance of proposed interruption of electric service.
  2. Indicate method of providing temporary electric service.
  3. Do not proceed with interruption of electric service without State's Representative's written permission.
  4. Comply with NFPA 70E.
- B. Coordinate layout and installation of switches, circuit breakers, and components with equipment served and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.
- C. Install individual wall-mounted switches and circuit breakers with tops at uniform height unless otherwise indicated.
- D. Temporary Lifting Provisions: Remove temporary lifting of eyes, channels, and brackets and temporary blocking of moving parts from enclosures and components.
- E. Install fuses in fusible devices.
- F. Comply with NFPA 70 and NECA 1.

**3.3 IDENTIFICATION**

- A. Comply with requirements in Section 260553 "Identification for Electrical Systems."
1. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs.
  2. Label each enclosure with engraved metal or laminated-plastic nameplate.

**3.4 FIELD QUALITY CONTROL**

- A. Perform tests and inspections.
- B. Tests and Inspections for Switches:
1. Visual and Mechanical Inspection:
    - a. Inspect physical and mechanical condition.
    - b. Inspect anchorage, alignment, grounding, and clearances.
    - c. Verify that the unit is clean.
    - d. Verify blade alignment, blade penetration, travel stops, and mechanical operation.
    - e. Verify that fuse sizes and types match the Specifications and Drawings.

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**Enclosed Switches and Circuit Breakers**

- f. Verify that each fuse has adequate mechanical support and contact integrity.
  - g. Inspect bolted electrical connections for high resistance using one of the two following methods:
    - 1) Use a low-resistance ohmmeter.
      - a) Compare bolted connection resistance values to values of similar connections. Investigate values that deviate from those of similar bolted connections by more than 50 percent of the lowest value.
    - 2) Verify tightness of accessible bolted electrical connections by calibrated torque-wrench method in accordance with manufacturer's published data or NETA ATS Table 100.12.
      - a) Bolt-torque levels shall be in accordance with manufacturer's published data. In the absence of manufacturer's published data, use NETA ATS Table 100.12.
  - h. Verify that operation and sequencing of interlocking systems is as described in the Specifications and shown on the Drawings.
  - i. Verify correct phase barrier installation.
  - j. Verify lubrication of moving current-carrying parts and moving and sliding surfaces.
2. Electrical Tests:
- a. Perform resistance measurements through bolted connections with a low-resistance ohmmeter. Compare bolted connection resistance values to values of similar connections. Investigate values that deviate from adjacent poles or similar switches by more than 50 percent of the lowest value.
  - b. Measure contact resistance across each switchblade fuseholder. Drop values shall not exceed the high level of the manufacturer's published data. If manufacturer's published data are not available, investigate values that deviate from adjacent poles or similar switches by more than 50 percent of the lowest value.
  - c. Perform insulation-resistance tests for one minute on each pole, phase-to-phase and phase-to-ground with switch closed, and across each open pole. Apply voltage in accordance with manufacturer's published data. In the absence of manufacturer's published data, use Table 100.1 from the NETA ATS. Investigate values of insulation resistance less than those published in Table 100.1 or as recommended in manufacturer's published data.

**Enclosed Switches and Circuit Breakers**

- d. Measure fuse resistance. Investigate fuse-resistance values that deviate from each other by more than 15 percent.
- e. Perform ground fault test according to NETA ATS 7.14 "Ground Fault Protection Systems, Low-Voltage."

**C. Tests and Inspections for Molded Case Circuit Breakers:**

**1. Visual and Mechanical Inspection:**

- a. Verify that equipment nameplate data are as described in the Specifications and shown on the Drawings.
- b. Inspect physical and mechanical condition.
- c. Inspect anchorage, alignment, grounding, and clearances.
- d. Verify that the unit is clean.
- e. Operate the circuit breaker to ensure smooth operation.
- f. Inspect bolted electrical connections for high resistance using one of the two following methods:

**1) Use a low-resistance ohmmeter.**

- a) Compare bolted connection resistance values to values of similar connections. Investigate values that deviate from those of similar bolted connections by more than 50 percent of the lowest value.

**2) Verify tightness of accessible bolted electrical connections by calibrated torque-wrench method in accordance with manufacturer's published data or NETA ATS Table 100.12.**

- a) Bolt-torque levels shall be in accordance with manufacturer's published data. In the absence of manufacturer's published data, use NETA ATS Table 100.12.

- g. Inspect operating mechanism, contacts, and chutes in unsealed units.
- h. Perform adjustments for final protective device settings in accordance with the coordination study.

**2. Electrical Tests:**

- a. Perform resistance measurements through bolted connections with a low-resistance ohmmeter. Compare bolted connection resistance values to values of similar connections. Investigate values that deviate from adjacent poles or similar switches by more than 50 percent of the lowest value.
- b. Perform insulation-resistance tests for one minute on each pole, phase-to-phase and phase-to-ground with circuit breaker closed, and

across each open pole. Apply voltage in accordance with manufacturer's published data. In the absence of manufacturer's published data, use Table 100.1 from the NETA ATS. Investigate values of insulation resistance less than those published in Table 100.1 or as recommended in manufacturer's published data.

- c. Perform a contact/pole resistance test. Drop values shall not exceed the high level of the manufacturer's published data. If manufacturer's published data are not available, investigate values that deviate from adjacent poles or similar switches by more than 50 percent of the lowest value.
  - d. Perform insulation resistance tests on all control wiring with respect to ground. Applied potential shall be 500-V dc for 300-V rated cable and 1000-V dc for 600-V rated cable. Test duration shall be one minute. For units with solid state components, follow manufacturer's recommendation. Insulation resistance values shall be no less than two megohms.
  - e. Determine the following by primary current injection:
    - 1) Long-time pickup and delay. Pickup values shall be as specified. Trip characteristics shall not exceed manufacturer's published time-current characteristic tolerance band, including adjustment factors.
    - 2) Short-time pickup and delay. Short-time pickup values shall be as specified. Trip characteristics shall not exceed manufacturer's published time-current characteristic tolerance band, including adjustment factors.
    - 3) Ground-fault pickup and time delay. Ground-fault pickup values shall be as specified. Trip characteristics shall not exceed manufacturer's published time-current characteristic tolerance band, including adjustment factors.
    - 4) Instantaneous pickup. Instantaneous pickup values shall be as specified and within manufacturer's published tolerances.
  - f. Test functionality of the trip unit by means of primary current injection. Pickup values and trip characteristics shall be as specified and within manufacturer's published tolerances.
  - g. Verify operation of charging mechanism. Investigate units that do not function as designed.
- 3. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.
  - 4. Test and adjust controls, remote monitoring, and safeties. Replace damaged and malfunctioning controls and equipment.
- D. Enclosed switches and circuit breakers will be considered defective if they do not pass tests and inspections.

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**Enclosed Switches and Circuit Breakers**

- E. Prepare test and inspection reports.
  - 1. Test procedures used.
  - 2. Include identification of each enclosed switch and circuit breaker tested and describe test results.
  - 3. List deficiencies detected, remedial action taken, and observations after remedial action.

END OF SECTION 262816

**SECTION 265119**  
**LED INTERIOR LIGHTING**

**PART 1 - GENERAL**

**1.1 SUMMARY**

**A. Section includes:**

1. Interior solid-state luminaires that use LED technology.
2. Lighting fixture supports.

**1.2 ACTION SUBMITTALS**

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

1. Manufacturers' Certified Data: Photometric data certified by manufacturer's laboratory with a current accreditation under the National Voluntary Laboratory Accreditation Program for Energy Efficient Lighting Products.
2. Testing Agency Certified Data: For indicated luminaires, photometric data certified by a qualified independent testing agency. Photometric data for remaining luminaires shall be certified by manufacturer.

**B. Shop Drawings:** For nonstandard or custom luminaires.

1. Include plans, elevations, sections, and mounting and attachment details.
2. Include details of luminaire assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
3. Include diagrams for power, signal, and control wiring.

**1.3 INFORMATIONAL SUBMITTALS**

- A. Coordination Drawings:** Reflected ceiling plan(s) and other details, drawn to scale and coordinated with each other, using input from installers of the items involved.
- B. Seismic Qualification Data:** For luminaires, accessories, and components, from manufacturer.
- C. Product Certificates:** For each type of luminaire.

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### **Led Interior Lighting**

- D. Product test reports.
- E. Sample warranty.

#### **1.4 CLOSEOUT SUBMITTALS**

- A. Operation and maintenance data.

#### **1.5 QUALITY ASSURANCE**

- A. Luminaire Photometric Data Testing Laboratory Qualifications: Luminaire manufacturer's laboratory that is accredited under the NVLAP for Energy Efficient Lighting Products.
- B. Luminaire Photometric Data Testing Laboratory Qualifications: Provided by an independent agency, with the experience and capability to conduct the testing indicated, that is an NRTL as defined by OSHA in 29 CFR 1910.7, accredited under the NVLAP for Energy Efficient Lighting Products, and complying with the applicable IES testing standards.
- C. Provide luminaires from a single manufacturer for each luminaire type.
- D. Each luminaire type shall be binned within a three-step MacAdam Ellipse to ensure color consistency among luminaires.

#### **1.6 WARRANTY**

- A. Warranty: Manufacturer and Installer agree to repair or replace components of luminaires that fail in materials or workmanship within specified warranty period.
- B. Warranty Period: Five year(s) from date of Substantial Completion.

### **PART 2 - PRODUCTS**

#### **2.1 PERFORMANCE REQUIREMENTS**

- A. Seismic Performance: Luminaires shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.
- B. Seismic Performance: Luminaires and lamps shall be labeled vibration and shock resistant.
  - 1. The term "withstand" means "the luminaire will remain in place without separation of any parts when subjected to the seismic forces specified."



- C. Ambient Temperature: 41 to 104 deg F.
  - 1. Relative Humidity: Zero to 95 percent.
- D. Altitude: Sea level to 1000 feet.

## 2.2 LUMINAIRE REQUIREMENTS

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in the CEC, by a qualified testing agency, and marked for intended location and application.
- B. Factory-Applied Labels: Comply with UL 1598. Include recommended lamps. Locate labels where they will be readily visible to service personnel, but not seen from normal viewing angles when lamps are in place.
  - 1. Label shall include the following lamp characteristics:
    - a. "USE ONLY" and include specific lamp type.
    - b. Lamp diameter, shape, size, wattage, and coating.
    - c. CCT and CRI.
- C. Recessed luminaires shall comply with NEMA LE 4.
- D. NRTL Compliance: Luminaires for hazardous locations shall be listed and labeled for indicated class and division of hazard by an NRTL.
- E. FM Global Compliance: Luminaires for hazardous locations shall be listed and labeled for indicated class and division of hazard by FM Global.
- F. California Title 24 compliant.

## 2.3 MANUFACTURERS

- A. As listed in lighting fixture schedule on drawings

## 2.4 MATERIALS

- A. Metal Parts:
  - 1. Free of burrs and sharp corners and edges.
  - 2. Sheet metal components shall be steel unless otherwise indicated.
  - 3. Form and support to prevent warping and sagging.
- B. Steel:

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### **Led Interior Lighting**

1. ASTM A36/A36M for carbon structural steel.
  2. ASTM A568/A568M for sheet steel.
- C. Stainless Steel:
1. Manufacturer's standard grade.
  2. Manufacturer's standard type, ASTM A240/240M.
- D. Galvanized Steel: ASTM A653/A653M.
- E. Aluminum: ASTM B209.

## **2.5 METAL FINISHES**

- A. Variations in finishes are unacceptable in the same piece. Variations in finishes of adjoining components are acceptable if they are within the range of approved Samples and if they can be and are assembled or installed to minimize contrast.

## **2.6 LUMINAIRE SUPPORT**

- A. Comply with requirements in Section 260529 "Hangers and Supports for Electrical Systems" for channel and angle iron supports and nonmetallic channel and angle supports.
- B. Single-Stem Hangers: 1/2-inch steel tubing with swivel ball fittings and ceiling canopy. Finish same as luminaire.
- C. Wires: ASTM A641/A641M, Class 3, soft temper, zinc-coated steel, 12 gage.
- D. Rod Hangers: 3/16-inch minimum diameter, cadmium-plated, threaded steel rod.
- E. Hook Hangers: Integrated assembly matched to luminaire, line voltage, and equipment with threaded attachment, cord, and locking-type plug.

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION**

- A. Comply with NECA 1.
- B. Install luminaires level, plumb, and square with ceilings and walls unless otherwise indicated.

- C. Install lamps in each luminaire.
- D. Supports:
  - 1. Sized and rated for luminaire weight.
  - 2. Able to maintain luminaire position after cleaning and relamping.
  - 3. Provide support for luminaire without causing deflection of ceiling or wall.
  - 4. Luminaire-mounting devices shall be capable of supporting a horizontal force of 100 percent of luminaire weight and a vertical force of 400 percent of luminaire weight.
- E. Comply with requirements in Section 260519 "Low-Voltage Electrical Power Conductors and Cables" for wiring connections.

### 3.2 IDENTIFICATION

- A. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Section 260553 "Identification for Electrical Systems."

### 3.3 FIELD QUALITY CONTROL

- A. Perform the following tests and inspections:
  - 1. Operational Test: After installing luminaires, switches, and accessories, and after electrical circuitry has been energized, test units to confirm proper operation.
  - 2. Test for Emergency Lighting: Interrupt power supply to demonstrate proper operation. Verify transfer from normal power to battery power and retransfer to normal.
- B. Luminaire will be considered defective if it does not pass operation tests and inspections.
- C. Prepare test and inspection reports.

END OF SECTION 265119

**SECTION 274100**  
**AUDIOVISUAL SYSTEMS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. This specification section outlines the minimum requirements and installation methods for the integrated audiovisual system, hardware, software, cables, accessories, and acceptance testing.
- B. System refers to the complete and functional assemblage of equipment required to achieve the specified functionality, performance, and design intent.

**1.2 SUBMITTALS**

- A. Comply with the Division 01 specification to submittal procedures.
- B. Product Data: For each type of product.

**1.3 CLOSEOUT SUBMITTALS**

- A. As-built documentation shall be submitted upon completion. This submittal package shall include, but not be limited to, the following:
  - 1. All information contained in the installation submittal package as organized above and edited to reflect final conditions.
  - 2. Documentation of equipment serial numbers and network/phone/ISDN addressing scheme.
  - 3. Software files for touch panel interfaces, source code, DSP, and equipment settings, both compiled and un-compiled code for future system modification.
  - 4. Manufacturer product guides and instruction manuals.
  - 5. Warranty information and product registration as applicable.

**PART 2 - PRODUCTS**

**2.1 DISPLAY**

- A. A single display will be mounted on a tilt wall mount.

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### **Audiovisual Systems**

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

- a. Samsung; QLED QEF1
- b. Or equal

#### **B. Requirements**

1. Screen Size: 65"
2. Refresh Rate: 60 Hz
3. Resolution: 4K
4. Video: Q4 AI Processor, Quantum HDR

#### **C. Mount**

1. Manufacturers: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
  - a. Peerless-AV, ST660P
  - b. Or equal
2. Smart Mount Universal Tilt Wall Mount for use with 39" to 80" displays.

## **2.2 RALLY BAR**

#### **A. All in one video conferencing camera**

1. Manufacturers: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
  - a. Logitech, 960-001308
  - b. Or equal
2. Description: Video bar, 4K, 15X zoom, PTZ all-in-one designed for sm/med rooms.
3. Color: Graphite
4. Frequency Response: 90Hz – 16 kHz
5. Microphone Data Rate Output: 48 kHz
6. Pickup Range: 23 ft

#### **B. TV Mount**

1. Manufacturers: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
  - a. Logitech, 952-000041
  - b. Or equal
2. Video bar TV mount, attached rally bar to display. Install below display.

## 2.3 CONTROLLER

### A. Meeting room touch controller with POE connectivity

1. Manufacturers: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
  - a. Logitech Tap IP Controller, 952-000085
  - b. Or equal
2. Touchscreen: 10.1" diagonal screen
3. Resolution: 1280 x 800.
4. Color: graphite.
5. Power & Ports: Power over Ethernet (PoE), Ethernet (10/100mbps), WiFi, Bluetooth 5.0.

### B. Table Mount

1. Manufacturers: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
  - a. Logitech, 939-000091
  - b. Or equal.
2. Swiveling table mount with cable management.

## 2.4 SCHEDULER

### A. Scheduling panel for meeting rooms

1. Manufacturers: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
  - a. Logitech Tap Scheduler, 952-000091
  - b. Or equal

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**Audiovisual Systems**

2. Touchscreen: 10.1" diagonal LCD Panel with LED backlighting
3. Resolution: 1280 x 800
4. Color: Graphite
5. Power & Ports: Power over Ethernet (PoE), Ethernet (10/100mbps), WiFi, Bluetooth 5.0.

**2.5 SERVICE PLAN**

- A. Service Plan for medium to large rooms.
- B. Logitech 994-000148 or equal.
- C. 3-year comprehensive service plan. 24x7 support by product experts, advanced RMA, and sync insights for maximum uptime.

**PART 3 - EXECUTION**

**3.1 GENERAL**

- A. Contractor shall install all system components including furnished equipment, and appurtenances in accordance with the manufacturer's instructions, and shall furnish all cables, connectors, terminators, interconnections, services, and adjustments required for a complete and operable system.
- B. Grounding shall be installed as necessary to preclude ground loops, noise, and surges from adversely affecting system operation.

**3.2 INSTALLATION**

**A. General**

1. Provide a complete and full functional AV system; installed, configured, inspected, tested, and documented as per the construction documents herein.
2. Provide all licenses, permits, tests, independent testing, factory testing, reports, fees, inspections, and warranties as required.
3. Unless noted, provide specialty boxes (touch screens, cameras, etc.), trim rings, escutcheons, faceplates, and wall plates.

**B. Layout**

1. The drawings are diagrammatic in nature and, unless explicitly dimensioned, indicate approximate locations of equipment and components. Changes in the location, and offsets of equipment components which are not shown on the drawings but are necessary to

accommodate building conditions and coordination with the work of other trades, shall be made prior to installation, without additional cost.

2. Coordinate layout and sizing for backing, bracing, and structural steel requirements.
3. Field measure conditions necessary to ensure correct fabrication of materials provided by the contractor.

C. Protection and Cleanup

1. Provide temporary protection of work, including wiring and junction boxes prior to hanging drywall and painting. Protect final equipment installations prior to final acceptance e.g. protect monitors/TVs, rack equipment, cameras, etc. from dust and other damage.
2. Painting and touchup of factory finishes and final cleaning of work prior to final acceptance.
3. Perform daily cleanup of all trash and debris resulting from work.

3.3 ACCEPTANCE TESTING

A. The State's Representative will perform an independent verification. The contractor shall perform all work necessary to determine and/or modify performance of the system to meet the requirements of this specification.

1. Provide a qualified technician knowledgeable with the system and the installation to assist the State's Representative with the acceptance procedure.
2. The contractor shall provide all labor, materials, tools, and measurement equipment necessary for these demonstrations, tests and adjustments.
3. As-built documentation, as detailed herein, shall be on hand for reference.

3.4 PROJECT CLOSE OUT

A. Warranty

1. For a period of three (3) year(s) from final acceptance, the contractor shall repair system deficiencies that result from improper installation, imperfect materials, or poor workmanship. These terms shall be accepted at no additional cost.

B. Demonstration and Training

1. Provide 8 hours of system training and orientation for the State's personnel. A technician familiar with the system provided and qualified to give technical guidance should conduct the training.
2. Training shall include, but not be limited to:



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**Audiovisual Systems**

- a. An overview of the physical installation, equipment, and cabling.
- b. Review of the systems documentation.
- c. Instructions on manufacturers maintenance procedures to enable State's personnel to successfully maintain the system.

END OF SECTION 274100

## **SECTION 282000**

### **VIDEO SURVEILLANCE**

#### **PART 1 - GENERAL**

##### **1.1 SUMMARY**

- A. Section includes a video surveillance system consisting of cameras, digital video recorder, data transmission wiring, and a control station with its associated equipment.

##### **1.2 ACTION SUBMITTALS**

- A. Product Data: For each type of product indicated. Include dimensions and data on features, performance, electrical characteristics, ratings, and finishes.
- B. Shop Drawings: For video surveillance. Include plans, elevations, sections, details, and attachments to other work.
  - 1. Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
  - 2. Functional Block Diagram: Show single-line interconnections between components for signal transmission and control. Show cable types and sizes.
  - 3. Dimensioned plan and elevations of equipment racks, control panels, and consoles. Show access and workspace requirements.
  - 4. Wiring Diagrams: For power, signal, and control wiring.
- C. Design Data: Include equipment list consisting of every piece of equipment by model number, manufacturer, serial number, location, and date of original installation.

##### **1.3 INFORMATIONAL SUBMITTALS**

- A. Seismic Qualification Certificates: For video surveillance, cameras, camera-supporting equipment, accessories, and components, from manufacturer.
  - 1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
  - 2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.

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### **Video Surveillance**

3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.

- B. Field quality-control reports.

#### **1.4 CLOSEOUT SUBMITTALS**

- A. Operation and maintenance data.

#### **1.5 PROJECT CONDITIONS**

- A. Environmental Conditions: Capable of withstanding the following environmental conditions without mechanical or electrical damage or degradation of operating capability:

1. Interior, Controlled Environment: System components, except central-station control unit, installed in temperature-controlled interior environments shall be rated for continuous operation in ambient temperatures of 36 to 122 deg F dry bulb and 20 to 90 percent relative humidity, noncondensing. Use NEMA 250, Type 1 enclosures.
2. Interior, Uncontrolled Environment: System components installed in non-temperature-controlled interior environments shall be rated for continuous operation in ambient temperatures of 0 to 122 deg F dry bulb and 20 to 90 percent relative humidity, noncondensing. Use NEMA 250, Type 3R enclosures.
3. Exterior Environment: System components installed in locations exposed to weather shall be rated for continuous operation in ambient temperatures of minus 30 to plus 122 deg F dry bulb and 20 to 90 percent relative humidity, condensing. Rate for continuous operation when exposed to rain as specified in NEMA 250, winds up to 85 mph. Use NEMA 250, Type 3R enclosures.
4. Security Environment: Camera housing for use in high-risk areas where surveillance equipment may be subject to physical violence.

#### **1.6 WARRANTY**

- A. The manufacturer shall provide a five (5) year limited hardware warranty for product that is free from defects in design, workmanship and materials under substantial normal use. Defective products under the warranty period will be either repaired or replaced by the manufacturer.

## PART 2 - PRODUCTS

### 2.1 GENERAL

- A. The product shall be IP-based and comply with established network and video standards.
- B. The product shall be powered by the switch utilizing the network cable. Power injectors (midspans) shall be provided by the contractor when required for proper operation.
- C. The product shall be fully supported by an open and published API (Application Programmers Interface), which shall provide necessary information for integration of functionality into third-party applications.

### 2.2 PERFORMANCE REQUIREMENTS

- A. Seismic Performance: Video surveillance system shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.
  - 1. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified."
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- C. Comply with NECA 1.
- D. Comply with NFPA 70.

### 2.3 VIDEO SURVEILLANCE CAMERAS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. AXIS; M4318-PLVE (P/N 02511-001)
  - 2. Or equal
- B. 12 MP panoramic dome camera with 360° view and deep learning
  - 1. The specified product shall meet or exceed the following design specifications
    - a. The camera shall operate on an open source and Linux-based platform, and include a built-in web server.

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- b. The camera shall provide a automatic IR-cut filter, providing day/night functionality.
  - c. The camera shall be equipped with a 1.1 mm lens with fixed iris and fixed focus, as well as a 12 MP image sensor with progressive scan.
  - d. The camera shall provide a horizontal field of view of 182° and a vertical field of 182°
  - e. The camera shall be designed to provide a digital roll function of +/- 180°.
  - f. The camera shall provide local video storage utilizing a microSD/microSDHC/microSDXC polycarbonate and aluminum hard-coated dome.
  - g. The camera shall be manufactured with an IP66-, NEMA 4X- and IK10-rated casing with a polycarbonate and aluminum hard-coated dome.
  - h. The camera shall be manufactured with a re-paintable skin cover accessory.
2. The specified product shall meet or exceed the following performance specifications:
- a. Illumination
    - i. Color: 0.19 lux at 50 IRE, F2.2
    - ii. B/W: 0.04 lux at 50 IRE, F2.2
    - iii. 0 lux with IR illumination on
  - b. Resolution
    - i. The camera shall be designed to provide video streams in 12 MP (2992x2992) at up to 30 frames per second (60Hz mode) or 25 frames per second (50Hz mode) using H.264, H265 or Motion JPEG.
    - ii. The camera shall provide 4 individually cropped out view areas.
    - iii. The camera shall support video resolutions including
      - 1) Overview: 2992x2992 to 160x160
      - 2) Panorama: 3840x2160 to 192x72
      - 3) Double Panorama: 3584x2688 to 512x288
      - 4) Quad view: 3584x2688 to 384x288
      - 5) View area 1-4: 2048x1536 to 256x144
      - 6) Corner right and left: 3200x1200 to 192x72
      - 7) Double corner: 2880x2880 to 384x288
      - 8) Corridor: 2560x1920 to 256x144
    - iv. The camera shall provide both landscape format (4:3 and 16:9 aspect ratio) as well as corridor format (3:4 and 9:16 aspect ratio)
  - c. Video streaming
    - i. The camera shall provide independently configured H.264, H.265 and Motion JPEG streams
    - ii. The camera shall provide configurable compression levels.
    - iii. The camera shall provide a video streaming indicator

- iv. The camera shall support standard baseline profile with motion estimation.
- v. The camera shall support motion estimation in H.264/MPEG-4 Part 10/AVC.
- vi. The camera shall support the following video encoding algorithms:
  - 1) Motion JPEG encoding in a selectable range from 1 up to 25/30 frames per second.
  - 2) Baseline Profile H.264 encoding with motion estimation in up to 25/30 frames per second.
  - 3) Main Profile H.264 or H.265 encoding with motion estimation and context-adaptive binary arithmetic coding (CABAC) in up to 25/30 frames per second.
  - 4) High Profile H.264 encoding with motion estimation up to 25/30 frames per second.
- vii. The camera shall in H.264 and H.265 support combining Average Bit Rate (ABR) and Maximum Bit Rate (MBR).
- viii. The camera shall be able to deliver predictable storage using Average Bit Rate (ABR) bitrate controlling algorithm based on a bitrate budget and selected retention time.
  - 1) The camera shall be able to deliver predictable storage using Average Bit Rate (ABR) bitrate controlling algorithm based on a bitrate budget and the selected retention time.
    - a) The ABR bitrate algorithm, depending on the bitrate budget and the selected retention time, shall adjust the bitrate to meet the bitrate budget over the whole retention time.
    - b) The ABR algorithm shall have a method to keep the video quality even during busy periods by allowing the current bitrate to be significantly above the configured average bitrate during significant parts of the retention time.
  - 2) The camera shall in H.264 and H.265 support flexible retention period for Average Bit Rate (ABR) algorithm up to 1 year.
  - 3) When using Average Bit Rate (ABR) the camera shall keep bitrate history up to at least 30 days.
  - 4) The camera shall in H.264 and H.265 support reuse of past Average Bit Rate (ABR) history if a stream is disconnected and the camera reconnects with the same basic stream parameters.
  - 5) When using Average Bit Rate (ABR), the camera shall in H.264 and H.265 support multiple parallel stream and independent ABR-history.

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- 6) The camera shall issue bitrate degradation events when using Average Bit Rate (ABR) if the configuration is predicted to be
      - a) Unrealistic
      - b) Not fulfilling basic quality requirements
      - c) Not fulfilling the bitrate budget
  - ix. The camera shall support scene adaptive bitrate control with one of the following capabilities to lower bandwidth and storage:
    - 1) Automatic dynamic Region of Interest to reduce bitrate in unprioritized regions in order to lowering bandwidth and storage requirements.
    - 2) Automatic dynamic Group of Pictures to lower bandwidth and storage requirements
    - 3) Automatic dynamic Frames per Second to lower bandwidth and storage requirements
  - x. The camera shall support optimized image processing time for live streams by reducing the latency in live streams to the minimum.
- d. Transmission
  - i. The camera shall allow for video to be transported over:
    - 1) HTTP (Unicast)
    - 2) HTTPS (Unicast)
    - 3) RTP (Unicast & Multicast)
    - 4) RTP over RTSP (Unicast)
    - 5) RTP over RTSP over HTTP (Unicast)
    - 6) SRTP/RTSPS (Unicast & Multicast)
  - ii. The camera shall support Quality of Service (QoS) to be able to prioritize traffic.
- e. Image
  - i. The camera shall provide at least 8 different palettes used to improve the detection of information in the video.
  - ii. The camera shall incorporate automatic and manual white balance.
  - iii. The camera shall incorporate an electronic shutter operating in the range of 1/8100 s to 0.5 s.
  - iv. The camera shall incorporate capture mode with the following settings:
    - 1) 12 MP (2992x2992) with WDR: 25/30 fps (50/60 Hz)
  - v. The camera shall incorporate wide dynamic range – forensic WDR functionality.
  - vi. The camera shall incorporate forensic wide dynamic range functionality providing up to 120 dB dynamic range.

- vii. The camera shall support manually defined values for:
  - 1) Saturation
  - 2) Brightness
  - 3) Sharpness
  - 4) Contrast
- viii. The camera shall incorporate a function for optimization of low-light behavior at different light levels.
- ix. The camera shall allow for rotation of the image.
- f. Audio
  - i. The camera shall support two-way audio connectivity via portcast technology with an accessory audio and I/O interface device, including voice enhancer.
- j. IR Illumination
  - i. The camera shall be equipped with built-in IR LEDs, with a range of up to 15 m (49.2 ft) with a wavelength of 850 nm.
  - ii. The camera shall be equipped with built-in IR LEDs with automatic seamless adapting angle of illumination and intensity.
- k. User Interface
  - i. Web server
    - 1) The camera shall contain a built-in web server making video and configuration available to multiple clients in a standard operating system and browser environment using HTTP, without the need for additional software.
    - 2) Optional components downloaded from the camera for specific tasks shall be signed by an organization providing digital trust services.
  - ii. Language Specification
    - 1) The camera shall provide a function for altering the language of the user interface, and shall include support for at least 10 different languages.
  - iii. IP addresses
    - 1) The camera shall support both fixed IP addresses and dynamically assigned IP addresses provided by a Dynamic Host Control Protocol (DHCP) server.
    - 2) The camera shall allow for automatic detection of the camera based on UPnP and Bonjour when using a computer with an operating system supporting this feature.
    - 3) The camera shall provide support for both IPv4 and IPv6.
    - 4) The camera shall provide support for IPv6 USGv6.
- i. PTZ functionality
  - i. The camera shall:
    - 1) Provide digital PTZ functionality.
    - 2) Provide preset positions functionality.



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- 3) Provide digital pan (except panorama at wall mount) and tilt of panorama, corner, corridor and quad views.
  - 4) Provide a guard tour functionality which allows the dome to automatically move between selected presets using an individual speed and viewing time for each preset.
- j. Event conditions
- i. The camera shall be equipped with an integrated event functionality:
    - 1) Device status
      - a) Operating temperature failure
      - b) Casing open
      - c) Live stream active
      - d) IP address
      - e) Network lost
      - f) System ready
    - 2) Edge storage
      - a) Recording ongoing
      - b) Storage disruption
      - c) Storage health issues detected
    - 3) I/O
      - a) Digital input
      - b) Manual trigger
      - c) Virtual inputs
    - 4) MQTT: stateless
    - 5) Scheduled and recurring: schedule
    - 6) Video
      - a) Average bitrate degradation
      - b) Day-night mode
      - c) Tampering
  - ii. Response to triggers shall include event actions:
    - 1) Day-night mode: use while the rule is active
    - 2) I/O: toggle once, toggle while the rule is active
    - 3) Illumination: use lights, use lights while the rule is active
    - 4) Images: FTP, HTTP, HTTPS, SFTP, email and network share
    - 5) MQTT: publish
    - 6) Notification: HTTP, HTTPS, TCP and email
    - 7) Overlay text: use, use while the rule is active

- 8) Recordings: record video, record video while the rule is active
    - 9) SNMP trap messages: send, send while the rule is active
    - 10) Status LED: flash, flash while the rule is active
    - 11) Video clips: FTP, HTTP, HTTPS, SFTP, email and network share
    - 12) WDR mode: set, set while the rule is active
  - iii. The camera shall provide memory for pre- and post-alarm recordings.
- k. Storage
- i. The camera shall support continuous and event controlled recording to:
    - 1) Local memory added to the cameras microSD-card slot
    - 2) Network attached storage, located on the local network
  - ii. The camera shall incorporate encryption functionality for the SD card (AES-XTS-Plain64 256bit).
  - iii. The camera shall be able to detect and notify edge storage disruptions.
- l. Protocol
- i. The camera shall incorporate support for at least IPv4, IPv6, USGv6, ICMPv4/ICMPv6, HTTP, HTTPS, HTTP/2, TLS, QoS, Layer 3 DiffServ, FTP, SFTP, CIFS/SMB, SMTP, mDNS (Bonjour), UPnP, SNMP v1/v2c/v3 (MIB-II), DNS/DNSv6, DDNS, NTP, RTSP, RTP, SRTP/RTSPS, TCP, UDP, IGMPv1/v2/v3, RTCP, DHCPv4/v6, SSH, LLDP, CDP, MQTT v3.1.1, Syslog, Link-Local address (ZeroConf), IEEE 802.1X (EAP-TLS), IEEE 802.1AR.
  - ii. The SMTP implementation shall include support for SMTP authentication.
- m. Text overlay
- i. The camera shall:
    - 1) Provide embedded on-screen text with support for date & time, and a customer-specific text, camera name, of at least 45 ASCII characters.
    - 2) Provide the possibility to choose different font sizes for embedded on-screen text, and to use white or black text on at least four different backgrounds.
    - 3) Provide the ability to manually set up and configure privacy masks to the image.
    - 4) Allow for the overlay of a graphical image, such as a logotype, into the image.
- n. Security
- i. The camera shall support the following:

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- 1) Secure web browsing
  - a) The use of HTTPS and TLS, providing the ability to upload signed certificates to encrypt and secure authentication and communication of both administration data and video streams.
  - b) Restrict access to the built-in web server by usernames and passwords at three different levels.
- 2) Certificate management
  - a) Provide centralized certificate management, with both pre-installed CA certificates and the ability to upload additional CA certificates. The certificates shall be signed by an organization providing digital trust services.
- 3) Enhanced security features
  - a) The use of signed firmware validates the firmware's integrity before accepting to install it.
  - b) The use of a secure boot process, based on the use of signed firmware, ensures that the camera can boot only with authorized firmware.
  - c) The use of signed video (adding cryptographic checksum to H.264 videos signed by the manufacturer's secured device ID) provides support for validating the video's authenticity and origin.
  - d) The use of a cryptographically verifiable hardware module where a collection of certificates, required to verify device identification, is installed.
  - e) Support for encrypted filesystem (AES-XTS-Plain64 256bit).
  - f) The collection of certificates (using IEEE 802.1AR) proves that the device and its firmware are authentic and produced by the manufacturer.
  - g) The product shall include a tamper-resistant hardware module, certified to at least Common Criteria EAL6+.
  - e) The product shall include a tamper-resistant hardware module. The module shall use a Trusted Execution Environment (TEE), providing a set of cryptographic features suitable for protecting private keys from unauthorized access.
  - f) The product shall include support for cryptographic module technology, certified to at least FIPS 140-2 level 1.
- 4) Authentication
  - a) IEEE 802.1x (EAP-TLS, PEAP-MSCHAPv2) authentication.
  - b) IEEE 802.1AE (MACsec PSK/EAP-TLS) authentication.

- c) Restrict access to pre-defined IP addresses via a host-based firewall.
  - 5) Brute force delay protection
- ii. Firmware support
  - 1) The manufacturer should provide a Software Bill of Material (SBOM) for each product firmware in machine-readable format (CycloneDX, SPDX) that contains information about the software composition of the device's operating system, publicly available for download.
  - 2) The manufacturer must provide firmware with long-term support that only contains corrections for critical bugs, security flaws and performance issues.
  - 3) The device should maintain high-level cybersecurity without introducing any significant functional changes or affecting any existing integrations.
- o. System integration
  - i. The camera shall be fully supported by an open and published API (Application Programmers Interface), which shall provide necessary information for integration of functionality into third-party applications.
  - ii. The camera shall be fully supported by the manufacturer's own application platform, including Native SDK and Computer vision SDK.
  - iii. Support for Session Initiation Protocol (SIP) for integration with Voice over IP (VoIP) systems, peer to peer or integrated with SIP/PBX
- p. Analytics
  - i. The camera shall provide a platform allowing the upload of third-party applications into the camera.
  - ii. The camera shall be equipped with a built-in, deep-learning processing unit capable of executing neural network algorithms, such as object detection, classification and segmentation (including vehicle types, license plates, people and faces). The deep-learning processing unit shall contain multiple parallel hardware accelerated compute recourses capable of performing real-time video inference. The camera manufacturer shall support approved third-party developers to enable custom made deep-learning applications using the DLPU to accelerate custom trained deep-learning networks with commonly available network architectures.
  - iii. The camera shall be supplied with preinstalled advanced video analytics capabilities, capable of detecting and classifying humans and vehicles in non-critical indoor and outdoor spaces.
    - 1) The camera shall provide a function to measure how long an object (human or vehicle) stayed in a monitored area.
    - 2) The camera shall provide functions that can generate triggers in the following scenarios: line crossing, object in area, crossline counting, occupancy in area.
- q. Installation and maintenance

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- i. The camera shall be supplied with Windows-based management software which allows the assignment of IP addresses, upgrade of firmware and backup of the cameras' configuration.
  - ii. The camera shall support the use of SNMP-based management tools according to SNMP v1, 2c & 3 / MIB-II.
  - iii. The camera shall allow updates of the software (firmware) over the network, using FTP or HTTP.
  - iv. The camera shall store all customer-specific settings in a non-volatile memory that shall not be lost during power cuts or soft reset.
  - v. The camera shall provide the ability to apply a rectangle of customer-defined number of pixels to the image, which can be used as a pixel counter identifying the size of objects in number of pixels.
  - vi. The camera shall accept external time synchronization from an NTP (Network Time Protocol) server.
- r. Access log
  - i. The camera shall provide a log file, containing information about the 250 latest connections and access attempts since the unit's latest restart. The file shall include information about the connecting IP addresses and the time of connecting.
  - ii. The camera shall provide a connection list of all currently connected viewers. The file shall include information about connecting IP address, time of connecting and the type of stream accessed.
- s. Camera diagnostics
  - i. The camera shall be equipped with LEDs, capable of providing visible status information. LEDs shall indicate the camera's operational status and provide information about power, communication with receiver, the network status and the camera status.
  - ii. The camera shall be monitored by a Watchdog functionality, which shall automatically re-initiate processes or restart the unit if a malfunction is detected.
  - iii. The camera shall send a notification when the unit has rebooted and all services are initialized.
- t. Hardware interfaces
  - i. Network interface
    - 1) The camera shall be equipped with one 10BASE-T/100BASE-TX PoE-port using a RJ45 connector and shall support auto negotiation of network speed (100 MBit/s and 10 MBit/s) and transfer mode (full and half duplex).
  - ii. Inputs/Outputs
    - 1) The camera shall provide I/O connectivity via portcast technology with an accessory audio and I/O interface device.
    - 2) The camera shall be equipped with one digital (alarm) input and one digital output, accessible via a removable terminal block. This input shall be configurable to respond to normally open (NO) or normally closed (NC) dry contacts. The output shall be able to provide 12 V DC, 15 mA.

- iii. Audio
  - 1) The camera shall provide audio connectivity via portcast technology with an accessory audio and I/O interface device.
- u. Enclosure
  - i. The camera shall:
    - 1) The camera shall be manufactured with an IP66-,NEMA 4X- and IK10–rated casing with a polycarbonate and aluminium hard-coated dome.
- v. Power
  - i. The camera shall support power over Ethernet IEEE 802.3af/802.3at Type 1 Class 3
    - 1) Max: 12.95 W
    - 2) Typical: 6.4 W
- w. Environmental
  - i. The camera shall:
    - 1) Operate in a temperature range of -40 °C to 50 °C (-40 °F to 122 °F)
    - 2) Operate in a humidity range of 10–100% RH (condensing).

## 2.4 CAMERA-SUPPORTING EQUIPMENT

- A. Telescopic Ceiling Mount
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. AXIS T91B50 (P/N 5507-451)
    - b. Or equal.
  - 2. The specified product shall meet or exceed the following design specifications:
    - a. Manufactured with a powder coated metal (aluminum) casing
    - b. Manufactured for both indoor and outdoor environments
    - c. Support a maximum load of 10 kg (22 lb)
    - d. Provide cable access either through one 3/4" conduit connection located on the back of the mount and one at the side.
    - e. Provide an assembly mechanism specifically designed for Axis cameras
- B. Pendant Kit
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. AXIS T94K01D Pendant Kit (P/N 5505-081)
    - b. Or equal.

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**PART 3 - EXECUTION**

**3.1 WIRING**

- A. Wiring Method: Install cables in raceways unless otherwise indicated.
  - 1. Except raceways are not required in accessible indoor ceiling spaces and attics.
  - 2. Except raceways are not required in hollow gypsum board partitions.
  - 3. Conceal raceways and wiring except in unfinished spaces.
- B. Wiring within Enclosures: Bundle, lace, and train conductors to terminal points with no excess and without exceeding manufacturer's limitations on bending radii. Provide and use lacing bars and distribution spools.
- C. Splices, Taps, and Terminations: For power and control wiring, use numbered terminal strips in junction, pull, and outlet boxes; terminal cabinets; and equipment enclosures. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A-486B.

**3.2 VIDEO SURVEILLANCE SYSTEM INSTALLATION**

- A. The contractor shall carefully follow instructions in documentation provided by the manufacturer to ensure all steps have been taken to provide a reliable, easy-to-operate system.
- B. All equipment shall be tested and configured in accordance with instructions provided by the manufacturer prior to installation.
- C. Software found in products shall be the latest and most up-to-date version as specified by the manufacturer, or by the product component provider.
- D. All equipment requiring users to log on using a password shall be configured with user/site-specific password/passwords. No system/product default passwords shall be allowed.
- E. Set pan-and-tilt unit stops to suit final camera position and to obtain the field of view required for camera. Connect all controls and alarms, and adjust.
- F. Avoid ground loops by making ground connections only at the control station.
  - 1. For 12- and 24-V dc cameras, connect the coaxial cable shields only at the monitor end.

- G. A proper installation shall meet NEC per the guidelines of that year's revision. When properly installed, equipment meets Low Voltage, Class 2 classification of the NEC.

### 3.3 FIELD QUALITY CONTROL

- A. Perform tests and inspections.

- 1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.

- B. Tests and Inspections:

- 1. Inspection: Verify that units and controls are properly installed, connected, and labeled, and that interconnecting wires and terminals are identified.
  - 2. Pretesting: Align and adjust system and pretest components, wiring, and functions to verify that they comply with specified requirements. Conduct tests at varying lighting levels, including day and night scenes as applicable. Prepare video-surveillance equipment for acceptance and operational testing as follows:
    - a. Verify operation of auto-iris lenses.
    - b. Set back-focus of fixed focal length lenses. At focus set to infinity, simulate nighttime lighting conditions by using a dark glass filter of a density that produces a clear image. Adjust until image is in focus with and without the filter.
    - c. Set back-focus of zoom lenses. At focus set to infinity, simulate nighttime lighting conditions by using a dark glass filter of a density that produces a clear image. Additionally, set zoom to full wide angle and aim camera at an object 50 to 75 feet away. Adjust until image is in focus from full wide angle to full telephoto, with the filter in place.
    - d. Set and name all preset positions; consult State's personnel.
    - e. Set sensitivity of motion detection.
    - f. Connect and verify responses to alarms.
    - g. Verify operation of control-station equipment.
  - 3. Test Schedule: Schedule tests after pretesting has been successfully completed and system has been in normal functional operation for at least 14 days. Provide a minimum of 10 days' notice of test schedule.
  - 4. Operational Tests: Perform operational system tests to verify that system complies with Specifications. Include all modes of system operation.

- C. Video surveillance system will be considered defective if it does not pass tests and inspections.

- D. Prepare test and inspection reports.



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3.4 DEMONSTRATION

- A. Train State's maintenance personnel to adjust, operate, and maintain video-surveillance equipment.

END OF SECTION 282000