



**PROJECT MANUAL**  
**For**  
**BIG BASIN REDWOODS STATE PARK**  
**Rancho Del Oso ADA Improvements**  
**Santa Cruz County, California**

**June 2009**



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

DEPARTMENT OF PARKS AND RECREATION

SMALL BUSINESS NOTICE

***Your business may now qualify for "Small Business" Certification with the State of California!*** On January 1, 1999, the legal definition of "small business" changed, making it possible for more small businesses to qualify for this valuable certification.

***Your firm may now be eligible if it meets all of the following:***

- Annual receipts averaging \$10 million or less over the previous three years?  
(Note: manufacturers do not have to meet this criteria)
- One hundred or fewer employees?
- Is your firm's principal office located in California, and its owners and officers living in California?
- Is it independently owned and operated?

The State of California Department of General Services, Procurement Division, Office of Small Business and DVBE Services (OSDS) offers many services that assist both contracting state agencies and contractors/business owners with a variety of information designed to streamline the state contracting process. For example, certified Small Businesses (SB) and Disabled Veteran Business Enterprises (DVBEs) are now listed at no charge on OSDS' website so state contracting officials can easily contact them to verify certification status and to develop referral lists for use by contractors bidding on state contracts. ***Please note most DVBEs also qualify for "Small Business" certification.***

On the OSDS website, the California State Contracts Register (CSCR) electronically announces contracting opportunities daily. One of many new services available to all businesses, the Subscription Outreach Service (SOS), sends firms notices (fax or e-mail) of California government contracting opportunities that match the services and products they provide. Contractors are able to complete a "profile" of their business, and OSDS forwards contracting opportunities that fit the contractor's specific profile. Please check out this and many other services in greater detail on OSDS' website: <http://www.pd.dgs.ca.gov/smbus>.

**The Department of Parks and Recreation (DPR)** welcomes all its contractors and suppliers as business partners and thanks them for supporting its mission to provide for the health, inspiration, and education of the people of California by helping to preserve the state's extraordinary biological diversity, protecting its most valued natural and cultural resources, and creating opportunities for high-quality outdoor recreation. DPR's mission is further enhanced by the goods and services you provide.

**What is the Small Business Preference?**

A five (5%) percent preference will be granted to the bidder properly approved as "Small Business" in accordance with Title 2, California Code of Regulations, Section 1896, et seq. A small business firm must have an approved certification form (STD 813) on file with the Department of General Services, Small Business and DVBE Services, 707 Third Street, First Floor - Room 400, West Sacramento, CA 95605, by 5:00 p.m. on the bid opening date.

***To assist the Department in a timely evaluation of bids received, any bidder requesting the small business preference is encouraged to submit with the bid a copy of his/her small business certification approval letter from OSDS.***

**How does the 5% Small Business Preference Work?**

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 Preference | Small Business Status                                            |
|--------|------------|----------------------|------------------------------------------------------------------|
| 1      | \$30,750   | \$30,750             | Claims small business status, but <i>is not</i> OSBDS-certified. |
| 2      | \$28,975   | \$28,975             | Does not claim to be small business.                             |
| 3      | \$29,520   | \$29,520             | Claims small business status, but <i>is not</i> OSBDS-certified. |
| 4      | \$29,870   | \$28,421             | Claims small business status and <i>is</i> OSBDS-certified.      |

***Computation Method***

Five percent is applied to the lowest (non-certified small business) responsible bid  
([Bidder 2] \$28,975 x .05 = \$1448.75).

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).

Bidder 4's computed total is \$28,421.25, making them the lowest bidder.

The contract is awarded to Bidder 4 for \$29,870.

**Notes:** The five percent bid preference **does not apply** when the certified small business is the lowest bidder. Also, the 5% preference is used only for computation purposes to determine the successful bidder and **does not alter the amounts of the actual bids**.

**Contact OSDS to find out more:**

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.pd.dgs.ca.gov/smbus](http://www.pd.dgs.ca.gov/smbus)  
Receptionist: (916) 375-4940  
24-hour recording (916) 322-5060  
FAX: (916) 375-4950

**NOTICE OF  
Disabled Veteran Business Enterprise (DVBE)  
INCENTIVE PROGRAM  
for Invitation For Bids (IFB)**

Your bid may qualify for the DVBE Incentive Program.

**What is the DVBE Incentive Program?**

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. The incentive may be combined with other incentives and preferences up to the established cap of \$100,000.00. ***The incentive is used only for evaluation purposes to arrive at the successful bidder and does not alter the amounts of the actual bids.***

**Who is eligible to receive the incentive?**

Any responsive and responsible bidder with an eligible amount of DVBE participation per Table A below.

**Who is not eligible for the incentive?**

Bidders who do not gain enough DVBE participation per Table A below and bidders who are not responsive and responsible regardless of the amount of DVBE participation.

**How does the DVBE Incentive Program Work?**

**Table A – IFB (aka Low Price Method)**

| <b>Confirmed DVBE Participation of</b>                                                     | <b>DVBE Incentive Amount for IFB</b>        |
|--------------------------------------------------------------------------------------------|---------------------------------------------|
| 6% or more                                                                                 | 5% of lowest responsive and responsible bid |
| <b>Good Faith Effort (GFE) is required if less than 6 % DVBE participation is achieved</b> |                                             |
| 5% - 5.99%                                                                                 | 4% of lowest responsive and responsible bid |
| 4% - 4.99%                                                                                 | 3% of lowest responsive and responsible bid |
| 3% - 3.99%                                                                                 | 2% of lowest responsive and responsible bid |
| Less than 3%                                                                               | N/A                                         |

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

**Computation Method**

The DVBE incentive is used only for evaluation purposes to arrive at 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.

For contracts 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 above. Example 1 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.

**Example 1 –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             | 2%                  | 8%                                        | 4.5%                                      |
| 5 steps of GFE                                                            | No                  | n/a                                       | Yes                                       |
| Initial Ranking                                                           | Unresponsive        | 2                                         | 1                                         |
| DVBE Incentive (from Table A)                                             | n/a                 | 5%                                        | 3%                                        |
| Incentive Amount<br>(% times lowest responsive and responsible bid price) | n/a                 | <b>\$5,000.00</b><br>(5% x \$100,000)     | <b>\$3,000.00</b><br>(3% x \$100,000)     |
| Adjusted Bid Price<br>(bidder's price minus bidder's incentive amount)    | n/a                 | <b>\$97,100.00</b><br>(\$102,100-\$5,000) | <b>\$97,000.00</b><br>(\$100,000-\$3,000) |
| <b>Final Rank</b>                                                         | <b>Unresponsive</b> | <b>2</b>                                  | <b>1</b>                                  |

**OFFICE OF SMALL BUSINESS AND DVBE SERVICES**

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 DVBE contractors. For more information, please:

Contact OSDS to find out more:

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

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THE RESOURCES AGENCY OF CALIFORNIA  
DEPARTMENT OF PARKS AND RECREATION  
**BIG BASIN REDWOODS STATE PARK**  
Rancho Del Oso ADA Improvements  
Santa Cruz County, California

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| California Disabled Veteran Business Enterprise Program Requirements<br>(STD 840, STD 840A) (blank) ..... | 10 |
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| Non-Collusion Affidavit (blank) .....                                                                     | 1  |
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| Small Business Preference and Certification Request (blank) .....                                         | 1  |
| California Public Contract Code Section 10162 Questionnaire (blank) .....                                 | 1  |
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State of California - The Resources Agency  
DEPARTMENT OF PARKS AND RECREATION

**PUBLIC WORKS  
NOTICE TO CONTRACTORS**

**BIG BASIN REDWOODS STATE PARK**

Rancho Del Oso ADA Improvements  
Santa Cruz County, California

Sealed bids will be received at the office of the Department of Parks and Recreation, One Capitol Mall, Suite 410, Sacramento, California 95814, **up to 2 p.m., Wednesday, June 10, 2009**, at which time and place they will be publicly opened and read for performing the work as follows:

Furnish all labor, materials, tools and equipment necessary to provide ADA improvements to the Rancho Del Oso Nature Center. The work includes ADA parking, utility improvements, the addition of two (2) ADA restrooms to the structure and ADA path of travel improvements at **BIG BASIN REDWOODS STATE PARK** in Santa Cruz 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: A or B

Engineer's Estimate: \$168,231

**NOTE: A job showing will be held at 10:30 a.m., Wednesday, May 20, 2009, at BIG BASIN REDWOODS STATE PARK, Rancho Del Oso Nature Center, 3600 Highway 1, Davenport, California 95017. Attendance at the job showing, although not mandatory, is highly recommended as it will be the only opportunity made available for prospective bidders to view the site.**

The bidder agrees to complete all work within **ONE HUNDRED FIFTY (150)** 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.

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 <http://www.eprocure.dgs.ca.gov/CSCRAAds.htm>. At the website in the middle of the page for the first SEARCH pane, enter the following Bid Number: **C08E0046**. Then select the option for "Bid Number", select the "Search" button, and select Park/Project description link to view the full advertisement. The bid package is also available on CD, free of charge, and can be obtained by faxing a request to (916) 445-9027. The CD will be sent by first class mail, unless a FedEx number is provided with the fax request. 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 email to Plans Counter at [planscounter@parks.ca.gov](mailto:planscounter@parks.ca.gov) or FAX to (916) 445-9027 no later than 5 p.m., seven (7) calendar days prior to bid opening date.

It is the responsibility of the bidders to download any addendum 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 00700.

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. 813) on file at the 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.eprocure.dgs.ca.gov/default.htm>). If bidder wants "Small Business" preference on this project, bidder must sign STD. 811 form (Small Business Preference and Certification Request) and submit with bid.

### **Non-Small Business Preference**

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, the proposal must include a list of the small business(es) with which you commit to subcontract in an amount of at least twenty-five percent (25%) of the net bid price with one or more California certified small businesses. Each listed certified small business must perform a "commercially useful function" in the performance of the contract as defined in Government Code Section 14837(d)(4). **Indicate in your Proposal whether or not you are claiming the non-small business preference.** The required list of California certified small business subcontracts must be attached to the proposal and must include the following: 1) subcontractor name, 2) address, 3) phone number, 4) a description of the work to be performed and/or products supplied, 5) and the dollar amount or percentage of the net bid price (as specified in the solicitation) per subcontractor.

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 Enterprise Program:** All DPR contracts over \$10,000 shall have a participation goal of **not less than 6%** for Disabled Veteran Business Enterprises. **ALL REFERENCES ON THE STD 840, DOCUMENTATION OF DVBE PROGRAM REQUIREMENTS, THAT REFER TO 3% PARTICIPATION ARE HEREBY AMENDED TO READ 6%.** In addition to other contracting requirements, to qualify as a responsive bidder, the bidder must either certify that the required goal has been achieved, or demonstrate that a good faith effort was made to meet the goal. Note: Ads must be published at least 14 days prior to the bid due date (refer to Page 3 of the DVBE requirements).

**DVBE Incentive:** For evaluation purposes only, an incentive will be given to bidders who meet the DVBE requirements, either through achieving the 6% DVBE participation or achieving less than the minimum 6% DVBE participation and completing a Good Faith Effort.

**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 Conditions at [www.ols.dgs.ca.gov/Standard+Language](http://www.ols.dgs.ca.gov/Standard+Language).)

**DEPARTMENT OF PARKS AND RECREATION**  
**Ruth G. Coleman, 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 Department of Parks and Recreation office listed in the Notice to Contractors.

**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 in an envelope using the pre-addressed label provided with the bidders checklist. This envelope shall be sealed and delivered to the place shown prior to the time and date for the bid opening. This envelope must have the return address of the bidder. It is the responsibility of the bidder to see that his/her bid is received in proper time. Facsimile (FAX) responses will not be considered.
- 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 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. BIDDER'S SIGNATURE ON THE FORM MUST BE NOTARIZED.
- 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.
- Q. Bids exceeding \$10,000 shall meet the Disabled Veteran Business Enterprise (DVBE) participation goal or bidders shall make a good faith effort to meet this goal as prescribed herein.

#### **1.04 CONTRACT**

- A. **Bids shall remain valid for 120 calendar days after the bid opening date:** The State will endeavor to execute a contract within 120 calendar days from the bid opening date. The contract is not executed until the appropriate State agency has approved the contract. Bidders shall hold their bids for 120 calendar days after the bid opening date. Upon expiration of 120 calendar days from the bid opening date, bidders may withdraw their bids. If bidder, after expiration of 120 calendar days from the bid opening fails to withdraw its bid and a contract is subsequently approved by the appropriate State agency and executed, bidder shall have no claim for any reason to amend its bid.
- 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 Bidder" 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 seven (7) 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 seven (7) days, not including Saturdays, Sundays and Legal Holidays may be deemed refusal of an award which shall 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) for bids that exceed \$147,000. 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.

## Exhibit B, Attachment 1

# PUBLIC WORKS BID FORM

|                                                   |                           |
|---------------------------------------------------|---------------------------|
| BID TIME<br>2 P.M.                                | BID DATE<br>June 10, 2009 |
| PROJECT LOCATION<br>BIG BASIN REDWOODS STATE PARK |                           |
| PROJECT NAME<br>Rancho Del Oso ADA 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 without 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)

PHONE NO.

FAX NO.

ADDRESS

CITY/STATE/ZIP CODE

LICENSE CLASSIFICATION

LICENSE NO.

LICENSE EXPIRATION DATE

STATUS OF BUSINESS (Check appropriate box.)

☐ Individual.

☐ Corporation. State in which incorporated: \_\_\_\_\_

☐ 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 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. |
|--------------|------------------|-------------|
|              |                  |             |
|              |                  |             |
|              |                  |             |
|              |                  |             |
|              |                  |             |
|              |                  |             |
|              |                  |             |

The bidder hereby proposes to furnish all labor, materials, tools and equipment necessary to provide ADA improvements to the Rancho Del Oso Nature Center. The work includes ADA parking, utility improvements, the addition of two (2) ADA restrooms to the structure and ADA path of travel improvements at **BIG BASIN REDWOODS STATE PARK** in Santa Cruz County, California, complete and ready for use in accordance with the contract documents therefore, for the following lump sum which shall include all applicable taxes and other expenses:

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

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

\_\_\_\_\_

**ADDENDUM ACKNOWLEDGEMENT (Please initial for Addendums received)**

Addendum #1 \_\_\_\_\_ Addendum #3 \_\_\_\_\_  
Addendum #2 \_\_\_\_\_ Addendum #4 \_\_\_\_\_

The bidder agrees to complete all work within **ONE HUNDRED FIFTY (150)** 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.

**Participation in Disabled Veteran Enterprise Program:** All DPR contracts over \$10,000 shall have a participation goal of not less than 6% for Disabled Veteran Business Enterprises. **ALL REFERENCES ON THE STD 840, DOCUMENTATION OF DVBE PROGRAM REQUIREMENTS, THAT REFER TO 3% PARTICIPATION ARE HEREBY AMENDED TO READ 6%.** In addition to other contracting requirements, to qualify as a responsive bidder, the bidder must either certify that the required goal has been achieved, or demonstrate that a good faith effort was made to meet the goal. Note: Ads must be published at least 14 days prior to the bid due date (refer to Page 3 of the DVBE requirements).

**DVBE Incentive:** For evaluation purposes only, an incentive will be given to bidders who meet the DVBE requirements, either through achieving the 6% DVBE participation or achieving less than the minimum 6% DVBE participation and completing a Good Faith Effort.

**SMALL BUSINESS PREFERENCE:** *To assist the Department in a timely evaluation of bids received, any bidder requesting the small business preference on this project is encouraged to submit along with signed STD. 811 - Small Business Preference and Certification Request, a copy of his/her small business certification approval letter from the State Office of Small Business and Disabled Veteran Business Enterprise Certification.*





DEPARTMENT OF PARKS AND RECREATION  
Acquisition and Development  
One Capitol Mall, Suite 500  
Sacramento, California 95814

Ruth Coleman, Director

# IMPORTANT NOTICE

## DVBE FORM STD 840

ALL REFERENCES ON THE STD 840, *DOCUMENTATION OF DVBE PROGRAM REQUIREMENTS*, THAT REFER TO 3% PARTICIPATION ARE HEREBY AMENDED TO READ 6%.

### ***BIDDERS MUST FULLY DOCUMENT AT LEAST ONE OF THE FOLLOWING OPTIONS TO COMPLY WITH DVBE REQUIREMENTS:***

#### **OPTION A – COMMITMENT TO FULL 6% DVBE GOAL**

Bidder is a DVBE or uses identified DVBE(s) to meet full 6% participation goal.

#### **OPTION B – GOOD FAITH EFFORT**

Bidder must fully document all 4 contacts made with DVBE resources as well as publish advertisements. DVBE ads must be published at least 14 days prior to the bid due date.

#### **OPTION C – Business Utilization Plan**

Applies only to goods and information technology bids.

IF YOU HAVE QUESTIONS OR NEED HELP FILLING OUT  
THE FORMS, CONTACT JAN VANDERBECK AT (916) 653-8674

# California Disabled Veteran Business Enterprise Program Requirements

(REV. 9-15-03)

**AUTHORITY.** The Disabled Veteran Business Enterprise (DVBE) Participation Goal Program for state contracts is established in Public Contract Code (PCC), Section 10115 et seq., Military and Veterans Code, Section 999 et seq. and California Code of Regulations, Title 2 (2CCR), Section 1896.60 et seq.

**The minimum DVBE participation percentage is 3% for this solicitation unless another percentage is specified in the solicitation.**

**INTRODUCTION.** The bidder must document at least one of the options (A, B or C) in this document to comply with this solicitation's DVBE program requirements. Bids or proposals (hereafter called "bids") that fail to fully document one of the DVBE program requirements options shall be considered non-responsive and ineligible for award.

All information submitted by the intended awardee to comply with this solicitation's DVBE requirements will be verified by the State. If evidence of an alleged violation is found during the verification process, the State shall initiate an investigation with this information in accordance with the requirements of the Public Contract Code, Section 10115, et seq. and the Military and Veterans Code, Section 999 et seq. and follow the investigatory procedures required by the California Code of Regulations, Section 1896.80.

Only State of California, Office of Small Business and DVBE Certification certified DVBEs who perform a commercially useful function relevant to this solicitation may be used to satisfy the DVBE program requirements. The criteria for performing a commercially useful function are contained on page 5, Resources & Information and California Code of Regulations, Title 2, Section 1896.61(l). Verify each DVBE subcontractor's/supplier's certification with the Office of Small Business and DVBE Certification Section to ensure DVBE eligibility.

|                                                                                                                                                                                                                       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>To meet the DVBE program requirements, bidders must complete and fully document at least one of the following compliance options:</b>                                                                              |
| <b>Option A - Commitment to full DVBE participation</b> - For a bidder who is a DVBE or who is able to meet the commitment to use identified DVBE(s) to fulfill the full DVBE participation goal.                     |
| <b>Option B - Good Faith Effort</b> - For a bidder documenting its completed effort, made prior to the bid due date, to obtain DVBE participation that may result in partial or no DVBE participation.                |
| <b>Option C - Business Utilization Plan</b> - For a bidder using an annual plan (subject to approval) to satisfy DVBE participation requirements. Applies only to solicitations for goods and information technology. |

**PLEASE READ ALL INSTRUCTIONS CAREFULLY.** These instructions contain information about the DVBE program requirements, bidder responsibilities, and requirements for performing and documenting each of the three available options as detailed below. Bidders are responsible for thorough review and compliance with these instructions. Document your option selection on the attached STD Form 840, Documentation of Disabled Veteran Business Enterprise Program Requirements.

**OPTION A – COMMITMENT** -- Commit to meet or exceed the DVBE participation requirement in this solicitation by either Method A1 or A2. Bidders must document DVBE participation commitment by completing and submitting the attached STD 840. Failure to complete and submit STD 840 (Side 1) as instructed shall render your bid non-responsive.

The bidder must provide, prior to contract award, a written agreement signed by the bidder and each proposed DVBE subcontractor. The written agreement will include the DVBE scope of work, work to be performed by the DVBE, term of intended subcontract with the DVBE, anticipated dates the DVBE will perform required work, rate and conditions of payment, total amount of contract to be paid to the DVBE, and the percentage of the entire contract that will be awarded to the DVBE, with each DVBE subcontractor. If this information is contained in the bidder's DVBE written agreement of intent, the agreement may be attached to the STD 840. If further verification is necessary, the state will obtain additional information to verify the above requirements.

**Method A1. Certified DVBE bidder:**

- a. Commit to performing at least 3% of the contract bid amount (unless otherwise specified) with your firm or in combination with other DVBE(s).
- b. Document DVBE participation on STD 840 (Side 1) and attach a copy of all applicable certifications.
- c. A DVBE bidder working in combination with other DVBEs shall be requested to submit proof of its commitment by submitting a written agreement with the DVBE(s) identified in its bid's STD 840. When requested, the written agreement must be submitted to the address or facsimile number specified and within the timeframe identified in the notification. Failure to submit the requested written agreement as specified may be grounds for bid rejection.

**Method A2. Non-DVBE bidder:**

- a. Commit to using certified DVBE(s) for at least 3% (unless otherwise specified) of the bid amount.
- b. When a bidder commits to less than the required 3% DVBE participation or its commitment may fall below 3% if specific line items/groups are not selected for award, then Option B, Good Faith Effort must be completed in addition to Option A, Commitment.
- c. Document DVBE participation on STD 840 (Side 1) and attach a copy of the DVBE's certification.
- d. Prior to contract award, a bidder is to submit proof of their commitment by submitting a written agreement with the DVBE(s) identified in its bid's STD 840. The awarding department contracting official named in this solicitation will contact each listed DVBE, by mail, fax or telephone, for verification of the bidder's submitted DVBE information. The written agreement must be submitted to the address or facsimile number specified and within the timeframe identified in the notification. Failure to submit the written agreement as specified may be grounds for bid rejection.

**OPTION B – GOOD FAITH EFFORT (GFE)** performance and documentation requirements must be completely satisfied prior to bid submission if you are unable to obtain and commit to the full DVBE participation percentage goal (Option A) and do not exercise Option C. Perform and document the following Steps 1 through 5 on both sides of the attached STD 840 form. Failure to perform and document GFE Steps 1 through 5 as instructed, which includes properly completing and submitting both sides of STD 840, shall result in your bid being deemed non-responsive. Step 3, Advertisement, is required unless specifically waived for this solicitation due to time limits imposed by the awarding department.

**Step 1 Awarding Department** - Contact the department's contracting official named in this solicitation to identify interested DVBEs. You must fully document this contact and describe the results on STD 840 (Side 2).

**Step 2 Other State and Federal Agencies, and Local Organizations**

**STATE** Contact the Department of General Services, Procurement Division's (DGS-PD) Office of Small Business and DVBE Certification (OSDC) to obtain a list of certified DVBEs by telephone at (916) 322-5060 for the 24-hour automated telephone system or (916) 375-4940 for the receptionist during normal business hours. This information can also be obtained by searching the online database at <http://www.pd.dgs.ca.gov/smbus>. Begin by selecting Certified Firm Inquiry Services, then search by using either the Keyword Search or the Standard Query options. You must fully document this contact and describe the results on STD 840 (Side 2).

**FEDERAL** Search the U.S. Small Business Administration's (SBA) online database (Pro-Net) at <http://www.pro-net.sba.gov> to identify potential DVBEs. Select these minimum options in the following sequence: select Search Database, select CA under "State"; select Service Disabled Veteran under "Other Ownership Data"; and "Search Using These Criteria" at the page bottom. The database takes a few moments to query, and then your list will appear on your screen. You may select other criteria to focus your search. You must fully document this contact and describe the results on STD 840 (Side 2).

**LOCAL** Contact at least one local DVBE organization to identify DVBEs. For a list of local DVBE organizations, please refer to the DVBE Resource Packet that may be accessed online (<http://www.pd.dgs.ca.gov/smbus> - select "DVBE Resource Packet") or obtain a hardcopy by requesting it from DGS-PD Office of Small Business and DVBE Outreach and Education (see the Resources & Information page). You must fully document your contact with local DVBE organizations and describe the results on STD 840 (Side 2).

**Step 3 Advertisements** are mandatory unless waived by the awarding department.

**CONTENT REQUIREMENTS:** Include all of the following in your advertisement(s): (1) company name; (2) contact name; (3) address; (4) telephone and facsimile (if applicable) numbers; (5) e-mail address (if applicable); (6) the state's solicitation number(s); (7) goods and/or services for which the state is soliciting; (8) the location of the work to be performed; and (9) the State's bid(s) due date and/or your due date for receiving DVBE responses.

**HOW MANY & WHERE TO PUBLISH:** Bidders must publish two (2) ads, one (1) each in a trade paper and a DVBE focus paper unless the paper is dual purpose (fulfilling both trade and focus requirements as defined in California Code of Regulations, Title 2, Section 1896.61(k)), in which case one (1) ad is acceptable. Please see <http://www.pd.dgs.ca.gov/smbus> for a list of DVBE Trade and Focus Paper Listings.

**WHEN:** Ads must be published after the solicitation's release date and at least 14 days prior to the bid due date, unless a different time period is expressly established in this solicitation.

**DOCUMENT & SUBMIT:** On STD 840 (Side 2), document the publication name(s) in which you published advertisement(s), the contact name and phone number, and date of publication. Include a copy(ies) of the advertisement(s) with your bid.

#### **Step 4 Invitations to Participate**

**WHO:** Invite (solicit) DVBEs who can provide relevant goods and/or services to this solicitation to subcontract with you. Conducting Steps 1 through 3 produces a list of DVBEs from which you may choose potential DVBEs subcontractors/suppliers to contact. Bidders are advised to contact as many DVBEs (who provide relevant goods and/or services in the applicable location(s)) as possible. Non-California-certified DVBEs are not eligible -- please refer those DVBEs to the OSDC to learn about certification (see the Resources & Information page for contact information).

**FOR WHAT:** Solicit DVBEs for goods and/or services relevant to the state's solicitation. If you are unable to identify specific portion(s) of the proposed contract to subcontract, the state encourages bidders to avoid making a predetermination that no DVBEs are able to perform without first contacting and soliciting participation from them. This allows DVBEs to respond whether they can or cannot provide any goods or services related to the solicitation, and provides a bidder with responses for consideration.

**HOW TO INVITE & CONTENT REQUIREMENTS:** Written invitations are required. At a minimum, invitations must contain all of the following: (1) company name; (2) contact name; (3) address; (4) phone and facsimile (if applicable) numbers; (5) return e-mail address (if applicable); (6) the state's solicitation number (NOT APPLICABLE FOR DPR); (7) goods and/or services for which the state is soliciting; (8) location of work; and (9) the State's bid(s) due date and/or your due date for receiving DVBE responses.

**WHEN:** Provide DVBE's with a reasonable time period to receive and respond to your invitation, and to be considered by you for participation as described in Step 5, prior to your bid submission.

**DOCUMENT & SUBMIT:** Bidders must document the completed contacts on STD 840 (Side 1), Section A. Attach additional copies of STD 840A as necessary to list your DVBE contacts. You are required to attach a copy of (1) each invitation or offer sent by letter, fax or e-mail; and (2) confirmation of transmission or delivery. Your bid shall be considered non-responsive if it fails to include copies of the written invitations and delivery confirmations.

**Step 5 Consider all responding DVBEs** for contract participation. Consideration must be based on business needs for the contract and the same evaluation criteria must be applied to each potential DVBE subcontractor/supplier offering the same goods and services. You must document on STD 840 (Side 1), Section A any firm(s) selected for participation; or if not selected, the reason for non-selection. Attach additional copies of STD 840A as necessary to list all of your DVBE contacts.

**OPTION C – THE DVBE BUSINESS UTILIZATION PLAN** (BUP) option permits bidders to submit an approved DVBE BUP to satisfy DVBE participation solicitation requirements up to 3%. **DVBE BUPs apply only to solicitations for goods and information technology (IT) goods and services.** DVBE BUPs are a company's commitment to expend a minimum of 3% of its total statewide contract dollars with DVBEs -- this percentage is based on all of its contracts in the State, not just those with the State. DVBE BUPs must be submitted to and approved by the DGS-PD prior to the bid due date. Please call the DGS-PD, Office of Small Business and DVBE Outreach and Education for assistance. Bidders choosing this option must properly complete and submit STD 840 (Side 1) and include a copy of its approval letter with the bid; failure to submit these documents shall render your bid non-responsive.

## RESOURCES AND INFORMATION

For assistance in preparing a responsive participation document, **contact the contracting official at the awarding department for this solicitation.** In accordance with Public Contract Code Section 10115.2(b)(3), bidders must advertise in trade and focus publications unless the requirement is waived. The Department of General Services, Procurement Division (DGS-PD) publishes a list of trade and focus publications to assist bidders in meeting these contract requirements. To obtain this list, please contact the DGS-PD Office of Small Business and DVBE Outreach and Education and request the "DVBE Resource Packet."

### U.S. Small Business Administration (SBA)

*Internet contact only – see instructions for website navigation*  
PRONET Database: <http://www.pro-net.sba.gov>

### FOR:

**Service-Disabled Veteran-owned businesses in California**

(Remember to verify each DVBE's California certification.)

**Local Organizations** (see the DVBE Resource Packet available from DGS-PD DVBE Program Section listed below)

### FOR:

**List of potential DVBE subcontractors**

### DGS-PD Office of Small Business and DVBE Certification (OSDC)

707 Third Street, Room 400, West Sacramento, CA 95605  
Website: <http://www.pd.dgs.ca.gov/smbus>  
24-hour automated information  
& document requests: (916) 322-5060  
Receptionist: (916) 375-4940  
Fax: (916) 375-4950

### FOR:

**Directory of Certified DVBEs  
Certification Applications  
Certification Information  
Certification Status, Concerns**

### DGS-PD Office of Small Business and DVBE Outreach and Education

707 Third Street, 2<sup>nd</sup> Floor, West Sacramento, CA 95605  
Voice, 8 am—5 pm: (800) 559-5529  
Fax: (916) 375-4597

### FOR:

**DVBE Program Participation Requirements  
DVBE Program Info. and Statewide Policy  
DVBE Resource Packet  
DVBE Business Utilization Plan  
Small Business/DVBE Advocates**

### Advertisement Format Example

This example offers a suggested format that includes required information outlined in Option B, Good Faith Effort, Step 3. You can substitute the applicable information for the bolded, italicized words.

DVBEs are invited to participate as a potential subcontractor/supplier to perform a commercially useful function specific to **DGS' IFB No. 12345** for ***fencing materials in Chowchilla.***  
***DVBE responses due to me 1/1/02;***  
***Bids due to the State 1/15/02.***

Contact: **ABC Company**  
**Jane Doe, General Manager**  
**123 Main Street, Sacramento, CA 95814**  
voice: **555/555-5555**; fax: **555/555-5556**  
or e-mail: ***jane.doe@abcco.com***

### Commercially Useful Function Definition

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 Section 1896.61(f); is certified in accordance with Section 1896.70; and provides services or goods that contribute to the fulfillment of the contract requirements by performing a commercially useful function. A DVBE contractor, subcontractor or supplier is considered performing a commercially useful function when it meets the following criteria:

(1) The business concern is: responsible for the execution of a distinct element of the work of the contract; carrying out its obligation by actually performing, managing or supervising the work involved; and performing work that is normal for its business services and functions, and

(2) The business concern is not further subcontracting a greater portion of the work than would be expected by normal industry practices.

# DOCUMENTATION OF DISABLED VETERAN BUSINESS ENTERPRISE PROGRAM REQUIREMENTS

STD 840 (REV. 9-15-2003)

**Designation Of Option** Check the appropriate box(es) to indicate the option(s) with which you choose to comply, complete the applicable sections and attach the required supporting documentation. You are advised to read all instructions carefully prior to completing this form. Remember that only California certified DVBEs who can provide related goods and/or services may be used to satisfy these program solicitation requirements.

- ☐ **OPTION A – I commit to meeting the full DVBE contract participation requirement.**  
Complete STD 840, Section A.
- ☐ **OPTION B – I performed and documented a Good Faith Effort (GFE) in an attempt to obtain DVBE participation.**  
Complete STD 840, Section A (for GFE Steps 4 & 5) and STD 840 (REVERSE), Section B (for GFE Steps 1–3).
- ☐ **OPTION C – I submit a copy of my firm's "Notice of Approved DVBE Business Utilization Plan."**

## A. Full information must be provided.

**For contract participation commitment**, at least one DVBE must be listed. DVBEs must perform a commercially useful function. List the specific goods and/or services with the dollar and/or percentage value(s) that the DVBE(s) commit(s) to provide and the DVBE's tier (prime contractor = 0, subcontractor to prime contractor = 1, subcontractor to Tier 1 subcontractor = 2, etc.). If both the estimated dollar amount and percentage are listed, the higher value supercedes. Attach additional pages to list all other DVBE subcontractors/suppliers (you may use STD 840A). During contract performance, all requests for substituting named DVBEs must be made in accordance with the provisions of California Code of Regulations, Title 2, Section 1896.64(c).

**For Good Faith Effort (GFE)**, use this section to document your first completed contacts with (Step 4), and consideration of (Step 5), relevant DVBEs. Business reasons for non-selection must be documented. Attach additional pages to list all other DVBE contacts (you may use STD 840A). Copies of all written invitations and delivery confirmations must also be attached and submitted with the bid.

|                                                       |                                                                                                                              |                                                                                                                                        |                                                                                                                   |                                 |                       |
|-------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|---------------------------------|-----------------------|
| BOTH SECTIONS MUST BE COMPLETED FOR GOOD FAITH EFFORT | AT LEAST ONE DVBE MUST BE NAMED FOR PARTICIPATION                                                                            | Date Contacted<br>/ /                                                                                                                  | DVBE Company Name (If you are the Prime and a DVBE enter your name, otherwise enter the solicited subcontractor.) |                                 |                       |
|                                                       |                                                                                                                              | DVBE Contact Name & Reference #                                                                                                        | Telephone Number<br>( )                                                                                           | Fax Number<br>( )               | E-mail (if available) |
|                                                       |                                                                                                                              | Street Address, City, State and Zip Code                                                                                               |                                                                                                                   |                                 |                       |
|                                                       |                                                                                                                              | <input type="checkbox"/> <b>Yes, I am, or I will subcontract with, the listed DVBE to provide the following goods and/or services:</b> |                                                                                                                   |                                 |                       |
|                                                       |                                                                                                                              | Specific Goods and/or Services                                                                                                         |                                                                                                                   | Estimated \$ and/or %<br>\$ / % | Tier                  |
|                                                       |                                                                                                                              | OR                                                                                                                                     | <input type="checkbox"/> <b>No, I am unable to subcontract with the DVBE for the following business reasons:</b>  |                                 |                       |
|                                                       |                                                                                                                              |                                                                                                                                        |                                                                                                                   |                                 |                       |
|                                                       |                                                                                                                              | Date Contacted<br>/ /                                                                                                                  | DVBE Company Name                                                                                                 |                                 |                       |
|                                                       |                                                                                                                              | DVBE Contact Name                                                                                                                      | Telephone Number<br>( )                                                                                           | Fax Number<br>( )               | E-mail (if available) |
|                                                       |                                                                                                                              | Street Address, City, State and Zip Code                                                                                               |                                                                                                                   |                                 |                       |
| OR                                                    | <input type="checkbox"/> <b>Yes, I will subcontract with the listed DVBE to provide the following goods and/or services:</b> |                                                                                                                                        |                                                                                                                   |                                 |                       |
|                                                       | Specific Goods and/or Services                                                                                               |                                                                                                                                        | Estimated \$ and/or %<br>\$ / %                                                                                   | Tier                            |                       |
|                                                       | <input type="checkbox"/> <b>No, I am unable to subcontract with the DVBE for the following business reasons:</b>             |                                                                                                                                        |                                                                                                                   |                                 |                       |
|                                                       |                                                                                                                              |                                                                                                                                        |                                                                                                                   |                                 |                       |

**ATTACH ADDITIONAL PAGES (OR USE STD 840A) TO LIST ALL OTHER DVBE CONTACTS**

Go to Side 2, Section B to continue Good Faith Effort documentation ⇨

**ADDITIONAL DISABLED VETERAN BUSINESS ENTERPRISE CONTACTS**

STD 840A (EST. 9-15-2003)

- B. Documentation of Good Faith Effort Steps 1, 2 and 3**—Remember to carefully read all instructions prior to completing this form. Please refer to the Resources & Information page for detailed contact information and a sample advertisement format.

**STEP 1. Contact the Awarding Department** (the contracting official, unless another contact is specified) to identify potential DVBE subcontractors/suppliers, **and document this contact as required.**

|             |                                                                |                                    |
|-------------|----------------------------------------------------------------|------------------------------------|
| Date<br>/ / | Contact Name: <i>ATTENTION BIDDERS: CONTACT JAN VANDERBECK</i> | Telephone Number<br>(916) 653-8674 |
|-------------|----------------------------------------------------------------|------------------------------------|

Describe Result

**STEP 2. Contact all of the following and document your contacts as required:** Other state and federal agencies and local organizations to identify potential DVBE subcontractors/suppliers.

**Other State Agency** – Procurement Division, Office of Small Business and DVBE Certification (Certification Office)

|                                             |             |                                                                                                 |              |                                                                                                                        |
|---------------------------------------------|-------------|-------------------------------------------------------------------------------------------------|--------------|------------------------------------------------------------------------------------------------------------------------|
| PHONE CONTACT<br><b>OR</b><br>ONLINE SEARCH | Date<br>/ / | Telephone Number<br>(916) 322-5060<br>(916) 375-4940                                            | Contact Name | <input type="checkbox"/> I contacted the Certification Office for a list of California certified DVBEs.                |
|                                             | Date<br>/ / | Internet Address<br><a href="http://www.pd.dgs.ca.gov/smbus">http://www.pd.dgs.ca.gov/smbus</a> |              | <input type="checkbox"/> I searched the Certification Office's online database to identify California certified DVBEs. |

Describe Result

**Federal Agency** – U.S. Small Business Administration (SBA) online database

|             |                                                                                         |                                                                                       |
|-------------|-----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Date<br>/ / | Internet Address<br><a href="http://www.pro-net.sba.gov">http://www.pro-net.sba.gov</a> | <input type="checkbox"/> I searched the federal online database for California DVBEs. |
|-------------|-----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|

Describe Result

**Local DVBE Organizations** – Contact at least one local DVBE organization—refer to the DVBE Resource Packet for a list of acceptable contacts. (<http://www.pd.dgs.ca.gov/smbus> - select “DVBE Resource Packet” )

|             |                   |              |                                                                                       |
|-------------|-------------------|--------------|---------------------------------------------------------------------------------------|
| Date<br>/ / | Organization Name | Contact Name | Telephone Number and/or Internet Address<br>( ) <a href="http://www.">http://www.</a> |
|-------------|-------------------|--------------|---------------------------------------------------------------------------------------|

Describe Result

|             |                   |              |                                                                                       |
|-------------|-------------------|--------------|---------------------------------------------------------------------------------------|
| Date<br>/ / | Organization Name | Contact Name | Telephone Number and/or Internet Address<br>( ) <a href="http://www.">http://www.</a> |
|-------------|-------------------|--------------|---------------------------------------------------------------------------------------|

Describe Result

**STEP 3. Publish advertisements:** Two (2) advertisements: One (1) ad in an accepted trade paper; and one (1) ad in an accepted DVBE focus paper (please see the DVBE Trade and Focus Paper listings for a list of all accepted publications); unless the paper is dual purpose (fulfilling both trade and focus requirements), in which case one (1) ad is acceptable. **Document this step as required and remember to attach a copy of your advertisement(s).**

|                                          |              |                          |
|------------------------------------------|--------------|--------------------------|
| <b>Focus Paper Name</b> (list full name) | Contact Name | Telephone Number<br>( )  |
| Address                                  |              | Date Ad Published<br>/ / |
| <b>Trade Paper Name</b> (list full name) | Contact Name | Telephone Number<br>( )  |
| Address                                  |              | Date Ad Published<br>/ / |

☐ I certify the ad was placed to reach both trade and focus audiences through this one publication.

|                                                    |              |                          |
|----------------------------------------------------|--------------|--------------------------|
| <b>Trade and Focus Paper Name</b> (list full name) | Contact Name | Telephone Number<br>( )  |
| Address                                            |              | Date Ad Published<br>/ / |



**ADDITIONAL DISABLED VETERAN BUSINESS ENTERPRISE CONTACTS**

STD 840A (EST. 9-15-2003)

***This document may be used as a continuation from Section A, STD 840 (REV. 9-15-2003)***

|                                          |                         |                   |                       |
|------------------------------------------|-------------------------|-------------------|-----------------------|
| Date Contacted<br>/ /                    | DVBE Company Name       |                   |                       |
| DVBE Contact Name                        | Telephone Number<br>( ) | Fax Number<br>( ) | E-mail (if available) |
| Street Address, City, State and Zip Code |                         |                   |                       |

|    |                                                                                                                              |                                 |      |
|----|------------------------------------------------------------------------------------------------------------------------------|---------------------------------|------|
| OR | <input type="checkbox"/> <b>Yes, I will subcontract with the listed DVBE to provide the following goods and/or services:</b> |                                 |      |
|    | Specific Goods and/or Services                                                                                               | Estimated \$ and/or %<br>\$ / % | Tier |
|    | <input type="checkbox"/> <b>No, I am unable to subcontract with the DVBE for the following business reasons:</b>             |                                 |      |

|                                          |                         |                   |                       |
|------------------------------------------|-------------------------|-------------------|-----------------------|
| Date Contacted<br>/ /                    | DVBE Company Name       |                   |                       |
| DVBE Contact Name                        | Telephone Number<br>( ) | Fax Number<br>( ) | E-mail (if available) |
| Street Address, City, State and Zip Code |                         |                   |                       |

|    |                                                                                                                              |                                 |      |
|----|------------------------------------------------------------------------------------------------------------------------------|---------------------------------|------|
| OR | <input type="checkbox"/> <b>Yes, I will subcontract with the listed DVBE to provide the following goods and/or services:</b> |                                 |      |
|    | Specific Goods and/or Services                                                                                               | Estimated \$ and/or %<br>\$ / % | Tier |
|    | <input type="checkbox"/> <b>No, I am unable to subcontract with the DVBE for the following business reasons:</b>             |                                 |      |

|                                          |                         |                   |                       |
|------------------------------------------|-------------------------|-------------------|-----------------------|
| Date Contacted<br>/ /                    | DVBE Company Name       |                   |                       |
| DVBE Contact Name                        | Telephone Number<br>( ) | Fax Number<br>( ) | E-mail (if available) |
| Street Address, City, State and Zip Code |                         |                   |                       |

|    |                                                                                                                              |                                 |      |
|----|------------------------------------------------------------------------------------------------------------------------------|---------------------------------|------|
| OR | <input type="checkbox"/> <b>Yes, I will subcontract with the listed DVBE to provide the following goods and/or services:</b> |                                 |      |
|    | Specific Goods and/or Services                                                                                               | Estimated \$ and/or %<br>\$ / % | Tier |
|    | <input type="checkbox"/> <b>No, I am unable to subcontract with the DVBE for the following business reasons:</b>             |                                 |      |

|                                          |                         |                   |                       |
|------------------------------------------|-------------------------|-------------------|-----------------------|
| Date Contacted<br>/ /                    | DVBE Company Name       |                   |                       |
| DVBE Contact Name                        | Telephone Number<br>( ) | Fax Number<br>( ) | E-mail (if available) |
| Street Address, City, State and Zip Code |                         |                   |                       |

|    |                                                                                                                              |                                 |      |
|----|------------------------------------------------------------------------------------------------------------------------------|---------------------------------|------|
| OR | <input type="checkbox"/> <b>Yes, I will subcontract with the listed DVBE to provide the following goods and/or services:</b> |                                 |      |
|    | Specific Goods and/or Services                                                                                               | Estimated \$ and/or %<br>\$ / % | Tier |
|    | <input type="checkbox"/> <b>No, I am unable to subcontract with the DVBE for the following business reasons:</b>             |                                 |      |

**ADDITIONAL DISABLED VETERAN BUSINESS ENTERPRISE CONTACTS**

STD 840A (EST. 9-15-2003) (REVERSE)

|                                          |                         |                   |                       |
|------------------------------------------|-------------------------|-------------------|-----------------------|
| Date Contacted<br>/ /                    | DVBE Company Name       |                   |                       |
| DVBE Contact Name                        | Telephone Number<br>( ) | Fax Number<br>( ) | E-mail (if available) |
| Street Address, City, State and Zip Code |                         |                   |                       |

|    |                                                                                                                              |                                 |      |
|----|------------------------------------------------------------------------------------------------------------------------------|---------------------------------|------|
| OR | <input type="checkbox"/> <b>Yes, I will subcontract with the listed DVBE to provide the following goods and/or services:</b> |                                 |      |
|    | Specific Goods and/or Services                                                                                               | Estimated \$ and/or %<br>\$ / % | Tier |
|    | <input type="checkbox"/> <b>No, I am unable to subcontract with the DVBE for the following business reasons:</b>             |                                 |      |

|                                          |                         |                   |                       |
|------------------------------------------|-------------------------|-------------------|-----------------------|
| Date Contacted<br>/ /                    | DVBE Company Name       |                   |                       |
| DVBE Contact Name                        | Telephone Number<br>( ) | Fax Number<br>( ) | E-mail (if available) |
| Street Address, City, State and Zip Code |                         |                   |                       |

|    |                                                                                                                              |                                 |      |
|----|------------------------------------------------------------------------------------------------------------------------------|---------------------------------|------|
| OR | <input type="checkbox"/> <b>Yes, I will subcontract with the listed DVBE to provide the following goods and/or services:</b> |                                 |      |
|    | Specific Goods and/or Services                                                                                               | Estimated \$ and/or %<br>\$ / % | Tier |
|    | <input type="checkbox"/> <b>No, I am unable to subcontract with the DVBE for the following business reasons:</b>             |                                 |      |

|                                          |                         |                   |                       |
|------------------------------------------|-------------------------|-------------------|-----------------------|
| Date Contacted<br>/ /                    | DVBE Company Name       |                   |                       |
| DVBE Contact Name                        | Telephone Number<br>( ) | Fax Number<br>( ) | E-mail (if available) |
| Street Address, City, State and Zip Code |                         |                   |                       |

|    |                                                                                                                              |                                 |      |
|----|------------------------------------------------------------------------------------------------------------------------------|---------------------------------|------|
| OR | <input type="checkbox"/> <b>Yes, I will subcontract with the listed DVBE to provide the following goods and/or services:</b> |                                 |      |
|    | Specific Goods and/or Services                                                                                               | Estimated \$ and/or %<br>\$ / % | Tier |
|    | <input type="checkbox"/> <b>No, I am unable to subcontract with the DVBE for the following business reasons:</b>             |                                 |      |

|                                          |                         |                   |                       |
|------------------------------------------|-------------------------|-------------------|-----------------------|
| Date Contacted<br>/ /                    | DVBE Company Name       |                   |                       |
| DVBE Contact Name                        | Telephone Number<br>( ) | Fax Number<br>( ) | E-mail (if available) |
| Street Address, City, State and Zip Code |                         |                   |                       |

|    |                                                                                                                              |                                 |      |
|----|------------------------------------------------------------------------------------------------------------------------------|---------------------------------|------|
| OR | <input type="checkbox"/> <b>Yes, I will subcontract with the listed DVBE to provide the following goods and/or services:</b> |                                 |      |
|    | Specific Goods and/or Services                                                                                               | Estimated \$ and/or %<br>\$ / % | Tier |
|    | <input type="checkbox"/> <b>No, I am unable to subcontract with the DVBE for the following business reasons:</b>             |                                 |      |

# DVBE Program Requirements Supplier Checklist (REV. 9-15-2003)

Please do not submit this checklist with your bid. It is provided for your use only. Checking every box of your elected compliance option does not guarantee that your bid will be evaluated compliant.

## ☐ **OPTION A: COMMITMENT TO DVBE CONTRACT PARTICIPATION**

- ☐ STD 840 included with bid
- ☐ DVBE Written Agreement
- ☐ Designated the Commitment Option – Checked the first box
- ☐ Listed at least one California certified DVBE subcontractor
- ☐ Checked the box(es) for “Yes ...”
- ☐ Listed specific goods and/or services DVBE(s) agrees to provide
- ☐ Proposed DVBE contract performance is a “commercially useful function” relevant to the contract
- ☐ Listed the estimated dollar amount and/or percentage of contract for the DVBE’s participation
- ☐ Proposed DVBE participation meets the 3% requirement (unless a different percentage is specified)
- ☐ Attached a copy of the DVBE’s certification letter from the Department of General Services

## ☐ **OPTION B: GOOD FAITH EFFORT (GFE)**

- ☐ STD 840 included with bid
- ☐ Designated the GFE Option – Checked the second box
- ☐ (Step 4) Listed all DVBEs contacted and invited to perform on the proposed contract
- ☐ Confirmed that listed DVBEs are California certified
- ☐ Attached copies of the invitations sent to the listed DVBEs
- ☐ Invitations included the required contact information
- ☐ Attached copies of the delivery confirmations for invitations to DVBEs (e.g. mail receipts, fax confirmations, etc.)
- ☐ (Step 5) Checked the “No” boxes and listed the business reasons for non-selection of DVBEs contacted
- ☐ (Step 1) Contacted the Awarding Department and listed contact and results
- ☐ (Step 2) Contacted Other State agency (Office of Small Business and DVBE Certification) and listed the contact and results
- ☐ (Step 2) Searched the Federal Pro-net internet database and noted the results
- ☐ (Step 2) Contacted Local DVBE Organization(s) and listed the contact and results
- ☐ (Step 3) Advertised – IF NOT WAIVED
  - Listed full information for the advertisement(s) and publication(s)  
[2 ads in one trade and in one DVBE focus publication; **OR** 1 ad in one dual-purpose publication]
- ☐ Attached a copy of the advertisement(s)
- ☐ The advertisement(s) were published at least 14 days prior to the bid due date
- ☐ The advertisement(s) included my required contact information

## ☐ **OPTION C: BUSINESS UTILIZATION PLAN (BUP)**

- ☐ **Prior to the bid due date** -- Submitted a BUP to DGS-PD and received approval
- ☐ STD 840 included with bid
- ☐ Designated the BUP Option – Checked the third box
- ☐ Attached a copy of the BUP Approval letter from DGS-PD

**DISABLED VETERAN BUSINESS ENTERPRISE DECLARATIONS**

STD. 843 (Rev. 11/2005)

**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: \_\_\_\_\_

PO/Contract Description (materials/supplies/services/equipment): \_\_\_\_\_

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 Number of Owner)\_\_\_\_\_  
(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)

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

**NONCOLLUSION AFFIDAVIT TO BE EXECUTED BY  
BIDDER AND SUBMITTED WITH BID FOR PUBLIC WORKS**

STATE OF CALIFORNIA )  
 ) ss  
COUNTY OF \_\_\_\_\_ )

\_\_\_\_\_  
(Name)

\_\_\_\_\_  
(Position title)

\_\_\_\_\_  
(The bidder)

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

DATED: \_\_\_\_\_

By \_\_\_\_\_  
(Person signing for bidder)

Subscribed and sworn to

before me on \_\_\_\_\_

\_\_\_\_\_  
(Notarial Seal)

\_\_\_\_\_  
(Notary Public)

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

**SMALL BUSINESS PREFERENCE AND CERTIFICATION REQUEST**  
**(For Construction Contractors Only)**

STD. 811 (REV 6-2001)(CA ST PKS, EXCEL 2/25/2009)

**READ BEFORE SIGNING**  
**(THIS REQUEST MUST REMAIN WITH THE BID PACKAGE)**• **1. PENALTY ASSESSMENT**

A business will be assessed a penalty and be ineligible to transact any business with the Department for furnishing incorrect information. (Title 2 of the California Code of Regulations)

• **2. ~~PUBLIC WORKS AGREEMENTS EXCEEDING \$100,000 AND REQUIRING TYPES "A" OR "B" CONTRACTORS LICENSE~~**

~~On public works agreements where the lowest responsible bid exceeds \$100,000, and the work to be performed requires a type "A" or "B" contractor's license and two or more subcontractors will be used, preferences shall only be granted to those small business bidders who certify, under penalty of perjury, that at least fifty percent (50%) of subcontractors utilized on the job are certified small businesses. In meeting the 50% requirement, bidders may use certified small business and/or small businesses that have applied for certification no later than 5:00 P.M. on the bid opening date and are subsequently granted certification. The 50% small business subcontractor utilization level shall be maintained through the term of the contract.~~

• **3. JOINT BIDDERS/COMBINATION BIDDERS**

Bidders bidding jointly or as a combination of several business organizations are especially cautioned that such bidders must be jointly licensed and approved in the form and style in which the bid is executed

• **4. NAME STYLE**

The Small Business Preference and Certification Request must be signed in the same name style in which the bidder is licensed by the Contractors' State License Board.

BIDDER'S(S) LEGAL NAME STYLE

FEDERAL EMPLOYER IDENTIFICATION NUMBER

OSBCR CERTIFICATION NUMBER

**CERTIFICATION**

- **5.** The undersigned hereby requests preference as a "SMALL BUSINESS" and further certifies under penalty of perjury, that the firm still meets the requirements of Section 1896(L) Title 2 of the California Code of Regulations. A completed form STD. 813 meeting all applicable requirements must be on file in the Office of Small Business Certification and Resources (OSBCR) by 5:00 p.m. of the bid opening date. The form STD. 813 may be obtained from the OSBCR Office at 1531 I Street, Second Floor, Sacramento, CA or can be downloaded at [www.dgs.ca.gov/osbcr](http://www.dgs.ca.gov/osbcr).

BIDDER'S SIGNATURE

DATE SIGNED

• **6. BIDDERS RECEIVING BONDING ASSISTANCE**

In the event the bidder has received assistance in obtaining bonding for this project, he/she shall set forth the name and nature of the firm providing such assistance. Should the firm be listed as a subcontractor, bidder shall set forth the percentage of the contract to be performed by the subcontractor.

NAME OF FIRM PROVIDING BONDING ASSISTANCE

NATURE OF FIRM PROVIDING BONDING ASSISTANCE

SUBCONTRACTOR ASSISTANCE

☐ YES - Percentage \_\_\_\_\_☐ NO

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

|                  |              |
|------------------|--------------|
| PARK UNIT NAME   | PROJECT NAME |
| NAME OF BUSINESS |              |

***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:***

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? ☐ **Yes** (Explain circumstances below. Attach additional pages if needed.) ☐ **No**

SAMPLE

**NOTICE TO BIDDERS**

Bidders are cautioned that making false certification may subject the certifier to criminal prosecution.

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.

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.

**CERTIFICATION**

*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*

BIDDER SIGNATURE

PRINTED NAME

DATE





## DARFUR CONTRACTING ACT

Pursuant to Public Contract Code section 10478, if a bidder or proposer currently or within the previous three years has had business activities or other operations outside of the United States, it must certify that it is not a "scrutinized" company as defined in Public Contract Code section 10476.

Therefore, to be eligible to submit a bid or proposal, please complete only one of the following three paragraphs (via initials for Paragraph # 1 or Paragraph # 2, or via initials and certification for Paragraph # 3):

1.        \_\_\_\_\_        We do not currently have, or we have not had within the previous  
             Initials        three years, business activities or other operations outside of the  
                                 United States.

**OR**

2.        \_\_\_\_\_        We are a scrutinized company as defined in Public Contract Code  
             Initials        section 10476, but we have received written permission from the  
                                 Department of General Services (DGS) 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.

**OR**

3.        \_\_\_\_\_        We currently have, or we have had within the previous three  
             Initials        year's business activities or other operations outside of the United  
                                 States, but we certify below that we are not a scrutinized  
             + certification        company below as defined in Public Contract Code section 10476.

**CERTIFICATION For # 3.**

I, the official named below, CERTIFY UNDER PENALTY OF PERJURY that I am duly authorized to legally bind the prospective proposer/bidder to the clause listed above in # 3. This certification is made under the laws of the State of California.

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

**YOUR BID OR PROPOSAL WILL BE DISQUALIFIED UNLESS YOUR BID OR PROPOSAL  
INCLUDES THIS FORM WITH EITHER PARAGRAPH # 1 OR # 2 INITIALED OR PARAGRAPH # 3  
INITIALED AND CERTIFIED.**

**STANDARD AGREEMENT**

STD 213[PW] (Rev 06/03)(CA ST PKS, EXCEL 10/20/2004)

AGREEMENT NUMBER

REGISTRATION NUMBER

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

STATE AGENCY'S NAME

CONTRACTOR'S NAME

## 2. The term of this Agreement is: through

## 3. The maximum amount \$ of this Agreement is:

## 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.

Exhibit A - Scope of Work page(s)

Exhibit B - Budget Detail and Payment Provisions page(s)

Exhibit C\* - General Terms and Conditions

Check mark one item below as Exhibit D:

☐  
☐

Exhibit - D Special Terms and Conditions (Attached hereto as part of this agreement)

page(s)

Exhibit - D\* Special Terms and Conditions

Exhibit D, Attachment 1 - Project Manual

pages

Exhibit E - Additional Provisions

pages

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 [www.ols.dgs.ca.gov/Standard+Language](http://www.ols.dgs.ca.gov/Standard+Language)**IN WITNESS WHEREOF, this Agreement has been executed by the parties hereto.****CONTRACTOR**

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

BY (Authorized Signature)

DATE SIGNED(Do not type)



PRINTED NAME AND TITLE OF PERSON SIGNING

ADDRESS

**STATE OF CALIFORNIA**

AGENCY NAME

BY (Authorized Signature)

DATE SIGNED(Do not type)



PRINTED NAME AND TITLE OF PERSON SIGNING

ADDRESS

**California Department of General  
Services Use Only**☐ Exempt per:

Contractor's Name:  
Agreement Number:  
Page: \_\_\_\_\_ of \_\_\_\_\_

**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:                 |  |

**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:

State's Representative's Name  
State's Rep Service Center  
Service Center Address  
Service Center City/State/Zip

**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.

Ten percent (10%) 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.

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 instructions to bidders, 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.

SAMPLE

**PAYMENT BOND TO ACCOMPANY CONSTRUCTION CONTRACT**  
(CIVIL CODE SECTION 3247)

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

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

**Know All Men By These Presents:**

That The State of California, acting by and through the \_\_\_\_\_

has awarded to \_\_\_\_\_ whose address is \_\_\_\_\_

(CONTRACTOR / PRINCIPLE)

\_\_\_\_\_ as Principle, a contract for the work described as follows:

WHEREAS, The provisions of Civil Code Section 3247 require that the Principle file a bond in connection with said contract and this bond is executed and tendered in accordance therewith.

NOW THEREFORE, Principle and \_\_\_\_\_, a corporation organized  
under the laws of \_\_\_\_\_ (SURETY)

, and authorized to transact a general surety business in the State 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 Principle or its subcontractors shall fail to pay any of the persons named in Civil Code Section 3181, 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 Principle 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 brought upon this bond, the Surety will pay a reasonable attorney's fee to be fixed by the court.

2. This bond shall insure to the benefit of any persons named in Civil Code Section 3181 as to give a right of action to such persons or their assigns 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. The bond is executed by the Surety, to comply with the provisions of Chapter 7, Title 15, Part 4, Division 3 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)

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

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

under the laws of the State of California.

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

\_\_\_\_\_  
(PRINTED OR TYPED NAME OF 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 \_\_\_\_\_ 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:

**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 \_\_\_\_\_ and No Cents (\$\_\_\_\_\_) 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\_\_\_\_.

\_\_\_\_\_  
B y \_\_\_\_\_  
Contractor

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

B y \_\_\_\_\_  
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)

STD. 204 (Rev. 6-2003)(CA ST PKS, EXCEL 9/22/2004)

|                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                            |                                                                                             |                                                                        |                      |                        |                         |                              |                              |
|------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------------------------------------------------------------------------------------------|------------------------------------------------------------------------|----------------------|------------------------|-------------------------|------------------------------|------------------------------|
| <b>1</b>                                                               | <b>INSTRUCTIONS:</b> Complete all information on this form. Sign, date, and return to the State agency (department/office) address shown at the bottom of this page. Prompt return of this <b>fully completed</b> form will prevent delays when processing payments. Information provided in this form will be used by State agencies to prepare Information Returns (1099). See reverse side for more information and Privacy Statement.<br><b>NOTE:</b> Governmental entities, federal, State, and local (including school districts), are not required to submit this form.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                            |                                                                                             |                                                                        |                      |                        |                         |                              |                              |
| <b>2</b>                                                               | <b>PAYEE'S LEGAL BUSINESS NAME</b> (Type or Print)<br><hr/> <table style="width: 100%;"> <tr> <td style="width: 60%;"><b>SOLE PROPRIETOR— ENTER NAME AS SHOWN ON SSN</b> (Last, First, M.I.)</td> <td style="width: 40%;"><b>EMAIL ADDRESS</b></td> </tr> <tr> <td><b>MAILING ADDRESS</b></td> <td><b>BUSINESS ADDRESS</b></td> </tr> <tr> <td><b>CITY, STATE, ZIP CODE</b></td> <td><b>CITY, STATE, ZIP CODE</b></td> </tr> </table>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                            |                                                                                             | <b>SOLE PROPRIETOR— ENTER NAME AS SHOWN ON SSN</b> (Last, First, M.I.) | <b>EMAIL ADDRESS</b> | <b>MAILING ADDRESS</b> | <b>BUSINESS ADDRESS</b> | <b>CITY, STATE, ZIP CODE</b> | <b>CITY, STATE, ZIP CODE</b> |
| <b>SOLE PROPRIETOR— ENTER NAME AS SHOWN ON SSN</b> (Last, First, M.I.) | <b>EMAIL ADDRESS</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                            |                                                                                             |                                                                        |                      |                        |                         |                              |                              |
| <b>MAILING ADDRESS</b>                                                 | <b>BUSINESS ADDRESS</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                            |                                                                                             |                                                                        |                      |                        |                         |                              |                              |
| <b>CITY, STATE, ZIP CODE</b>                                           | <b>CITY, STATE, ZIP CODE</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                            |                                                                                             |                                                                        |                      |                        |                         |                              |                              |
| <b>3</b>                                                               | <b>ENTER FEDERAL EMPLOYER IDENTIFICATION NUMBER (FEIN):</b> <span style="border: 1px solid black; padding: 2px;">  </span> - <span style="border: 1px solid black; padding: 2px;">  </span> <span style="border: 1px solid black; padding: 2px;">  </span> <span style="border: 1px solid black; padding: 2px;">  </span> <span style="border: 1px solid black; padding: 2px;">  </span> <span style="border: 1px solid black; padding: 2px;">  </span> <span style="border: 1px solid black; padding: 2px;">  </span> <span style="border: 1px solid black; padding: 2px;">  </span> <span style="border: 1px solid black; padding: 2px;">  </span>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                            | <b>NOTE:</b><br>Payment will not be processed without an accompanying taxpayer I.D. number. |                                                                        |                      |                        |                         |                              |                              |
| <b>PAYEE ENTITY TYPE</b><br><br><b>CHECK ONE BOX ONLY</b>              | <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <input type="checkbox"/> <b>PARTNERSHIP</b><br/><br/> <input type="checkbox"/> <b>ESTATE OR TRUST</b> </div> <div style="width: 45%;"> <b>CORPORATION:</b><br/> <input type="checkbox"/> <b>MEDICAL</b> (e.g., dentistry, psychotherapy, chiropractic, etc.)<br/> <input type="checkbox"/> <b>LEGAL</b> (e.g., attorney services)<br/> <input type="checkbox"/> <b>EXEMPT</b> (nonprofit)<br/> <input type="checkbox"/> <b>ALL OTHERS</b> </div> </div> <hr/> <input type="checkbox"/> <b>INDIVIDUAL OR SOLE PROPRIETOR</b><br><b>ENTER SOCIAL SECURITY NUMBER:</b> <span style="border: 1px solid black; padding: 2px;">  </span> <span style="border: 1px solid black; padding: 2px;">  </span> - <span style="border: 1px solid black; padding: 2px;">  </span> <span style="border: 1px solid black; padding: 2px;">  </span> <span style="border: 1px solid black; padding: 2px;">  </span> <span style="border: 1px solid black; padding: 2px;">  </span> <span style="border: 1px solid black; padding: 2px;">  </span> <span style="border: 1px solid black; padding: 2px;">  </span> <span style="border: 1px solid black; padding: 2px;">  </span> |                            |                                                                                             |                                                                        |                      |                        |                         |                              |                              |
|                                                                        | (SSN required by authority of California Revenue and Tax Code Section 18646)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                            |                                                                                             |                                                                        |                      |                        |                         |                              |                              |
| <b>4</b>                                                               | <b>PAYEE RESIDENCY STATUS</b><br><br><input type="checkbox"/> California resident - Qualified to do business in California or maintains a permanent place of business in California.<br><br><input type="checkbox"/> California nonresident (see reverse side) - Payments to nonresidents for services may be subject to State income tax withholding.<br><div style="margin-left: 20px;"> <input type="checkbox"/> No services performed in California.<br/> <input type="checkbox"/> Copy of Franchise Tax Board waiver of State withholding attached.         </div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                            |                                                                                             |                                                                        |                      |                        |                         |                              |                              |
| <b>5</b>                                                               | <p style="text-align: center;"><b>I hereby certify under penalty of perjury that the information provided on this document is true and correct.</b><br/> <b>Should my residency status change, I will promptly notify the State agency below.</b></p> <table style="width: 100%;"> <tr> <td colspan="2"><b>AUTHORIZED PAYEE REPRESENTATIVE'S NAME</b> (Type or Print)</td> <td><b>TITLE</b></td> </tr> <tr> <td><b>SIGNATURE</b></td> <td><b>DATE</b></td> <td><b>TELEPHONE</b><br/>(    )   </td> </tr> </table>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                            |                                                                                             | <b>AUTHORIZED PAYEE REPRESENTATIVE'S NAME</b> (Type or Print)          |                      | <b>TITLE</b>           | <b>SIGNATURE</b>        | <b>DATE</b>                  | <b>TELEPHONE</b><br>(    )   |
| <b>AUTHORIZED PAYEE REPRESENTATIVE'S NAME</b> (Type or Print)          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>TITLE</b>               |                                                                                             |                                                                        |                      |                        |                         |                              |                              |
| <b>SIGNATURE</b>                                                       | <b>DATE</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>TELEPHONE</b><br>(    ) |                                                                                             |                                                                        |                      |                        |                         |                              |                              |
| <b>6</b>                                                               | <b>Please return completed form to:</b><br><br><b>Department/Office:</b> _____<br><b>Unit/Section:</b> _____<br><b>Mailing Address:</b> _____<br><b>City/State/Zip:</b> _____<br><b>Telephone:</b> (    ) _____ <b>Fax:</b> (    ) _____<br><b>E-mail Address:</b> _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                            |                                                                                             |                                                                        |                      |                        |                         |                              |                              |



**PAYEE DATA RECORD**

STD. 204 (Rev. 6-2003)(REVERSE)(CA ST PKS, EXCEL 9/22/2004)

|                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                              |                     |                 |                     |                                      |                |          |                |
|----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|---------------------|-----------------|---------------------|--------------------------------------|----------------|----------|----------------|
| 1                                            | <p><b><u>Requirement to Complete Payee Data Record, STD. 204</u></b></p> <p>A completed Payee Data Record, STD. 204, is required for payments to all non-governmental entities and will be kept on file at each State agency. Since each State agency with which you do business must have a separate STD. 204 on file, it is possible for a payee to receive this form from various State agencies.</p> <p>Payees who do not wish to complete the STD. 204 may elect to not 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 backup withholding and nonresident State income tax withholding. Amounts reported on Information Returns (1099) are in accordance with the Internal Revenue Code and the California Revenue and Taxation Code</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                              |                     |                 |                     |                                      |                |          |                |
| 2                                            | <p>Enter the payee's legal business name. Sole proprietorships must also include the owner's full name. An individual must list his/her full name. The mailing address should be the address at which the payee chooses to receive correspondence. Do not enter payment address or lock box information here.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                              |                     |                 |                     |                                      |                |          |                |
| 3                                            | <p>Check the box that corresponds to the payee business type. Check only one box. Corporations must check the box that identifies the type of corporation. 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 the California Revenue and Taxation Code Section 18646 to facilitate tax compliance enforcement activities and the preparation of Form 1099 and other information returns as required by the Internal Revenue Code Section 6109(a).</p> <p>The TIN for individuals and sole proprietorships is the Social Security Number (SSN). Only partnerships, estates, trusts, and corporations will enter their Federal Employer Identification Number (FEIN).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                              |                     |                 |                     |                                      |                |          |                |
| 4                                            | <p><b><u>Are you a California resident or nonresident?</u></b></p> <p>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.</p> <p>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.</p> <p>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.</p> <p>Payments to all nonresidents may be subject to withholding. Nonresident payees performing services in California or receiving rent, lease, or royalty payments from property (real or personal) located in California will have 7% of their total payments withheld for State income taxes. However, no withholding is required if total payments to the payee are \$1,500 or less for the calendar year.</p> <p>For information on Nonresident Withholding, contact the Franchise Tax Board at the numbers listed below:</p> <table border="0"> <tr> <td>Withholding Services and Compliance Section:</td> <td>1-888-792-4900</td> <td>E-mail address:</td> <td>wscs.gen@ftb.ca.gov</td> </tr> <tr> <td>For hearing impaired with TDD, call:</td> <td>1-800-822-6268</td> <td>Website:</td> <td>www.ftb.ca.gov</td> </tr> </table> | Withholding Services and Compliance Section: | 1-888-792-4900      | E-mail address: | wscs.gen@ftb.ca.gov | For hearing impaired with TDD, call: | 1-800-822-6268 | Website: | www.ftb.ca.gov |
| Withholding Services and Compliance Section: | 1-888-792-4900                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | E-mail address:                              | wscs.gen@ftb.ca.gov |                 |                     |                                      |                |          |                |
| For hearing impaired with TDD, call:         | 1-800-822-6268                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Website:                                     | www.ftb.ca.gov      |                 |                     |                                      |                |          |                |
| 5                                            | <p>Provide the name, title, signature, and telephone number of the individual completing this form. Provide the date the form was completed.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                              |                     |                 |                     |                                      |                |          |                |
| 6                                            | <p>This section must be completed by the State agency requesting the STD. 204.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                              |                     |                 |                     |                                      |                |          |                |
|                                              | <p><b><u>Privacy Statement</u></b></p> <p>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.</p> <p>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.</p> <p>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.</p> <p>All questions should be referred to the requesting State agency listed on the bottom front of this form.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                              |                     |                 |                     |                                      |                |          |                |

## SECTION 00700 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 bodily injury, property damage, and personal injury with limits not less than one million dollars (\$1,000,000) per occurrence and two million dollars (\$2,000,000) general 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 one million dollars (\$1,000,000) per 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 Workers' Compensation and Employers' Liability Insurance for all of Contractor's employees who will be engaged in the performance of Work on Property, including special coverage extensions where applicable. Contractor is required to meet all requirements as stated in California Labor Code, Section 3700.

- 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 thirty (30) 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; (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.

#### 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) Upon notification by State 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.
- (3) Upon State's request, Contractor shall provide copies of its Workers' Compensation and Employers' Liability Insurance.

- 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 TWO HUNDRED FIFTY DOLLARS (\$250.00) 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) Ten percent (10%) shall be retained from each progress payment and held by State. After the Punch List has been issued, retainage may be adjusted to 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 ten percent (10%) 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 excrow 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 00802**  
**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)
  - 2. Section 00804 – Disposal of Refuse
  - 3. Section 01250 – Contract Modification Procedures
  - 4. Section 01290 – Payment Procedures
  - 5. Section 01330 – Submittal Procedures
  - 6. Section 01420 – References
  - 7. Section 01770 – Closeout Procedures
- 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, earthquake, 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 Architect's and Contractor's services and expenses required as a result of such insured loss.
- 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.

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



PART 3 - EXECUTION (not used)

END OF SECTION 00802

**SECTION 00803**  
**MINED PRODUCTS AND MATERIALS**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

- A. The following requirements supplement the General Conditions, Section 00700.

**1.2 RELATED WORK**

- A. Related Sections include, but are not limited to, the following:

1. 02300 EARTHWORK
2. 02741 HOT-MIX ASPHALT PAVING
3. 02751 CEMENT CONCRETE PAVEMENT
4. 03300 CAST-IN-PLACE CONCRETE

**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 CERTIFICATE 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.

**END OF SECTION 00803**

**SECTION 00804**  
**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 00804**

## **SECTION 00810 CONSTRAINTS AND MITIGATIONS**

### **PART 1 - GENERAL**

#### **1.1 DESCRIPTION**

- A. The following requirements supplement the General Conditions, Section 00700.

#### **1.2 RELATED REQUIREMENTS**

- A. Section 02230 – Site Clearing
- B. Section 02235 – Water Pollution Control
- C. Section 02300 – Earthwork

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

### **PART 3 - EXECUTION**

#### **3.1 CONSTRAINTS AND MITIGATIONS**

- A. The Department of Parks and Recreation has completed an environmental review process governed by the various rules, regulations, and codes of the State of California. In compliance with the environmental review document, the Contractor's operations are subject to the following constraints and environmental protection measures. In addition to these, the Contractor is also responsible for compliance with any and all constraints or environmental protection measures that may be noted in other sections of the Technical Specifications.
- B. The contractor's operations are subject to the following constraints and mitigations:
  - 1. Natural Resources
    - a. California Red-Legged frog (CRLF) and San Francisco Garter Snake (SFGS):
      - 1) DPR Contractor shall notify State's Representative a minimum of 14 calendar days prior to the start of any project-related activities to coordinate with a DPR-qualified biologist to conduct training, conduct pre-construction surveys for CRLF and SFGS, and at the discretion of the DPR-qualified biologist, monitor project ground-disturbing activities outside of the Visitor/Nature Center.

- 2) Prior to the start of construction work, Contractor and all on-site construction personnel shall attend a natural resources training session by a DPR-qualified biologist that shall be up to 2 hours in length. Training shall contain information about CRLF and SFGS identification, biology, and avoidance measures.
    - 3) If a CRLF or SFGS is encountered on site, Contractor shall cease all work in that location immediately and notify the State's Representative. Contractor shall be redirected to work in another location temporarily until a USFWS-permitted biologist is consulted and the Contractor receives written approval from the State's Representative to resume activity in that location. Contractor shall not handle or transport CRLF or SFGS.
  - b. Nesting Raptors and Migratory Birds (Sections 02230, 02300): If construction shall be initiated during the raptor and migratory bird nesting season (February 1 – August 31), DPR Contractor shall notify the State's Representative a minimum of 14 calendar days prior to the start of any project-related activities to coordinate with a DPR-qualified biologist to conduct pre-construction nest surveys to locate any potential raptor and migratory bird nests in and around the project site. Construction shall not occur within a 250 foot buffer (as flagged by the DPR-qualified biologist) of any active raptor nest until after the young have fledged, as determined by the DPR-qualified biologist. Construction shall not occur within a 50 foot buffer (as flagged by the DPR-qualified biologist) of any active migratory bird nest that may be disturbed until after the young have fledged, as determined by the DPR-qualified biologist.
  - c. Non-Native Species: Before Contractor begins construction within Park boundaries, all equipment will be cleaned prior to entering Park boundaries so that it is free and clear of seeds and vegetation to prevent the possible introduction of new species (non-native) to the area.
2. Cultural Resources
  - a. Training: Prior to the start of construction work, Contractor and all on-site construction personnel shall attend a cultural resources training session by a DPR archaeologist that shall be up to 2 hours in length. Training shall contain information about the discovery of previously unknown cultural resources and human remains within the boundaries of the project site and specific measures required to protect and avoid potential impacts to these resources.
  - b. ***Discovery of Resources***: Should the Contractor, in the performance of this contract discover evidence of possible cultural resources (including but not limited to dark soil containing shell, bone, flaked stone, groundstone, or deposits of historic objects), the Contractor shall immediately cease work at that location and notify the State's Representative of the location and description of the findings.

Contractor shall be directed to other project tasks. Contractor shall not work within 50 feet of the discovery until receipt of written approval from the State's Representative to resume activity in the area of the discovery.

- c. ***Discovery of Human Remains:*** If human remains are discovered, Contractor shall immediately halt work and notify the State's Representative. Contractor shall be directed to other project tasks. Contractor shall not work within 50 feet of the discovery until receipt of written approval from the State's Representative to resume activity in the area of the discovery.
- d. **Archaeological Monitoring:** In the event that any significant cultural resources are found during project construction, the Contractor shall coordinate with the State's Representative for a DPR-qualified archaeologist to be present to monitor any further ground disturbing activities.

3. Water Pollution Control

- a. Contractor shall submit a Water Pollution Control Plan to the State's Representative a minimum of 14 days prior to the start of any project related activities for the DPR-qualified biologist to review and accept the Plan. All measures and procedures in the Plan shall meet the minimum criteria defined in the California Stormwater Best Management Practices Handbook, 2004 (the handbook). This handbook is available at the following website:  
[www.cabmphandbooks.com/construction.aps](http://www.cabmphandbooks.com/construction.aps)
- b. Prior to the start of construction, Contractor shall implement Water Pollution Control measures (WPC) as specified in the Water Pollution Control Plan and **Division 2, Section 02235**. Measures shall include but not be limited to Best Management Practices (BMPs) to prevent and control fluid spills from vehicles, equipment, and construction-related materials and BMPs for installation and maintenance of erosion control measures.

4. Dust Control

- a. Contractor shall implement Wind Erosion Control BMPs from the Stormwater Best Management Practices Handbook for Construction (Handbook) for BMPs related to dust control. The Handbook is available online at <http://www.cabmphandbooks.com>.
- b. Contractor shall suspend excavation and other ground-disturbing activities when sustained winds exceed 15 miles per hour (mph), or instantaneous gusts exceed 25 mph.

5. Access to Parking and Visitor/Nature Center: Contractor shall coordinate with State's Representative to keep parking and alternative routes of pedestrian travel open for visitor access to the Visitor/Nature Center during construction.

3.2 SITE CONDITIONS

A. Coordination with the State's Representative

1. Contractor shall include in the project schedule, consideration of up to 5 calendar days down time for unforeseen conditions uncovered during monitoring that may require further resource analysis. As such, Resource down time days are approved by the State's Representative.
2. Contractor shall notify State's Representative about any proposed project changes, including but not limited to construction site, vehicle access, and equipment staging areas, for review and approval by DPR-qualified biologist and DPR-qualified archaeologist in advance of implementation.

END OF SECTION 00810

## **SECTION 01100 SUMMARY**

### **PART 1 - GENERAL**

#### **1.1 WORK COVERED BY CONTRACT DOCUMENTS**

##### **A. Project Information:**

1. Owner: State of California, Department of Parks and Recreation.
2. Park District: Santa Cruz District
3. Park Unit: Big Basin Redwoods State Park
4. Location: Rancho Del Oso Nature Center, 3600 Highway 1, Davenport, CA 95017

##### **B. Refer to Notice to Contractors included in Project Manual for a general description of the work.**

#### **1.2 WORK PHASING AND SEQUENCE (Not Used)**

#### **1.3 USE OF PROJECT SITE**

##### **A. General: The project site is limited to the areas indicated, and the Contractor shall limit operations to the project site. Contractor shall have full use of project site for construction operations during construction period. Contractor's use of project site is limited only by The State's right to perform work or to retain other contractors on portions of Project or as directed by State's Representative. Rules and regulations for state park systems are found in Title 14 California Code of Regulations, Division 3, Chapters 1 and 2.**

#### **1.4 WORK UNDER OTHER CONTRACTS (Not Used)**

#### **1.5 FUTURE WORK (Not Used)**

#### **1.6 SPECIFICATION FORMATS AND CONVENTIONS**

##### **A. Specification Format: The Specifications are organized into Divisions and Sections using the 16-division format and CSI/CSC's "MasterFormat" numbering system.**

##### **B. 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. **Abbreviated Language:** Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be inferred as the sense requires. Singular words shall be interpreted as plural, and



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plural words shall be interpreted as singular where applicable as the context of the Contract Documents indicates.

2. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by Contractor. Occasionally, the indicative or subjunctive mood may be used in the Section Text for clarity to describe responsibilities that must be fulfilled indirectly by Contractor or by others when so noted.

- a. 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.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01100

## **SECTION 01140 WORK RESTRICTIONS**

### **PART 1 - GENERAL**

1.1 USE OF PROJECT SITE Use of Site: Limit operations to work in areas indicated. Do not disturb portions of project site beyond areas indicated.

1. Limits: Confine constructions operations to the areas indicated.
2. State Occupancy: Allow for State occupancy of site and use by the public.
3. Driveways and Entrances: Keep driveways and entrances serving the project site clear and available to The State, State's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
  - a. Schedule deliveries to minimize use of driveways and entrances.

B. Use of Existing Facilities: Maintain existing facilities in a weathertight condition throughout construction period. Repair damage caused by construction operations. Protect facilities and occupants during construction period.

### **1.2 SPECIAL REQUIREMENTS**

A. There are no special requirements known at this time.

### **1.3 OCCUPANCY REQUIREMENTS**

A. Full State Occupancy: State will occupy site and existing facilities during entire construction period. Cooperate with the State during construction operations to minimize conflicts and facilitate State usage. Perform the Work so as not to interfere with State's operations.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01140

## **SECTION 01250 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).
  - 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

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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 01250

## **SECTION 01290 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..

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- 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 01290



## **SECTION 01330 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.

#### **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: Six copies of each submittal must be transmitted to the State Representative within 15 days of Notice To Proceed.
- 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.

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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 submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. 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 Action Submittals required by individual Specification Sections.
  - 1. Number of Copies: Submit six copies of each submittal, unless otherwise indicated. The State Representative will return two copies. Mark up and retain one returned copy as a Project Record Document.
- 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:
    - 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.

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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.
  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 six (6) copies of each submittal, unless otherwise indicated. The State Representative will return two (2) copies.
  - 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. 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.
- D. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements and, where required, is authorized for this specific Project.
- E. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements. Include evidence of manufacturing experience where required.
- F. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements.
- G. 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.
- H. 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.
- I. 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.

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- J. 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.
- K. 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.
- L. Maintenance Data: Submit written and graphic instructions and procedures for operation and normal maintenance of products and equipment.
- M. 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.
- N. 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.
- O. 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 01330

## **SECTION 01400 QUALITY REQUIREMENTS**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. This Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Contractor shall arrange and pay for a qualified independent testing agency to perform all required testing for the Project. Test reports shall be submitted to the State's Representative within forty-eight (48) hours.
- C. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
  - 1. Specified tests, inspections, and related actions do not limit Contractor's quality-control efforts as necessary to provide compliance with the Contract Document requirements.
  - 2. Requirements for Contractor to provide quality-control services required by the State, or authorities having jurisdiction are not limited by provisions of this Section.

#### **1.2 DEFINITIONS**

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and ensure that proposed construction complies with requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions before, during and after execution of the Work to evaluate that completed construction complies with requirements. Quality Control Services do not include contract enforcement activities performed by the State or Designer of Record.
- C. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

#### **1.3 DELEGATED DESIGN**

- 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.



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**Quality Requirements**

1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to the State's Representative.

**1.4 SUBMITTALS**

- A. Qualification Data: 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.
- B. Delegated-Design Submittal: In addition to Shop Drawings, Product Data, and other required submittals, 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.
- C. Contractor's Daily Quality Control Reports: The Contractor shall designate an individual responsible for maintaining control over the quality of the work. For each day on which work is scheduled to be performed, the Contractor's Quality Control Representative shall Prepare and submit certified written reports that include the following:
  1. Date of report preparation and date work was performed.
  2. Project title and number.
  3. Name, address, and telephone number of testing agency.
  4. Dates and locations of samples, tests or inspections.
  5. Names of individuals making tests and inspections.
  6. Description of the Work performed that day, and reasons for non-work.
  7. Item of work tested or inspected. Test and inspection methods.
  8. Identification of products delivered/installed and corresponding Specification Sections.
  9. Complete test or inspection data.
  10. Test and inspection results and an interpretation of test results.
  11. Weather conditions. Ambient conditions at time of sample taking , testing and inspecting.
  12. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
  13. Name and signature of Quality Control Representative, and laboratory inspector.
  14. Recommendations on retesting and reinspecting.
- D. Permits, Licenses, and Certificates: For the State's records, 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.

## **1.5 QUALITY ASSURANCE**

- A. 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.
- B. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- C. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- D. 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.
- E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is 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 to those indicated for this Project in material, design, and extent.
- F. Specialists: Certain sections of the Specifications may require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
  - 1. Requirement for specialists shall not supersede building codes and similar regulations governing the Work, nor interfere with local trade-union jurisdictional settlements and similar conventions.
- G. Testing Agency Qualifications: An agency with the experience and capability to conduct testing and inspecting indicated, as documented by ASTM E 548, and that specializes in types of tests and inspections to be performed.

## **1.6 QUALITY CONTROL**

- A. Contractor Responsibilities: The Contractor is solely responsible for controlling the work to comply with the Contract Documents. Unless otherwise indicated,

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**Quality Requirements**

provide quality-control services specified and required by authorities having jurisdiction.

1. Where testing or inspection services are indicated, engage a qualified testing agency to perform these quality-control services.
  2. Notify the State Representative, State's testing agencies, Inspector of Record, and Contractor's testing agencies at least 48 hours in advance of time when Work that requires testing or inspecting will be performed.
  3. Testing or inspection services are the Contractor's responsibility; submit a certified written report, in duplicate, of each testing or inspection service.
  4. Testing and inspecting 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.
- B. Special Tests and Inspections: The Contractor will engage a testing agency to conduct special tests and inspections required by authorities having jurisdiction.
1. Testing agency will notify the State's Representative and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
  2. Testing agency will submit a certified written report of each test, inspection, and similar quality-control service to the State's Representative with copy to Contractor and to authorities having jurisdiction.
  3. Testing agency will submit a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
  4. Testing agency will interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.
  5. Testing agency will retest and reinspect corrected work.
- C. 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.
- D. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that revised or replaced Work that failed to comply with requirements established by the Contract Documents.
- E. Testing Agency Responsibilities: Cooperate with the State's Representative and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
1. Notify the State and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.

2. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
  3. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
  4. Do not release, revoke, alter, or increase requirements of the Contract Documents or approve or accept any portion of the Work.
  5. Do not perform any duties of Contractor.
- F. Associated Services: Cooperate with agencies 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 inspecting. Assist agency in obtaining samples.
  4. Facilities for storage and field-curing of test samples.
  5. Delivery of samples to testing agencies.
  6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
  7. Security and protection for samples and for testing and inspecting equipment at Project site.
- G. 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 inspecting.
1. Schedule times for tests, inspections, obtaining samples, and similar activities.

## PART 2 - PRODUCTS (Not Used)

## PART 3 - EXECUTION

### 3.1 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
1. Provide materials and comply with installation requirements specified in other Sections of these Specifications. Restore patched areas and extend restoration into adjoining areas in a manner that eliminates evidence of patching.
- B. Protect construction exposed by or for quality-control service activities.

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- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 01400

## **SECTION 01420 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)           |



**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                                                                            |

**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 01420 – 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                                                       |

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01420

**SECTION 01500**  
**TEMPORARY FACILITIES AND CONTROLS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. This Section includes requirements for temporary facilities and controls, including temporary utilities, support facilities, and security and protection facilities.
- B. Contractor may elect to provide a temporary construction office and utilities. The following requirements apply if these facilities are to be provided.
- C. Site is subject to continual public use. Facilities shall be safe and secure at all times.

**1.2 DEFINITIONS**

- A. Permanent Enclosure: As determined by the State, permanent or temporary roofing is complete, insulated, and weathertight; exterior walls are insulated and weathertight; and all openings are closed with permanent construction or substantial temporary closures.

**1.3 TEMPORARY UTILITIES**

- A. General: Cost or use charges for temporary facilities are not chargeable to the State and shall be included in the Contract Sum. Allow other entities to use temporary services and facilities without cost, including, but not limited to, the State's construction forces, testing and inspecting agencies and personnel of authorities having jurisdiction.
- B. Water Service: Use water from the State's existing water system without metering and without payment of use charges. Paragraphs above and below assume services are available and Owner will permit tapping into existing system without charge.
- C. Electric Power Service: Use electric power from the State's existing system without metering and without payment of use charges.

**1.4 SUBMITTALS**

- A. Temporary Utility Reports: Submit reports of tests, inspections, meter readings, and similar procedures performed on temporary utilities.

**1.5 QUALITY ASSURANCE**

**Temporary Facilities and Controls**

- A. Standards: Comply with ANSI A10.6, NECA's "Temporary Electrical Facilities," and NFPA 241.
  - 1. 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.

**1.6 PROJECT CONDITIONS**

- A. Temporary Utilities: At earliest feasible time, when acceptable to the State, change over from use of temporary service to use of permanent service.
  - 1. Temporary Use of Permanent Facilities: Installer of each permanent service shall assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before the State's acceptance, regardless of previously assigned responsibilities.
- B. Conditions of Use: The following conditions apply to use of temporary services and facilities by all parties engaged in the Work:
  - 1. Keep temporary services and facilities clean and neat.
  - 2. Relocate temporary services and facilities as required by progress of the Work.

**PART 2 - PRODUCTS**

**2.1 MATERIALS**

- A. General: Provide new materials. Undamaged, previously used materials in serviceable condition may be used if approved. Provide materials suitable for use intended.
- B. Portable Chain-Link Fencing: Minimum 2-inch 9-gage, galvanized steel, chain-link fabric fencing; minimum 6 feet high with galvanized steel pipe posts; minimum 2-3/8-inch OD line posts and 2-7/8-inch OD corner and pull posts, with 1-5/8-inch OD top and bottom rails. Provide concrete or galvanized steel bases for supporting posts as directed.
- C. Tarpaulins: Fire-resistive labeled with flame-spread rating of 15 or less.
- D. Water: Potable.

**2.2 EQUIPMENT**

- A. Field Offices: Prefabricated, mobile units, with lockable entrances, operable windows, and serviceable finishes; heated and air conditioned; on foundations adequate for normal loading.
- B. Fire Extinguishers: Hand carried, portable, UL rated. Provide class and extinguishing agent as indicated or a combination of extinguishers of NFPA-recommended classes for exposures.
  - 1. Comply with Title 19 CCR, Division 1, Chapter 3; and NFPA 241 for classification, extinguishing agent, and size required by location and class of fire exposure.
- C. Self-Contained Toilet Units: Single-occupant units of chemical, aerated recirculation, or combustion type; vented; fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material.
- D. Electrical Outlets: Properly configured, NEMA-polarized outlets to prevent insertion of 110- to 120-V plugs into higher-voltage outlets; equipped with ground-fault circuit interrupters, reset button, and pilot light.

### PART 3 - EXECUTION

#### 3.1 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.
- B. Provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

#### 3.2 TEMPORARY UTILITY INSTALLATION

- A. General: Engage appropriate local utility company to install temporary service or connect to existing service. Where utility company provides only part of the service, provide the remainder with matching, compatible materials and equipment. Comply with utility company recommendations.
  - 1. Arrange with utility company, the State, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services. Provide minimum 48 hours advance written notice.
  - 2. Provide adequate capacity at each stage of construction. Before temporary utility is available, provide trucked-in services.
  - 3. Obtain easements to bring temporary utilities to Project site where the State's easements cannot be used for that purpose.

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**Temporary Facilities and Controls**

- B. Water Service: Use of the State's existing water service facilities may be permitted, at the direction of the State's Representative, as long as facilities are cleaned and maintained in a condition acceptable to the State. At Substantial Completion, restore these facilities to condition existing before initial use.
  - 1. Provide rubber hoses as necessary to serve Project site.
  - 2. Where installations below an outlet might be damaged by spillage or leakage, provide a drip pan of suitable size to minimize water damage. Drain accumulated water promptly from pans.
- C. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking-water fixtures. Comply with regulations and health codes for type, number, location, operation, and maintenance of fixtures and facilities.
  - 1. Disposable Supplies: Provide toilet tissue, paper towels, paper cups, and similar disposable materials for each facility. Maintain adequate supply. Provide covered waste containers for disposal of used material.
  - 2. Toilets: Install self-contained toilet units. Shield toilets to ensure privacy.
- D. Ventilation and Humidity Control: Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment from that specified that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.
- E. Electric Power Service: Provide weatherproof, grounded electric power service and distribution system of sufficient size, capacity, and power characteristics during construction period. Include meters, transformers, overload-protected disconnecting means, automatic ground-fault interrupters, and main distribution switchgear.
  - 1. Install power distribution wiring overhead and rise vertically where least exposed to damage.
- F. Electric Power Service: Use of the State's existing electric power service may be permitted, at the direction of the State's Representative, as long as equipment is maintained in a condition acceptable to the State.
- G. Electric Distribution: Provide receptacle outlets adequate for connection of power tools and equipment.
  - 1. Provide waterproof connectors to connect separate lengths of electrical power cords if single lengths will not reach areas where construction activities are in progress. Do not exceed safe length-voltage ratio.

**3.3 SUPPORT FACILITIES INSTALLATION**

- A. Project Identification and Temporary Signs: Prepare Project identification and other signs in sizes indicated or as directed. Install signs where indicated to inform public and persons seeking entrance to Project. Do not permit installation of unauthorized signs.
  - 1. Engage an experienced sign painter to apply graphics for Project identification signs. Comply with details indicated.
  - 2. Prepare temporary signs to provide directional information to construction personnel and visitors.
- B. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Containerize and clearly label hazardous, dangerous, or unsanitary waste materials separately from other waste. Comply with Division 1 Section 01700 "Execution Requirements" for progress cleaning requirements.
  - 1. If required by authorities having jurisdiction, provide separate containers, clearly labeled, for each type of waste material to be deposited.
  - 2. Develop a waste management plan for Work performed on Project. Indicate types of waste materials Project will produce and estimate quantities of each type. Provide detailed information for on-site waste storage and separation of recyclable materials. Provide information on destination of each type of waste material and means to be used to dispose of all waste materials.

### 3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects. Avoid using tools and equipment that produce harmful noise. Restrict use of noisemaking tools and equipment to hours that will minimize complaints from persons or firms near Project site.
- B. Stormwater Control: Provide earthen embankments and similar barriers in and around excavations and subgrade construction, sufficient to prevent flooding by runoff of stormwater from heavy rains. Provide stormwater control in accordance with Contractor's approved Stormwater Pollution Prevention Plan.
- C. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from construction damage. Protect tree root systems from damage, flooding, and erosion.
- D. Pest Control: Before deep foundation work has been completed, retain a local exterminator or pest-control company to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests. Engage this pest-control service to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Substantial

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Completion. Obtain extended warranty for the State. Perform control operations lawfully, using environmentally safe materials.

- E. Site Enclosure Fence: Before construction operations begin install enclosure fence with lockable entrance gates. Locate where indicated, or enclose entire Project site or portion determined sufficient to accommodate construction operations. Install in a manner that will prevent people, dogs, and other animals from easily entering site except by entrance gates.
  - 1. Set portable chain-link fence posts in concrete or galvanized steel bases.
  - 2. Provide gates in sizes and at locations necessary to accommodate delivery vehicles and other construction operations.
  - 3. Maintain security by limiting number of keys and restricting distribution to authorized personnel. Provide the State with one set of keys.
- F. 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 not complete, provide insulated temporary enclosures. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions and effects.
  - 2. Vertical Openings: Close openings of 25 sq. ft. or less with plywood or similar materials.
  - 3. Horizontal Openings: Close openings in floor or roof decks and horizontal surfaces with load-bearing, wood-framed construction.
  - 4. Install tarpaulins securely using fire-retardant-treated wood framing and other materials.
- G. Temporary Fire Protection: Until fire-protection needs are supplied by permanent facilities, install and maintain temporary fire-protection needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241.
  - 1. Provide fire extinguishers visible and accessible from space being served.
    - a. Locate fire extinguishers where convenient and effective for their intended purpose.
  - 2. Store combustible materials in containers in fire-safe locations.
  - 3. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire-protection facilities, and other access routes for firefighting. Prohibit smoking in hazardous fire-exposure areas.
  - 4. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition.

5. Develop and supervise an overall fire-prevention and first-aid fire-protection program for personnel at Project site. Review needs with local fire agencies having jurisdiction and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.
6. Provide hoses for fire protection of sufficient length to reach construction areas. 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.

### 3.5 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. Protect from damage caused by freezing temperatures and similar elements.
  1. Maintain operation of temporary enclosures, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
  2. Prevent water-filled piping from freezing. Maintain markers for underground lines. Protect from damage during excavation operations.
- C. Temporary Facility Changeover: Except for using permanent fire protection as soon as available, 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 the property of Contractor. The State reserves right to take possession of Project identification signs.
  2. At Substantial Completion, clean and renovate permanent facilities used during construction period.

END OF SECTION 01500



## **SECTION 01575 CONSTRUCTION WASTE MANAGEMENT**

### **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 State's Representative where Construction Waste Management requirements could detrimentally impact construction schedule.
- B. Waste Management Objective for the Project:
  - 1. The State 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. Bricks
  - 7. Concrete Masonry Units (CMU)
  - 8. Asphalt Concrete
  - 9. Paper
    - a. Bond
    - b. Newsprint
    - c. Cardboard and paper packaging materials

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10. Cement Fiber Products: Shingles, panels, and siding
11. Metals
  - a. Ferrous
  - b. Non-Ferrous
12. Paint
13. Rigid Foam
14. Glass
15. Plastics
16. Carpet and pad
17. Beverage Containers
18. Insulation
19. Gypsum Board
20. Porcelain Plumbing Fixtures
21. Florescent Light Tubes (per Department of Toxic Substances Control regulations)

**1.2 RELATED REQUIREMENTS**

- A. Appendix 01575A: Construction Waste Estimate.
- B. Appendix 01575B: Waste Management Report.
- C. Section 01330: Submittal Procedures.
- D. Section 01770: 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.

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- 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.
- 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 01575B, 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 01575B, Waste Management Report, or use them as a basis for Contractor's forms.
  5. The State will provide electronic copies of Appendix 01575B for Contractors' use.
- B. Submit Waste Management Report under provisions of Section 01770 – "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 State's Representative.
- 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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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 01575

# 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 01700 EXECUTION REQUIREMENTS**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. This Section includes general procedural requirements governing execution of the Work including, but not limited to, the following:
  - 1. Construction layout.
  - 2. Field engineering and surveying.
  - 3. General installation of products.
  - 4. Progress cleaning.
  - 5. Starting and adjusting.
  - 6. Protection of installed construction.
  - 7. Correction of the Work.

#### **1.2 SUBMITTALS**

- A. Certificates: Submit certificate signed by either a land surveyor or a professional engineer certifying that location and elevation of improvements comply with requirements.
- B. Landfill Receipts: Submit copy of receipts issued by a landfill facility, licensed to accept hazardous materials, for hazardous waste disposal.
- C. Certified Surveys: Submit two copies signed by the land surveyor or professional engineer.
- D. Record of Survey: Submit three copies showing the Work performed and record survey data.

#### **1.3 QUALITY ASSURANCE**

- A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.

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

### **PART 3 - EXECUTION**

#### **3.1 EXAMINATION**

- A. Existing Conditions: The existence and location of site improvements, utilities, and other construction indicated as existing are not guaranteed. Before

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beginning work, investigate and verify the existence and location of mechanical and electrical systems and other construction affecting the Work.

1. Before construction, verify the location and points of connection of utility services.
- B. Existing Utilities: 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 and other construction affecting the Work.
1. Furnish location data for work related to Project that must be performed by public utilities serving Project site.
- C. Acceptance of Conditions: 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. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
  2. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
  3. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

**3.2 PREPARATION**

- A. Existing Utility Information: Furnish information to the State regarding existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.
- B. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by the State or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
1. Notify the State not less than two days in advance of proposed utility interruptions.
  2. Do not proceed with utility interruptions without the State's written permission.
- C. 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.

- D. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- E. 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 the State's Representative. Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents, on a Request for Information form. (RFI) ]

### 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. If discrepancies are discovered, notify the State promptly.
- B. General: Engage a licensed land surveyor or professional engineer to lay out the Work using accepted surveying practices.
  - 1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
  - 2. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
  - 3. Inform installers of lines and levels to which they must comply.
  - 4. Check the location, level and plumb, of every major element as the Work progresses.
  - 5. Notify the State when deviations from required lines and levels exceed allowable tolerances.
  - 6. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.
- C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and invert elevations.
- D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.
- E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and

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types of instruments and tapes used. Make the log available for reference by the State.

**3.4 FIELD ENGINEERING**

- A. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.
- B. Benchmarks: Establish and maintain a minimum of two permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.
  - 1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
- C. Certified Survey: On completion of foundation walls, major site improvements, and other work requiring field-engineering services, prepare a certified survey showing dimensions, locations, angles, and elevations of construction and sitework.
- D. Record of Survey: Where a Record of Survey is specified, Prepare a final property survey showing significant features (real property) for Project. Include on the survey a certification, signed by licensed land surveyor—or professional engineer licensed to practice surveying that principal metes, bounds, lines, and levels of Project are accurately positioned as shown on the survey.
  - 1. Recording: At Substantial Completion, have the final property survey recorded by or with authorities having jurisdiction as the official "property survey."

**3.5 INSTALLATION**

- A. General: 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 the best possible results. 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.
- E. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.
  - 1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by the State.
  - 2. Allow for building movement, including thermal expansion and contraction.
- F. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
- G. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

### 3.6 PROGRESS CLEANING

- A. General: Clean Project site and work areas daily, including common areas. Coordinate progress cleaning for joint-use areas where more than one installer has worked. 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 materials more than 7 days during normal weather or 3 days if the temperature is expected to rise above 90 deg F.
  - 3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
- 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.

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- E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- F. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.
- G. 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.
- H. 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.
- I. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

**3.7 STARTING AND ADJUSTING**

- A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
- B. Adjust operating components for proper operation without binding. Adjust equipment for proper operation.
- C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

**3.8 PROTECTION 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. Comply with manufacturer's written instructions for temperature and relative humidity.

**3.9 CORRECTION OF THE WORK**

- A. Repair or remove and replace defective construction. Restore damaged substrates and finishes.
  - 1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.

- B. Restore permanent facilities used during construction to their specified condition.
- C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.
- D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.
- E. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION 01700

## **SECTION 01731 CUTTING AND PATCHING**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. This Section includes procedural requirements for cutting and patching.

#### **1.2 SUBMITTALS**

- A. Cutting and Patching Proposal: Submit a proposal describing procedures at least 10 days before the time cutting and patching will be performed, requesting approval to proceed. Include the following information:
  - 1. Extent: Describe cutting and patching, show how they will be performed, and indicate why they cannot be avoided.
  - 2. Changes to Existing Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building's appearance and other significant visual elements.
  - 3. Products: List products to be used and firms or entities that will perform the Work.
  - 4. Dates: Indicate when cutting and patching will be performed.
  - 5. Utilities: List utilities that cutting and patching procedures will disturb or affect. List utilities that will be relocated and those that will be temporarily out of service. Indicate how long service will be disrupted.
  - 6. Structural Elements: Where cutting and patching involve adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with original structure.
  - 7. The State's Approval: Obtain approval of cutting and patching proposal before cutting and patching. Approval does not waive right to later require removal and replacement of unsatisfactory work.

#### **1.3 QUALITY ASSURANCE**

- A. Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.
- B. 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.
  - 1. Main water service feed.
- C. Miscellaneous Elements: Do not cut and patch the following elements or related components in a manner that could change their load-carrying capacity,



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that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety.

- D. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in the State's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

**1.4 WARRANTY**

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during cutting and patching operations, by methods and with materials so as not to void existing warranties.

**PART 2 - PRODUCTS**

**2.1 MATERIALS**

- A. General: Comply with requirements specified in other Sections of these Specifications.
- B. Existing Materials: Use materials identical to existing materials. For exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.
  - 1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of existing materials.

**PART 3 - EXECUTION**

**3.1 EXAMINATION**

- A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.
  - 1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
  - 2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

**3.2 PREPARATION**

- A. Temporary Support: Provide temporary support of Work to be cut.

- B. Protection: Protect existing 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.
- C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
- D. Existing Services: Where existing services are required to be removed, relocated, or abandoned, bypass such services before cutting to avoid interruption of services to occupied areas.

### 3.3 PERFORMANCE

- 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 existing 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.
- B. Cutting: Cut existing 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 as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
  - 2. Existing Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
  - 3. Concrete or 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 Division 2 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.
- C. 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 possible. Provide materials and comply with installation requirements specified in other Sections of these Specifications.

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1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate 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.

END OF SECTION 01731

## **SECTION 01732 SELECTIVE DEMOLITION**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. This Section includes demolition and removal of the following:
  - 1. Selected portions of a building or structure.
  - 2. Selected site elements.
  - 3. Repair procedures for selective demolition operations.

#### **1.2 DEFINITIONS**

- A. Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.
- B. Remove and Salvage: Detach items from existing construction and deliver them to the State.
- C. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

#### **1.3 MATERIALS OWNERSHIP**

- A. Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain the State's property, demolished materials shall become Contractor's property and shall be removed from Project site.

#### **1.4 SUBMITTALS**

- A. Schedule of Selective Demolition Activities: Indicate detailed sequence of selective demolition and removal work, with starting and ending dates for each activity, interruption of utility services, use of elevator and stairs, and locations of temporary partitions and means of egress.
- B. Predemolition Photographs or Videotape: Document existing conditions of adjoining construction and site improvements adjacent to demolition operations. Submit photographs and/or videotapes taken in the presence of the State's Representative. Submit before Work begins.
- C. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.

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**1.5 QUALITY ASSURANCE**

- A. Demolition Firm Qualifications: An experienced firm that has specialized in demolition work similar in material and extent to that indicated for this Project.
- B. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- C. Standards: Comply with ANSI A10.6 and NFPA 241.
- D. Predemolition Conference: Conduct conference at Project site. Review predemolition condition documentation.

**1.6 PROJECT CONDITIONS**

- A. The State will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so the State's operations will not be disrupted. Provide not less than 72 hours' notice to the State of activities that will affect the State's operations.
- B. Maintain safe access to existing walkways, corridors, and other adjacent occupied or used facilities.
  - 1. Do not close or obstruct walkways or other occupied or used facilities without written permission from authorities having jurisdiction.
- C. The State assumes no responsibility for condition of areas to be selectively demolished.
  - 1. Conditions existing at time of inspection for bidding purpose will be maintained by the State as far as practical.
- D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
  - 1. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify the State Representative.
- E. Storage or sale of removed items or materials on-site will not be permitted.
- F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
  - 1. Maintain fire-protection facilities in service during selective demolition operations.

## 1.7 WARRANTY

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

## PART 2 - PRODUCTS

### 2.1 REPAIR MATERIALS

- A. Use repair materials identical to existing materials.
  - 1. If identical materials are unavailable or cannot be used for exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.
  - 2. Use materials whose installed performance equals or surpasses that of existing materials.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped.
- B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- C. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.
- D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to the State.
- E. Engage a professional engineer to survey 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 demolition operations.

### 3.2 UTILITY SERVICES

- A. Existing Utilities: Maintain services indicated to remain and protect them against damage during selective demolition operations.
- B. Do not interrupt existing utilities serving occupied or operating facilities unless authorized in writing by the State and authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to the State and to authorities having jurisdiction.

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1. Provide at least 48 hours' written notice to the State if shutdown of service is required during changeover.
- C. Utility Requirements: Locate, identify, disconnect, and seal or cap off indicated utilities serving areas to be selectively demolished.
1. Arrange to shut off indicated utilities with utility companies.
  2. If utility services are required to be removed, relocated, or abandoned, provide temporary utilities before proceeding with selective demolition that bypass area of selective demolition and that maintain continuity of service to other parts of building.
  3. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing.
- D. Utility Requirements: Refer to Division 15 and 16 Sections for shutting off, disconnecting, removing, and sealing or capping utilities. Do not start selective demolition work until utility disconnecting and sealing have been completed and verified in writing.

**3.3 PREPARATION**

- A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
1. Do not close or obstruct streets, walks, walkways, or other adjacent occupied or used facilities without permission from the State and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.
  2. Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by the State.
  3. Protect existing site improvements, appurtenances, and landscaping to remain.

**3.4 POLLUTION CONTROLS**

- A. Dust Control: Use water mist, temporary enclosures, and other suitable methods to limit spread of dust and dirt. Comply with governing environmental-protection regulations.
- B. Disposal: Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
- C. Cleaning: 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.

### **3.5 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.
  - 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.
  - 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 fire watch portable fire-suppression devices during flame-cutting operations.
  - 4. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
- B. Removed and Salvaged Items:
  - 1. Clean salvaged items.
  - 2. Pack or crate items after cleaning. Identify contents of containers.
  - 3. Store items in a secure area until delivery to the State.
  - 4. Transport items to the State's storage area on-site.
  - 5. Protect items from damage during transport and storage.
- C. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by the State, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

### **3.6 PATCHING AND REPAIRS**

- A. General: Promptly repair damage to adjacent construction caused by selective demolition operations.
- B. Patching: Comply with Division 1 Section 01731 "Cutting and Patching."
- C. Repairs: Where repairs to existing surfaces are required, patch to produce surfaces suitable for new materials.
  - 1. Completely fill holes and depressions in existing masonry walls that are to remain with an approved masonry patching material applied according to manufacturer's written recommendations.



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3.7 DISPOSAL OF DEMOLISHED MATERIALS

- A. General: Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.
- B. Burning: Do not burn demolished materials.
- C. Disposal: Transport demolished materials off the State's property and legally dispose of them.

END OF SECTION 01732

## **SECTION 01770 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.

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**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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- 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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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 01770

**SECTION 02080**  
**PIPED UTILITIES - BASIC MATERIALS AND METHODS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. This Section includes the following:
  - 1. Piping materials and installation instructions common to most piping systems.
  - 2. Transition fittings.
  - 3. Dielectric fittings.
  - 4. Sleeves.
  - 5. Identification devices.
  - 6. Grout.
  - 7. Piped utility demolition.
  - 8. Equipment installation requirements common to equipment sections.
  - 9. Concrete bases.
  - 10. Metal supports and anchorages.

**1.2 DEFINITIONS**

- A. Exposed Installations: Exposed to view outdoors or subject to outdoor ambient temperatures and weather conditions.
- B. Concealed Installations: Concealed from view and protected from weather conditions and physical contact by building occupants but subject to outdoor ambient temperatures. Examples include installations within unheated shelters.

**1.3 SUBMITTALS**

- A. Welding certificates.

**1.4 QUALITY ASSURANCE**

- A. Steel Support Welding: Qualify processes and operators according to AWS D1.1, "Structural Welding Code--Steel."
- B. Steel Pipe Welding: Qualify processes and operators according to ASME Boiler and Pressure Vessel Code: Section IX, "Welding and Brazing Qualifications."
  - 1. Comply with provisions in ASME B31 Series, "Code for Pressure Piping."
  - 2. Certify that each welder has passed AWS qualification tests for welding processes involved and that certification is current.
- C. Comply with ASME A13.1 for lettering size, length of color field, colors, and viewing angles of identification devices.



## PART 2 - PRODUCTS

### 2.1 JOINING MATERIALS

- A. Refer to individual Division 2 piping Sections for special joining materials not listed below.
- B. Pipe Threads: ASME B1.20.1 for factory-threaded pipe and pipe fittings.
- C. Pipe-Flange Gasket Materials: Suitable for chemical and thermal conditions of piping system contents.
  - 1. ASME B16.21, nonmetallic, flat, asbestos-free, 1/8-inch maximum thickness unless thickness or specific material is indicated.
    - a. Full-Face Type: For flat-face, Class 125, cast-iron and cast-bronze flanges.
    - b. Narrow-Face Type: For raised-face, Class 250, cast-iron and steel flanges.
  - 2. AWWA C110, rubber, flat face, 1/8 inch thick, unless otherwise indicated; and full-face or ring type, unless otherwise indicated.
- D. Flange Bolts and Nuts: ASME B18.2.1, carbon steel, unless otherwise indicated.
- E. Plastic, Pipe-Flange Gasket, Bolts, and Nuts: Type and material recommended by piping system manufacturer, unless otherwise indicated.
- F. Solder Filler Metals: ASTM B 32, lead-free alloys. Include water-flushable flux according to ASTM B 813.
- G. Brazing Filler Metals: AWS A5.8, BCuP Series, or BAg1, unless otherwise indicated.
- H. Welding Filler Metals: Comply with AWS D10.12 for welding materials appropriate for wall thickness and chemical analysis of steel pipe being welded.
- I. Solvent Cements for Joining Plastic Piping:
  - 1. ABS Piping: ASTM D 2235.
  - 2. CPVC Piping: ASTM F 493.
  - 3. PVC Piping: ASTM D 2564. Include primer according to ASTM F 656.
  - 4. PVC to ABS Piping Transition: ASTM D 3138.
- J. AWWA Transition Couplings: Same size as, and with pressure rating at least equal to and with ends compatible with, piping to be joined.

## 2.2 DIELECTRIC FITTINGS

- A. Description: Combination fitting of copper alloy and ferrous materials with threaded, solder-joint, plain, or weld-neck end connections that match piping system materials.
- B. Insulating Material: Suitable for system fluid, pressure, and temperature.
- C. Dielectric Unions: Factory-fabricated, union assembly, for 250-psig minimum working pressure at 180 deg F.
- D. Dielectric Flanges: Factory-fabricated, companion-flange assembly, for 150-psig minimum working pressure as required to suit system pressures.
- E. Dielectric-Flange Kits: Companion-flange assembly for field assembly. Include flanges, full-face- or ring-type neoprene or phenolic gasket, phenolic or polyethylene bolt sleeves, phenolic washers, and steel backing washers.
  - 1. Separate companion flanges and steel bolts and nuts shall have 150-psig minimum working pressure where required to suit system pressures.
- F. Dielectric Couplings: Galvanized-steel coupling with inert and noncorrosive, thermoplastic lining; threaded ends; and 300-psig minimum working pressure at 225 deg F.
- G. Dielectric Nipples: Electroplated steel nipple with inert and noncorrosive, thermoplastic lining; plain, threaded, or grooved ends; and 300-psig minimum working pressure at 225 deg F.

## 2.3 SLEEVES

- A. Galvanized-Steel Sheet: 0.0239-inch minimum thickness; round tube closed with welded longitudinal joint.
- B. Steel Pipe: ASTM A 53, Type E, Grade B, Schedule 40, galvanized, plain ends.
- C. Cast Iron: Cast or fabricated "wall pipe" equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.
- D. Molded PE: Reusable, PE, tapered-cup shaped and smooth-outer surface with nailing flange for attaching to wooden forms.

## 2.4 IDENTIFICATION DEVICES

- A. Equipment Nameplates: Metal permanently fastened to equipment with data engraved or stamped.

1. Data: Manufacturer, product name, model number, serial number, capacity, operating and power characteristics, labels of tested compliances, and essential data.
  2. Location: Accessible and visible.
- B. Plastic Tape: Manufacturer's standard color-coded, pressure-sensitive, self-adhesive vinyl tape, at least 3 mils thick.
1. Width: 1-1/2 inches on pipes with OD, including insulation, less than 6 inches; 2-1/2 inches for larger pipes.
  2. Color: Comply with ASME A13.1, unless otherwise indicated.
- C. Valve Tags: Stamped or engraved with 1/4-inch letters for piping system abbreviation and 1/2-inch sequenced numbers. Include 5/32-inch hole for fastener.
1. Material: 0.032-inch thick, polished brass.
  2. Valve Tag Fasteners: Brass, wire-link or beaded chain; or brass S-hooks.
- D. Engraved Plastic-Laminate Signs: ASTM D 709, Type I, cellulose, paper-base, phenolic-resin-laminate engraving stock; Grade ES-2, black surface, black phenolic core, with white melamine subcore, unless otherwise indicated. Fabricate in sizes required for message. Provide holes for mechanical fastening.
1. Engraving: Engraver's standard letter style, of sizes and with terms to match equipment identification.
  2. Thickness: 1/16 inch, for units up to 20 sq. in. or 8 inches in length, and 1/8 inch for larger units.
  3. Fasteners: Self-tapping, stainless-steel screws or contact-type permanent adhesive.

## 2.5 GROUT

- A. Description: ASTM C 1107, Grade B, nonshrink and nonmetallic, dry hydraulic-cement grout.
1. Characteristics: Post-hardening, volume-adjusting, nonstaining, noncorrosive, nongaseous, and recommended for interior and exterior applications.
  2. Design Mix: 5000-psi, 28-day compressive strength.
  3. Packaging: Premixed and factory packaged.

## **PART 3 - EXECUTION**

### **3.1 PIPED UTILITY DEMOLITION**

- A. Disconnect, demolish, and remove piped utility systems, equipment, and components indicated to be removed.
  - 1. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
  - 2. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material.
- B. If pipe, insulation, or equipment to remain is damaged in appearance or is unserviceable, remove damaged or unserviceable portions and replace with new products of equal capacity and quality.

### **3.2 PIPING SYSTEMS - COMMON REQUIREMENTS**

- A. Install piping according to the following requirements and Division 2 Sections specifying piping systems.
- B. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved on Coordination Drawings.
- C. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.
- D. Install piping to permit valve servicing.
- E. Install piping at indicated slopes.
- F. Install piping free of sags and bends.
- G. Install fittings for changes in direction and branch connections.
- H. Select system components with pressure rating equal to or greater than system operating pressure.
- I. Verify final equipment locations for roughing-in.
- J. Refer to equipment specifications in other Sections of these Specifications for roughing-in requirements.

### **3.3 PIPING JOINT CONSTRUCTION**

- A. Join pipe and fittings according to the following requirements and Division 2 Sections specifying piping systems.
- B. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.
- C. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.
- D. Soldered Joints: Apply ASTM B 813, water-flushable flux, unless otherwise indicated, to tube end. Construct joints according to ASTM B 828 or CDA's "Copper Tube Handbook," using lead-free solder alloy complying with ASTM B 32.
- E. Brazed Joints: Construct joints according to AWS's "Brazing Handbook," "Pipe and Tube" Chapter, using copper-phosphorus brazing filler metal complying with AWS A5.8.
- F. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:
  - 1. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.
  - 2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.
- G. Welded Joints: Construct joints according to AWS D10.12, using qualified processes and welding operators according to Part 1 "Quality Assurance" Article.
- H. Flanged Joints: Select appropriate gasket material, size, type, and thickness for service application. Install gasket concentrically positioned. Use suitable lubricants on bolt threads.
- I. Plastic Piping Solvent-Cement Joints: Clean and dry joining surfaces. Join pipe and fittings according to the following:
  - 1. Comply with ASTM F 402 for safe-handling practice of cleaners, primers, and solvent cements.
  - 2. ABS Piping: Join according to ASTM D 2235 and ASTM D 2661 Appendixes.
  - 3. CPVC Piping: Join according to ASTM D 2846/D 2846M Appendix.
  - 4. PVC Pressure Piping: Join schedule number ASTM D 1785, PVC pipe and PVC socket fittings according to ASTM D 2672. Join other-than-

schedule-number PVC pipe and socket fittings according to ASTM D 2855.

5. PVC Nonpressure Piping: Join according to ASTM D 2855.
6. PVC to ABS Nonpressure Transition Fittings: Join according to ASTM D 3138 Appendix.

- J. Plastic Pressure Piping Gasketed Joints: Join according to ASTM D 3139.
- K. Plastic Nonpressure Piping Gasketed Joints: Join according to ASTM D 3212.
- L. PE Piping Heat-Fusion Joints: Clean and dry joining surfaces by wiping with clean cloth or paper towels. Join according to ASTM D 2657.
  1. Plain-End Pipe and Fittings: Use butt fusion.
  2. Plain-End Pipe and Socket Fittings: Use socket fusion.
- M. Fiberglass Bonded Joints: Prepare pipe ends and fittings, apply adhesive, and join according to pipe manufacturer's written instructions.

### 3.4 PIPING CONNECTIONS

- A. Make connections according to the following, unless otherwise indicated:
  1. Install unions, in piping NPS 2 and smaller, adjacent to each valve and at final connection to each piece of equipment.
  2. Install flanges, in piping NPS 2-1/2 and larger, adjacent to flanged valves and at final connection to each piece of equipment.
  3. Dry Piping Systems: Install dielectric unions and flanges to connect piping materials of dissimilar metals.
  4. Wet Piping Systems: Install dielectric coupling and nipple fittings to connect piping materials of dissimilar metals.

### 3.5 EQUIPMENT INSTALLATION - COMMON REQUIREMENTS

- A. Install equipment level and plumb, unless otherwise indicated.
- B. Install equipment to facilitate service, maintenance, and repair or replacement of components. Connect equipment for ease of disconnecting, with minimum interference with other installations. Extend grease fittings to an accessible location.
- C. Install equipment to allow right of way to piping systems installed at required slope.

### 3.6 IDENTIFICATION

- A. Piping Systems: Install pipe markers on each system. Include arrows showing normal direction of flow.

1. Plastic markers, with application systems. Install on insulation segment if required for hot noninsulated piping.
  2. Locate pipe markers on exposed piping according to the following:
    - a. Near each valve and control device.
    - b. Near each branch, excluding short takeoffs for equipment and terminal units. Mark each pipe at branch if flow pattern is not obvious.
    - c. At manholes and similar access points that permit view of concealed piping.
    - d. Near major equipment items and other points of origination and termination.
- B. Equipment: Install engraved plastic-laminate sign or equipment marker on or near each major item of equipment.
1. Lettering Size: Minimum 1/4 inch high for name of unit if viewing distance is less than 24 inches, 1/2 inch high for distances up to 72 inches, and proportionately larger lettering for greater distances. Provide secondary lettering two-thirds to three-fourths of size of principal lettering.
  2. Text of Signs: Provide name of identified unit. Include text to distinguish among multiple units, inform user of operational requirements, indicate safety and emergency precautions, and warn of hazards and improper operations.
- C. Adjusting: Relocate identifying devices that become visually blocked by work of this or other Divisions.

### 3.7 CONCRETE BASES

- A. Concrete Bases: Anchor equipment to concrete base according to equipment manufacturer's written instructions and according to seismic codes at Project.
1. Construct concrete bases of dimensions indicated, but not less than 4 inches larger in both directions than supported unit.
  2. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch centers around the full perimeter of the base.
  3. Install epoxy-coated anchor bolts for supported equipment that extend through concrete base, and anchor into structural concrete floor.
  4. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
  5. Install anchor bolts to elevations required for proper attachment to supported equipment.
  6. Install anchor bolts according to anchor-bolt manufacturer's written instructions.

7. Use 3000-psi, 28-day compressive-strength concrete and reinforcement as specified in Division 2 Section 02751 "Cement Concrete Pavement."

### 3.8 ERECTION OF METAL SUPPORTS AND ANCHORAGES

- A. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor piped utility materials and equipment.
- B. Field Welding: Comply with AWS D1.1.

### 3.9 GROUTING

- A. Mix and install grout for equipment base bearing surfaces, pump and other equipment base plates, and anchors.
- B. Clean surfaces that will come into contact with grout.
- C. Provide forms as required for placement of grout.
- D. Avoid air entrapment during placement of grout.
- E. Place grout, completely filling equipment bases.
- F. Place grout on concrete bases and provide smooth bearing surface for equipment.
- G. Place grout around anchors.
- H. Cure placed grout.

END OF SECTION 02080



**Section 02100**  
**Hazardous Materials**

**Part I - General**

**1) Location**

Rancho Del Oso Nature Center  
3600 Highway 1  
Davenport, CA 95017

**2) Description of the Work**

Renovation of the restrooms at the above site will impact hazardous materials, requiring abatement or stabilization if the materials are disturbed.

- |                                                               |                                                                                |
|---------------------------------------------------------------|--------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> Lead Paint                | <input checked="" type="checkbox"/> Interior and Exterior Paint and wood stain |
|                                                               | <input checked="" type="checkbox"/> Ceramic Tiles                              |
| <input checked="" type="checkbox"/> Renovation                |                                                                                |
| <input checked="" type="checkbox"/> Other hazardous Materials | <input checked="" type="checkbox"/> Fluorescent Tubes and PCB ballasts         |

**3) Products and Setup**

- A) All poly used must be minimum of 6 mil, fire retardant.
- B) All encapsulating materials used must be submitted for approval per Section 00700 General Conditions, and must be fully compatible with other products that will be installed at a later date.
- C) At a minimum, a fully compliant OSHA wash station must be established for all workers who may encounter lead paint or asbestos.
  - i) The wash station water must be captured and filtered to 2 microns prior to disposal.

**4) Lead Stabilization Guidelines**

- A) Breaking, cutting or grinding of ceramic tile or interior paint and/or wood stain disturbance requires negative pressure containment at -.02 inches of water as recorded on a manometer 24 hours a day.
- B) Protect the ground and interior surfaces prior to lead paint preparation
- C) Remove all chipping and peeling paint from interior and exterior surfaces
- D) Collect and dispose of paint chips as hazardous waste.
- E) Carefully remove any broken, abraded or otherwise disturbed pieces of ceramic tiles and keep separate for testing prior to disposal.
- F) Intact ceramic tiles that are scheduled for disposal should be placed with the broken tiles for the same waste profiling.
- G) Remove the poly from the interior.
- H) HEPA vacuum and wet wipe all interior surfaces
- I) Collect and dispose all exterior paint chips
- J) Stabilize the remaining surfaces with a product approved by the State
- K) Remove the exterior ground cover
- L) Inspect the ground to ensure that all paint chips are removed.
- M) Stabilize the remaining surfaces with a product approved by the State
- N) Advise KELLCO-MACS when the unit is ready for a visual/tactile inspection and clearance sampling.
  - a. Re-clean and re-inspect as necessary
- O) Clearance will be by wipe testing of stabilized and/or repainted walls and interior flooring.

**5) Fluorescent Tube and Ballast Guidelines**

- A) Carefully collect fluorescent tubes without breaking
- B) Fluorescent tubes will be recycled or re-used.
- C) Remove ballasts and inspect for PCB label
- D) All ballasts that do NOT have a "PCB FREE" or similar label will be disposed as PCB containing hazardous materials.

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**Hazardous Materials**

- E) Ballasts that have the “PCB FREE” or similar labels will be recycled or reused.

**6) Pre Abatement Submittals**

- A) Written work plan and sketches for this project
- B) Contractor’s business license and DOSH registration
- C) Insurance Certificate with the State named as additionally insured
- D) Notifications
- E) Waste hauler information
- F) EPA approved disposal site information
- G) Water runoff plan
- H) Emergency phone numbers
- I) AHERA and DHS training certificates for supervisors and workers
- J) Employee medical records
- K) Respirator fit tests
- L) Equipment lists and data
- M) Medical Surveillance program
- N) Respiratory Protection Program

**7) Regulatory Compliance**

- A) Contractor shall comply with the following listed applicable Federal and State regulations
- B) Contractor shall comply with local regulations
- C) The current issue of each specified document shall govern. Where conflict among regulations exist, the more stringent shall be applicable
- D) OSHA
  - i) CFR 1926.1101, Asbestos Construction Standard
  - ii) CFR 1910.1001, Asbestos General Industry Standard
  - iii) 29 CFR 1926.62 Lead Standard
  - iv) CFR 1910.134, Respiratory Protection Standard
  - v) CFR 1910.141, Hygiene And Shower Facilities Standard
  - vi) CFR 1910.20, Access To Medical Records

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**Hazardous Materials**

- vii) CFR 1926.1101, Local Exhaust Ventilation System Standard
- viii) CFR 1910.1200, Hazard Communication Standard
- E) CALIFORNIA AND CAL-OSHA
  - i) Title 22 CCR, Section 12503, Environmental Exposures;
  - ii) Proposition 65
  - iii) Title 8 CCR, 341.6/341.14, Asbestos Related Work
  - iv) Title 8 CCR, Section 1529, Asbestos Construction Standard
  - v) Title 8 CCR, Section 5208, Asbestos General Industry Standard
  - vi) Title 8 CCR, Section 5208.1, Asbestos General Industry Standard, non-asbestiform tremolite, actinolite, anthophyllite
  - vii) Title 8 CCR, 1532.1 California Lead Standard
  - viii) Title 17 CCR Division 1, Chapter 8 Accreditation, Certification and Work Practices for Lead-Based Paint and Lead Hazards.
  - ix) Title 8 CCR, Section 1531, Respiratory Protection Standard
  - x) Title 8 CCR Section 3366, 3367, Hygiene and shower facilities standard
  - xi) Title 8 CCR, Section 3204, Access to medical records
  - xii) Title 8 CCR, Section 5143, Local exhaust ventilation system standard
  - xiii) Title 8 CCR, Section 5194, Hazard Communication Standard
  - xiv) Title 8 CCR, Sections 1500-1938, Construction Safety Order
  - xv) Title 8 CCR, Sections 2299-2974, Electrical Safety Orders
  - xvi) Title 8 CCR, Section 3221, Fire Prevention
  - xvii) Title 8, Emergency Action Plan
  - xviii) Title 8 CCR, Section 5144, Respiratory Protection Equipment
  - xix) Title 8 CCR, GISO Section 3203, Injury and Illness Prevention Plan
  - xx) Title 8 CCR, Section 6003, Accident Prevention Signs
- F) EPA
  - i) Title 40 Code of Federal Regulations, Section 763, Asbestos Hazard Emergency Response Act
  - ii) Office of Toxic Substances, Asbestos Containing Materials in School Buildings, A Guidance Document, parts 1 & 2

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**Hazardous Materials**

G) NESHAP

- i) Title 40 Code of Federal Regulations, Part 61, Subparts A & B, National Emissions Standard for Hazardous Air Pollutants, USEPA Publication EPA 560-5-83-002
- ii) Federal Register Vol. 55, No 224, National Emission Standards for Hazardous Air Pollutants; Asbestos NESHAP Revision; Final Rule, November 20, 1990: ...if the asbestos content is estimated to be less than 10 percent by a method other than point counting, such as visual estimation, EPA has revised the definition to require that the determination be repeated using the point counting technique with PLM

H) Regulations and requirements of the local Air Quality Management District.

I) CODES AND STANDARDS

- i) ASTM -American Society for Testing and Materials
- ii) ANSI -American National Standards Institute
- iii) ULI -Underwriters Laboratories, Inc
- iv) NIST - National Institute of Standards and Technology
- v) NFPA -National Fire Protection Association
- vi) NEC -National Electrical Code

**8) Worker Requirements**

- A) All workers will have the following training and/or certifications:
  - i) Asbestos worker training per AHERA
  - ii) Lead worker training per DHS
- B) All supervisors will have the following training and/or certifications
  - i) Asbestos supervisor per AHERA
  - ii) Lead supervisor certification per DHS
- C) A lead supervisor must be present at all times
- D) Blood lead level requirements

## **Section 02100 – Page 6**

### **Hazardous Materials**

- i) All workers and supervisors must have their blood lead levels tested within 2 weeks before starting to work on this project.
- ii) To qualify and work on this project each worker must have a documented blood lead level less than 15 g/dl of blood.
- iii) Blood lead levels must be re-tested within one week of leaving this job.

### **9) Clearance**

- A) After the removal of each designated material, advise KELLCO when the work area is ready for a visual/tactile inspection.

### **10) Waste Management, Labeling, Disposal and Manifests**

- A) Prior to removal of the waste from the work area, the State's Representative employee must be available to count waste bags exiting work area
- B) Waste will be disposed by the Contractor at an appropriate waste facility approved by the State.
- C) The Contractor must submit certified weight tickets for each load of waste to the State. All certified weight tickets must be submitted within 15 days of shipping waste from site
- D) The waste generator is the State of California Department of Parks and Recreation.
- E) The emergency phone number for box #15 of the manifest is to be provided by the State.
- F) Waste manifests will be signed by an authorized representative of the State.
- G) The EPA ID number will be provided by the State.
- H) The State Board of Equalization Tax account will be provided by the State.
- I) Any waste storage containers left by the Contractor onsite, during the course of abatement, will be rigid on all sides and securable via lock and key
- J) All waste containers will be removed from the site by the Contractor at the end of the abatement project

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**Hazardous Materials**

K) The waste containers (bags, drums, etc.) must have proper labeling for the hazardous materials they contain.

L) The address of the removal site

Rancho Del Oso Nature Center  
3600 Highway 1  
Davenport, CA 95017

M) Disposal of Contractor's waste will be according to NESHAP 40 CFR 61

**11) Testing of Waste from Lead Paint**

A) KELLCO Services does not consider intact leaded paint on building components to be hazardous, unless a core sample of the component and paint are greater than 5-ppm lead as tested by TCLP and/or STLC. It is the Contractor's responsibility to segregate all waste into categories as follows:

(i) Intact paint on building components

(ii) Ceramic tiles

(iii) Paint chips, debris

(iv) Abatement activity, equipment and supply waste (used poly, suits, etc.)

B) The waste generated from the lead-based paint abatement must be evaluated to determine waste characteristics prior to disposal. The Contractor shall be responsible for segregating waste into the appropriate categories.

C) Each LBP related waste produced shall be placed in properly segregated, labeled and sealed, impervious containers.

D) Large pieces should be placed in a poly-lined dumpster lined with two layers of 6 mil or one layer of 10 mil poly.

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**Hazardous Materials**

- E) Small items may be stored in poly bags in fiber drums.
- F) All waste containers, bags, and packaged waste shall be stored in a designated, secure waste storage area and be labeled "PENDING ANALYSIS" with the following information:
- Waste Category  
Date Accumulated  
Name, Address, Owner  
Origin of Waste
- G) HEPA vacuum and wet-wipe the exterior of all waste containers prior to removing them from the work area to the designated storage area.
- H) All LBP waste will be considered hazardous until waste characterization has been performed under the California Code of Regulations, Title 22.
- I) Each category of waste will be tested by \*\*\*\*\* using the following tested protocol:

| <b>Cal EPA Testing Protocol</b>              | <b>Criteria</b> |
|----------------------------------------------|-----------------|
| Total Threshold Limit Concentration (TTLC)   | 1000 ppm        |
| Soluble Threshold Limit Concentration (STLC) | 5 ppm           |

| <b>Federal EPA Testing Protocol</b>               | <b>Criteria</b> |
|---------------------------------------------------|-----------------|
| Toxicity Characteristic Leaching Procedure (TCLP) | 5 ppm           |

- J) Cal-EPA testing protocol:
- i) Total Threshold Limit Concentration (TTLC): 1000 ppm
  - ii) Soluble Threshold Limit Concentration (STLC): 5 ppm
- K) Federal-EPA testing protocol:
- Toxicity Characteristic Leaching Procedure (TCLP): 5 ppm
- L) Based on the testing protocols, any waste greater than or equal to 5 ppm using STLC or TCLP tests or any waste greater than or equal to 1000 ppm



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**Hazardous Materials**

using the TTLC test shall be considered a hazardous waste. When the TTLC is less than 50 ppm, no further testing is required for that waste category sampled. The number and types of samples taken to represent each category of waste will depend on the amount and types of waste generated and will be the responsibility of the Owner's Consultant.

**12)Close out Documentation**

- A) Submit 2 copies of the following documentation:
  - i) Worker training certificates
  - ii) Worker medical certifications
  - iii) Blood lead test results within 1 week of leaving the project
- B) Worker fit test certifications
- C) Air monitoring results
- D) Rotometer calibration documentation
- E) Manometer charts
- F) Manifest and weight slips
- G) Clearance punch list
- H) Any other submittals as directed by the consultant or the State.

## **SECTION 02221 BUILDING DEMOLITION**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. This Section includes demolition and removal of the following:
  - 1. Portion of Building.
  - 2. Site improvements including site utilities.
- B. See Division 2 Section 02230 "Site Clearing" for site clearing and removal of above- and below-grade improvements not part of building demolition.

#### **1.2 DEFINITIONS**

- A. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged or recycled.
- B. Remove and Salvage: Detach items from existing construction and deliver them to Owner.
- C. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or recycled.

#### **1.3 MATERIALS OWNERSHIP**

- A. Historic items, relics, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, antiques, and other items of interest or value to State that may be encountered during building demolition remain State's property. Carefully remove and salvage each item or object in a manner to prevent damage and deliver promptly to and as directed by State's Representative.

#### **1.4 SUBMITTALS**

- A. Proposed Protection and Control Measures: Submit statement or drawing that indicates the measures proposed for use, proposed locations, and proposed time frame for their operation. Identify options if proposed measures are later determined to be inadequate. Include measures for the following:
  - 1. Environmental protection.
  - 2. Dust control.
  - 3. Noise control.

**Building Demolition**

- B. Schedule of Building Demolition Activities: Indicate detailed sequence of demolition and removal work, with starting and ending dates for each activity, interruption of utility services, and locations of temporary protection and means of egress.
- C. Predemolition Photographs: Show existing conditions of adjoining construction and site improvements that might be misconstrued as damage caused by building demolition operations. Submit before Work begins.
- D. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.

**1.5 QUALITY ASSURANCE**

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Standards: Comply with ANSI A10.6 and NFPA 241.
- C. Predemolition Conference: Conduct conference at Project site with District Representative.

**1.6 PROJECT CONDITIONS**

- A. Portions of Building to be demolished will be vacated and their use discontinued before start of Work.
- B. State assumes no responsibility for buildings and structures to be demolished.
  - 1. Conditions existing at time of inspection for bidding purpose will be maintained by State as far as practical.
  - 2. Before building demolition, Contractor shall remove the following items and deliver it to parks storage area (as directed by District):
    - a. Copper lines
    - b. Electrical boxes
    - c. Light fixtures
- C. Hazardous Materials: Hazardous materials are present in buildings and structures to be demolished. A report on the presence of hazardous materials is on file for review and use. Examine report to become aware of locations where hazardous materials are present.
  - 1. Hazardous material remediation is specified elsewhere in the Contract Documents.

2. Do not disturb hazardous materials or items suspected of containing hazardous materials except under procedures specified elsewhere in the Contract Documents.

D. Storage or sale of removed items or materials on-site is not permitted.

#### 1.7 COORDINATION

- A. Arrange demolition schedule so as not to interfere with State's on-site operations.

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

#### PART 3 - EXECUTION

##### 3.1 EXAMINATION

- A. Survey existing conditions and correlate with requirements indicated to determine extent of building demolition required.
- B. Inventory and record the condition of items to be removed and salvaged.
- C. When unanticipated mechanical, electrical, or structural elements are encountered, investigate and measure the nature and extent of the element. Promptly submit a written report to State Representative.
- D. Verify that hazardous materials have been remediated before proceeding with building demolition operations.

##### 3.2 PROTECTION

- A. Existing Facilities: Protect adjacent walkways and other building facilities during demolition operations.
- B. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during demolition. When permitted by State's Representative, items may be removed to a suitable, protected storage location during demolition and cleaned and reinstalled in their original locations after demolition operations are complete.
- C. Existing Utilities: Maintain utility services indicated to remain and protect them against damage during demolition operations.
  1. Do not interrupt existing utilities serving adjacent occupied or operating facilities unless authorized in writing by State's Representative and authorities having jurisdiction.
  2. Provide temporary services during interruptions to existing utilities, as acceptable to State's Representative and to authorities having jurisdiction.

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**Building Demolition**

- a. Provide at least 72 hours' notice to State's Representative if shutdown of service is required during changeover.
- D. Temporary Protection: Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction and as indicated. Comply with requirements in Division 1 Section 01500 "Temporary Facilities and Controls."
  1. Protect existing site improvements, appurtenances, and landscaping to remain.
  2. Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
  3. Provide protection to ensure safe passage of people around building demolition area and to and from occupied portions of adjacent buildings and structures.

**3.3 DEMOLITION, GENERAL**

- A. General: Demolish indicated existing areas of building completely. Use methods required to complete the Work within limitations of governing regulations and as follows:
  1. Do not use cutting torches until work area is cleared of flammable materials. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.
  2. Maintain adequate ventilation when using cutting torches.
  3. Locate building demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
- B. Site Access and Temporary Controls: Conduct building demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
  1. Do not close or obstruct walks, walkways, or other adjacent occupied or used facilities without permission from State's Representative and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.
  2. Use water mist and other suitable methods to limit spread of dust and dirt. Comply with governing environmental-protection regulations. Do not use water when it may damage adjacent construction or create hazardous or objectionable conditions, such as ice, flooding, and pollution.

**3.4 MECHANICAL DEMOLITION**

- A. Proceed with demolition of structural framing members systematically, from higher to lower level.

- B. Concrete: Cut concrete full depth at junctures with construction indicated to remain, using power-driven saw, then remove concrete between saw cuts.
- C. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished at junctures with construction indicated to remain, then break up and remove.
- D. Building Components: Remove the following components, as whole units, intact and undamaged:
  - 1. Doors.
  - 2. Door hardware.
  - 3. Light fixtures.
- E. Equipment: Disconnect equipment at nearest fitting connection to services, complete with service valves. Remove as whole units, complete with controls.
- F. Existing Utilities: Abandon existing utilities and below-grade utility structures. Cut utilities flush with grade.
- G. Existing Utilities: Demolish and remove existing utilities and below-grade utility structures.

### 3.5 EXPLOSIVE DEMOLITION

- A. Explosives: Use of explosives is not permitted.

### 3.6 SITE RESTORATION

- A. Below-Grade Areas: Rough grade below-grade areas ready for further excavation or new construction.
- B. Site Grading: Uniformly rough grade area of demolished construction to a smooth surface, free from irregular surface changes. Provide a smooth transition between adjacent existing grades and new grades.

### 3.7 REPAIRS

- A. General: Promptly repair damage to adjacent construction caused by building demolition operations.
- B. Where repairs to existing surfaces are required, patch to produce surfaces suitable for new materials.
- C. Restore exposed finishes of patched areas and extend restoration into adjoining construction in a manner that eliminates evidence of patching and refinishing.

### 3.8 RECYCLING DEMOLISHED MATERIALS

**Building Demolition**

- A. General: Separate recyclable demolished materials from other demolished materials to the maximum extent possible. Separate recyclable materials by type.
  - 1. Provide containers or other storage method approved by State Representative for controlling recyclable materials until they are removed from Project site.
  - 2. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
  - 3. Stockpile materials away from demolition area. Do not store within drip line of remaining trees.
  - 4. Store components off the ground and protect from the weather.
  - 5. Transport recyclable materials off State's property and legally dispose of them.
- B. Recycling Incentives: Revenues, savings, rebates, tax credits, and other incentives received for recycling building demolition materials shall accrue to Contractor.

**3.9 DISPOSAL OF DEMOLISHED MATERIALS**

- A. General: Except for items or materials indicated to be recycled, reused, salvaged, reinstalled, or otherwise indicated to remain State's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.
  - 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.
- B. Burning: Do not burn demolished materials.
- C. Disposal: Transport demolished materials off State's property and legally dispose of them.

**3.10 CLEANING**

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

END OF SECTION 02221

## **SECTION 02230 SITE CLEARING**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. This Section includes the following:
  - 1. Protecting existing trees and vegetation to remain.
  - 2. Removing above-grade site improvements.
  - 3. Disconnecting, capping or sealing, and abandoning site utilities in place.
  - 4. Disconnecting, capping or sealing, and removing site utilities.

#### **1.2 MATERIALS OWNERSHIP**

- A. Except for materials indicated to be stockpiled or to remain the State's property, cleared materials shall become Contractor's property and shall be removed from the site.

#### **1.3 PROJECT CONDITIONS**

- A. Traffic: Minimize interference with adjoining roads, walks, and other adjacent occupied or used facilities during site-clearing operations.
- B. Salvable Improvements: Carefully remove items indicated to be salvaged and store at location indicated by the State's Representative.
- C. Notify utility locator service for area where Project is located before site clearing.

### **PART 2 - PRODUCTS**

#### **2.1 SOIL MATERIALS**

- A. Satisfactory Soil Materials: As specified in Division 2 Section 02300 "Earthwork."
  - 1. Obtain approved borrow soil materials off-site when satisfactory soil materials are not available on-site.

### **PART 3 - EXECUTION**

#### **3.1 PREPARATION**

- A. Provide erosion-control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.



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**Site Clearing**

- B. Locate and clearly flag trees and vegetation to remain or to be relocated.
- C. Protect existing site improvements to remain from damage during construction.
  - 1. Restore damaged improvements to their original condition, as acceptable to State Parks.

**3.2 TREE PROTECTION**

- A. Refer to Division 2; section 02231 "Tree Protection".

**3.3 UTILITIES**

- A. Locate, identify, disconnect, and seal or cap off utilities indicated to be removed.
- B. Do not interrupt utilities serving facilities occupied by the State or others unless permitted. Arrange to provide temporary utility services.
- C. Excavate for and remove underground utilities indicated to be removed.

**3.4 SITE IMPROVEMENTS**

- A. Remove existing above- and below-grade improvements as indicated and as necessary to facilitate new construction.

**3.5 DISPOSAL**

- A. Disposal: Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials, including trash and debris, and legally dispose of them off State's property.

END OF SECTION 02230

## SECTION 02231 TREE PROTECTION AND TRIMMING

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. This Section includes protection of trees affected by new construction.

#### 1.2 QUALITY ASSURANCE

- A. Certification: From a qualified State staff or arborist, that trees indicated to remain have been protected during construction according to DPR protection standards and that trees were promptly and properly treated and repaired if damaged.
- B. Arborist Qualifications: An arborist certified by the International Society of Arboriculture or licensed in jurisdiction where Project is located.

#### 1.3 DEFINITIONS

- A. **DBH** – Diameter at Breast Height of tree, or 54 inches from the ground as measured on the high side of the tree.
- B. **TPZ** – Tree Protection Zone, 5 times the DBH or tree dripline, whichever is greater.

### PART 2 - PRODUCTS

#### 2.1 MANUFACTURERS

- A. Construction Fence: Fencing around trees and planted areas to be protected from construction damage shall consist of 36" minimum height plastic orange color temporary construction fencing as manufactured by White Cap or approved equal. Post may be steel driven type, or self-supporting type, as per plans or directions of the State's Representative.

### PART 3 - EXECUTION

#### 3.1 PREPARATION

- A. The Contractor shall meet on site with qualified State staff or arborist to review all required tree protection measures.
- B. The Contractor shall locate and clearly flag trees and vegetation to remain or to be relocated, as diagrammed on the construction documents.

**Section 02231 – Page 2**  
**Tree Protection and Trimming**

- C. The Contractor and qualified State staff, or arborist, shall review all protected trees whose root zones will be impacted by the new construction. The Contractor shall utilize protection measures as outlined by qualified State staff or arborist, which may include directional drilling, or hand clearing to expose the roots, or tree removal.
- D. The Contractor shall avoid spillage within the **TPZ** while mixing, placing, or storing construction materials and from flooding, eroding, or excessive moisture caused by dewatering operations.
- E. No storage of equipment, debris, and or materials is permitted within **TPZ**.

**3.2 EXCAVATION AND REGRADING**

- A. Excavation: Do not excavate within three (3) times the diameter of the trunk, unless otherwise indicated. Where excavation is required within drip line of trees, hand clear and excavate to minimize damage to root systems. Use narrow-tine spading forks and comb soil to expose roots.
- B. Roots: No root 2 inch diameter or greater may be cut or damaged without prior approval of the State's Representative. All trenching outside the existing building pad and within 5 times the diameter of a tree trunk exceeding 12 inch diameter must be hand cleared and excavated to minimize damage to root systems. Use narrow-tine spade forks and comb soil to expose roots. Any walkways outside existing concrete area must not damage or directly bear upon existing roots exceeding 2 inch diameter.
- C. Grade Lowering: Where new finish grade is indicated below existing grade around trees, slope grade beyond drip line of trees. Maintain existing grades within drip line of trees.
- D. Minor Fill: Where existing grade is 6 inches or less below elevation of finish grade, fill with topsoil. Place topsoil in single uncompacted layer and hand grade to required finish elevations.

**3.3 TREE PROTECTION**

- A. Contractor shall take care to protect all trees within the designated construction site from damage by fencing the **TPZ** of individual or groups of trees as appropriate, see Section 2.01A.
- B. Trees located in areas of heavy equipment operations, as designated by the qualified State staff or arborist, shall utilizing tree trunk protection. Tree trunk protection shall consist of a wood guard constructed with 3" wide nylon straps, attaching rough sawn 2 inch x 6 inch x 8 foot lumber at 12 inches on-center vertically around entire trunk of trees to remain. Lumber shall extend to natural base of tree and protect any exposed roots at the base of the tree.

- C. Where excavation for new construction is approved within the TPZ, care will be exercised to prevent root damage. Locate the root zone and either tunnel below the roots, directional drill or use hand clearing to prevent root damage, in a manner approved by the State's Representative.
- D. Contractor shall exercise diligence to avoid tree limb damage. Erect and maintain a temporary fence around drip line of individual trees and around perimeter drip line of groups of trees.
- E. Repair or replace trees and vegetation indicated to remain that are damaged by construction operations, in a manner approved by the State's Representative.

#### 3.4 TREE PRUNING

- A. No pruning shall be conducted unless approved by the State's Representative.

#### 3.5 TRIMMING

- A. Clearance:
  - 1. Provide 20-foot vertical clearance above new roads and parking areas.
  - 2. Provide 8-foot vertical clearance above new walks.
  - 3. Provide 6-foot vertical clearance above new buildings.
- B. Technique: When a woody limb must be shortened or removed, the piece is always pruned just above a junction with another growing part (e.g., main stem, larger branch, equal-sized branch, smaller branch, twig, or bud). Removing or shortening a woody limb that is larger than 2 inches in diameter is a 3 step process. For limbs smaller than 2 inches in diameter, the Contractor may skip to Step 3, Final Cut.

Step 1, Undercut: The undercut is necessary to prevent the bark from peeling and to assist in directional felling. Cut into the bottom of the limb at a point 1 to 2 feet beyond the junction with another growing part (stem, branch, twig, and bud). Cut the limb 1/3 of the way through or until the saw begins to bind. When removing a vertical stem, make the undercut on the side that you wish the stem to fall.

Step 2, Precut (Jumpcut): The precut (jumpcut) is done to remove most of the limb weight. The precut is made on the top of the branch at a point 1 to 2 inches beyond the undercut (or on the opposite side of a vertical stem 1 to 2 inches above the undercut). The precut (jumpcut) is made all the way through the limb until it breaks off.

Step 3, Final Cut: The final cut is made to facilitate wound healing. The final cut is not a flush cut; the final cut shall not injure the branch bark ridge or the branch collar (see definitions).

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**Tree Protection and Trimming**

1. When the smaller limb at a junction is to be removed, then the final cut is made perpendicular to the branch being cut. The final cut shall be close to, but not injuring the branch collar.
2. When the larger or equal-sized limb at a junction is to be removed, then the final cut shall be made close to and parallel to, but not injuring the branch bark ridge.

The Contractor shall not apply any material onto the final cut surface of a limb.

C. Definition of Terms:

1. The Branch Collar, when visible, is a swelling of the limb at its point of attachment to a larger limb. This swelling usually encircles the smaller limb and connects with the Branch Bark Ridge.
2. The Branch Bark Ridge, when visible, are areas, rings, or line of bulging bark that may be rough and darker in color than the surrounding bark. The Branch Bark Ridge occurs at the junction of 2 limbs, between the 2 limbs.

3.6 TREE REPAIR

- A. Repair trees damaged by construction operations within 24 hours. Treat damaged trunks, limbs, and roots according to written instructions of qualified arborist.

3.7 DISPOSAL

- A. Remove excess excavated material, displaced trees, and excess chips from the State's property. Burning is not permitted.

3.8 TREE DAMAGE PENALTY

- A. If any tree or shrub, not shown to be removed, is damaged or destroyed during the course of, or as a result of, construction operations, the Contractor shall repair the damage at no additional cost to the State. In addition, the Contractor shall pay the State an amount calculated in accordance with the formulas below. Damage is defined, without limitation, as any cutting, breaking, tearing, bruising or skinning of the trunk or roots.
  1. The total value shall be paid to the State for a tree totally destroyed.
  2. A proportional amount of the total value shall be paid to the State, for each tree damaged, as follows:
    - a. Tree Value (Hardwoods/Conifers) \$ =  $\$2.16 \times (\text{Trunk circumference in inches at a height of 54" above the ground})^2$ .

- 1) **Example:** 24 inch Diameter Pine  
Circumference = 75.4 inches  
 $\$2.16 \times 5,685 = \$12,280$   
**Tree Value \$12,280.00**

- b. Damage \$ = Tree Value x (Trunk Damage + Root Damage)  
c. Trunk Damage + Root Damage shall not exceed 1.0  
d. Trunk Damage = Maximum width of trunk damage divided by trunk circumference at maximum width of injury

- 1) **Example:** 24 inch Pine with 6 inch wide trunk damage  
6 inches divided by 75.4 inches = 0.08  
Trunk Damage Value = 0.08  
**Trunk Damage Penalty = \$12,280 x 0.08 = \$982**

- e. Root Damage = Percentage of root damage based on size of root damaged. The following table determines percentage of overall root damage based on size of root damaged.

2 – 3 inch root = 10% of root zone = 0.1  
4 – 5 inch root = 20% of root zone = 0.2  
6 inch and up = 30% of root zone = 0.3

Percentages will be added for multiple roots damaged within the root zone of one tree. Assumed root zone for all trees is a 20-foot diameter or 314 square feet.

- 1) **Example:** 24-inch pine with one 2-inch root damaged and one 4-inch root damaged.  
 $0.1(2 \text{ inch root}) + 0.2(4 \text{ inch root}) = 0.3$   
 $0.3 \times \$12,280 = \$3,684$   
**Root Damage Penalty = \$3,684**

3. Total amount of such damages shall be deducted from any funds due or become due the Contractor. All damages shall be repaired by a certified arborist (certified by the Western Chapter, International Society of Arboriculture) at the Contractor's expense. All injured or destroyed trees shall remain the property of the State. At no additional cost to the State, the Contractor shall remove destroyed trees and shrubs from State Park property if so directed by the State's Representative.

- B. Contractor is prohibited from storing or stockpiling material, parking, and excessive foot or vehicular traffic within the drip line of trees or shrubs.

END OF SECTION 02231

**SECTION 02235**  
**WATER POLLUTION CONTROL**

**PART 1 - GENERAL**

**1.1 SUMMARY**

A. Section describes the following work:

1. Implementation of sediment, erosion control, and spill prevention measures during construction, and upon close-out of construction contract.
2. Maintenance and repair of erosion, sediment control, and spill prevention measures during the construction period.

B. Related Sections:

1. Section 00810: Constraints and Mitigations
2. Section 02230: Site Clearing
3. Section 02300: Earthwork

C. Definitions:

1. Construction Period: Between the dates of Notice to Proceed and Substantial Completion of the work.
2. Maintenance Period: Between the date of Notice to Proceed and completion of work or the end of the rainy season.

**PART 2 - PRODUCTS**

**2.1 MATERIALS AND PROCEDURES**

- A. All materials and procedures required to execute the installation and maintenance of Best Management Practices (BMP's) for erosion and sediment control, and for spill prevention, containment, and cleanup of any non-sediment pollutants shall meet the minimum criteria defined in the *California Stormwater Best Management Practices Handbook*, 2004 (the handbook). This handbook is available at the following website:

[www.cabmphandbooks.com/construction.asp](http://www.cabmphandbooks.com/construction.asp)

**PART 3 - EXECUTION**

### 3.1 GENERAL REQUIREMENTS

- A. At a minimum, the Contractor shall install and maintain temporary erosion and sediment control measures (BMP's) for erosion and sediment control, and for spill prevention, containment, and cleanup for any non-sediment pollutants that shall meet the minimum criteria defined in the *California Stormwater Best Management Practices Handbook*, 2004 (the handbook). These measures shall be implemented and maintained throughout the construction and upon close-out of construction contract.
- B. During the construction period, the Contractor shall maintain onsite sufficient quantities of erosion and sediment control materials to be installed in the event that rain is forecast, and for rapid response to failures or emergencies. The Contractor shall consult the local weather forecast daily.
- C. If rain is forecast during construction the Contractor shall, at a minimum, secure all soil stockpiles by covering and/or installing a perimeter silt barrier.

### 3.2 CLEANUP

- A. Upon completion of the construction period, unless directed by the State's Representative, remove all unused erosion control materials, and remove all used erosion control materials that are no longer needed and dispose of properly offsite. Some BMP's may need to remain in place after construction as part of permanent BMP's or to continue to control potential pollution through the rainy season. Regrade drainage ditches and over-silted areas to even and smooth grade. Leave the site in clean condition acceptable to the State.

END OF SECTION 02235



## **SECTION 02300 EARTHWORK**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. This Section includes the following:
  - 1. Preparing subgrades.
  - 2. Excavating and backfilling.
  - 3. Drainage course for slabs-on-grade.
  - 4. Subbase course for concrete walks and pavements.
  - 5. Base course for asphalt paving.

#### **1.2 DEFINITIONS**

- A. Backfill: Soil materials used to fill an excavation.
- B. Base Course: Layer placed between the subbase course and asphalt paving.
- C. Bedding Course: Layer placed over the excavated subgrade in a trench before laying pipe.
- D. Borrow: Satisfactory soil imported from off-site for use as fill or backfill.
- E. Drainage Course: Layer supporting slab-on-grade used to minimize capillary flow of pore water.
- F. Excavation: Removal of material encountered above subgrade elevations.
  - 1. Additional Excavation: Excavation below subgrade elevations as directed by Architect. Additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.
  - 2. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated dimensions without direction by State's Representative. Unauthorized excavation, as well as remedial work directed by State's Representative, shall be without additional compensation.
- G. Fill: Soil materials used to raise existing grades.
- H. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.
- I. Subbase Course: Layer placed between the subgrade and base course for asphalt paving, or layer placed between the subgrade and a concrete pavement or walk.

**Earthwork**

- J. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, drainage fill, or topsoil materials.
- K. Utilities include on-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

**1.3 PROJECT CONDITIONS**

- A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted in writing by Architect and then only after arranging to provide temporary utility services according to requirements indicated.

**PART 2 - PRODUCTS**

**2.1 SOIL MATERIALS**

- A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.
- B. Satisfactory Soils: ASTM D 2487 Soil Classification Groups GW, GP, GM, SW, SP, and SM, or a combination of these group symbols; free of rock or gravel larger than 2 inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.
- C. Unsatisfactory Soils: ASTM D 2487 Soil Classification Groups GC, SC, ML, MH, CL, CH, OL, OH, and PT, or a combination of these group symbols.
- D. Backfill and Fill: Satisfactory soil materials.
- E. Subbase: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2- inch sieve and not more than 12 percent passing a No. 200 sieve.
- F. Base: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 95 percent passing a 1-1/2-inch sieve and not more than 8 percent passing a No. 200 sieve.
- G. Bedding: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; except with 100 percent passing a 1-inch sieve and not more than 8 percent passing a No. 200 sieve.
- H. Drainage Fill: Washed, narrowly graded mixture of crushed stone, or crushed or uncrushed gravel; ASTM D 448; coarse-aggregate grading Size 57; with 100 percent passing a 1-1/2- inch sieve and 0 to 5 percent passing a No. 8 sieve.

- I. Detectable Warning Tape: Polyethylene film warning tape encasing a metallic core, minimum 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility.

### **PART 3 - EXECUTION**

#### **3.1 PREPARATION**

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, freezing temperatures or frost, and other hazards created by earthwork operations. Provide protective insulating materials as necessary.
- B. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.
- C. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.
- D. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.

#### **3.2 EXCAVATION**

- A. Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered, including rock, soil materials, and obstructions.
  1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.
- B. Excavate for structures, pavements, and walks to indicated elevations and dimensions. Extend excavations for placing and removing concrete formwork, for installing services and other construction, and for inspections. Trim bottoms to required lines and grades to leave solid base to receive other work.
- C. Excavate utility trenches to indicated gradients, lines, depths, and invert elevations of uniform widths to provide a working clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches higher than top of pipe or conduit.
  1. Excavate trenches deeper than bottom of pipe elevation, 6 inches deeper in rock, 4 inches deeper elsewhere, to allow for bedding course. Hand excavate for bell of pipe.

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**Earthwork**

- D. Proof roll subgrades, before filling or placing aggregate courses, with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof roll wet or saturated subgrades.
- E. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities.
- F. Fill unauthorized excavation under foundations or wall footings by extending bottom elevation of concrete foundation or footing to excavation bottom, without altering top elevation. Lean concrete fill may be used when approved by Architect.
  - 1. Fill unauthorized excavations under other construction or utility pipe as directed by State's Representative.
- G. Stockpile borrow materials and satisfactory soil materials, without intermixing, in shaped, graded, drained, and covered stockpiles. Stockpile soil materials away from edge of excavations and outside drip line of remaining trees.

**3.3 BACKFILLS AND FILLS**

- A. Utility Trench Backfill: Place, compact, and shape bedding course to provide continuous support for pipes and conduits over rock and other unyielding bearing surfaces and to fill unauthorized excavations.
  - 1. Place and compact initial backfill of satisfactory soil material or subbase material, free of particles larger than 1 inch, to a height of 12 inches over the utility pipe or conduit. Place and compact final backfill of satisfactory soil material to final subgrade.
  - 2. Install warning tape directly above utilities, 12 inches below finished grade, except 6 inches below subgrade under pavements and slabs.
- B. Fill: Place and compact fill material in layers to required elevations.
- C. Uniformly moisten or aerate subgrade and each subsequent fill or backfill layer before compaction to within 2 percent of optimum moisture content.
  - 1. Remove and replace, or scarify and air dry, otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.
- D. Compaction: Place backfill and fill materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.
- E. Compact soil to not less than the following percentages of maximum dry 95 percent according to ASTM D 1557:

1. Under structures, building slabs, steps, and pavements, scarify and recompact top 12 inches of existing subgrade and each layer of backfill or fill material at 95 percent.
  2. Under walkways, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill material at 90 percent.
  3. Under lawn or unpaved areas, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill material at 85 percent.
- F. Grading: Uniformly grade areas to a smooth surface, free from irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated. Grade lawns, walks, and unpaved subgrades to tolerances of plus or minus 1 inch and pavements and areas within building lines to plus or minus 1/2 inch.
- G. Subbase and Base Courses: Under pavements and walks, place subbase course on prepared subgrade. Place base course material over subbase. Compact to required grades, lines, cross sections, and thickness to not less than 95 percent of maximum dry unit weight according to ASTM D 1557.
- H. Under slabs-on-grade, place drainage course on prepared subgrade. Compact to required cross sections and thickness to not less than 95 percent of maximum dry unit weight according to ASTM D 698.

#### **3.4 FIELD QUALITY CONTROL**

- A. Testing Agency: Contractor will engage a qualified independent testing and inspecting agency to perform field tests and inspections and to prepare test reports.
- B. Allow testing agency to test and inspect subgrades and each fill or backfill layer. Proceed with subsequent earthwork only after test results for previously completed work comply with requirements.
- C. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil to depth required; recompact and retest until specified compaction is obtained.

#### **3.5 PROTECTION AND DISPOSAL**

- A. Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction.

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**Earthwork**

- C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
- D. Disposal: Remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off Owner's property.

END OF SECTION 02300

## **SECTION 02361 TERMITE CONTROL**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. This Section includes soil treatment for termite control.

#### **1.2 SUBMITTALS**

- A. Product Data: For each product indicated, including EPA-Registered Label.
- B. Product certificates.
- C. Soil Treatment Application Report: After application of termiticide is completed, submit report for State's Representative record information, including the following as applicable:
  - 1. Date and time of application.
  - 2. Moisture content of soil before application.
  - 3. Brand name and manufacturer of termiticide.
  - 4. Quantity of undiluted termiticide used.
  - 5. Dilutions, methods, volumes, and rates of application used.
  - 6. Areas of application.
  - 7. Water source for application.

#### **1.3 QUALITY ASSURANCE**

- A. Applicator Qualifications: A pest control operator who is licensed according to regulations of authorities having jurisdiction to apply termite control treatment in jurisdiction where Project is located.
- B. Regulatory Requirements: Formulate and apply termiticides, and label with a Federal registration number, to comply with EPA regulations and authorities having jurisdiction.

#### **1.4 WARRANTY**

- A. Soil Termiticide Special Warranty: Manufacturer's standard form, signed by applicator and Contractor, certifying that applied soil termiticide treatment will prevent infestation of subterranean termites. If subterranean termite activity or damage is discovered within five years from date of Substantial Completion, re-treat soil and repair or replace damage caused by termite infestation.

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**Termite Control**

**PART 2 - PRODUCTS**

**2.1 TERMITE CONTROL**

- A. Soil Treatment: EPA-registered termiticide complying with requirements of authorities having jurisdiction, in a soluble or emulsible, concentrated formulation that dilutes with water or foaming agent. Use only soil treatment solutions that are not harmful to plants.
  - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
    - a. AgrEvo Environmental Health, Inc.; a company of Hoechst and Schering, Berlin.
    - b. American Cyanamid Co.; Agricultural Products Group; Specialty Products Department.
    - c. Bayer Corp.; Garden & Professional Care.
    - d. DowElanco.
    - e. FMC Corp.; Pest Control Specialties.
    - f. Zeneca Professional Products.
    - g. Or equivalent.

**PART 3 - EXECUTION**

**3.1 PREPARATION**

- A. Remove all extraneous sources of wood cellulose and other edible materials such as wood debris, tree stumps and roots, stakes, formwork, and construction waste wood from soil and around foundations.

**3.2 SOIL TREATMENT APPLICATION**

- A. Apply soil treatment at the label volume and rate for the maximum termiticide concentration allowed for each specific use, according to the product's EPA-Registered Label.
  - 1. Mix termiticide solution to a uniform consistency.
  - 2. Apply to produce a continuous horizontal and vertical termiticidal barrier or treated zone around and under building construction. Distribute the treatment evenly.
  - 3. Slabs-on-Grade: Under ground-supported slab construction, including footings, building slabs, and attached slabs as an overall treatment. Treat soil materials before concrete footings and slabs are placed.
  - 4. Foundations: Adjacent soil including soil along entire inside perimeter of foundation walls, along both sides of interior partition walls, around plumbing pipes and electric conduit penetrating slab, and around interior column footers, piers, and chimney bases; and along entire outside



perimeter, from grade to bottom of footing. Avoid soil washout around footings.

5. Penetrations: At expansion joints, control joints, and areas where slabs will be penetrated.
- B. Avoid disturbance of treated soil after application. Keep off treated areas until completely dry.
- C. Protect termiticide solution, dispersed in treated soils and fills, from being diluted until ground-supported slabs are installed. Use waterproof barrier according to EPA-Registered Label instructions.
- D. Post warning signs in areas of application.
- E. Reapply soil treatment solution to areas disturbed by subsequent excavation, grading, landscaping, or other construction activities following application.

END OF SECTION 02361

## **SECTION 02510 WATER DISTRIBUTION**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. This Section includes water-distribution piping and specialties outside the building for the following:
  - 1. Water services.
  - 2. Aboveground water piping for applications other than water-service piping.

#### **1.2 SUBMITTALS**

- A. Product Data: For the following:
  - 1. Valves and accessories.
- B. Wiring Diagrams: Power, signal, and control wiring.
- C. Field quality-control test reports.
- D. Operation and Maintenance Data: For the following:
  - 1. Valves.
  - 2. Protective enclosures.

#### **1.3 QUALITY ASSURANCE**

- A. Regulatory Requirements:
  - 1. Comply with requirements of utility company supplying water. Include tapping of water mains and backflow prevention.
  - 2. Comply with standards of authorities having jurisdiction for potable-water-service piping, including materials, installation, testing, and disinfection.
- B. Piping materials shall bear label, stamp, or other markings of specified testing agency.
- C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- D. NSF Compliance:
  - 1. Comply with NSF 14 for plastic potable-water-service piping.

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**Water Distribution**

2. Comply with NSF 61 for materials for water-service piping and specialties for domestic water.

**1.4 PROJECT CONDITIONS**

- A. Existing Utilities: Do not interrupt utilities serving facilities occupied by State or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
  1. Notify State's Representative not less than two (2) days in advance of proposed utility interruptions.
  2. Do not proceed with utility interruptions without State's Representative's written permission.

**1.5 COORDINATION**

- A. Coordinate connection to water main with utility company.

**PART 2 - PRODUCTS**

**2.1 MANUFACTURERS**

- A. In other Part 2 articles where subparagraph titles below introduce lists, the following requirements apply for product selection:
  1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the products specified.
  2. 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.

**2.2 PIPING MATERIALS**

- A. Refer to Part 3 "Piping Applications" Article for applications of pipe, tube, fitting, and joining materials.

**2.3 PIPE AND FITTINGS**

- A. Mechanical-Joint, Ductile-Iron Pipe: AWWA C151, with mechanical-joint, bell-and plain-spigot end unless grooved or flanged ends are indicated.
  1. Mechanical-Joint, Ductile-Iron Fittings: AWWA C110, ductile- or gray-iron standard pattern or AWWA C153, ductile-iron compact pattern.
    - a. Glands, Gaskets, and Bolts: AWWA C111, ductile- or gray-iron glands, rubber gaskets, and steel bolts.

- B. Push-on-Joint, Ductile-Iron Pipe: AWWA C151, with push-on-joint, bell- and plain-spigot end unless grooved or flanged ends are indicated.
  - 1. Push-on-Joint, Ductile-Iron Fittings: AWWA C110, ductile- or gray-iron standard pattern or AWWA C153, ductile-iron compact pattern.
    - a. Gaskets: AWWA C111, rubber.
- C. Soft Copper Tube: ASTM B 88, Type K, water tube, annealed temper.
  - 1. Copper Fittings: ASME B16.18, cast-copper-alloy or ASME B16.22, wrought-copper, solder-joint pressure type. Furnish only wrought-copper fittings if indicated.
- D. PE, ASTM Pipe: ASTM D 2239, SDR Numbers 5.3, 7, or 9; with PE compound number required to give pressure rating not less than 160 psig.
  - 1. Insert Fittings for PE Pipe: ASTM D 2609, made of PA, PP, or PVC with serrated, male insert ends matching inside of pipe. Include bands or crimp rings.
  - 2. Molded PE Fittings: ASTM D 3350, PE resin, socket- or butt-fusion type, made to match PE pipe dimensions and class.
- E. PVC, Schedule 40 Pipe: ASTM D 1785.
  - 1. PVC, Schedule 40 Socket Fittings: ASTM D 2466.
- F. PVC, Schedule 80 Pipe: ASTM D 1785.
  - 1. PVC, Schedule 80 Socket Fittings: ASTM D 2467.
- G. PVC, AWWA Pipe: AWWA C900, Class 200, with bell end with gasket and spigot end.
  - 1. Comply with UL 1285 for fire-service mains if indicated.
  - 2. PVC Fabricated Fittings: AWWA C900, Class 200, with bell-and-spigot or double-bell ends. Include elastomeric gasket in each bell.
  - 3. PVC Molded Fittings: AWWA C907, Class 150, with bell-and-spigot or double-bell ends. Include elastomeric gasket in each bell.

## 2.4 JOINING MATERIALS

- A. Brazing Filler Metals: AWS A5.8, BCuP Series.
- B. Soldering Flux: ASTM B 813, water-flushable type.
- C. Solder Filler Metal: ASTM B 32, lead-free type with 0.20 percent maximum lead content.

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**Water Distribution**

**2.5 VALVES**

**A. AWWA, Cast-Iron, Gate Valves:**

**1. Manufacturers:**

- a. American AVK Co.; Valves & Fittings Div.
- b. American Cast Iron Pipe Co.; American Flow Control Div.
- c. American Cast Iron Pipe Co.; Waterous Co. Subsidiary.
- d. Crane Co.; Crane Valve Group; Stockham Div.
- e. East Jordan Iron Works, Inc.
- f. Grinnell Corporation; Mueller Co.; Water Products Div.
- g. McWane, Inc.; Clow Valve Co. Div. (Oskaloosa).
- h. McWane, Inc.; Kennedy Valve Div.
- i. McWane, Inc.; Tyler Pipe; Utilities Div.
- j. NIBCO INC.
- k. United States Pipe and Foundry Company.
- l. Or equivalent.

**2. Nonrising-Stem, Metal-Seated Gate Valves: AWWA C500, gray- or ductile-iron body and bonnet; with cast-iron or bronze double-disc gate, bronze gate rings, bronze stem, and stem nut.**

- a. Minimum Working Pressure: 200 psig.
- b. End Connections: Mechanical joint.
- c. Interior Coating: Complying with AWWA C550.

**3. Nonrising-Stem, Resilient-Seated Gate Valves: AWWA C509, gray- or ductile-iron body and bonnet; with bronze or gray- or ductile-iron gate, resilient seats, bronze stem, and stem nut.**

- a. Minimum Working Pressure: 200 psig.
- b. End Connections: Mechanical joint.
- c. Interior Coating: Complying with AWWA C550.

**B. UL/FM, Cast-Iron Gate Valves:**

**1. Manufacturers:**

- a. American Cast Iron Pipe Co.; American Flow Control Div.
- b. American Cast Iron Pipe Co.; Waterous Co. Subsidiary.
- c. Central Sprinkler Company.
- d. Crane Co.; Crane Valve Group; Stockham Div.
- e. Grinnell Corporation.
- f. Grinnell Corporation; Mueller Co.; Water Products Div.
- g. McWane, Inc.; Clow Valve Co. Div. (Oskaloosa).
- h. McWane, Inc.; Kennedy Valve Div.
- i. McWane, Inc.; M & H Valve Company Div.

- j. NIBCO INC.
  - k. United States Pipe and Foundry Company.
  - l. Or equivalent.
2. UL/FM, Nonrising-Stem Gate Valves: UL 262, FM-approved iron body and bonnet with flange for indicator post, bronze seating material, and inside screw.
- a. Minimum Working Pressure: 175 psig.
  - b. End Connections: Flanged.

## 2.6 GATE VALVE ACCESSORIES AND SPECIALTIES

- A. Tapping-Sleeve Assemblies: Comply with MSS SP-60. Include sleeve and valve compatible with drilling machine.
- 1. Manufacturers:
    - a. American Cast Iron Pipe Co.; Waterous Co. Subsidiary.
    - b. East Jordan Iron Works, Inc.
    - c. Grinnell Corporation; Mueller Co.; Water Products Div.
    - d. International Piping Services Company.
    - e. McWane, Inc.; Clow Valve Co. Div. (Oskaloosa).
    - f. McWane, Inc.; Kennedy Valve Div.
    - g. McWane, Inc.; M & H Valve Company Div.
    - h. United States Pipe and Foundry Company.
    - i. Or equivalent.
  - 2. Tapping Sleeve: Cast- or ductile-iron or stainless-steel, two-piece bolted sleeve with flanged outlet for new branch connection. Include sleeve matching size and type of pipe material being tapped and with recessed flange for branch valve.
  - 3. Valve: AWWA, cast-iron, nonrising-stem, metal-seated gate valve with one raised face flange mating tapping-sleeve flange.
- B. Valve Boxes: Comply with AWWA M44 for cast-iron valve boxes. Include top section, adjustable extension of length required for depth of burial of valve, plug with lettering "WATER," bottom section with base of size to fit over valve, and approximately 5-inch- diameter barrel.
- 1. Operating Wrenches: Steel tee-handle with one pointed end, stem of length to operate deepest buried valve, and socket matching valve operating nut.
- C. Vertical-Type Indicator Posts: UL 789, FM-approved, cast-iron body with operating wrench, extension rod, and adjustable cast-iron barrel of length required for depth of burial of valve.

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**Water Distribution**

**2.7 CORPORATION VALVE**

**A. Available Manufacturers:**

1. Amcast Industrial Corporation; Lee Brass Co.
2. Ford Meter Box Company, Inc. (The).
3. Grinnell Corporation; Mueller Co.; Water Products Div.
4. Jones, James Company.
5. Master Meter, Inc.
6. McDonald, A. Y. Mfg. Co.
7. Red Hed Manufacturing Co.
8. Or equivalent.

**B. Service-Saddle Assemblies: Comply with AWWA C800. Include saddle and valve compatible with tapping machine.**

1. Service Saddle: Copper alloy with seal and AWWA C800, threaded outlet for corporation valve.
2. Corporation Valve: Bronze body and ground-key plug, with AWWA C800, threaded inlet and outlet matching service piping material.

**C. Curb Valves: Comply with AWWA C800. Include bronze body, ground-key plug or ball, and wide tee head, with inlet and outlet matching service piping material.**

**D. Service Boxes for Curb Valves: Similar to AWWA M44 requirements for cast-iron valve boxes. Include cast-iron telescoping top section of length required for depth of burial of valve, plug with lettering "WATER," bottom section with base of size to fit over curb valve, and approximately 3-inch- diameter barrel.**

1. Shutoff Rods: Steel, tee-handle with one pointed end, stem of length to operate deepest buried valve, and slotted end matching curb valve.

**PART 3 - EXECUTION**

**3.1 PIPING APPLICATIONS**

**A. Refer to Division 2 Section 02300 "Earthwork" for excavating, trenching, and backfilling.**

**B. Underground Water-Service Piping: Use any of the following piping materials for each size range:**

1. NPS 3/4 to NPS 2: Soft copper tube, Type K; wrought-copper fittings; and soldered joints.
2. NPS 3/4 to NPS 2: PE, ASTM pipe; insert fittings for PE pipe; and clamped; and heat-fusion joints.

3. NPS 3/4 to NPS 2: PVC, Schedule 40 pipe; PVC, Schedule 40 socket fittings; and solvent-cemented joints.
4. NPS 2-1/2 to NPS 3-1/2: Soft copper tube, Type K; wrought-copper fittings; and soldered joints.
5. NPS 2-1/2 to NPS 3-1/2: PVC, Schedule 80 pipe; PVC, Schedule 80 socket fittings; and solvent-cemented joints.
6. NPS 4: Ductile-iron, push-on-joint pipe; ductile-iron, push-on-joint fittings; and gasketed or mechanical-joint pipe; ductile-iron, mechanical-joint fittings; and mechanical joints.
7. NPS 4: PE, AWWA pipe; PE, AWWA fittings; and heat-fusion joints.
8. NPS 4: PVC, Schedule 40 pipe; PVC, Schedule 40 Schedule 80 pipe; PVC, Schedule 80 socket fittings; and solvent-cemented joints.
9. NPS 4: PVC, AWWA Class 150 pipe; PVC, AWWA Class 150 fabricated or molded fittings; and gasketed joints.
10. NPS 5 and NPS 6: Use NPS 6 ductile-iron, push-on-joint pipe; ductile-iron, push-on-joint fittings; and gasketed or mechanical-joint pipe; ductile-iron, mechanical-joint fittings; and mechanical joints.
11. NPS 5 and NPS 6: PVC, Schedule 40 pipe; PVC, Schedule 40 Schedule 80 pipe; PVC, Schedule 80 socket fittings; and solvent-cemented joints.
12. NPS 5 and NPS 6: Use NPS 6 PVC, AWWA Class 150 pipe; PVC, AWWA Class 150 fabricated or molded fittings; and gasketed joints.

### 3.2 VALVE APPLICATIONS

- A. General Application: Use mechanical-joint-end valves for NPS 3 and larger underground installation. Use threaded- or flanged-end valves for installation in vaults. Use UL/FM, nonrising-stem gate valves for installation with indicator posts. Use corporation valves and curb valves with ends compatible with piping, for NPS 2 and smaller installation.
- B. Drawings indicate valve types to be used. Where specific valve types are not indicated, the following requirements apply:
  1. Underground Valves, NPS 3 and Larger: AWWA, cast-iron, nonrising-stem, metal resilient high-pressure, resilient-seated, gate valves with valve box.
  2. Underground Valves, NPS 4 and Larger, for Indicator Posts: UL/FM, Cast-iron, nonrising-stem gate valves with indicator post.

### 3.3 JOINT CONSTRUCTION

- A. Make pipe joints according to the following:
  1. Ductile-Iron Piping, Gasketed Joints for Water-Service Piping: AWWA C600 and AWWA M41.
  2. Ductile-Iron Piping, Gasketed Joints for Fire-Service-Main Piping: UL 194.



3. Copper Tubing Soldered Joints: ASTM B 828. Use flushable flux and lead-free solder.
4. PVC Piping Gasketed Joints: Use joining materials according to AWWA C900. Construct joints with elastomeric seals and lubricant according to ASTM D 2774 or ASTM D 3139 and pipe manufacturer's written instructions.
5. PE Piping Insert-Fitting Joints: Use plastic insert fittings and fasteners according to fitting manufacturer's written instructions.
6. Dissimilar Materials Piping Joints: Use adapters compatible with both piping materials, with OD, and with system working pressure. Refer to Division 2 Section "Utility Materials" for joining piping of dissimilar metals.

### 3.4 PIPING INSTALLATION

- A. Make connections larger than NPS 2 with tapping machine according to the following:
  1. Install tapping sleeve and tapping valve according to MSS SP-60.
  2. Install tapping sleeve on pipe to be tapped. Position flanged outlet for gate valve.
  3. Use tapping machine compatible with valve and tapping sleeve; cut hole in main. Remove tapping machine and connect water-service piping.
  4. Install gate valve onto tapping sleeve. Comply with MSS SP-60. Install valve with stem pointing up and with valve box.
- B. Make connections NPS 2 and smaller with drilling machine according to the following:
  1. Install service-saddle assemblies and corporation valves in size, quantity, and arrangement required by utility company standards.
  2. Install service-saddle assemblies on water-service pipe to be tapped. Position outlets for corporation valves.
  3. Use drilling machine compatible with service-saddle assemblies and corporation valves. Drill hole in main. Remove drilling machine and connect water-service piping.
  4. Install corporation valves into service-saddle assemblies.
  5. Install manifold for multiple taps in water main.
  6. Install curb valve in water-service piping with head pointing up and with service box.
- C. Install ductile-iron, water-service piping according to AWWA C600 and AWWA M41.
- D. Install copper tube and fittings according to CDA's "Copper Tube Handbook."
- E. Install PVC, AWWA pipe according to AWWA M23 and ASTM F 645.
- F. Install PE pipe according to ASTM D 2774 and ASTM F 645.

- G. Bury piping with depth of cover over top at least 30 inches, with top at least 12 inches below level of maximum frost penetration.
- H. Extend water-service piping and connect to water-supply source and building water piping systems at outside face of building wall in locations and pipe sizes indicated.
  - 1. Terminate water-service piping at building wall until building water piping systems are installed. Terminate piping with caps, plugs, or flanges as required for piping material. Make connections to building water piping systems when those systems are installed.
- I. Sleeves are specified in Division 15 Section 15050 "Basic Mechanical Materials and Methods."
- J. Mechanical sleeve seals are specified in Division 15 Section 15050 "Basic Mechanical Materials and Methods."
- K. Install underground piping with restrained joints at horizontal and vertical changes in direction. Use restrained-joint piping, thrust blocks, anchors, tie-rods and clamps, and other supports.
- L. Anchor service-entry piping to building wall.

### **3.5 ANCHORAGE INSTALLATION**

- A. Install anchorages for tees, plugs and caps, bends, crosses, valves, and hydrant branches. Include anchorages for the following piping systems:
  - 1. Gasketed-Joint, Ductile-Iron, Water-Service Piping: According to AWWA C600.
  - 2. Gasketed-Joint, PVC Water-Service Piping: According to AWWA M23.
  - 3. Fire-Service-Main Piping: According to NFPA 24.
  - 4. Apply full coat of asphalt or other acceptable corrosion-resistant material to surfaces of installed ferrous anchorage devices.

### **3.6 VALVE INSTALLATION**

- A. AWWA Gate Valves: Comply with AWWA C600 and AWWA M44. Install each underground valve with stem pointing up and with valve box.
- B. UL/FM Gate Valves: Comply with NFPA 24. Install each underground valve and valves in vaults with stem pointing up and with vertical cast-iron indicator post.
- C. Corporation Valves and Curb Valves: Install each underground curb valve with head pointed up and with service box.

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**Water Distribution**

**3.7 CONNECTIONS**

- A. Piping installation requirements are specified in other Division 2 Sections. Drawings indicate general arrangement of piping and specialties.
- B. Connect water-distribution piping to existing water main. Use tapping sleeve and tapping valve.
- C. Connect water-distribution piping to interior domestic-water piping.
- D. Connect waste piping from drinking fountains to sanitary sewerage system. See Division 2 Section 02530 "Sanitary Sewerage" for connection to sanitary-sewer piping.
- E. Ground equipment according to Division 16 Section 16060 "Grounding and Bonding."

**3.8 FIELD QUALITY CONTROL**

- A. Hydrostatic Tests: Test at not less than 1-1/2 times working pressure for 2 hours.
  - 1. Increase pressure in 50-psig increments and inspect each joint between increments. Hold at test pressure for 1 hour; decrease to 0 psig. Slowly increase again to test pressure and hold for 1 more hour. Maximum allowable leakage is 2 quarts per hour per 100 joints. Remake leaking joints with new materials and repeat test until leakage is within allowed limits.
- B. Prepare reports of testing activities.

**3.9 IDENTIFICATION**

- A. Install continuous underground detectable warning tape during backfilling of trench for underground water-service piping. Locate below finished grade, directly over piping. See Division 2 Section 02300 "Earthwork" for underground warning tapes.
- B. Permanently attach equipment nameplate or marker, indicating plastic water-service piping, on main electrical meter panel.

**3.10 CLEANING**

- A. Clean and disinfect water-distribution piping as follows:
  - 1. Purge new water-distribution piping systems and parts of existing systems that have been altered, extended, or repaired before use.

2. Use purging and disinfecting procedure prescribed by authorities having jurisdiction or, if method is not prescribed by authorities having jurisdiction, use procedure described in NFPA 24 for flushing of piping. Flush piping system with clean, potable water until dirty water does not appear at points of outlet.
3. Use purging and disinfecting procedure prescribed by authorities having jurisdiction or, if method is not prescribed by authorities having jurisdiction, use procedure described in AWWA C651 or as described below:
  - a. Fill system or part of system with water/chlorine solution containing at least 50 ppm of chlorine; isolate and allow to stand for 24 hours.
  - b. Drain system or part of system of previous solution and refill with water/chlorine solution containing at least 200 ppm of chlorine; isolate and allow to stand for 3 hours.
  - c. After standing time, flush system with clean, potable water until no chlorine remains in water coming from system.
  - d. Submit water samples in sterile bottles to authorities having jurisdiction. Repeat procedure if biological examination shows evidence of contamination.

B. Prepare reports of purging and disinfecting activities.

END OF SECTION 02510

## **SECTION 02530 SANITARY SEWERAGE**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. This Section includes sanitary sewerage outside the building.

#### **1.2 PERFORMANCE REQUIREMENTS**

- A. Gravity-Flow, Nonpressure-Piping Pressure Ratings: At least equal to system test pressure.

#### **1.3 SUBMITTALS**

- A. Product Data: For the following:
  - 1. Backwater valves and cleanouts.
- B. Coordination Profile Drawings: Show system piping in elevation. Draw profiles at horizontal scale of not less than 1 inch equals 50 feet and vertical scale of not less than 1 inch equals 5 feet. Indicate underground structures and pipe. Show types, sizes, materials, and elevations of other utilities crossing system piping.
- C. Field test reports.

#### **1.4 PROJECT CONDITIONS**

- A. Site Information: Perform site survey and verify existing utility locations.

### **PART 2 - PRODUCTS**

#### **2.1 MANUFACTURERS**

- A. In other Part 2 articles where subparagraph titles below introduce lists, the following requirements apply for product selection:
  - 1. 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.
  - 2. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers specified.

#### **2.2 PIPING MATERIALS**

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**Sanitary Sewerage**

- A. Refer to Part 3 "Piping Applications" Paragraph for applications of pipe and fitting materials.

**2.3 PIPES AND FITTINGS**

- A. Hub-and-Spigot, Cast-Iron Soil Pipe and Fittings: ASTM A 74, gray iron, for gasketed joints.
  - 1. Gaskets: ASTM C 564, rubber, compression type, thickness to match class of pipe.
- B. Ductile-Iron Sewer Pipe: ASTM A 746, for push-on joints.
  - 1. Standard-Pattern, Ductile-Iron Fittings: AWWA C110, ductile or gray iron, for push-on joints.
  - 2. Compact-Pattern, Ductile-Iron Fittings: AWWA C153, for push-on joints.
  - 3. Gaskets: AWWA C111, rubber.
- C. PVC Sewer Pipe and Fittings: According to the following:
  - 1. PVC Sewer Pipe and Fittings, NPS 15 and Smaller: ASTM D 3034, SDR 35, for solvent-cemented or gasketed joints.
    - a. Gaskets: ASTM F 477, elastomeric seals.
  - 2. PVC Sewer Pipe and Fittings, NPS 18 and Larger: ASTM F 679, T-1 wall thickness, bell and spigot for gasketed joints.
    - a. Gaskets: ASTM F 477, elastomeric seals.

**2.4 CONCRETE**

- A. General: Cast-in-place concrete according to ACI 318, ACI 350R, and the following:
  - 1. Cement: ASTM C 150, Type II.
  - 2. Fine Aggregate: ASTM C 33, sand.
  - 3. Coarse Aggregate: ASTM C 33, crushed gravel.
  - 4. Water: Potable.
- B. Portland Cement Design Mix: 4000 psi minimum, with 0.45 maximum water-cementitious materials ratio.
  - 1. Reinforcement Fabric: ASTM A 185, steel, welded wire fabric, plain.
  - 2. Reinforcement Bars: ASTM A 615/A 615M, Grade 60, deformed steel.
- C. Ballast and Pipe Supports: Portland cement design mix, 3000 psi minimum, with 0.58 maximum water-cementitious materials ratio.

1. Reinforcement Fabric: ASTM A 185, steel, welded wire fabric, plain.
2. Reinforcement Bars: ASTM A 615/A 615M, Grade 60, deformed steel.

## 2.5 BACKWATER VALVES

- A. Gray-Iron Backwater Valves: ASME A112.14.1, gray-iron body and bolted cover, with bronze seat.
1. Manufacturers:
    - a. Josam Co.
    - b. McWane, Inc.; Tyler Pipe; Wade Div.
    - c. Smith, Jay R. Mfg. Co.
    - d. Watts Industries, Inc.; Ancon Drain Div.
    - e. Watts Industries, Inc.; Enpoco, Inc. Div.
    - f. Zurn Industries, Inc.; Hydromechanics Div.
    - g. Or equivalent.
  2. Horizontal Type: With swing check valve and hub-and-spigot ends.
  3. Combination Horizontal and Manual Gate-Valve Type: With swing check valve, integral gate valve, and hub-and-spigot ends.
  4. Terminal Type: With bronze seat, swing check valve, and hub inlet.
- B. PVC Backwater Valves: Similar to ASME A112.14.1, horizontal type; with PVC body, PVC removable cover, and PVC swing check valve.
1. Manufacturers:
    - a. Canplas, Inc.
    - b. IPS Corp.
    - c. NDS, Inc.
    - d. Plastic Oddities, Inc.
    - e. Sioux Chief Manufacturing Co., Inc.
    - f. Or equivalent.

## 2.6 CLEANOUTS

- A. Gray-Iron Cleanouts: ASME A112.36.2M, round, gray-iron housing with clamping device and round, secured, scoriated, gray-iron cover. Include gray-iron ferrule with inside calk or spigot connection and countersunk, tapered-thread, brass closure plug. Use units with top-loading classifications according to the following applications:
1. Light Duty: In earth or grass foot-traffic areas.
  2. Medium Duty: In paved foot-traffic areas.
  3. Heavy Duty: In vehicle-traffic service areas.
  4. Sewer Pipe Fitting and Riser to Cleanout: ASTM A 74, Service class, cast-iron soil pipe and fittings.

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- B. PVC Cleanouts: PVC body with PVC threaded plug. Include PVC sewer pipe fitting and riser to cleanout of same material as sewer piping.

**PART 3 - EXECUTION**

**3.1 INSTALLATION**

- A. Excavating, trenching, and backfilling are specified in Division 2 Section 02300 "Earthwork."
- B. Identification: Materials and their installation are specified in Division 2 Section 02300 "Earthwork." Arrange for installing green warning tapes directly over piping and at outside edges of underground structures.
  - 1. Use warning tape or detectable warning tape over ferrous piping.
  - 2. Use detectable warning tape over nonferrous piping and over edges of underground structures.
- C. Piping Applications: Include watertight joints.
  - 1. NPS 3: Hub-and-spigot, Service class, cast-iron soil pipe and fittings; gaskets; and gasketed joints.
  - 2. NPS 4 to NPS 6: Hub-and-spigot, Service class, cast-iron soil pipe and fittings; gaskets; and gasketed joints.
  - 3. NPS 4 and NPS 6: Ductile-iron sewer pipe; standard-pattern, ductile-iron fittings; gaskets; and gasketed joints.
  - 4. NPS 4 and NPS 6: Corrugated PE drainage tubing, PVC socket-end fittings, gaskets, and gasketed joints.
  - 5. NPS 4 and NPS 6: PVC sewer pipe and fittings, gaskets, and gasketed joints.
  - 6. NPS 8 and NPS 10: Hub-and-spigot, Service class, cast-iron soil pipe and fittings; gaskets; and gasketed joints.
  - 7. NPS 8 and NPS 10: Ductile-iron sewer pipe; standard-pattern, ductile-iron fittings; gaskets; and gasketed joints.
  - 8. NPS 8 and NPS 10: Corrugated PE drainage tubing, PVC socket-end fittings, gaskets, and gasketed joints.
  - 9. NPS 8 and NPS 10: PVC sewer pipe and fittings, gaskets, and gasketed joints.
- D. Sleeve-Type Pipe Couplings: Use where required to join piping and no other appropriate method is specified. Do not use instead of specified joining methods.
- E. General Locations and Arrangements: Drawing plans and details indicate general location and arrangement of underground sanitary sewerage piping. Location and arrangement of piping layout take design considerations into account. Install piping as indicated, to extent practical.



- F. Install piping beginning at low point, true to grades and alignment indicated with unbroken continuity of invert. Place bell ends of piping facing upstream. Install gaskets, seals, sleeves, and couplings according to manufacturer's written instructions for using lubricants, cements, and other installation requirements. Maintain swab or drag in line, and pull past each joint as it is completed.
- G. Use manholes for changes in direction, unless fittings are indicated. Use fittings for branch connections, unless direct tap into existing sewer is indicated.
- H. Use proper size increasers, reducers, and couplings where different sizes or materials of pipes and fittings are connected. Reducing size of piping in direction of flow is prohibited.
- I. Install gravity-flow piping and connect to building's sanitary drains, of sizes and in locations indicated. Terminate piping as indicated.
  - 1. Install piping pitched down in direction of flow, at minimum slope of 2 percent, unless otherwise indicated.
  - 2. Install piping with 36-inch minimum cover.
- J. Extend sanitary sewerage piping and connect to building's sanitary drains, of sizes and in locations indicated. Terminate piping as indicated.
- K. Pipe Joint Construction and Installation: Join and install pipe and fittings according to installations indicated.
  - 1. Refer to Division 2 Section "Utility Materials" for basic piping joint construction and installation.
  - 2. Hub-and-Spigot, Cast-Iron Soil Pipe and Fittings: With rubber gaskets according to CISPI's "Cast Iron Soil Pipe and Fittings Handbook." Use gaskets that match class of pipe and fittings.
  - 3. Ductile-Iron Sewer Pipe with Ductile-Iron Fittings: According to AWWA C600.
  - 4. PE Pipe and Fittings: As follows:
    - a. Join pipe, tubing, and gasketed fittings with gaskets for watertight joints according to ASTM D 2321 and manufacturer's written instructions.
    - b. Install according to ASTM D 2321 and manufacturer's written instructions.
    - c. Install corrugated piping according to the Corrugated Polyethylene Pipe Association's "Recommended Installation Practices for Corrugated Polyethylene Pipe and Fittings."
  - 5. PVC Sewer Pipe and Fittings: As follows:
    - a. Join pipe and gasketed fittings with gaskets according to ASTM D 2321.

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- b. Install according to ASTM D 2321.
- 6. Join piping made of different materials or dimensions with couplings made for this application. Use couplings that are compatible with and that fit both systems' materials and dimensions.
- L. Manhole Installation: Install complete with appurtenances and accessories indicated.
  - 1. Form continuous concrete channels and benches between inlets and outlet.
  - 2. Set tops of frames and covers flush with finished surface of manholes that occur in pavements. Set tops 3 inches above finished surface elsewhere, unless otherwise indicated.
  - 3. Install precast concrete manhole sections with gaskets according to ASTM C 891.
- M. Concrete Placement: Place cast-in-place concrete according to ACI 318 and ACI 350R.
- N. Install backwater valves in piping where indicated.
- O. Install cleanouts and riser extension from sewer pipe to cleanout at grade. Use cast-iron soil pipe fittings in sewer pipes at branches for cleanouts and cast-iron soil pipe for riser extensions to cleanouts. Install piping so cleanouts open in direction of flow in sewer pipe.
- P. Set cleanout frames and covers in earth in cast-in-place concrete block, 18 by 18 by 12 inches deep. Set with tops 1 inch above surrounding grade.
- Q. Set cleanout frames and covers in concrete pavement with tops flush with pavement surface.
- R. Make connections to existing piping and underground structures so finished Work complies as nearly as practical with requirements specified for new Work.
- S. Use commercially manufactured wye fittings for piping branch connections. Remove section of existing pipe; install wye fitting into existing piping; and encase entire wye fitting, plus 6-inch overlap, with not less than 6 inches of concrete with 28-day compressive strength of 3000 psi.
- T. Make branch connections from side into existing piping, NPS 4 to NPS 20. Remove section of existing pipe; install wye fitting into existing piping; and encase entire wye with not less than 6 inches of concrete with 28-day compressive strength of 3000 psi.

- U. Protect existing piping and structures to prevent concrete or debris from entering while making tap connections. Remove debris or other extraneous material that may accumulate.
- V. Clear interior of piping and structures of dirt and superfluous material as work progresses. Maintain swab or drag in piping, and pull past each joint as it is completed.
  - 1. Place plug in end of incomplete piping at end of day and when work stops.
  - 2. Flush piping between manholes and other structures to remove collected debris, if required by authorities having jurisdiction.

### 3.2 FIELD QUALITY CONTROL

- A. Inspect interior of piping to determine whether line displacement or other damage has occurred. Inspect after approximately 24 inches of backfill is in place, and again at completion of Project.
  - 1. Defects requiring correction include the following:
    - a. Alignment: Less than full diameter of inside of pipe is visible between structures.
    - b. Deflection: Flexible piping with deflection that prevents passage of ball or cylinder of size not less than 92.5 percent of piping diameter.
    - c. Crushed, broken, cracked, or otherwise damaged piping.
    - d. Infiltration: Water leakage into piping.
    - e. Exfiltration: Water leakage from or around piping.
  - 2. Replace defective piping using new materials, and repeat inspections until defects are within allowances specified.
  - 3. Reinspect and repeat procedure until results are satisfactory.
- B. Test new piping systems, and parts of existing systems that have been altered, extended, or repaired, for leaks and defects.
  - 1. Do not enclose, cover, or put into service before inspection and approval.
  - 2. Test completed piping systems according to authorities having jurisdiction.
  - 3. Schedule tests and inspections by authorities having jurisdiction with at least 24 hours' advance notice.
  - 4. Submit separate reports for each test.
  - 5. If authorities having jurisdiction do not have published procedures, perform tests as follows:
    - a. Sanitary Sewerage: Perform hydrostatic test.
      - 1) Allowable leakage is maximum of 50 gal. per inch of nominal pipe size per mile of pipe, during 24-hour period.
      - 2) Close openings in system and fill with water.

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- 3) Purge air and refill with water.
- 4) Disconnect water supply.
- 5) Test and inspect joints for leaks.
- 6) Option: Test ductile-iron piping according to AWWA C600, Section "Hydrostatic Testing." Use test pressure of at least 10 psig.

b. Sanitary Sewerage: Perform air test according to UNI-B-6.

6. Manholes: Perform hydraulic test according to ASTM C 969.
7. Leaks and loss in test pressure constitute defects that must be repaired.
8. Replace leaking piping using new materials, and repeat testing until leakage is within allowances specified.

END OF SECTION 02530

**SECTION 02870**  
**SITE FURNISHINGS and ACCESSORIES**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. This Section includes the following:

1. Picnic Tables

**1.2 SUBMITTALS**

- A. Product Data: For each product indicated.
- B. Samples: For each type of exposed finish and for each color and texture required.
1. Provide full range of manufacturer's standard colors for table selection by State's Representative prior to installation.
- C. Maintenance data.
- D. Warranties

**PART 2 - PRODUCTS**

**2.1 MANUFACTURERS**

- A. In other Part 2 articles where subparagraph titles below introduce lists, the following requirements apply for product selection:
1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the products and manufacturer's specified.

**2.2 MATERIALS**

- A. Anchors, Fasteners, Fittings, and Hardware: Commercial quality; tamperproof, vandal and theft resistant; concealed, recessed, and capped or plugged. Provide as required for site and street furnishings' assembly, mounting, and secure attachment.
1. Material Galvanized steel or Manufacturer's standard, corrosion-resistant-coated or noncorrodible materials.
2. Angle Anchors: For inconspicuously bolting legs of site and street furnishings to on-grade substrate.

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**Site and Street Furnishings**

3. Antitheft Hold-Down Brackets: For securing site and street furnishings to substrate.

**2.3 PICNIC TABLE**

- A. Concrete table with top, benches and table supports cast in one integral piece. Table tops shall be 92 inches long by a minimum of 33 inches wide. Height of table top surface shall be 32 inches from finish grade. Table benches shall be 92 inches long by 10.5 inches wide with a height of 18 inches from finish grade to top of bench.
  1. Product: Accessible Outdoor Creations Picnic Table, Model 1002, or approved equivalent. Available from Outdoor Creations, P.O. Box 50, Round Mountain, CA 96084, 530-337-6774.
  2. Product: Accessible Universal Precast Concrete Inc., P.O. Box 6431296, San Jose, CA 95153-1296, 408-799-8888, Model PT 9636 or equivalent.
  3. State parks logo inset into table supports.
- B. Thickness: Minimum thickness of all areas to be 4 inches.
- C. Weight: Minimum 2,450 lbs.
- D. Installation Method: Freestanding.
- E. Color: Pure mineal oxides mixed integrally with cement. Color as selected from manufacturer's standard color range by State's Representative.
- F. Concrete Mix Design: 8.5 sacks Portland cement per yard with maximum rock size of  $\frac{3}{4}$ " reinforced with #4 and #5 rebar grid, fabricated so that a continuous connection is made between table tops and seats and table legs. Rebar frame set a minimum of 2 inches from outside edges. Cured concrete shall attain minimum compressive strength of 7,000 psi at 28 days.
- G. Finish: manufacturer applied clear concrete graffiti-resistance sealer to all exposed surfaces. All formed surfaces and edges shall be fully rounded and smooth.
- H. Warranty: Ten-year vandal-proof guarantee that will replace the table in the event of destructive vandalism.

**PART 3 - EXECUTION**

**3.1 HANDLING**

- A. Transport, store and handle precast units and manufactured items in a manner to avoid damage. Store units free of the ground. Cover unit, secure cover firmly, and protect units from staining materials.

**3.2 INSTALLATION**

- A. Complete field assembly of site and street furnishings, where required.
- B. Set all work true and square, plumb and level.
- C. Unless otherwise indicated, install site and street furnishings after planting and paving have been completed.

**3.3 CLEAN UP**

- A. Clean up per section 01700.

**END OF SECTION 02870**

## **SECTION 03010 CONCRETE SEALER**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. This section includes all products and installation of a concrete sealer:
  - 1. Furnish all labor, material, tools, equipment and services for all concrete cure/sealer/hardener application as indicated, in accordance with provisions of Contract Documents.
  - 2. Completely coordinate with work of all other trades.

#### **1.2 SYSTEM**

- A. Description: A Sealer/Hardener, that seals, hardens, and dustproofs concrete providing long-lasting durable protection.
- B. Location of Work: As indicated on drawings.

#### **1.3 QUALITY ASSURANCE**

- A. Design criteria:
  - 1. Must comply with the specification for liquid chemical hardeners by the U.S. Army Corps of Engineers, Navy Post Office and Veteran's Administration for use on class 1, 2, 3 and 4 concrete floors as classified in table 1.1, ACI standard 302-69.
- B. Applicator qualification:
  - 1. Approved in writing by manufacturer.

#### **1.4 SUBMITTALS**

- A. Product Data: Within thirty (30) calendar days after the Contractor has received the Tenant's Notice to Proceed, submit:
  - 1. Materials list of items proposed to be provided under this Section;
  - 2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements



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**Concrete Sealer**

**1.5 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver to job site in sealed, labeled, containers.
- B. Store and handle to prevent damage to product and environment.

**1.6 JOB CONDITIONS**

- A. Existing conditions:
  - 1. Assure concrete has been cured per manufacturer's requirements.
  - 2. Assure concrete is clean and free of film forming curing compounds and/or other sealers.
  - 3. Free of laitence, grease, oil and contaminants.
- B. Environmental requirements:
  - 1. Comply with all VOC and EPA requirements.
- C. Protection:
  - 1. Protect adjacent surfaces/areas from damage due to over spray; especially glass metal and painted surfaces.

**1.7 PRE-INSTALLATION MEETING**

- A. At the State's Representatives request, technical personnel shall be available for a pre-job conference to review installation procedure.

**1.8 WARRANTY**

- A. Written warranty signed jointly by applicator, manufacturer and contractor.
- B. Warrant installation for a period of ten years from date of substantial completion against dusting from abrasion.

**PART 2 - PRODUCTS**

**2.1 CONCRETE SEALER/DENSIFIER/HARDENER**

- A. Acceptable manufacturers: Edoco, 4226 Kansas Avenue, Kansas City, KS. (877) 416-3439 or (888) 287-5387 – Basis of Design.

1. Product:
  - a. "Burke-O-Lith"
  - b. Type: Colorless fluosilicate
- B. Other Manufacturer's may be allowed provided it is compatible with concrete slab and its curing compound. Provide test per manufacturer's requirements to determine acceptability of the dry film appearance and adhesion. Acceptable Manufacturer's:
  1. Glaze 'N' Seal Products "multi-purpose sealer" with "matte floor polish".
  2. Endure-O-Seal Products "EOS HydraLoc, EOS HydraSeal, Homeseal, cure & seal.

### **PART 3 - EXECUTION**

#### **3.1 INSPECTION**

- A. Assure surfaces are clean and free of all contaminants, and any film forming compounds or sealers.
- B. Assure concrete has been cured per manufacturer's requirements.
- C. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

#### **3.2 APPLICATION**

- A. Apply in accordance with manufacturer's instructions.
  1. A test area of at least nine (9) square feet must be done to determine the acceptability of the dry film appearance and adhesion or the product warranty is void.
  2. Apply first coat at 2:1, water to product ratio. Apply second coat undiluted.
  3. Application equipment: Hand sprayer or low pressure sprayer, push broom or squeegee.
  4. Apply at a minimum rate of one (1) gallon per 100 sq. ft.
  5. Apply two coats of material.
  6. Finished surface to have smooth finish.

#### **3.3 FIELD QUALITY CONTROL**

- A. Have applicator certify rate of application.

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**Concrete Sealer**

**3.4 CLEANING**

- A. Leave area broom clean. Remove all debris resulting from this work.

**END OF SECTION**

## **SECTION 03300 CAST-IN-PLACE CONCRETE**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. This Section includes cast-in-place concrete, including reinforcement, concrete materials, mix design, placement procedures, and finishes.
- B. See Division 2 Section 02300 "Earthwork" for drainage fill under slabs-on-grade.

#### **1.2 SUBMITTALS**

- A. Product Data: For each manufactured material and product indicated.
- B. Design Mixes: For each concrete mix indicated.
- C. Shop Drawings: Include details of steel reinforcement placement including material, grade, bar schedules, stirrup spacing, bent bar diagrams, arrangement, and supports.
- D. Material certificates and test reports.

#### **1.3 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products complying with ASTM C 94 requirements for production facilities and equipment.
- B. Comply with ACI 301, "Specification for Structural Concrete," including the following, unless modified by the requirements of the Contract Documents.
  - 1. General requirements, including submittals, quality assurance, acceptance of structure, and protection of in-place concrete.
  - 2. Formwork and form accessories.
  - 3. Steel reinforcement and supports.
  - 4. Concrete mixtures.
  - 5. Handling, placing, and constructing concrete.

### **PART 2 - PRODUCTS**

#### **2.1 MATERIALS**

- A. Formwork: Furnish formwork and form accessories according to ACI 301.

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**Cast-In-Place Concrete**

**B. Steel Reinforcement:**

1. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.
2. Plain-Steel Welded Wire Fabric: ASTM A 185, fabricated from as-drawn steel wire into flat sheets.
3. Deformed-Steel Welded Wire Fabric: ASTM A 497, flat sheet.

**C. Concrete Materials:**

1. Portland Cement: ASTM C 150, Type I or II.
2. Normal-Weight Aggregate: ASTM C 33, uniformly graded, not exceeding 1-1/2-inch nominal size.
3. Water: Complying with ASTM C 94.
4. Synthetic Fiber: Fibrillated or monofilament polypropylene fibers engineered and designed for use in concrete, complying with ASTM C 1116, Type III, 1/2 to 1-1/2 inches (13 to 38 mm) long.

**D. Admixtures:**

1. Air-Entraining Admixture: ASTM C 260.

**E. Vapor Barrier: Multi-ply reinforced polyethylene sheet, ASTM D 4397, not less than 10 mils thick.**

1. Fine-Graded Granular Material: Clean mixture of crushed stone, crushed gravel, and manufactured or natural sand; ASTM D 448, Size 10, with 100 percent passing a No. 4 sieve and 10 to 30 percent passing a No. 100 sieve; complying with deleterious substance limits of ASTM C 33 for fine aggregates.

**F. Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber.**

**G. Curing Materials:**

1. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
2. Water: Potable.

**2.2 CONCRETE MIXES**

**A. Comply with ACI 301 requirements for concrete mixtures.**

**B. Prepare design mixes, proportioned according to ACI 301, for normal-weight concrete determined by either laboratory trial mix or field test data bases, as follows:**

1. Compressive Strength (28 Days): 3000 psi (20.7 MPa).
2. Slump: 4 inches.

- C. Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having an air content of 2.5 to 4.5 percent
  - 1. Air content of trowel-finished interior concrete floors shall not exceed 3.0 percent.

## 2.3 CONCRETE MIXING

- A. Ready-Mixed Concrete: Comply with ASTM C 94.
  - 1. When air temperature is between 85 and 90 deg F (30 and 32 deg C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.
- B. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mix type, mix time, quantity, and amount of water added. Record approximate location of final deposit in structure.

## PART 3 - EXECUTION

### 3.1 INSTALLATION, GENERAL

- A. Formwork: Design, construct, erect, shore, brace, and maintain formwork according to ACI 301.
- B. Vapor Barrier: Install, protect, and repair vapor barrier sheets according to ASTM E 1643; place sheets in position with longest dimension parallel with direction of pour.
  - 1. Lap joints 6 inches and seal with manufacturers recommended tape.
  - 2. Cover vapor barrier with fine-graded granular material, moisten, and compact with mechanical equipment to elevation tolerances of plus 0 inch or minus 3/4 inch.
- C. Steel Reinforcement: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.
  - 1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.
- D. Joints: Construct joints true to line with faces perpendicular to surface plane of concrete.

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**Cast-In-Place Concrete**

1. Construction Joints: Locate and install so as not to impair strength or appearance of concrete, at locations indicated or as approved by State Representative. Maintain on-hand materials as necessary, and install construction joint whenever interruptions of concrete placement may otherwise result in a cold joint.
  2. Isolation Joints: Install joint-filler strips at junctions with slabs-on-grade and vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.
    - a. Extend joint fillers full width and depth of joint, terminating flush with finished concrete surface, unless otherwise indicated.
  3. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of the concrete thickness, as follows:
    - a. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint with groover tool to a radius of 1/8 inch. Repeat grooving of contraction joints after applying surface finishes. Eliminate groover marks on concrete surfaces.
    - b. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch-wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.
- E. Tolerances: Comply with ACI 117, "Specifications for Tolerances for Concrete Construction and Materials. "A 1/8" to 1/4" maximum variation measured with a 10' straight edge.

**3.2 CONCRETE PLACEMENT**

- A. Comply with recommendations in ACI 304R for measuring, mixing, transporting, and placing concrete.
- B. Do not add water to concrete during delivery, at Project site, or during placement.
  1. Consolidate concrete with mechanical vibrating equipment. Use equipment and procedures for consolidating concrete recommended by ACI 309R.

**3.3 FINISHING FORMED SURFACES**

- A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defective areas repaired and patched, and fins

and other projections exceeding 1/4 inch in height rubbed down or chipped off.

1. Apply to concrete surfaces not exposed to public view.
- B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defective areas. Completely remove fins and other projections.
1. Apply to concrete surfaces exposed to public view or to be covered with a coating or covering material applied directly to concrete, such as waterproofing, dampproofing, veneer plaster, or painting.
  2. Do not apply rubbed finish to smooth-formed finish.
  3. Apply smooth-rubbed finish, defined in ACI 301, to smooth-formed finished concrete.
- C. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.

#### 3.4 FINISHING UNFORMED SURFACES

- A. General: Comply with ACI 302.1R for screeding, restraighening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Screed surfaces with a straightedge and strike off. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane before excess moisture or bleedwater appears on the surface.
1. Do not further disturb surfaces before starting finishing operations.
- C. Scratch Finish: Apply scratch finish to surfaces to receive concrete floor topping or mortar setting beds for ceramic or quarry tile, portland cement terrazzo, and other bonded cementitious floor finish, unless otherwise indicated.
- D. Float Finish: Apply float finish to surfaces indicated, to surfaces to receive trowel finish, and to floor and slab surfaces to be covered with fluid-applied or sheet waterproofing, built-up or membrane roofing, or sand-bed terrazzo.
- E. Trowel Finish: Apply a hard trowel finish to surfaces indicated and to floor and slab surfaces exposed to view or to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin film-finish coating system.



- F. Trowel and Fine-Broom Finish: Apply a partial trowel finish, stopping after second troweling, to surfaces indicated and to surfaces where ceramic or quarry tile is to be installed by either thickset or thin-set methods. Immediately after second troweling, and when concrete is still plastic, slightly scarify surface with a fine broom.
- G. Nonslip Broom Finish: Apply a nonslip broom finish to surfaces indicated and to exterior concrete platforms, steps, and ramps. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route.

### 3.5 CONCRETE PROTECTION AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection, and follow recommendations in ACI 305R for hot-weather protection during curing.
- B. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions occur before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- C. Begin curing after finishing concrete, but not before free water has disappeared from concrete surface.
- D. Cure formed and unformed concrete for at least seven days as follows:
  - 1. Moisture Curing: Keep surfaces continuously moist with continuous water-fog spray.
  - 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. Immediately repair any holes or tears during curing period using cover material and waterproof tape.

### 3.6 FIELD QUALITY CONTROL

- A. Testing Agency: The Contractor will be required to engage a qualified independent testing and inspecting agency to sample materials, perform tests, and submit test reports during concrete placement. Tests will be performed according to ACI 301.
  - 1. Testing Frequency: One composite sample for each day's pour of each concrete mix exceeding 5 cu. yd, but less than 25 cu. yd, plus one set for each additional 50 cu. yd. or fraction thereof.

2. Testing Frequency: At least one composite sample for each 100 cu. yd. or fraction thereof of each concrete mix placed each day.

END OF SECTION 03300

## **SECTION 06100 ROUGH CARPENTRY**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

A. This Section includes the following:

1. Wood framing.
2. Wood supports.
3. Wood blocking.
4. Wood cants.
5. Wood nailers.
6. Wood furring.
7. Wood grounds.
8. Wood sheathing.
9. Wood underlayment.
10. Plywood backing panels.

#### **1.2 SUBMITTALS**

A. Product Data: For each type of process and factory-fabricated product indicated.

1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that materials comply with requirements.

B. Material Certificates: For dimension lumber specified to comply with minimum allowable unit stresses.

C. Research/Evaluation Reports: For the following:

1. Treated wood.
2. Power-driven fasteners.
3. Powder-actuated fasteners.
4. Expansion anchors.

### **PART 2 - PRODUCTS**

#### **2.1 MANUFACTURERS**

A. In other Part 2 articles where subparagraph titles below introduce lists, the following requirements apply for product selection:

1. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers specified.

**2.2 WOOD PRODUCTS, GENERAL**

- A. Lumber: DOC PS 20 and applicable rules of lumber grading agencies certified by the American Lumber Standards Committee Board of Review.
  - 1. Factory mark each piece of lumber with grade stamp of grading agency.
  - 2. For exposed lumber indicated to receive stained or natural finish, mark grade stamp on end or back of each piece.
  - 3. Provide dressed lumber, S4S, unless otherwise indicated.
  - 4. Provide dry lumber with 19 percent maximum moisture content at time of dressing for 2-inch nominal thickness or less, unless otherwise indicated.
- B. Engineered Wood Products: Acceptable to authorities having jurisdiction and for which current model code research or evaluation reports exist that show compliance with building code in effect for Project.
  - 1. Allowable Design Stresses: Meet or exceed those indicated per manufacturer's published values determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.
- C. Wood Structural Panels:
  - 1. Plywood: Either DOC PS 1 or DOC PS 2, unless otherwise indicated.
  - 2. Oriented Strand Board: DOC PS 2.
  - 3. Comply with "Code Plus" provisions in APA Form No. E30K, "APA Design/Construction Guide: Residential & Commercial."

**2.3 WOOD-PRESERVATIVE-TREATED MATERIALS**

- A. Preservative Treatment by Pressure Process: AWWA C2 (lumber) and AWWA C9 (plywood), except that lumber that is not in contact with the ground and is continuously protected from liquid water may be treated according to AWWA C31 with inorganic boron (SBX).
- B. Kiln-dry material after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.
- C. Mark each treated item with treatment quality mark of an inspection agency approved by the American Lumber Standards Committee Board of Review.
- D. Application: Treat items indicated on Drawings, and the following:
  - 1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
  - 2. Wood sills, sleepers, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete.

3. Wood framing members less than 18 inches above grade.
4. Wood floor plates that are installed over concrete slabs directly in contact with earth.

## 2.4 DIMENSION LUMBER

- A. General: Of grades indicated according to the American Lumber Standards Committee National Grading Rule provisions of the grading agency indicated.
- B. Non-Load-Bearing Interior Partitions: Construction, Stud, or No. 2 grade and the following species:
  1. Northern species; NLGA.
  2. Western woods; WCLIB or WWP, Douglas Fir Larch
- C. Framing Other Than Non-Load-Bearing Partitions: Grade #1 or better and the following species: unless otherwise noted.
  1. Douglas fir-larch, NLGA, WCLIB, or WWP.
- D. Exposed Framing: Hand select material for uniformity of appearance and freedom from characteristics that would impair finish appearance.
  1. Species and Grade: As indicated above for load-bearing construction of same type. Grade #1 or better, Redwood or pressure treated Douglas Fir P.T.D.F.

## 2.5 TIMBER AND MISCELLANEOUS LUMBER

- A. For timbers of 5-inch nominal size and thicker, provide material complying with the following requirements:
  1. Species and Grade: Douglas fir-larch; or No. 1 grade; NLGA, WCLIB, or WWP.
- B. Provide miscellaneous lumber for support or attachment of other construction, including the following:
  1. Blocking.
  2. Cants.
  3. Nailers.
  4. Furring.
  5. Grounds.
- C. For items of dimension lumber size, provide No. 1 or No. 2 grade lumber with 15 percent maximum moisture content of any species.
- D. For concealed boards, provide lumber with 15 percent maximum moisture content from the following species and grades:

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**Rough Carpentry**

1. Western woods, Construction or No. 2 Common grade; WCLIB or WWPA.

**2.6 SHEATHING**

- A. Plywood Wall Sheathing: Exterior, Structural I sheathing.

**2.7 PLYWOOD BACKING PANELS**

- A. Telephone and Electrical Equipment Backing Panels: DOC PS 1, Exposure 1, C-D Plugged, fire-retardant treated, in thickness indicated or, if not indicated, not less than 1/2 inch thick.

**2.8 MISCELLANEOUS MATERIALS**

- A. Fasteners:

1. Where rough carpentry is exposed to weather, in ground contact, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.
2. Power-Driven Fasteners: CABO NER-272.
3. Bolts: Steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and, where indicated, flat washers.

- B. Metal Framing Anchors: Made from hot-dip, zinc-coated steel sheet complying with ASTM A 653/A 653M, G60 coating designation.

1. Manufacturers:

- a. KC Metals Products, Inc.
- b. Silver Metal Products, Inc.
- c. Simpson Strong-Tie Company, Inc.
- d. United Steel Products Company, Inc.
- e. Or equivalent.

2. Research/Evaluation Reports: Provide products acceptable to the State for which code research/evaluation reports exist that show compliance of metal framing anchors, for application indicated, with codes in effect for Project.
3. Allowable Design Loads: Meet or exceed those indicated per manufacturer's published values determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.

- C. Building Paper: Asphalt-saturated organic felt complying with ASTM D 226, Type I (No. 15 asphalt felt), unperforated.

- D. Sill-Sealer Gaskets: Glass-fiber-resilient insulation, fabricated in strip form, for use as a sill sealer; 1-inch nominal thickness, compressible to 1/32 inch;

selected from manufacturer's standard widths to suit width of sill members indicated.

- E. Adhesives for Field Gluing Panels to Framing: Formulation complying with APA AFG-01 and ASTM D 3498 that is approved for use with type of construction panel indicated by both adhesive and panel manufacturers.

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION**

- A. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry to other construction; scribe and cope as needed for accurate fit. Locate furring, nailers, blocking, grounds, and similar supports to comply with requirements for attaching other construction.
- B. Apply field treatment complying with AWPAC M4 to cut surfaces of preservative-treated lumber and plywood.
- C. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
  - 1. CABO NER-272 for power-driven fasteners.
  - 2. Published requirements of metal framing anchor manufacturer.
  - 3. Table 23-II-B-1, "Nailing Schedule," and Table 23-II-B-2, "Wood Structural Panel Roof Sheathing Nailing Schedule," in the Uniform Building Code.
- D. Use finishing nails for exposed work, unless otherwise indicated. Countersink nail heads and fill holes with wood filler.
- E. Framing Standard: Comply with AFPA's "Manual for Wood Frame Construction," unless otherwise indicated.
- F. Framing with Engineered Wood Products: Install engineered wood products to comply with manufacturer's written instructions.
- G. Comply with applicable recommendations contained in APA Form No. E30K, "APA Design/Construction Guide: Residential & Commercial," for types of structural-use panels and applications indicated.
  - 1. Comply with "Code Plus" provisions in above-referenced guide.
- H. Fastening Methods:
  - 1. Sheathing: Nail to wood framing.
  - 2. Underlayment: Nail or staple to subflooring.
  - 3. Plywood Backing Panels: Nail or screw to supports.

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**Rough Carpentry**

- I. Apply building paper horizontally with 2-inch overlap and 6-inch end lap; fasten to sheathing with galvanized staples or roofing nails. Cover upstanding flashing with 4-inch overlap.
- J. Provide all necessary blocking, backing and framing for light fixtures, plumbing, millwork, accessories and all other items requiring same.

END OF SECTION 06100



## **SECTION 06150 WOOD DECKING**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. This Section includes solid-wood roof decking.

#### **1.2 SUBMITTALS**

- A. Product Data: For solid wood decking. (forestry grading stamps)

#### **1.3 QUALITY ASSURANCE**

- A. Decking Standard: Comply with AITC 112, "Standard for Tongue-and-Groove Heavy Timber Roof Decking."

#### **1.4 DELIVERY, STORAGE, AND HANDLING**

- A. Schedule delivery of wood decking to avoid extended on-site storage and to avoid delaying the Work.

### **PART 2 - PRODUCTS**

#### **2.1 LUMBER, GENERAL**

- A. Comply with DOC PS 20, "American Softwood Lumber Standard," and with applicable grading rules of inspection agencies.
- B. Grade Stamps: Factory mark with grade stamp of inspection agency on surfaces that will not be exposed to view.

#### **2.2 SOLID WOOD DECKING**

- A. Wood Species: Douglas fir-larch, Douglas fir-larch (North), hem-fir, hem-fir (North), Alaska cedar.
- B. Decking Grade: Select(ed) Decking Commercial Decking.
- C. Moisture Content: Provide wood decking with 15 percent maximum moisture content at time of dressing.
- D. Pattern and Dressing: Tongue and groove, edge vee one side, surfaced two sides.

#### **2.3 FABRICATION**

- A. Fabricate decking in lengths for controlled random lay-up.

**Wood Decking**

**PART 3 - EXECUTION**

**3.1 INSTALLATION**

- A. Solid Wood Decking: Install to comply with referenced decking standard and with end joints located according to lay-up indicated. Apply joint sealant between decking and supports and between tongues and grooves at outside wall supports.
  - 1. Install per structural instructions.
- B. Repair damaged surfaces and finishes after completing erection. Replace damaged decking if repairs are not approved by Architect.
- C. Provide temporary waterproof covering to protect exposed decking before applying roofing.

**END OF SECTION 06150**

## **SECTION 06200 FINISH CARPENTRY**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

A. This Section includes the following:

1. Standing and running trim.
2. Louvers.
3. Paneling.
4. Siding.

#### **1.2 SUBMITTALS**

A. Product Data: For each type of factory-fabricated product and process indicated.

B. Samples: For the following:

1. Each type of finish required.
2. Each type of siding required.

### **PART 2 - PRODUCTS**

#### **2.1 MATERIALS, GENERAL**

- A. Lumber Standards: Comply with DOC PS 20, "American Softwood Lumber Standard," for lumber and with applicable grading rules of inspection agencies certified by the American Lumber Standards Committee Board of Review.
- B. Softwood Plywood: Comply with DOC PS 1, "U.S. Product Standard for Construction and Industrial Plywood."
- C. Preservative Treatment: Comply with NWWDA I.S. 4 for exterior finish carpentry to receive water-repellent preservative treatment.
- D. Fire-Retardant Treatment: Where indicated, use materials impregnated with fire-retardant chemicals per AWWPA C20; exterior type or interior Type A as required.

#### **2.2 STANDING AND RUNNING TRIM**

A. Exterior Standing and Running Trim: Finished lumber and moldings.

1. Species and Grade: Smooth-textured, Clear All Heart redwood; RIS Saw-textured, Clear Heart, western red cedar; WCLIB, or WWPA.

## **Section 06200 – Page 2**

### **Finish Carpentry**

- B. Primed Hardboard Trim: Fabricated from high-temperature-cured, high-resin, wood fiber composite; factory primed on face and two edges; and recommended by manufacturer for exterior use.

### **2.3 SIDING**

- A. Fibercement Siding: ANSI/AHA A135.6, primed with manufacturer's standard exterior enamel primer: James Hardie Building products.

- 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- 2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. James Hardie Building Products.
  - b. Cemplank, Inc.
  - c. Certainteed Corp.
  - d. Or equivalent.
- 3. Texture: Wood-grain textured.
  - a. 4 foot wide sheets x 5/16" Sierra 8 Woodgrain
  - b. Harditrim-Select Cedarmill 4" width x 7/16".

- B. Plywood wood siding: based on Roseburg Wood Products.

- 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Roseburg, Oregon
  - b. Or equivalent.
- 2. Texture: Breckenridge, 4 foot wide sheets, 15/32", with 12"groove patterns. Adhesive to be fully waterproof phenolic glue. (No added urea formaldehyde), Siding grade clear, inner and Back veneer to C grade or better western softwood

### **2.4 PANELS**

- A. Medium Density Overlay, 1/2" Douglas Fir wood cellulose fibers with exterior synthetic resin board framed under heat and pressure. Industrial Grade.

### **2.5 MISCELLANEOUS MATERIALS**

- A. Fasteners for Exterior Finish Carpentry: Provide nails of stainless steel or hot-dip galvanized steel.

**PART 3 - EXECUTION**

**3.1 PREPARATION**

- A. Condition finish carpentry to average prevailing humidity conditions in installation areas before installation, for a minimum of 24 hours.
- B. Prime and backprime lumber for painted finish exposed on the exterior. Comply with requirements for surface preparation and application in Division 9 Section 09910 "Painting."

**3.2 INSTALLATION**

- A. Install finish carpentry level, plumb, true, and aligned with adjacent materials. Use concealed shims where required for alignment. Scribe and cut finish carpentry to fit adjoining work. Refinish and seal cuts.
- B. Standing and Running Trim: Install with minimum number of joints practical, using full-length pieces from maximum lengths of lumber available. Stagger joints in adjacent and related trim. Cope at returns and miter at corners.
- C. Siding: Install siding and flashing according to manufacturer's written recommendations. Do not allow nails to penetrate more than one thickness of siding, unless otherwise recommended by siding manufacturer. Seal joints at inside and outside corners and at trim locations.
- D. Repair damaged or defective finish carpentry where possible to eliminate functional or visual defects. Where not possible to repair, replace finish carpentry. Adjust joinery for uniform appearance.

**END OF SECTION 06200**

**SECTION 07311**  
**COMPOSITE SHINGLE ROOFING**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. This Section includes the following:
  - 1. Composite shingle roofing.
  - 2. Felt underlayment.
  - 3. Self-adhering sheet underlayment.

**1.2 SUBMITTALS**

- A. Product Data: For each product indicated.
- B. Samples: For composite shingle roofing, ridge and hip cap shingles.
- C. Product test reports.
- D. Research/evaluation reports.

**1.3 QUALITY ASSURANCE**

- A. Source Limitations: Obtain ridge and hip cap shingles felt underlayment and self-adhering sheet underlayment through one source from a single composite shingle manufacturer.
- B. Fire-Test-Response Characteristics: Provide fiber reinforced shingle and related roofing materials with the fire-test-response characteristics indicated, as determined by testing identical products per test method below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.
  - 1. Exterior Fire-Test Exposure: Class A; ASTM E 108 or UL 790, for application and roof slopes indicated.
- C. Acceptance of Substrate: Prior to installation of Fiber reinforced Shingles, substrate must be approved by contractor. Installation of Fiber reinforced Shingles constitutes acceptance of the substrate by the subcontractor.
- D. Inspection: Contact State's Representative at least 48 hours in advance so Representative may review substrate before installation of the Fiber reinforced Shingles.

**1.4 WARRANTY**

**Section 07311 – Page 2**  
**Composite Shingle Roofing**

- A. Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace fiber reinforced shingles that fail in materials within specified warranty period.
  - 1. Material Warranty Period: 40 years from date of Substantial Completion, prorated, with first ten (10) years nonprorated.
  - 2. Algae-Discoloration Warranty Period: Shingles will not discolor 15 years from date of Substantial Completion.

**PART 2 - PRODUCTS**

**2.1 MANUFACTURERS**

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
  - 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products specified.
  - 2. Products: Subject to compliance with requirements, provide one of the products specified.

**2.2 GLASS-FIBER-REINFORCED FIBER REINFORCED SHINGLES**

- A. Fiberglass Composition Shingles: ASTM D 3462, three piece laminated construction, glass-fiber reinforced, mineral-granule surfaced, and self-sealing. These shingles shall be a 480lb., Class A fire rated. Algae growth resistance (15 years).
  - 1. Products: (to match existing shingles)
    - a. CertainTeed Corporation.
    - b. Elk Corporation of Dallas.
    - c. GAF Materials Corporation.
    - d. Georgia-Pacific Corporation.
    - e. Malarkey Roofing Company.
    - f. Owens Corning.
    - g. Or equivalent.
- B. Hip and Ridge Shingles: Manufacturer's standard units to match fiber reinforced shingles.

**2.3 UNDERLAYMENT MATERIALS**

- A. Felts: ASTM D 226, Type I or II, fiber reinforced-saturated organic felts, nonperforated Certain Teed Roofers Select or equivalent.

**2.4 ACCESSORIES**

- A. Fiber reinforced Roofing Cement: ASTM D 4586, Type II, asbestos free.
- B. Roofing Nails: ASTM F 1667; aluminum, stainless-steel, copper, or hot-dip galvanized steel wire shingle nails, minimum 0.120-inch- diameter, barbed shank, sharp-pointed, with a minimum 3/8-inch- diameter flat head and of sufficient length to penetrate 3/4 inch into solid wood decking or extend at least 1/8 inch through OSB or plywood sheathing.
  - 1. Where nails are in contact with metal flashing, use nails made from same metal as flashing.
- C. Felt Underlayment Nails: Aluminum, stainless-steel, or hot-dip galvanized steel wire with low profile capped heads or disc caps, 1-inch minimum diameter.

## 2.5 METAL FLASHING AND TRIM

- A. Sheet Metal Flashing and Trim: Comply with requirements in Division 7 Section 07620 "Sheet Metal Flashing and Trim."
- B. Fabricate sheet metal flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item.

## PART 3 - EXECUTION

### 3.1 UNDERLAYMENT INSTALLATION

- A. Single-Layer Felt Underlayment: Install single layer of felt underlayment on roof deck perpendicular to roof slope in parallel courses. Lap sides a minimum of 2 inches over underlying course. Lap ends a minimum of 4 inches. Stagger end laps between succeeding courses at least 72 inches. Fasten with roofing nails.
  - 1. Install felt underlayment on roof deck not covered by self-adhering sheet underlayment. Lap sides of felt over self-adhering sheet underlayment not less than 3 inches in direction to shed water. Lap ends of felt not less than 6 inches over self-adhering sheet underlayment.

### 3.2 METAL FLASHING INSTALLATION

- A. General: Install metal flashings and other sheet metal to comply with requirements in Division 7 Section 07620 "Sheet Metal Flashing and Trim."
  - 1. Install metal flashings according to recommendations in ARMA's "Residential Fiber reinforced Roofing Manual" and fiber reinforced shingle recommendations in NRCA's "The NRCA Roofing and Waterproofing Manual."



**Section 07311 – Page 4**  
**Composite Shingle Roofing**

**3.3 FIBER REINFORCED SHINGLE INSTALLATION**

- A. Install fiber reinforced shingles according to manufacturer's written instructions, recommendations in ARMA's "Residential Fiber reinforced Roofing Manual," and fiber reinforced shingle recommendations in NRCA's "The NRCA Roofing and Waterproofing Manual."
- B. Install starter strip along lowest roof edge, consisting of a roof shingle strip at least 7 inches wide with self-sealing strip face up at roof edge.
  - 1. Extend shingles 1/2 inch over fascia at eaves and rakes.
- C. Install first and remaining courses of shingles stair-stepping diagonally across roof deck with manufacturer's recommended offset pattern at succeeding courses, maintaining uniform exposure.
- D. Fasten shingle strips with a minimum of six roofing nails located according to manufacturer's written instructions.
- E. Ridge and Hip Cap Shingles: Maintain same exposure of cap shingles as roofing shingle exposure. Lap cap shingles at ridges to shed water away from direction of prevailing winds. Fasten with roofing nails of sufficient length to penetrate sheathing.

END OF SECTION 07311

## **SECTION 07620 SHEET METAL FLASHING AND TRIM**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. This Section includes the following:
  - 1. Manufactured reglets.
  - 2. Formed steep-slope roof flashing and trim.
  - 3. Formed wall flashing and trim.

#### **1.2 SUBMITTALS**

- A. Product Data: For each product indicated.
- B. Shop Drawings: Show layouts, profiles, shapes, seams, dimensions, and details for fastening, joining, supporting, and anchoring sheet metal flashing and trim.
- C. Samples: For each type of sheet metal flashing and trim.

#### **1.3 QUALITY ASSURANCE**

- A. Sheet Metal Flashing and Trim Standard: Comply with SMACNA's "Architectural Sheet Metal Manual." Conform to dimensions and profiles shown unless more stringent requirements are indicated.
- B. Acceptance of Substrate: Prior to installation of Sheet Metal Flashing and Trim, substrate must be approved by contractor. Installation of Sheet Metal Flashing and Trim constitutes acceptance of the substrate by the subcontractor
- C. Inspection: Contact State's Representative at least 48 hours in advance so Representative may review substrate before installation of the Sheet Metal Flashing and Trim.

### **PART 2 - PRODUCTS**

#### **2.1 MANUFACTURERS**

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
  - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.
  - 2. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

**Section 07620 – Page 2**  
**Sheet Metal Flashing and Trim**

**2.2 SHEET METALS**

- A. Copper Sheet: ASTM B 370, Temper H00 or H01, cold-rolled copper sheet.
- B. Stainless-Steel Sheet: ASTM A 240/A 240M, Type 304, No. [2D] [2B] [3] [4] finish.
- C. Zinc-Tin Alloy-Coated Stainless-Steel Sheet: ASTM A 240/A 240M, Type 304, dead-soft, fully annealed stainless-steel sheet, coated on both sides with a zinc-tin alloy (50 percent zinc, 50 percent tin).
- D. Zinc-Coated (Galvanized) Steel Sheet: ASTM A 653/A 653M, G90 coating designation; structural quality, mill phosphatized for field painting.

**2.3 MISCELLANEOUS MATERIALS**

- A. General: Provide materials and types of fasteners, solder, welding rods, protective coatings, separators, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation.
- B. Felt Underlayment: ASTM D 226, Type II (No. 30), asphalt-saturated organic felt, nonperforated.
  - 1. Slip Sheet: Rosin-sized paper, minimum 3 lb/100 sq. ft..
- C. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads.
  - 1. Nails for Copper Sheet: Copper or hardware bronze, 0.109 inch minimum and not less than 7/8 inch long, barbed with large head.
  - 2. Exposed Fasteners: Heads matching color of sheet metal by means of plastic caps or factory-applied coating.
  - 3. Fasteners for Flashing and Trim: Blind fasteners or self-drilling screws, gasketed, with hex washer head.
  - 4. Blind Fasteners: High-strength aluminum or stainless-steel rivets.
- D. Sealing Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealing tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape.
- E. Elastomeric Sealant: ASTM C 920, elastomeric, polyurethane, polysulfide, silicone, polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.
- F. Butyl Sealant: ASTM C 1311, single-component, solvent-release butyl rubber sealant, polyisobutylene plasticized, heavy bodied for hooked-type expansion joints with limited movement.
- G. Epoxy Seam Sealer: Two-part, noncorrosive, aluminum seam-cementing compound.

- H. Bituminous Coating: Cold-applied asphalt mastic, SSPC-Paint 12, compounded for 15-mil dry film thickness per coat.

#### 2.4 REGLETS

- A. Reglets: Units of type, material, and profile indicated, formed to provide secure interlocking of separate reglet and counterflashing pieces, and compatible with flashing indicated with factory- mitered and -welded corners and junctions.

- 1. Manufacturers:

- a. Cheney Flashing Company, Inc.
  - b. Fry Reglet Corporation.
  - c. Heckmann Building Products Inc.
  - d. Hickman, W. P. Company.
  - e. Keystone Flashing Company, Inc.
  - f. Sandell Manufacturing Company, Inc.
  - g. Or equivalent.

- 2. Material: Stainless steel, 0.0187 inch thick Copper, 16 oz./sq. ft.

#### 2.5 FABRICATION, GENERAL

- A. General: Custom fabricate sheet metal flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated. Shop fabricate items where practicable. Obtain field measurements for accurate fit before shop fabrication.
- B. Fabricate sheet metal flashing and trim without excessive oil canning, buckling, and tool marks and true to line and levels indicated, with exposed edges folded back to form hems.
  - 1. Seams for Other Than Aluminum: Fabricate nonmoving seams in accessories with flat-lock seams. Tin edges to be seamed, form seams, and solder.
- C. Sealed Joints: Form nonexpansion but movable joints in metal to accommodate elastomeric sealant to comply with SMACNA recommendations.
- D. Expansion Provisions: Where lapped or bayonet-type expansion provisions in the Work cannot be used, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with elastomeric or butyl sealant concealed within joints.
- E. Conceal fasteners and expansion provisions where possible on exposed-to-view sheet metal flashing and trim, unless otherwise indicated.
- F. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal, and in thickness not less than that of metal being secured.

**Section 07620 – Page 4**  
**Sheet Metal Flashing and Trim**

**2.6 STEEP-SLOPE ROOF SHEET METAL FABRICATIONS**

- A. Apron, Step, Cricket, and Backer Flashing: Fabricate from the following material:
  - 1. Copper: 16 oz./sq. ft.
  - 2. Stainless Steel: 0.0156 inch thick.
  - 3. Zinc-Tin Alloy-Coated Stainless Steel: 0.015 inch thick.
  - 4. Galvanized Steel: 0.0217 inch thick.
- B. Drip Edges: Fabricate from the following material:
  - 1. Copper: 16 oz./sq. ft.
  - 2. Stainless Steel: 0.0156 inch thick.
  - 3. Zinc-Tin Alloy-Coated Stainless Steel: 0.015 inch thick.
  - 4. Galvanized Steel: 0.0217 inch thick.
- C. Eave, Rake, Ridge, and Hip Flashing: Fabricate from the following material:
  - 1. Copper: 16 oz./sq. ft.
  - 2. Stainless Steel: 0.0156 inch thick.
  - 3. Zinc-Tin Alloy-Coated Stainless Steel: 0.015 inch thick.
  - 4. Galvanized Steel: 0.0217 inch thick.

**2.7 WALL SHEET METAL FABRICATIONS**

- A. Openings Flashing in Frame Construction: Fabricate head, sill, jamb, and similar flashings to extend 4 inches beyond wall openings. Form head and sill flashing with 2-inch- high end dams. Fabricate from the following material:
  - 1. Copper: 16 oz./sq. ft..
  - 2. Stainless Steel: 0.0156 inch thick.
  - 3. Zinc-Tin Alloy-Coated Stainless Steel: 0.015 inch thick.
  - 4. Galvanized Steel: 0.0217 inch thick.

**PART 3 - EXECUTION**

**3.1 INSTALLATION, GENERAL**

- A. General: Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement. Use fasteners, solder, welding rods, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.
  - 1. Torch cutting of sheet metal flashing and trim is not permitted.
- B. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with

bituminous coating or by other permanent separation as recommended by fabricator or manufacturers of dissimilar metals.

- C. Install exposed sheet metal flashing and trim without excessive oil canning, buckling, and tool marks.
- D. Install sheet metal flashing and trim true to line and levels indicated. Provide uniform, neat seams with minimum exposure of solder, welds, and elastomeric or butyl sealant.
- E. Install sheet metal flashing and trim to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
  - 1. Space cleats not more than 12 inches apart. Anchor each cleat with two fasteners. Bend tabs over fasteners.
- F. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped or bayonet-type expansion provisions cannot be used or would not be sufficiently watertight, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with elastomeric or butyl sealant concealed within joints.
- G. Fasteners: Use fasteners of sizes that will penetrate substrate not less than 1-1/4 inches for nails and not less than 3/4 inch for wood screws.
  - 1. Galvanized or Prepainted, Metallic-Coated Steel: Use stainless-steel fasteners.
  - 2. Copper: Use copper or stainless-steel fasteners.
  - 3. Stainless Steel: Use stainless-steel fasteners.
- H. Seal joints with elastomeric or butyl sealant as required for watertight construction.
- I. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter. Pre-tin edges of sheets to be soldered to a width of 1-1/2 inches except where pre-tinned surface would show in finished Work.
  - 1. Pre-tinning is not required for zinc-tin alloy-coated stainless steel.

### 3.2 ROOF DRAINAGE SYSTEM INSTALLATION

- A. General: Install sheet metal roof drainage items to produce complete roof drainage system according to SMACNA recommendations and as indicated. Coordinate installation of roof perimeter flashing with installation of roof drainage system.

### 3.3 ROOF FLASHING INSTALLATION

**Section 07620 – Page 6**  
**Sheet Metal Flashing and Trim**

- A. General: Install sheet metal roof flashing and trim to comply with performance requirements and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, set units true to line, and level as indicated. Install work with laps, joints, and seams that will be permanently watertight.
- B. Roof Edge Flashing: Anchor to resist uplift and outward forces according to recommendations in FMG Loss Prevention Data Sheet 1-49.
  - 1. Interlock bottom edge of roof edge flashing with continuous cleats anchored to substrate at 16-inch centers.
- C. Counterflashing: Coordinate installation of counterflashing with installation of base flashing. Insert counterflashing in reglets or receivers and fit tightly to base flashing. Secure in a waterproof manner. Extend counterflashing 4 inches over base flashing. Lap counterflashing joints a minimum of 4 inches and bed with elastomeric or butyl sealant.
- D. Roof-Penetration Flashing: Coordinate installation of roof-penetration flashing with installation of roofing and other items penetrating roof. Install flashing as follows:
  - 1. Turn lead flashing down inside vent piping, being careful not to block vent piping with flashing.
  - 2. Seal with elastomeric or butyl sealant and clamp flashing to pipes penetrating roof except for lead flashing on vent piping.

**3.4 WALL FLASHING INSTALLATION**

- A. General: Install sheet metal wall flashing to intercept and exclude penetrating moisture according to SMACNA recommendations and as indicated. Coordinate installation of wall flashing with installation of wall-opening components such as windows, doors, and louvers.
- B. Openings Flashing in Frame Construction: Install continuous head, sill, jamb, and similar flashings to extend 4 inches beyond wall openings.

**END OF SECTION 07620**

## **SECTION 07920 JOINT SEALANTS**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. This Section includes sealants for the following (All joints on this project are considered to be exterior joints):
  - 1. Exterior joints in vertical surfaces and nontraffic horizontal surfaces.
  - 2. Exterior joints in horizontal traffic surfaces.
- B. See Division 2 Section 02764 "Pavement Joint Sealants" for pavement sealant joints installed between portland cement and asphalt paving.

#### **1.2 SUBMITTALS**

- A. Product Data: For each joint sealant product indicated.
- B. Samples: For each joint sealant product indicated.
- C. Sealant compatibility and adhesion test reports.
- D. Preconstruction field-adhesion test reports.
- E. Product certificates.

#### **1.3 QUALITY ASSURANCE**

- A. Sealant Compatibility and Adhesion Testing: Use sealant manufacturer's standard test methods to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.
- B. Preconstruction Field-Adhesion Testing: Before installing elastomeric sealants, field test their adhesion to joint substrates using test method indicated in Part 3 "Field Quality Control" Article.

#### **1.4 WARRANTY**

- A. Special Installer's Warranty: Written warranty in which Installer agrees to repair or replace elastomeric joint sealants that do not meet requirements specified in this Section or fail in adhesion within specified warranty period two years from date of Substantial Completion.
- B. Special Manufacturer's Warranty: Manufacturer's standard form in which manufacturer agrees to furnish elastomeric joint sealants to repair or replace



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**Joint Sealants**

those that do not comply with requirements specified in this Section within 20 years from date of Substantial Completion.

**PART 2 - PRODUCTS**

**2.1 MANUFACTURERS**

- A. In other Part 2 articles where subparagraph titles below introduce lists, the following requirements apply for product selection:
  - 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the products specified.
  - 2. Products: Subject to compliance with requirements, provide one of the products specified.

**2.2 MATERIALS, 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 sealant manufacturer based on testing and field experience.
- B. Colors of Exposed Joint Sealants: As selected.

**2.3 ELASTOMERIC JOINT SEALANTS**

- A. Multicomponent Nonsag Polysulfide Sealant:
  - 1. Products:
    - a. Meadows, W. R, Inc.; cm-60.
    - b. Morton International, Inc.; T-2235-M.
    - c. Pecora Corporation; GC-5 Synthacalk.
    - d. Sonneborn Building Products Div., ChemRex Inc.; Two-Part Sealant.
    - e. Or equivalent.
  - 2. Type and Grade: M (multicomponent) and NS (nonsag).
  - 3. Class: 25.
  - 4. Exposure: Use T (traffic) and NT (nontraffic).
  - 5. Substrates: Uses M, G, A, and, as applicable to joint substrates indicated, O.
- B. Single-Component Nonsag Polysulfide Sealant:
  - 1. Products:
    - a. Meadows, W. R., Inc.; Deck-O-Seal One Step.

- b. Morton International, Inc.; Thiokol 1P.
  - c. Pecora Corporation; GC-9 Synthacalk.
  - d. Polymeric Systems, Inc.; PSI-7000.
  - e. Or equivalent.
- 2. Type and Grade: S (single component) and NS (nonsag).
- 3. Class: 25.
- 4. Exposure: Use NT (nontraffic).
- 5. Substrates: Uses M, G, A, and, as applicable to joint substrates indicated, O.

**C. Low-Modulus Nonacid-Curing Silicone Sealant:**

- 1. Products:
  - a. Dow Corning; 790.
  - b. GE Silicones; Silpruf.
  - c. NUCO Industries, Inc.; HiFlex 331.
  - d. Ohio Sealants, Inc.; VP 275.
  - e. Pecora Corporation; 864.
  - f. Polymeric Systems, Inc.; PSI-641.
  - g. Sonneborn Building Products Div., ChemRex Inc.; Omniseal.
  - h. Tremco; Spectrem 1.
  - i. Or equivalent.
- 2. Type and Grade: S (single component) and NS (nonsag).
- 3. Class: 25.
- 4. Additional Movement Capability: Capable of 50 percent movement in extension and 50 percent movement in compression when tested for adhesion and cohesion under maximum cyclic movement per ASTM C 719.
- 5. Exposure: Use NT (nontraffic).
- 6. Substrates: Uses M, G, A, and, as applicable to joint substrates indicated, O.
- 7. Nonstaining to porous substrates when testing per ASTM C 1248 for substrates indicated.

**D. Medium-Modulus Neutral-Curing Silicone Sealant:**

- 1. Products:
  - a. Dow Corning; 791.
  - b. NUCO Industries, Inc.; HiFlex 393.
  - c. Polymeric Systems, Inc.; PSI-631.
  - d. Schnee-Morehead, Inc.; SM5731 Poly-Glaze.
  - e. Tremco; Spectrem 2.
  - f. Or equivalent.

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**Joint Sealants**

2. Type and Grade: S (single component) and NS (nonsag).
3. Class: 25.
4. Exposure: Use NT (nontraffic).
5. Substrates: Uses M, G, A, and, as applicable to joint substrates indicated, O.
6. Nonstaining to porous substrates when testing per ASTM C 1248 for substrates indicated.

**E. Mildew-Resistant Silicone Sealant:**

1. Products:
  - a. Dow Corning; 786 Mildew Resistant.
  - b. GE Silicones; Sanitary 1700.
  - c. NUCO Industries, Inc.; NuFlex 302.
  - d. Pecora Corporation; 898 Silicone Sanitary Sealant.
  - e. Polymeric Systems, Inc.; PSI-611.
  - f. Tremco; Tremsil 600 White.
  - g. Or equivalent.
2. Type and Grade: S (single component) and NS (nonsag).
3. Class: 25.
4. Exposure: Use NT (nontraffic).
5. Substrates: Uses G, A, and, as applicable to joint substrates indicated, O.

**F. Single-Component Nonsag Urethane Sealant:**

1. For joints subject to traffic, provide the following:
  - a. Products:
    - 1) Mameco International; Vulkem 116.
    - 2) Sika Corporation; Sikaflex - 1a.
    - 3) Sonneborn Building Products Div., ChemRex Inc.; NP 1.
    - 4) Or equivalent.
  - b. Type and Grade: S (single component) and NS (nonsag).
  - c. Class: 12-1/2.
2. Exposure: Use T (traffic) and NT (nontraffic).
3. Substrates: Uses M, G, A, and, as applicable to joint substrates indicated, O.
4. For joints not subject to traffic, provide the following:
  - a. Products:
    - 1) Bostik Inc.; Chem-Chalk 900.
    - 2) Mameco International; Vulkem 921.

- 3) Ohio Sealants, Inc.; PR-255.
- 4) Pecora Corporation; Dynatrol I.
- 5) Polymeric Systems, Inc.; Flexiprene 1000.
- 6) Schnee-Morehead, Inc.; SM7100 Permathane.
- 7) Tremco; DyMonic.
- 8) Or equivalent.

- b. Type and Grade: S (single component) and NS (nonsag).
- c. Class: 12-1/2.
- d. Exposure: Use NT (nontraffic).
- e. Substrates: Uses M,[G,] A, and, as applicable to joint substrates indicated, O.

**G. Single-Component Pourable Urethane Sealant:**

**1. Products:**

- a. Bostik Inc.; Chem-Calk 950.
- b. Mameco International; Vulkem 45.
- c. Pecora Corporation; NR-201.
- d. Polymeric Systems, Inc.; Flexiprene PSI-951.
- e. Sonneborn Building Products Div., ChemRex Inc.; SL 1.
- f. Or equivalent.

2. Type and Grade: S (single component) and P (pourable).
3. Class: 25.
4. Exposure: Use T (traffic).
5. Substrates: Uses M, G, A, and, as applicable to joint substrates indicated, O.

**2.4 SOLVENT-RELEASE JOINT SEALANTS**

**A. Butyl-Rubber-Based Solvent-Release Joint Sealant: ASTM C 1085.**

**1. Products:**

- a. Bostik Inc.; Bostik 300.
- b. H.B. Fuller Company; PTI 707.
- c. NUCO Industries, Inc.; NuFlex 232.
- d. Pecora Corporation; BC-158.
- e. Polymeric Systems, Inc.; PSI-301.
- f. Sonneborn Building Products Div., ChemRex, Inc.; Sonneborn Multi-Purpose Sealant.
- g. Tremco; Tremco Butyl Sealant.
- h. Or equivalent.

**2.5 JOINT-SEALANT BACKING**

**Joint Sealants**

- A. General: Provide sealant backings of material and type that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
- B. Cylindrical Sealant Backings: ASTM C 1330, of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance:
  - 1. Type: C closed-cell material with a surface skin or O (open-cell material).
- C. Elastomeric Tubing Sealant Backings: Neoprene, butyl, EPDM, or silicone tubing complying with ASTM D 1056, nonabsorbent to water and gas, and capable of remaining resilient at temperatures down to minus 26 deg F. Provide products with low compression set and of size and shape to provide a secondary seal, to control sealant depth, and otherwise contribute to optimum sealant performance.
- D. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.

**2.6 MISCELLANEOUS MATERIALS**

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

**PART 3 - EXECUTION**

**3.1 INSTALLATION**

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants.

1. Remove foreign material from joint substrates that could interfere with adhesion of joint sealant.
  2. Clean porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining from above cleaning operations by vacuuming or blowing out joints with oil-free compressed air.
  3. Remove laitance and form-release agents from concrete.
  4. Clean nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues could interfere with adhesion of joint sealants.
- B. Joint Priming: Prime joint substrates where recommended in writing by joint sealant manufacturer, based on preconstruction joint-sealant-substrate tests or prior experience. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.
- D. Sealant Installation: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- E. Install sealant backings to support sealants during application and at position required to produce optimum sealant movement capability.
1. Do not leave gaps between ends of sealant backings.
  2. Do not stretch, twist, puncture, or tear sealant backings.
  3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.
- F. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and back of joints.
- G. Place sealants so they directly contact and fully wet joint substrates.
1. Completely fill recesses provided for each joint configuration.
  2. Produce uniform, cross-sectional shapes and depths that allow optimum sealant movement capability.
- H. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants to form smooth, uniform beads, to eliminate air pockets, and to ensure contact and adhesion of sealant with sides of joint.

**Joint Sealants**

1. Remove excess sealants from surfaces adjacent to joint.
  2. Use tooling agents that are approved by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
  3. Joint Configuration: Concave joint configuration per Figure 5A in ASTM C 1193, unless otherwise indicated.
- I. Clean excess sealants or sealant smears adjacent to joints as installation progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

**3.2 JOINT SEALANT SCHEDULE**

- A. Exterior joints in the following vertical surfaces and nontraffic horizontal surfaces:
1. Control and Expansion Joints in Cast-in-Place Concrete: Urethane sealant.
  2. Control and Expansion Joints in Unit Masonry: Urethane sealant.
  3. Joints in Dimension Stone Cladding: Urethane sealant.
  4. Joints between Different Materials Listed above: Urethane sealant.
  5. Perimeter Joints between Materials Listed above and Frames of Doors and Windows: Silicone sealant.
  6. Control and Expansion Joints in Ceiling and Overhead Surfaces: Silicone sealant.
- B. Exterior joints in the following horizontal traffic surfaces:
1. Control, Expansion, and Isolation Joints in Cast-in-Place Concrete Slabs: Urethane sealant.
  2. Joints in Stone Paving Units, Including Steps: Urethane sealant.
  3. Tile Control and Expansion Joints: Mildew resistant Silicone sealant.
  4. Joints between Different Materials Listed above: Urethane sealant.

END OF SECTION 07920

**SECTION 08100**  
**FIBERGLASS DOORS AND FRAMES**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. This Section includes the following:
  - 1. Fiberglass Reinforced Plastic Doors and louvers.
  - 2. Fiberglass Resin Transfer Molded Door Frames.

**1.2 SUBMITTALS**

- A. Product Data: For each type of door, and frame.
  - 1. Acknowledgement that products submitted meet requirements of standard referenced.
  - 2. Manufacturer shall provide certificate of compliance with current local and federal regulations as it applies to the manufacturing process.
  - 3. Manufacturer's installation instructions.
  - 4. Schedule of doors and frames: Use same reference designations indicated on drawings.
  - 5. Details of core and edge construction. Include factory-construction specifications.
  - 6. Certification of manufacturer's qualifications.
- B. Shop Drawings: Indicate location, size, and hand of each door; elevation of each kind of door and frame; construction details; location and extent of hardware blocking; and other pertinent data.
  - 1. Drawing showing dimensional location of each hardware item and size of each door.
  - 2. Construction and mounting detail for each frame type.
- C. Samples: Provide material and finish for each door, frame and vent.
- D. Operation and Maintenance Manuals:
  - 1. Include recommended methods and frequency for maintaining optimum condition of fiberglass doors and frames under anticipated traffic and use conditions.
  - 2. Include one set of final as built drawings with the same requirements as mentioned in section B above.
  - 3. Include certificate of warranty for door and frame listing specific door registration numbers.
  - 4. Include hardware data sheets and hardware manufacturer's warranties.



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**FIBERGLASS DOORS AND FRAMES**

**1.3 QUALITY ASSURANCE**

**A. Referred Standards:**

1. Tensile Strength ASTM D 882
2. Flexural Strength ASTM D 790
3. Barcol Hardness ASTM D 2583
4. Impact Resistance ASTM D 256
5. Density/Specific Gravity of Laminate ASTM D 792
6. Mechanical Fastener ASTM D 1761

**B. Core Properties**

1. Thermal Properties ASTM C 177
2. Density/Specific Gravity ASTM D 1622
3. Surface Burning Characteristics ASTM E 84

**C. Qualifications:**

1. Manufacturer Qualifications: A company specialized in the manufacture of fiberglass reinforced plastic ( FRP) doors and frames as specified herein with a minimum of ten years documented experience and with a record of successful in-service performance for the applications as required for this project.
2. Installer Qualifications: An experienced installer who has completed fiberglass door and frame installations similar in material, design, and extent to those indicated and whose work has resulted in construction with a record of successful in-service performance.
3. Source Limitations: Obtain fiberglass reinforced plastic doors and frames through one source fabricated from a single manufacturer, including fire related fiberglass frames.
4. Source Limitations: Hardware and accessories for all FRP doors as specified in Section 08710 should be provided and installed by the fiberglass door and frame manufacturer. All door hardware shall be braced/blocked so that no deformation of the door occurs.

**1.4 DELIVERY, STORAGE, AND HANDLING**

- A. Each door and frame should be delivered individually crated for protection from damage in cardboard containers, clearly marked with project information, door location, specific reference number as shown on drawings, and shipping information. Each crate should contain all fasteners necessary for installations as well as complete installation instructions.
- B. Doors should be stored in the original container out of inclement weather or protection against the elements.

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**FIBERGLASS DOORS AND FRAMES**

- C. Handle doors pursuant to the manufacturer's recommendations as posted on outside of crate.

**1.5 WARRANTY**

- A. Warranty all fiberglass doors and frames for a period of 25 years against failure due to corrosion. Additionally, warranty all fiberglass doors and frames on materials and workmanship for a period of 10 years, including warp, separation or delamination, and expansion of the core.

**PART 2 - PRODUCTS**

**2.1 MANUFACTURERS**

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  - 1. Chem-Pruf Door Co.
  - 2. Ampco Products
  - 3. Simpson
  - 4. Therma-Tru
  - 5. Or equivalent
- B. Door, frames and vents to equal Chem-Pruf Door Co.

**2.2 FIBERGLASS REINFORCED PLASTIC DOOR and FRAME CONSTRUCTION**

- A. Doors:
  - 1. Door Plates shall be 1/8 inch thick, molded in one continuous piece, starting with a 25 mil gelcoat of the color specified, integrally molded with at least two layers of 1.5 ounce per square foot of fiberglass mat and one layer of 16 ounce per square yard unidirectional roving. This will yield a plate weight of 0.97 lbs per square foot at a ratio of 30/70 glass to resin.
  - 2. Stiles and Rails shall be constructed starting from the outside toward the inside, of a 25 mil gel coat of the specified followed by a matrix of at least three layers of 1.5 ounce per square foot of fiberglass mat. The stile and rail shall be molded in one continuous piece to a U-shaped configuration and to the exact dimensions of the door. In this manner there will be no disparate materials used to form the once-piece stile and rail.
  - 3. Doors shall be made of fiberglass reinforced plastic using chemical proven resins resistant to contaminants typically found in the environment. Doors shall be 1-3/4 inch thick and of flush construction having no seams or cracks. All doors up to 4'-0" x 8'-0" shall have equal diagonal measurements with a maximum tolerance of +/- 1/32 inch.
  - 4. Core material shall be a minimum of 2 pounds per square feet expanded polyurethane foam, which completely fills all voids.

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**FIBERGLASS DOORS AND FRAMES**

5. Internal reinforcement shall be to adequately support the required hardware and function (doors shall not buckle/bend or warp from hardware installation).
6. Finish of door and frame shall be identical in color and texture. At time of manufacture, 25 mil of resin-rich gelcoat must be integrally molded into both the door and frame. Secondary painting to achieve color is not acceptable.
7. Louvers: Shall be solid fiberglass inverted "V" vanes and shall match color, texture and finish of the doors.

**B. Frames:**

1. Shall be fiberglass and manufactured using the resin transfer method in closed rigid molds to assure uniformity in color and size. Beginning with a minimum 25 mil gel coat and a minimum of two layers continuous strand fiberglass mat saturated with resin, the frame will be one-piece construction with molded stop. All frame profiles up to  $\frac{3}{4}$ " will be solid fiberglass. All frame profiles greater than  $\frac{3}{4}$ " shall have a core material of 2 psf polyurethane foam. Metal frames of pultruded fiberglass frames will not be accepted.
2. Internal reinforcement shall be to adequately support the required hardware and function. Frame screw holding value to accommodate screw shall be a minimum of 1,000 lbs per screw. Documented strength of frame screw holding value after third insert must be submitted.
3. Colors, Patterns, and Finishes: to match door standard.
4. Jamb/Header connection shall be coped for a tight fit.

**PART 3 - EXECUTION**

**3.1 INSTALLATION**

- A. Install doors-opening assemblies in accordance with shop drawings and manufacturer's printed installation instructions.
- B. Field alteration of doors or frames to accommodate field conditions is strictly prohibited.
- C. Site Tolerances: Maintain plumb and level tolerance specified in Manufacturer's printed installation instructions.

**3.2 INSTALLATION CONDITIONS**

**A. Verification of Conditions**

1. Openings are correctly prepared to receive doors and frames.
2. Openings are correct size and depth in accordance with shop drawings or submittals.

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**FIBERGLASS DOORS AND FRAMES**

**B. Installers Examination**

1. Have the installer examine conditions under which construction activities of this section are to be performed and submit a written report if conditions are unacceptable.
2. Transmit two copies of the installer's report to the State's Representative within 24 hours of receipt.

**C. Site Tolerances: Maintain plumb and level tolerance specified in Manufacturer's printed installation instructions.**

**3.3 INSTALLATION**

**A. Placing Frames: Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is completed, remove temporary braces and spreaders, leaving surfaces smooth and undamaged.**

1. **Wall Anchors: Provide at least three anchors per jamb. For openings 90 inches or more in height, install an additional anchor at hinge and strike jambs.**

**3.4 CLEANING**

- A. Clean surfaces of door opening assemblies and exposed door hardware in accordance with respective manufacturer's maintenance instructions.**

**END OF SECTION 08100**

**SECTION 08212**  
**STILE and RAIL WOOD DOORS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. This Section includes exterior stile and rail wood doors.
- B. See Division 6 Section 06200 Finish Carpentry for wood door frames.

**1.2 SUBMITTALS**

- A. Product Data: For each type of door indicated.
- B. Shop Drawings: Indicate location, size, and hand of each door; fire ratings; construction details for stiles, rails, panels, and moldings (sticking); mortises, holes, and cutouts; and other pertinent data.
- C. Samples: For each face material and finish.

**1.3 QUALITY ASSURANCE**

- A. AWI Quality Standard: AWI's "Architectural Woodwork Quality Standards" for grade of door, core, construction, finish, and other requirements.
- B. Safety Glass: Provide products complying with ANSI Z97.1 and testing requirements in 16 CFR 1201, for Category II materials, unless those of Category I are expressly indicated and permitted.

**PART 2 - PRODUCTS**

**2.1 STILE and RAIL DOORS OF SPECIAL DESIGN AND CONSTRUCTION**

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Pinecrest.
  - 2. Dimension Millworks.
  - 3. ENJO Doors and Windows.
  - 4. Karona, Inc.
  - 5. Maiman Company (The).
  - 6. Artistic Doors and Windows.
  - 7. Woodtech Trading Company.

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**Stile and Rail Wood Doors**

8. or equivalent

C. Doors for Transparent Finish:

1. Grade: Premium.
2. Wood Species and Cut: Red oak, quarter sawed/sliced stiles and rails.
3. Stile and Rail Construction: Veneered, finger-jointed softwood or laminated-strand lumber core with edges of species indicated.
4. Raised Panel Construction: Wood-based panel product with veneer applied to both faces.

D. Exterior Doors:

1. Stile, Top and Intermediate Rail Widths: As indicated.
2. Bottom Rail Widths: As indicated.
3. Raised Panel Thickness: 1-3/4 inches.
4. Glass for Openings: Uncoated, insulating-glass units made from 2 lites of 3.0-mm-thick, clear, fully tempered glass with 1/4-inch.
5. Door style: Pinecrest, to match/similar to "Cottage Collection" with safety glass as indicated.

2.2 FABRICATION

- A. Fabricate stile and rail wood doors for site fitting.
- B. Factory fit doors to suit frame-opening sizes indicated. Comply with clearance requirements of referenced quality standard for fitting. Comply with requirements in NFPA 80 for fire-rated doors.
- C. Factory machine doors for hardware that is not surface applied.
- D. Factory-Glaze Openings: Comply with Division 8 Section 08800 "Glazing."
- E. Field-Glazed Openings: Trim openings indicated for glazing with solid wood moldings of profile indicated, with one side removable.
- F. Transom and Side Panels: Fabricate panels matching adjoining doors in materials, finish, and quality of construction.
- G. Exterior Doors: Factory treat exterior doors after fabrication with water repellent to comply with NWWDA I.S.4. Flash top of outswinging doors with manufacturer's standard metal flashing.

2.3 SHOP PRIMING

- A. Doors for Opaque Finish: Shop prime exposed portions of doors for paint finish with one coat of wood primer specified in Division 9 Section 09910 "Painting."

- B. Transparent Finish: Shop seal faces and edges of doors with stain (if required), other required pretreatments, and first coat of finish as specified in Division 9 Section 09910 "Painting."

### PART 3 - EXECUTION

#### 3.1 INSTALLATION

- A. Install wood doors to comply with referenced quality standard and manufacturer's written instructions.
- B. Field Fit Doors: Align and fit doors in frames with uniform clearances and bevels indicated; do not trim stiles and rails in excess of limits set by manufacturer or permitted with fire-rated doors. Machine doors for hardware. Seal cut surfaces after fitting and machining.
  - 1. Clearances:
    - a. At Heads, Jambs and Between Pairs of Doors: 1/8 inch.
    - b. Bottom of Door to Top of Floor Finish or Covering: 1/8 inch.
    - c. Bottom of Door to Top of Threshold: 1/4 inch.
  - 2. Bevel:
    - a. Non-Fire-Rated Doors: 1/8 inch at lock and hinge edges.
- C. Factory-Fitted Doors: Align in frames for uniform clearance at each edge.

END OF SECTION 08212

## **SECTION 08550 WOOD WINDOWS**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. This Section includes the following vinyl-clad wood-framed window product types:
  - 1. Fixed windows.

#### **1.2 PERFORMANCE REQUIREMENTS**

- A. General: Provide wood windows capable of complying with performance requirements indicated, based on testing manufacturer's windows that are representative of those specified and that are of minimum test size required by AAMA/NWWDA 101/I.S.2.
- B. AAMA/NWWDA Performance Requirements: Provide wood windows of the performance class and grade indicated that comply with AAMA/NWWDA 101/I.S.2.
  - 1. Performance Class: LC
  - 2. Performance Grade: 40
  - 3. Exception to AAMA/NWWDA 101/I.S.2: In addition to requirements for performance class and performance grade, design glass framing system to limit lateral deflections of glass edges to less than 1/175 of glass-edge length or 3/4 inch, whichever is less at design pressure based on testing performed according to AAMA/NWWDA 101/I.S.2, Uniform Load Deflection Test or structural computations.
- C. Thermal Transmittance: Provide wood windows with a whole-window U-value maximum of .50 at 15-mph exterior wind velocity and winter condition temperatures when tested according to NFRC 100.
- D. Solar Heat-Gain Coefficient: Provide wood windows with a whole-window SHGC maximum of .35, determined according to NFRC 200 procedures.
- E. Specific Product Performance Requirements: Comply with Section 2.2 of AAMA/NWWDA 101/I.S.2 as applicable to types of wood windows indicated.

#### **1.3 SUBMITTALS**

- A. Product Data: For each type of wood window indicated.
- B. Shop Drawings: Include plans, elevations, sections, details, hardware, attachments to other Work, and operational clearances.



**Wood Windows**

1. Include structural analysis data indicating deflection limitations of glass framing systems, signed and sealed by the qualified professional engineer responsible for their preparation.

C. Samples: For each exposed finish.

D. Product test reports.

E. Maintenance data.

**1.4 QUALITY ASSURANCE**

A. Installer: A qualified installer, approved by manufacturer to install manufacturer's products.

B. Fenestration Standard: Comply with AAMA/NWWDA 101/I.S.2, "Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors," for minimum standards of performance, materials, components, accessories, and fabrication unless more stringent requirements are indicated.

C. Glazing Publications: Comply with published recommendations of glass manufacturers and GANA's "Glazing Manual" unless more stringent requirements are indicated. Do we have a copy of this??

**1.5 WARRANTY**

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace wood windows that fail in materials and workmanship within 10 years from date of Substantial Completion.

B. Warranty Period for Glass: 20 years from date of Substantial Completion.

**PART 2 - PRODUCTS**

**2.1 MANUFACTURERS**

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

B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Andersen Commercial Group; Andersen Corp. 400 series windows with narrow steel connection or equal.
2. Caradco Window Corp.; Jeld-Wen, Inc.
3. Hurd Millwork Co.
4. Kolbe & Kolbe Millwork Co., Inc.

5. Marvin Windows and Doors.
6. Pella Corporation.
7. Pozzi Wood Windows; Jeld-Wen, Inc.
8. Weather Shield Mfg., Inc.
9. or equivalent

## 2.2 MATERIALS, GENERAL

- A. Frame: Fabricated from Wood species approved in WDMA I.S.4.
- B. Vinyl for Cladding, vinyl wrapped wood (pvc) complying with the requirements of ASTM D4216.: Permanent, integral color, bronze finish.

## 2.3 GLAZING

- A. Glass: Clear, insulating-glass.
- B. Glazing System: Manufacturer's standard factory-glazing system that produces weathertight seal.

## 2.4 ACCESSORIES

- A. Grilles (False Muntins): Provide grilles in designs indicated, for removable application to inside of each sash lite.
  1. Material: to match window trim.
  2. Design: Rectangular
  3. Color: to match window trim.

## 2.5 FABRICATION

- A. General: Fabricate wood windows, in sizes indicated, that comply with AAMA/NWDA 101/I.S.2 for performance class and performance grade indicated. Include a complete system for assembling components and anchoring windows.
- B. Fabricate wood windows that are reglazable without dismantling sash or ventilator framing.
- C. Weather Stripping: Provide full-perimeter weather stripping for each operable sash and ventilator, unless otherwise indicated.
- D. Factory machine windows for openings and hardware that is not surface applied.
- E. Mullions: Provide mullions and cover plates as shown, matching window units, complete with anchors for support to structure and installation of window units.

**Section 08550 – Page 4**  
**Wood Windows**

Allow for erection tolerances and provide for movement of window units due to thermal expansion and building deflections, as indicated. Provide mullions and cover plates capable of withstanding design loads of window units.

1. Windows: Provide wood windows in configuration indicated. Provide window frames, fixed and operating sash, operating hardware, and other trim and components necessary for a complete, secure, and weathertight installation,

**2.6 WOOD FINISHES**

- A. Factory-Finished Windows: Provide fabricator's standard factory finish consisting of prime coat and two finish coats; 3-mil Apply finish to exposed exterior and interior wood surfaces.

**PART 3 - EXECUTION**

**3.1 INSTALLATION**

- A. Install windows level, plumb, square, true to line, without distortion or impeding thermal movement, anchored securely in place to structural support, and in proper relation to wall flashing and other adjacent construction.
- B. Set sill members in bed of sealant or with gaskets, as indicated, for weathertight construction.
- C. Metal Protection: Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials by complying with requirements specified in "Dissimilar Materials" Paragraph in Appendix B in AAMA/NWDA 101/I.S.2.
- D. Adjust operating sashes and ventilators, screens, hardware, and accessories for a tight fit at contact points and weather stripping for smooth operation and weathertight closure. Lubricate hardware and moving parts.
- E. Protect window surfaces from contact with contaminating substances resulting from construction operations. In addition, monitor window surfaces adjacent to and below exterior concrete and masonry surfaces during construction for presence of dirt, scum, alkaline deposits, stains, or other contaminants. If contaminating substances do contact window surfaces, remove contaminants immediately according to manufacturer's written recommendations.
- F. Clean exposed surfaces immediately after installing windows. Avoid damaging protective coatings and finishes. Remove excess sealants, glazing materials, dirt, and other substances.
- G. Clean factory-glazed glass immediately after installing windows. Comply with manufacturer's written recommendations for final cleaning and maintenance. Remove nonpermanent labels and clean surfaces.

- H. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.

END OF SECTION 08550

## **SECTION 08572 FIBERGLASS WINDOWS**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. This Section includes the following fiberglass window product types:
  - 1. Fixed windows.

#### **1.2 PERFORMANCE REQUIREMENTS**

- A. General: Provide fiberglass windows capable of complying with performance requirements indicated, based on testing manufacturer's windows that are representative of those specified and that are of minimum test size required by AAMA/NWWDA 101/I.S.2. (Rating F-C50).
- B. Window Air Leakage, ASTM E 283: Window air leakage when tested at 1.57 psf (25pmh) shall be 0.25 cfm/SF of frame or less.
- C. Window Water Penetration, ASTM E 547: No water penetration through window when tested under static pressure of 4.5 psf (42 mph) after 4 cycles of 5 minutes each, with water being applied at a rate of 5 gallons per hour per square foot..

#### **1.3 SUBMITTALS**

- A. Product Data: For each type of fiberglass window indicated.
- B. Shop Drawings: Include plans, elevations, sections, details, hardware, attachments to other Work, and operational clearances (installation details).
- C. Samples: For each exposed finish.
- D. Product test reports.
- E. Maintenance data.

#### **1.4 QUALITY ASSURANCE**

- A. Installer: A qualified installer, approved by manufacturer to install manufacturer's products.

#### **1.5 WARRANTY**

**Section 08572 – Page 2**  
**Fiberglass Windows**

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace fiberglass windows that fail in materials and workmanship within 10 years from date of Substantial Completion.

**PART 2 - PRODUCTS**

**2.1 MANUFACTURERS**

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Marvin Windows - Infinity.
  - 2. Pella Corporation - Imperia.
  - 3. Milgard - Ultra.
  - 4. or equivalent.

**2.2 MATERIALS, GENERAL**

- A. Frame: Factory assembled fixed window.
- B. Color: Hunter Green (sim. to Milgard Ultra)

**2.3 GLAZING**

- A. Glass: Translucent pebbled, tempered (ASTM C 1048), insulating-glass.
- B. Glazing System: Manufacturer's standard factory-glazing system that produces weathertight seal.

**2.4 ACCESSORIES**

- A. Grilles (False Muntins): Provide grilles in designs indicated, for removable application to inside of each sash lite.
  - 1. Material: to match window trim.
  - 2. Design: ¾" Vintage (similar to Marvin Ultra)
  - 3. Color: to match window trim.

**2.5 FABRICATION**

- A. General: Fabricate fiberglass windows, in sizes indicated, that comply with AAMA/NWWDA 101/I.S.2 for performance class and performance grade indicated. Include a complete system for assembling components and anchoring windows.

- B. Factory machine windows for openings and hardware that is not surface applied.
- C. Tolerances: Vertical and Width Dimensions Between high and low points (plus  $\frac{1}{4}$  inch, minus zero).

## 2.6 FINISHES

- A. Factory-Finished Windows: Provide fabricator's standard factory finish to exposed exterior and interior surfaces.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Install windows level, plumb, square, true to line, without distortion or impeding thermal movement, anchored securely in place to structural support, and in proper relation to wall flashing and other adjacent construction.
- B. Set sill members in bed of sealant or with gaskets, as indicated, for weathertight construction.
- C. Protect window surfaces from contact with contaminating substances resulting from construction operations. In addition, monitor window surfaces adjacent to and below exterior concrete and masonry surfaces during construction for presence of dirt, scum, alkaline deposits, stains, or other contaminants. If contaminating substances do contact window surfaces, remove contaminants immediately according to manufacturer's written recommendations.
- D. Clean exposed surfaces immediately after installing windows. Avoid damaging protective coatings and finishes. Remove excess sealants, glazing materials, dirt, and other substances.
- E. Clean factory-glazed glass immediately after installing windows. Comply with manufacturer's written recommendations for final cleaning and maintenance. Remove nonpermanent labels and clean surfaces.
- F. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.

END OF SECTION 08572

## **SECTION 08711 DOOR HARDWARE**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. This Section includes the following:
  - 1. Commercial door hardware.
  - 2. Cylinders for doors specified in other Sections.

#### **1.2 SUBMITTALS**

- A. Product Data: For each product indicated.
- B. Shop Drawings: Include details of electrified door hardware and wiring diagrams.
- C. Samples: For each exposed finish.
- D. Door Hardware Schedule: Organized into door hardware sets indicating type, style, function, size, label, hand, manufacturer, fasteners, location, and finish of each door hardware item. Include description of each electrified door hardware function, including sequence of operation.
- E. Keying Schedule: Detail Owner's final keying instructions for locks.
- F. Product certificates.
- G. Before any finish hardware is ordered or purchased for this work, submit to the State for its acceptance, a complete hardware schedule listing all opens by groups of all finish hardware proposed to be furnished for this work, including catalog cuts for each item, giving manufacturer's name, catalog number, finish and size.

#### **1.3 QUALITY ASSURANCE**

- A. Supplier Qualifications: Person who is or employs a qualified DHI Architectural Hardware Consultant.
- B. Keying Conference: Conduct conference at Project site. Incorporate keying conference decisions into final keying schedule.
- C. Keys: Deliver keys to District by registered mail.
- D. Templates: Obtain and distribute templates for doors, frames, and other work specified to be factory prepared for installing door hardware.



## **Section 08711 – Page 2**

### **Door Hardware**

- E. Standards: Comply with BHMA A156 series standards, Grade 1.
- F. Certified Products: Provide door hardware that is listed in BHMA directory of certified products.

#### **1.4 WARRANTY**

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within warranty period.
  - 1. Warranty Period for Manual Closers: 10 years from date of Substantial Completion.

### **PART 2 - PRODUCTS**

#### **2.1 MANUFACTURERS**

- A. Product: Subject to compliance with requirements, provide the product named for each door hardware item indicated in Door Hardware Sets.
- B. Basis-of-Design Product: Product named for each door hardware item indicated in Door Hardware Sets establishes the basis of design. Provide either the named product or a comparable product by one of the manufacturers specified for each type of hardware item (upon acceptance by the District).

#### **2.2 DOOR HARDWARE**

- A. Scheduled Door Hardware: Provide door hardware according to Door Hardware Sets at the end of Part 3. Manufacturers' names are abbreviated.

#### **2.3 PIVOTS AND HINGES**

- A. Manufacturers:
  - 1. Hinges:
    - a. Baldwin Hardware Corporation (BH).
    - b. Hager Companies (HAG).
    - c. McKinney Products Company; Div. of ESSEX Industries, Inc. (MCK).
    - d. PBB, Inc. (PBB).
    - e. Sargent Manufacturing Company; Div. of ESSEX Industries, Inc. (SGT).
    - f. Stanley Commercial Hardware; Div. of The Stanley Works (STH).
    - g. Or equivalent.
  - 2. Pivots and Pivot Hinges:
    - a. DORMA Door Controls Inc.; Member of The DORMA Group (DC).

- b. Hager Companies (HAG).
    - c. Lawrence Brothers, Inc. (LB).
    - d. LCN Closers; an Ingersoll-Rand Company (LCN).
    - e. McKinney Products Company; Div. of ESSEX Industries, Inc. (MCK).
    - f. Sargent Manufacturing Company; Div. of ESSEX Industries, Inc. (SGT).
    - g. Stanley Commercial Hardware; Div. of The Stanley Works (STH).
    - h. Or equivalent.
  - B. General: Except for hinges and pivots to be installed entirely (both leaves) into wood doors and frames, provide only template-produced units.
  - C. Hinge Base Metal: Unless otherwise indicated, provide the following:
    - 1. Exterior Hinges: 4 ½ x 4 ½ stainless-steel ball bearing, nonremovable pin.
  - D. Nonremovable Pins: Provide set screw in hinge barrel that prevents removal of pin while door is closed; for outswinging exterior doors.
  - E. Screws: Phillips flat-head screws; screw heads finished to match surface of hinges.
    - 1. Metal Doors and Frames: Machine screws (drilled and tapped holes).
- 2.4 MECHANICAL LOCKS AND LATCHES
- A. All doors from all rooms are to have locks or latches of a type which are operable at all times from the inside by merely turning the lever and shall not require special knowledge or effort unless otherwise specifically noted.
  - B. Manufacturers:
    - 1. Adams Rite Manufacturing Co. (ARM).
    - 2. Architectural Builders Hardware Mfg., Inc. (ABH).
    - 3. Best Lock Corporation (BLC).
    - 4. Corbin Russwin Architectural Hardware; Div. of Yale Security Inc. (CR).
    - 5. Glynn-Johnson; an Ingersoll-Rand Company (GJ).
    - 6. Hager Companies (HAG).
    - 7. Ives, H. B. (IVS).
    - 8. McKinney Products Company; Div. of ESSEX Industries, Inc. (MCK).
    - 9. Sargent Manufacturing Company; Div. of ESSEX Industries, Inc. (SGT).
    - 10. Schlage Lock Company; an Ingersoll-Rand Company (SCH).
    - 11. Yale Security Inc.; Div. of Williams Holdings (YAL).
    - 12. Or equivalent.
  - C. Backset: 2-3/4 inches (70 mm), unless otherwise indicated.

**Door Hardware**

**2.5 BOLTS**

**A. Flush Bolts: BHMA Grade 1, designed for mortising into door edge.**

**1. Manufacturers:**

- a. Adams Rite Manufacturing Co. (ARM).
- b. Glynn-Johnson; an Ingersoll-Rand Company (GJ).
- c. Hager Companies (HAG).
- d. Ives, H. B. (IVS).
- e. NT Quality Hardware; an Ingersoll-Rand Company (NTQ).
- f. Sargent Manufacturing Company; Div. of ESSEX Industries, Inc. (SGT).
- g. Schlage Lock Company; an Ingersoll-Rand Company (SCH).
- h. Yale Security Inc.; Div. of Williams Holdings (YAL).
- i. Or equivalent.

**2.6 CLOSERS**

**A. General:**

- 1. All closers shall meet the requirements of the California Building Code Section 1133B.2.5 regarding maximum effort to operate.
  - a. Exterior Doors: 5 pounds maximum pressure to operate.
  - b. The sweep period of the closer shall be adjusted so that from an open position of 20 degrees, the door will take at least three (3) seconds to move to a point three (3) inches from the latch (measured to the leading edge of the door).

**B. Surface-Mounted Closers:**

**1. Manufacturers:**

- a. Arrow Architectural Hardware; Div. of ESSEX Industries, Inc. (AAH).
- b. Corbin Russwin Architectural Hardware; Div. of Yale Security Inc. (CR).
- c. DORMA Door Controls Inc.; Member of The DORMA Group (DC).
- d. LCN Closers; an Ingersoll-Rand Company (LCN).
- e. Norton Door Controls; Div. of Yale Security Inc. (NDC).
- f. Sargent Manufacturing Company; Div. of ESSEX Industries, Inc. (SGT).
- g. Yale Security Inc.; Div. of Williams Holdings (YAL).
- h. Or equivalent.

**2.7 STOPS AND HOLDERS**

- A. Stops and Holders: Provide floor stops for doors, unless wall or other type stops are scheduled or indicated. Do not mount floor stops where they will impede traffic. Where floor or wall stops are not appropriate, provide overhead holders.
1. Manufacturers:
- a. Architectural Builders Hardware Mfg., Inc. (ABH).
  - b. Baldwin Hardware Corporation (BH).
  - c. Door Controls International (DCI).
  - d. DORMA Door Controls Inc.; Member of The DORMA Group (DC).
  - e. Glynn-Johnson; an Ingersoll-Rand Company (GJ).
  - f. Hager Companies (HAG).
  - g. Ives, H. B. (IVS).
  - h. Sargent Manufacturing Company; Div. of ESSEX Industries, Inc. (SGT).
  - i. Triangle Brass Manufacturing Company, Inc. (TBM).
  - j. Trimco (T)
  - k. Yale Security Inc.; Div. of Williams Holdings (YAL).
  - l. Or equivalent.
- B. Silencers for Door Frames: Neoprene or rubber; fabricated for drilled-in application to frame.

## 2.8 DOOR GASKETING AND THRESHOLDS

- A. Door Gasketing: Provide continuous weather-strip gasketing on exterior doors. Provide noncorrosive fasteners for exterior applications and elsewhere as indicated.
1. Manufacturers:
- a. Gasketing:
    - 1) Hager Companies (HAG).
    - 2) National Guard Products, Inc. (NGP).
    - 3) Pemko Manufacturing Co., Inc. (PEM).
    - 4) Reese Enterprises, Inc. (RE).
    - 5) Sealeze Corporation (SEL).
    - 6) Ultra Industries; a Macklanburg-Duncan Company (ULT).
    - 7) Zero International, Inc. (ZRO).
    - 8) Or equivalent.
  - b. Door Bottoms:
    - 1) Hager Companies (HAG).
    - 2) National Guard Products, Inc. (NGP).
    - 3) Pemko Manufacturing Co., Inc. (PEM).

**Door Hardware**

- 4) Reese Enterprises, Inc. (RE).
  - 5) Sealeze Corporation (SEL).
  - 6) Ultra Industries; a Macklanburg-Duncan Company (ULT).
  - 7) Zero International, Inc. (ZRO).
  - 8) Or equivalent.
2. Air Leakage: Not to exceed 0.50 cfm per foot (0.000774 cu. m/s per m) of crack length for gasketing other than for smoke control, as tested according to ASTM E 283.
  3. Gasketing Materials: Comply with ASTM D 2000 and AAMA 701/702.

**2.9 CYLINDERS, KEYING, AND STRIKES**

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

1. Manufacturers:
  - a. Same manufacturer as for locks and latches.
  - b. Best Lock Corporation (BLC).
  - c. Corbin Russwin Architectural Hardware; Div. of Yale Security Inc. (CR).
  - d. NT Falcon Lock Co.; an Ingersoll-Rand Company (NTF).
  - e. Sargent Manufacturing Company; Div. of ESSEX Industries, Inc. (SGT).
  - f. Schlage Lock Company; an Ingersoll-Rand Company (SCH).
  - g. Yale Security Inc.; Div. of Williams Holdings (YAL).
  - h. Or equivalent.
2. Number of Pins: Five, Six or Seven as requested by District.
3. High-Security Grade: BHMA Grade 1A, listed and labeled as complying with UL 437 (Suffix A).
4. Permanent Cores: Manufacturer's standard; finish face to match lockset; interchangeable cores. As required by District.

- B. Keying System: Factory-registered keying system; grand master key system.

1. Keys: Provide nickel-silver keys permanently inscribed with a visual key control number and "DO NOT DUPLICATE" notation. In addition to one extra blank key for each lock, provide three change keys and five master keys.

- C. Strikes: Manufacturer's standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set.

**2.10 FABRICATION**

- A. Base Metals: Furnish metals of a quality equal to or greater than that of specified door hardware units and BHMA A156.18 for finishes. Do not furnish manufacturer's standard materials if different from specified standard.
- B. Fasteners: Phillips flat-head screws with finished heads to match surface of door hardware, unless otherwise indicated. Provide steel machine or wood screws or steel through bolts for fire-rated applications.
- C. Spacers or Sex Bolts: For through bolting of hollow metal doors.
- D. Fasteners for Wood Doors: Comply with requirements of DHI WDHS.2, "Recommended Fasteners for Wood Doors."
- E. Finishes: Comply with BHMA A156.18.

### **PART 3 - EXECUTION**

#### **3.1 INSTALLATION**

- A. Examine doors and frames for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.
- B. Fiberglass Door and Frame Preparation: Comply with DHI A115 series. Drill and tap doors and frames for surface-applied hardware according to SDI 107.
- C. Mounting Heights: Comply with the following requirements, unless otherwise indicated:
  - 1. Standard Fiberglass Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Doors and Frames."
- D. Adjust and reinforce attachment substrates as necessary for proper installation and operation. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.
- E. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with accessibility requirements.
  - 1. Door Closers: Adjust sweep period so that from an open position of 70 degrees, the door will take at least three seconds to move to a point 3 inches (75 mm) from the latch, measured to the leading edge of the door.

#### **3.2 DOOR HARDWARE SETS**

- A. Furnish the following items in the amounts required for a complete and operable facility. Refer to the Door Schedule on the Drawings for Hardware

**Section 08711 – Page 8****Door Hardware**

Group Identification. Each door, or pair of doors within a single opening, has an individual Hardware Group identification.

- B. Refer to descriptions as noted herein before hardware items not specifically noted by type and manufacturer.

| <u>Description</u>                                                | <u>Type</u>                                                                                | <u>Mfr</u> |
|-------------------------------------------------------------------|--------------------------------------------------------------------------------------------|------------|
| Group1 Restroom Door(s): <b><i>To be updated per District</i></b> |                                                                                            |            |
| 1 ½ Pair Butts                                                    | FBB 191                                                                                    | (ST)       |
| 1 Lockset                                                         | L9496 with L583363<br>“easy thumbturn” at<br>accessible restrooms<br>L Concealed Full Face | (S)        |
| 1 Closer                                                          | 4511 T (L) Slide Track Pull side                                                           | (LCN)      |
| 2 Kickplate                                                       | K0050 SS                                                                                   | (T)        |
| 1 Door Stop                                                       | #1214 CK                                                                                   | (T)        |
| 1 Door Shoe                                                       | 216 DPK                                                                                    | (P)        |
| 1 Weatherstripping                                                | 588-Bronze                                                                                 | (P)        |
| Group 2 Entry Door:                                               |                                                                                            |            |
| 1 ½ Pair Butts                                                    | FBB 191                                                                                    | (ST)       |
| 1 Lockset                                                         | L9050SPA<br>L Concealed Full Face                                                          | (S)        |
| 1 Closer                                                          | 4511 T (L) Slide Track Pull side                                                           | (LCN)      |
| 1 Kickplate                                                       | K0050 SS                                                                                   | (T)        |
| 1 Door Stop                                                       | #1214                                                                                      | (T)        |
| 1 Door Shoe                                                       | 216 DPK                                                                                    | (P)        |
| 1 Weatherstripping                                                | 588-Bronze                                                                                 | (P)        |
| Group 3 Storage Door:                                             |                                                                                            |            |
| 1 ½ Pair Butts                                                    | FBB 191                                                                                    | (ST)       |
| 1 Lockset                                                         | L9050SPA<br>L Concealed Full Face                                                          | (S)        |
| 1 Kickplate                                                       | K0050 SS                                                                                   | (T)        |
| 1 Door Stop                                                       | #1214                                                                                      | (T)        |
| 1 Door Shoe                                                       | 216 DPK                                                                                    | (P)        |
| 1 Weatherstripping                                                | 588-White                                                                                  | (P)        |

END OF SECTION 08711

## **SECTION 09250 GYPSUM WALLBOARD**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. This Section also includes:
  - 1. Gypsum Wallboard
  - 2. Cementing and taping.

#### **1.2 SUBMITTALS**

- A. Product Data: Submit manufacturer's product data and installation instructions for each component.
- B. Documentation of recycled content for each product.
- C. Documentation of manufacturer's buyback and/or recycling program.

#### **1.3 QUALITY ASSURANCE**

- A. The following references, codes and standards are hereby made a part of this Section and gypsum wallboard work shall conform to the applicable requirements therein except as otherwise specified herein or shown on the Drawings. Nothing in the Drawings or these Specifications shall be construed as permitting work which is contrary to code requirements.
  - 1. "Recommended Specifications for the Application and Finishing of Gypsum Board" published by the Gypsum Association (GA-253-2004).
- B. Store materials in protected dry storage areas. Neatly stack in flat position with suitable stickers to prevent sagging and contact with concrete slabs.

#### **1.4 ENVIRONMENTAL CONDITIONS**

- A. Maintain a temperature between 50 degrees and 80 degrees F within the building for twenty-four (24) hours prior to gypsum drywall installation, during installation and after installation until the building is occupied. Provide ventilation as required to remove excess moisture.



**Gypsum Wallboard**

**PART 2 - PRODUCTS**

**2.1 MANUFACTURERS**

- A. For all gypsum wallboard work throughout the Project, provide materials, including wallboard, accessories, fasteners, and finishing materials produced by one manufacturer, unless noted otherwise. Acceptable manufacturers are: USG, Georgia Pacific (GP) Gypsum, or equivalent.

**2.2 MATERIALS**

- A. Gypsum Wallboard: ASTM C36, 5/8" (16 mm) thickness unless otherwise noted. Material used in fire rated assemblies shall be Type X, UL labeled and approved as 1 hour fire resistive. Pieces to be 4 ft. (1200 mm) wide, maximum permissible lengths as required for minimum of end joints, ends square cut. Material to receive troweled finish, spray applied finish, or flexible coverings, shall have long edges tapered to receive manufacturer's standard joint treatment.
  - 1. Recycled Content: Gypsum recycled content shall be a minimum of 10% post industrial content. Paper content to be 100% post consumer recycled content.
- B. Water Resistant (W-R) Gypsum Wallboard: ASTM C 30, 5/8" (16 mm) thickness unless otherwise noted, water resistant board. Material used in fire rated assemblies shall be Type X, UL labeled and approved as 1 hour fire resistive. Pieces to be 4 ft. (1200 mm) wide, maximum permissible lengths as required for minimum of end joints, ends square cut, long edges tapered to receive manufacturer's standard joint treatment.
- C. Metal Edge Trim: USG 200-A, National Gypsum No. 100, or equivalent, where board edge is exposed; where edge is not exposed, USG 200-B, National Gypsum No. 200, or equivalent, may be used. Corner bead to be USG "Dur-A-Bead" #103, Gold Bond, or equal, 1-1/4" x 1-1/4" (32 mm x 32 mm).
- D. Control Joints: USG #093, Western, or equal.
- E. Fasteners: Metal screws as recommended by metal system manufacturer and meeting ASTM C 1002. Use S-12 screws for 20 gage or heavier metal.
- F. Tape: ASTM C 475, perforated reinforcing tape, [fiberglass reinforcing tape where joining to adjacent existing plaster,] and fasteners.
- G. Joint Compound: Provide compound in conformance with ASTM 475, as recommended by the manufacturer of the gypsum products being used, for the finish specified.
- H. Fasteners: Provide self piercing steel screws for installation of gypsum board to wood or cold-formed steel studs in conformance with ASTM C 1002.

1. Type W: For fastening to wood members.

### **PART 3 - EXECUTION**

#### **3.1 COORDINATION**

- A. Coordinate with other trades for provisions for insulation, blocking, metal backing plates, special anchors, etc., and ensure that such items are properly installed and located prior to installing wall finish.
- B. Coordinate with trades responsible for furnishing access doors with exact locations subject to Project Manager's approval.

#### **3.2 MATERIALS HANDLING**

- A. Protect gypsum products from moisture and contaminants. Do not store near materials that may off gas harmful volatile organic compounds, such as solvents, kerosene, etc.

#### **3.3 EXAMINATION**

- A. Inspect surfaces, backing, framing and furring systems, etc., to receive wallboard, and report any discrepancies. Starting work implies acceptance of existing conditions.
- B. Where air plenums occur above suspended or furred ceilings, verify that plenum surfaces are free of dirt, dust and loose construction soil and that construction work is otherwise complete, equipment installed and that surfaces and openings which might provide "leaks" are sealed prior to commencing installation of ceiling assembly.

#### **3.4 GYPSUM WALLBOARD INSTALLATION**

- A. General: Install gypsum wallboard with metal screws in conformance with the requirements of the Gypsum Association Specifications GA.216.
- B. Install wallboard plumb, level, and/or plane.
  1. Layout panels to minimize waste; reuse cutoffs whenever feasible.
  2. Select panel sizes to minimize waste.
- C. Single Layer Gypsum Wallboard: Erect single layer gypsum wallboard in non-fire rated walls in most economical direction, with edges and ends on firm bearing. Neatly fit ends of edges where they abut. Erect single layer fire rated gypsum wallboard vertically, with edges and ends occurring over firm bearing.
- D. Water Resistant (WR) Gypsum Wallboard: Install where gypsum wallboard is used as a backing for ceramic tiles and in "wet" areas, or where WR is indicated.

**Gypsum Wallboard**

Install in the same manner as regular gypsum wallboard. Treat cut edges and holes with sealant.

- E. Tile Backing Panels: Cementitious Backer Unit Application (ANSI A 108.11)
- F. Properly space fastenings as per manufacturer's specifications and code requirements, with heads set slightly below surface for proper cementing, but without breaking paper covering. Loosely butt joints to be taped; firmly butt concealed joints to be left untreated. Stagger end joints and joints in finish material 12" (300 mm) min. with those in backing. Joints on opposite sides of partition shall occur on different studs. Install backing for finish material to present no surface imperfections in applied finish. Make holes and cutouts by sawing or by such method as will not fracture core or tear covering and with such accuracy that plates, escutcheons, trim, etc., will cover edges. Clearance for cutouts in partitions shall not exceed 1/4".
- G. Install metal edge trim at exposed edges and ends and at untrimmed joints between wallboard finish and other material. Install corner bead at all outside corners. Where trim is required at wallboard edge, and headers, studs, sill or other backing are not available for positive fastening of trim, apply trim to board with contact type of adhesive.

**3.5 TAPING AND CEMENTING**

- A. Tape and cement gypsum wallboard in accord with manufacturer's directions. Unless otherwise noted, finish shall be smooth sanded without imperfections, tool marks, etc. (3 coat min.). Tape and cement all wallboard. At sound insulated and air sealed construction, ensure that joints and voids between adjoining wallboard panels (including corner intersections) are filled solidly with compound prior to taping. Subcontractor's attention is directed to Reference Standard 1.02A(1) whereby wallboard surfaces to receive gloss type paints (other than "flat") shall receive a thin skim coat of joint compound. Such treatment shall be smooth sanded to provide a uniform surface for painting. Taping and cementing need not be finished for appearance where board serves as backing to other finish except that treatment shall not interfere with proper installation of finish or permit "telegraphing".

**3.6 OTHER METAL TRIM**

- A. General:
  - 1. The Drawings do not purport to show all locations and requirements for metal trim.
  - 2. Carefully study the Drawings and the installation, and provide all metal trim normally recommended by the manufacturer of the gypsum wallboard approved for use in this Work.

**3.7 CLEANING UP**

- A. In addition to other requirements for cleaning, use necessary care to prevent scattering gypsum wallboard scraps and dust, and to prevent tracking gypsum and joint finishing compound onto floor surfaces.
- B. At completion of each segment of installation in a room or space, promptly pick up and remove from the working area all scrap, debris, and surplus material of this Section.

**3.8 WASTE MANAGEMENT**

- A. Separate clean waste gypsum products from contaminants for recycling in accordance with the Waste Management Plan. Do not include wood, plastic, metal, asphalt impregnated gypsum board or any gypsum board coated with glass fiber, vinyl, decorative paper, paint or other finish. Place in designated area and protect from moisture and contamination.
- B. Store scraps larger than 2 square feet for use in patching and small infill areas.
- C. Clean waste gypsum products shall be recycled by:
  - 1. Returning to gypsum board manufacturer in lieu of landfill.
- D. Separate metal waste, packaging and all other materials in accordance with the Waste Management Plan and place in designated areas for recycling or reuse.

**END OF SECTION 09250**

## **SECTION 09310 CERAMIC TILE**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. This Section includes the following:
  - 1. Ceramic tile.
  - 2. Glazed wall tile.
  - 3. Crack-suppression membrane for thin-set tile installations.

#### **1.2 SUBMITTALS**

- A. Product Data: For each product indicated.
- B. Shop Drawings: Show locations of each type of tile and tile pattern. Show widths, details, and locations of expansion, contraction, control, and isolation joints.
- C. Samples:
  - 1. Each type, composition, color, and finish of tile.
  - 2. Assembled samples with grouted joints for each type, composition, color, and finish of tile.

#### **1.3 QUALITY ASSURANCE**

- A. All work shall be performed in compliance with the standards established by the Tile Council of America (TCA).

#### **1.4 EXTRA MATERIALS**

Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents. Revise subparagraph below to suit Project.

- 1. Tile and Trim Units: Furnish quantity of full-size units equal to 3 percent of amount installed, for each type, composition, color, pattern, and size indicated.

### **PART 2 - PRODUCTS**

#### **2.1 MANUFACTURERS**

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply for product selection:

**Ceramic Tile**

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the products specified.
2. Products: Subject to compliance with requirements, provide one of the products specified.
3. 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.
4. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.
5. Basis-of-Design Product: The design for each tile type is based on the product named. Subject to compliance with requirements, provide either the named product or a comparable product by one of the other manufacturers specified.

**2.2 TILE PRODUCTS**

**A. Manufacturers:**

1. American Marazzi Tile, Inc.
2. American Olean; Div. of Dal-Tile International Corp.
3. Crossville Ceramics Company, L.P.
4. Daltile; Div. of Dal-Tile International Inc.
5. Florida Tile Industries, Inc.
6. GranitiFiandre.
7. Summitville Tiles, Inc.
8. United States Ceramic Tile Company.
9. Or equivalent

**B. ANSI Ceramic Tile Standard: Provide Standard grade tile that complies with ANSI A137.1, "Specifications for Ceramic Tile," for types, compositions, and other characteristics indicated**

**C. Glazed Wall Tile at Restroom as follows:**

1. Module Size: 6x6.
2. Thickness: 1/4 inch.
3. Face: Plan with modified square edges.
4. Basis-of-Design Product: Daltile – “Continental Slate” - Porcelain Tile – “Egyptian Beige (CS50)”.
5. Products:
  - a. Bullnose and other shapes for a complete installation.

**D. Glazed Floor Tile at Restroom as follows:**

1. Module Size: 1'-0" x 2'-0".
2. Thickness: 1/4 inch.

3. Face: Plain with modified square edges.
4. Basis-of-Design Product: Daltile – “Continental Slate” – “Porcelain Tile” – Indian Red 1'x 2' block random.
5. Flooring shall be slip resistant per CBC 1124B1.

E. Trim Products:

1. Bullnose, inside corners, round top base, outside corners and other pieces required for a complete closed installation (no edge exposure of tile is allowed).

2.3 ACCESSORY MATERIALS

A. Crack-Suppression Membranes for Thin-Set Tile Installations: Manufacturer's standard product that complies with ANSI A118.10.

1. Chlorinated-Polyethylene-Sheet Product: Nonplasticized, chlorinated polyethylene faced on both sides with nonwoven polyester fabric, 0.030-inch nominal thickness.
  - a. Product: Noble Company (The); Nobleseal TS.

2.4 SETTING AND GROUTING MATERIALS

A. Manufacturers:

1. Atlas Minerals & Chemicals, Inc
2. Bonsal, W. R., Company.
3. Bostik.
4. Custom Building Products.
5. LATICRETE International Inc.
6. MAPEI Corporation.
7. Summitville Tiles, Inc.
8. Or equivalent.

B. Latex-Portland Cement Mortar (Thin Set): ANSI A118.4, TCA W202-05.

1. Prepackaged dry-mortar mix containing dry additive to which only water must be added.
2. Prepackaged dry-mortar mix combined with liquid-latex additive.
3. For wall applications, provide nonsagging mortar.

C. Chemical-Resistant, Water-Cleanable, Tile-Setting and -Grouting Epoxy: ANSI A118.3.

D. Standard Sanded Cement Grout: ANSI A118.6, color as indicated.

## **2.5 MISCELLANEOUS MATERIALS**

- A. Elastomeric Sealants: Elastomeric sealants of base polymer and characteristics indicated that comply with applicable requirements in Division 7 Section 07920 "Joint Sealants."
  - 1. One-Part, Mildew-Resistant Silicone: ASTM C 920; Type S; Grade NS; Class 25; Uses NT, G, A, and, as applicable to nonporous joint substrates indicated, O; formulated with fungicide, intended for in-service exposures of high humidity and extreme temperatures.
    - a. Products:
      - 1) Dow Corning Corporation; Dow Corning 786.
      - 2) GE Silicones; Sanitary 1700.
      - 3) Pecora Corporation; Pecora 898 Sanitary Silicone Sealant.
      - 4) Tremco, Inc.; Tremsil 600 White.
      - 5) Or equivalent.
- B. Cementitious Backer Units: ANSI A118.9 in maximum lengths available to minimize end-to-end butt joints.
  - 1. Thickness: 1/2 inch.
  - 2. Products:
    - a. C-Cure; C-Cure Board 990.
    - b. Custom Building Products; Wonderboard.
    - c. FinPan, Inc.; Util-A-Crete Concrete Backer Board.
    - d. USG Corporation; DUROCK Cement Board.
    - e. Or equivalent.
- C. Trowelable Underlayments and Patching Compounds: Latex-modified, portland cement-based formulation provided or approved by manufacturer of tile-setting materials.
- D. Grout Sealer: Manufacturer's standard silicone product for sealing grout joints that does not change color or appearance of grout.

## **PART 3 - EXECUTION**

### **3.1 PREPARATION**

- A. Remove coatings, including curing compounds and other substances that contain soap, wax, oil, or silicone, that are incompatible with tile-setting materials.
- B. Fill cracks, holes, and depressions with trowelable leveling and patching compound according to tile-setting material manufacturer's written instructions.



- C. Remove protrusions, bumps, and ridges by sanding or grinding.
- D. Blending: For tile exhibiting color variations, use factory blended tile or blend tiles at Project site before installing.
- E. Field-Applied Temporary Protective Coating: Where indicated under tile type or needed to prevent grout from staining or adhering to exposed tile surfaces, precoat them with continuous film of temporary protective coating, taking care not to coat unexposed tile surfaces.

### 3.2 INSTALLATION, GENERAL

- A. ANSI Tile Installation Standards: Comply with parts of ANSI A108 Series "Specifications for Installation of Ceramic Tile" that apply to types of setting and grouting materials and to methods indicated in ceramic tile installation schedules.
- B. TCA Installation Guidelines: TCA's "Handbook for Ceramic Tile Installation." Comply with TCA installation methods indicated in ceramic tile installation schedules.
- C. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions, unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.
- D. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Grind cut edges of tile abutting trim, finish, or built-in items. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.
- E. Jointing Pattern: Lay tile in grid pattern, unless otherwise indicated. Align joints when adjoining tiles on floor, base, walls, and trim are same size. Lay out tile work and center tile fields in both directions in each space or on each wall area. Adjust tile layout so no tile row is less than one-half tile width. Provide uniform joint widths, unless otherwise indicated.
- F. Lay out tile wainscots to next full tile beyond dimensions indicated.
- G. Expansion Joints: Locate expansion joints and other sealant-filled joints during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.
  - 1. Locate joints in tile surfaces directly above joints in concrete substrates.
  - 2. Prepare joints and apply sealants to comply with requirements in Division 7 Section "Joint Sealants."

**Ceramic Tile**

- H. Grout tile to comply with requirements of ANSI A108.10, unless otherwise indicated.
  - 1. For chemical-resistant epoxy grouts, comply with ANSI A108.6.
- I. At restrooms and where indicated, install cementitious backer units and treat joints to comply with ANSI A108.11.
- J. Install tile on walls and floors with the following joint widths:
  - 1. Glazed Wall and Floor Tile: 1/16 inch.
- K. Apply grout sealer to cementitious grout joints in tile floors according to grout-sealer manufacturer's written instructions. As soon as grout sealer has penetrated grout joints, remove excess sealer and sealer that has gotten on tile faces by wiping with soft cloth.

**3.3 FLOOR TILE INSTALLATION SCHEDULE**

- A. Exterior floor installation on concrete; cement mortar bed (thickset) bonded to concrete; TCA F115.
  - 1. Bond Coat/Thin-Set Mortar: Latex- portland cement mortar.
  - 2. Grout: Sand-portland cement Polymer-modified sanded grout.

**3.4 WALL TILE INSTALLATION SCHEDULE**

- A. Wall installation over masonry or concrete; cement mortar bed (thickset); TCA W202.
  - 1. Bond Coat/Thin-Set Mortar: Latex- portland cement mortar.
  - 2. Grout: Sand-portland cement or Polymer-modified sanded grout.
  - 3. Placing of tile: Random placement of accent at field tile.

**3.5 CLEANING**

- A. Cleaning:
  - 1. Upon completion of placing and grouting, clean the work of this section in accordance with recommendations of the Manufacturer's of the materials used.
  - 2. Protect metal surfaces, cast iron, and vitreous items from effects of acid cleaning.
  - 3. Flush surfaces with clean water before and after cleaning.
- B. Provide tile surfaces clean and free from cracked, broken, chipped, unbonded, and otherwise defective units.

- C. Provide required protection of tile surfaces to prevent damage and wear prior to acceptance of the Work by the Owner.

END OF SECTION 09310

**SECTION 09911**  
**PAINTING (CONSUMER LINE PRODUCTS)**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. This Section includes surface preparation and field painting of exposed exterior and interior items and surfaces.

**1.2 SUBMITTALS**

- A. Product Data: For each product indicated.
- B. Samples: For each type of finish-coat material indicated.

**1.3 PROJECT CONDITIONS**

- A. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg F. Maintain storage containers in a clean condition, free of foreign materials and residue.
- B. Apply waterborne paints only when temperatures of surfaces to be painted and surrounding air are between 50 and 90 deg F.
- C. Apply solvent-thinned paints only when temperatures of surfaces to be painted and surrounding air are between 45 and 95 deg F.
- D. Do not apply paint in snow, rain, fog, or mist; or when relative humidity exceeds 85 percent; or at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

**1.4 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 State.
  - 1. Quantity: Five (5) percent, but not less than 1 gal. or 1 case, as appropriate, of each material and color applied.

**PART 2 - PRODUCTS**

**2.1 MANUFACTURERS**

**Painting (Consumer Line Products)**

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products listed in other Part 2 articles.
- B. Products: Subject to compliance with requirements, provide one of the products listed in other Part 2 articles.
- C. Manufacturers' Names: Shortened versions (shown in parentheses) of the following manufacturers' names are used in other Part 2 articles:
  - 1. Benjamin Moore & Co. (Benjamin Moore).
  - 2. ICI Dulux Paint Centers (ICI Dulux Paints).
  - 3. Kelly-Moore Paint Co. (Kelly-Moore).
  - 4. PPG Industries, Inc. (Pittsburgh Paints).
  - 5. Sherwin-Williams Co. (Sherwin-Williams).
  - 6. Dunn-Edwards Co.
  - 7. Or equivalent.

**2.2 PAINT MATERIALS, GENERAL**

- A. Material Compatibility: Provide block fillers, primers, and finish-coat materials that are compatible with one another and with the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
- B. Material Quality: Provide manufacturer's best-quality paint material of the various coating types specified that are factory formulated and recommended by manufacturer for application indicated. Paint-material containers not displaying manufacturer's product identification will not be acceptable.
- C. Colors:
  - 1. Building Field Color: Color to be selected by District from standard colors.
  - 2. Post, Trim, Frame Color: Color to be selected by District from standard colors.
  - 3. Building Interior Walls (Ceilings) above tile: Sherwin Williams, SW Classic White SW 2829 semi gloss.

**2.3 PREPARATORY COATS**

- A. Concrete Unit Masonry Block Filler: High-performance latex block filler of finish coat manufacturer and recommended in writing by manufacturer for use with finish coat and on substrate indicated.
- B. Exterior Primer: Exterior alkyd or latex-based primer of finish coat manufacturer and recommended in writing by manufacturer for use with finish coat and on substrate indicated.

1. Ferrous-Metal and Aluminum Substrates: Rust-inhibitive metal primer.
2. Zinc-Coated Metal Substrates: Galvanized metal primer.
3. Where manufacturer does not recommend a separate primer formulation on substrate indicated, use paint specified for finish coat.

C. Interior Primer: Interior latex-based or alkyd primer of finish coat manufacturer and recommended in writing by manufacturer for use with finish coat and on substrate indicated.

1. Ferrous-Metal Substrates: Quick drying, rust-inhibitive metal primer.
2. Zinc-Coated Metal Substrates: Galvanized metal primer.
3. Where manufacturer does not recommend a separate primer formulation on substrate indicated, use paint specified for finish coat.

## 2.4 EXTERIOR FINISH COATS

A. Exterior Flat Acrylic Paint:

1. Benjamin Moore; MoorLife Latex House Paint No. 105.
2. ICI Dulux Paints; 2201-XXXX Dulux Ultra Latex Flat Finish.
3. Kelly-Moore; 1240 Acry-Shield Exterior Acrylic Flat Finish.
4. Pittsburgh Paints; 10 Line Pitt-Cryl Exterior Water Base Paint.
5. Sherwin-Williams; SuperPaint Exterior Latex Flat House and Trim Paint, A80 Series.
6. A-100 Exterior Laxtex.
7. Or equivalent.

B. Exterior Low-Luster Acrylic Paint:

1. Benjamin Moore; Moorcraft Super Spec Low Lustre Latex House Paint No. 185.
2. ICI Dulux Paints; 2402-XXXX Dulux Professional Exterior 100 Percent Acrylic Satin Finish.
3. Kelly-Moore; 1245 Acry-Velvet Exterior Low Sheen Acrylic Finish.
4. Pittsburgh Paints; 6-2000 Series SpeedHide Exterior House & Trim Satin--Acrylic Latex.
5. Pittsburgh Paints; 90-400 Series Pitt-Tech One Pack High Performance Waterborne Satin DTM Industrial Enamels.
6. Sherwin-Williams; A-100 Exterior Latex Satin House & Trim Paint A82 Series.
7. Or equivalent.

C. Exterior Semigloss Acrylic Enamel:

1. Benjamin Moore; Moorcraft Super Spec Latex House & Trim Paint No. 170.

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**Painting (Consumer Line Products)**

2. ICI Dulux Paints; 2406-XXXX Dulux Professional Exterior 100 Percent Acrylic Semi-Gloss Finish.
3. Kelly-Moore; 1250 Acry-Lustre Exterior Semi-Gloss Acrylic Finish.
4. Pittsburgh Paints; 6-900 Series SpeedHide Exterior House & Trim Semi-Gloss Acrylic Latex Paint.
5. Sherwin-Williams; A-100 Latex Gloss A8 Series.
6. Or equivalent.

**PART 3 - EXECUTION**

**3.1 APPLICATION**

- A. Comply with procedures specified in PDCA P4 for inspection and acceptance of surfaces to be painted.
- B. Coordination of Work: Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.
- C. Remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures, and similar items already installed that are not to be painted. If removal is impractical or impossible because of size or weight of the item, provide surface-applied protection before surface preparation and painting.
  1. After completing painting operations in each space or area, reinstall items removed using workers skilled in the trades involved.
- D. Surface Preparation: Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition and as specified.
  1. Provide barrier coats over incompatible primers or remove and reprime.
  2. Cementitious Materials: Remove efflorescence, chalk, dust, dirt, grease, oils, and release agents. Roughen as required to remove glaze. If hardeners or sealers have been used to improve curing, use mechanical methods of surface preparation.
  3. Wood: Clean surfaces of dirt, oil, and other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sand surfaces exposed to view smooth and dust off.
    - a. Scrape and clean small, dry, seasoned knots, and apply a thin coat of white shellac or other recommended knot sealer before applying primer. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood filler. Sand smooth when dried.
    - b. Prime, stain, or seal wood to be painted immediately on delivery. Prime edges, ends, faces, undersides, and back sides of wood, including cabinets, counters, cases, and paneling.

- c. If transparent finish is required, backprime with spar varnish.
    - d. Backprime paneling on interior partitions where masonry, plaster, or other wet wall construction occurs on back side.
    - e. Seal tops, bottoms, and cutouts of unprimed wood doors with a heavy coat of varnish or sealer immediately on delivery.
  - 4. Ferrous Metals: Clean ungalvanized ferrous-metal surfaces that have not been shop coated; remove oil, grease, dirt, loose mill scale, and other foreign substances. Use solvent or mechanical cleaning methods that comply with SSPC's recommendations.
    - a. Treat bare and sandblasted or pickled clean metal with a metal treatment wash coat before priming.
  - 5. Galvanized Surfaces: Clean galvanized surfaces with nonpetroleum-based solvents so surface is free of oil and surface contaminants. Remove pretreatment from galvanized sheet metal fabricated from coil stock by mechanical methods.
- E. Material Preparation:
- 1. Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.
  - 2. Stir material before application to produce a mixture of uniform density. Stir as required during application. Do not stir surface film into material. If necessary, remove surface film and strain material before using.
  - 3. Do not add solvent, thinners or extenders. Use coating materials as supplied from manufacturers container.
- F. Exposed Surfaces: Include areas visible when permanent or built-in fixtures, grilles, convactor covers, covers for finned-tube radiation, and similar components are in place. Extend coatings in these areas, as required, to maintain system integrity and provide desired protection.
- 1. Paint back sides of access panels and removable or hinged covers to match exposed surfaces.
  - 2. Finish exterior doors on tops, bottoms, and side edges the same as exterior faces.
- G. Sand lightly between each succeeding enamel or varnish coat.
- H. Scheduling Painting: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.
- 1. Omit primer over metal surfaces that have been shop primed and touchup painted.
  - 2. If undercoats, stains, or other conditions show through final coat of paint, apply additional coats until paint film is of uniform finish, color, and appearance.



**Painting (Consumer Line Products)**

- I. Application Procedures: Apply paints and coatings by brush, roller, spray, or other applicators according to manufacturer's written instructions.
- J. Minimum Coating Thickness: Apply paint materials no thinner than manufacturer's recommended spreading rate. Provide total dry film thickness of the entire system as recommended by manufacturer.
- K. Mechanical and Electrical Work: Painting of mechanical and electrical work is limited to items exposed in equipment rooms and occupied spaces.
- L. Block Fillers: Apply block fillers to concrete masonry block at a rate to ensure complete coverage with pores filled.
- M. Prime Coats: Before applying finish coats, apply a prime coat, as recommended by manufacturer, to material that is required to be painted or finished and that has not been prime coated by others. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to ensure a finish coat with no burn-through or other defects due to insufficient sealing.
- N. Pigmented (Opaque) Finishes: Completely cover surfaces as necessary to provide a smooth, opaque surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.
- O. Transparent (Clear) Finishes: Use multiple coats to produce a glass-smooth surface film of even luster. Provide a finish free of laps, runs, cloudiness, color irregularity, brush marks, orange peel, nail holes, or other surface imperfections.
- P. Stipple Enamel Finish: Roll and redistribute paint to an even and fine texture. Leave no evidence of rolling, such as laps, irregularity in texture, skid marks, or other surface imperfections.

**3.2 CLEANING AND PROTECTING**

- A. At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from Project site.
- B. Protect work of other trades, whether being painted or not, against damage from painting. Correct damage by cleaning, repairing or replacing, and repainting, as approved by State Representative.
- C. Provide "Wet Paint" signs to protect newly painted finishes. After completing painting operations, remove temporary protective wrappings provided by others to protect their work.

1. After work of other trades is complete, touch up and restore damaged or defaced painted surfaces. Comply with procedures specified in PDCA P1.

### 3.3 EXTERIOR PAINT SCHEDULE

#### A. Concrete, Stucco, and Masonry (Other Than Concrete Unit Masonry):

1. Acrylic Finish: Two finish coats over a primer.
  - a. Primer: Exterior concrete and masonry primer.
  - b. Finish Coats: Exterior low-luster acrylic paint and semigloss acrylic enamel.

#### B. Concrete Unit Masonry:

1. Acrylic Finish: Two finish coats over a block filler.
  - a. Block Filler: Concrete unit masonry block filler.
  - b. Finish Coats: Exterior low-luster acrylic paint and semigloss acrylic enamel concrete, masonry.

#### C. Mineral-Fiber-Reinforced Cement Panels:

1. Acrylic Finish: Two finish coats over a primer.
  - a. Primer: Exterior concrete and masonry primer.
  - b. Finish Coats: Exterior flat acrylic paint.

#### D. Smooth Wood:

1. Acrylic Finish: Two finish coats over a primer.
  - a. Primer: Exterior wood primer for acrylic enamels.
  - b. Finish Coats: Exterior low-luster acrylic paint for wood.

#### E. Wood Trim:

1. Acrylic-Enamel Finish: Two finish coats over a primer.
  - a. Primer: Exterior wood primer for acrylic enamels.
  - b. Finish Coats: Exterior semigloss acrylic enamel wood.

#### F. Plywood:

1. Acrylic Finish: Two finish coats over a primer.
  - a. Primer: Exterior wood primer for acrylic enamels.
  - b. Finish Coats: Exterior acrylic paint.

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**Painting (Consumer Line Products)**

G. Ferrous Metal:

1. Acrylic Finish: Two finish coats over a rust-inhibitive primer.
  - a. Primer: Exterior ferrous-metal primer (not required on shop-primed items).
  - b. Finish Coats: Exterior low-luster acrylic paint for ferrous and other metals.

H. Zinc-Coated Metal:

1. Acrylic Finish: Two finish coats over a galvanized metal primer.
  - a. Primer: Exterior galvanized metal primer.
  - b. Finish Coats: Exterior semigloss acrylic enamel and other metals.

END OF SECTION 09911

**SECTION 10416**  
**DIRECTORIES AND BULLETIN BOARDS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. This Section includes the following:

1. Bulletin boards.

**1.2 SUBMITTALS**

- A. Product Data: For each type of directory, bulletin board, and accessory indicated.
- B. Shop Drawings: Include plans, elevations, sections, and details of installation.

**1.3 EXTRA MATERIALS**

- A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
1. Message Strips: Furnish units matching message strips installed and equal to 5 percent of amount installed.

**PART 2 - PRODUCTS**

**2.1 BULLETIN BOARD**

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
- C. Basis-of-Design Product: Subject to compliance with requirements, provide the named product or a comparable product by one of the following:
1. Andco Industries Corporation.
  2. Claridge Products and Equipment, Inc.
  3. Greensteel, Inc.
  4. Nelson-Harkins Industries.
  5. Or equivalent.

**2.2 ACCESSORIES**

**Section 10416 – Page 2**  
**Directories and Bulletin Boards**

- A. Fasteners: Provide screws, bolts, and other exposed fastening devices of same material as items being fastened. Use theft-resistant fasteners where exposed to view.
- B. Hardware: Provide building directories and bulletin boards with the following hardware:
  - 1. Hinges: Continuous-type piano hinges.
  - 2. Locks: Furnish each cover with lock; key locks alike. Furnish two keys per lock.
- C. Colors: Where items other than frames or glazing materials require color selection to distinguish graphic images from the background, provide colors as selected from manufacturer's full range.

**2.3 FINISHES**

- A. Aluminum Finish: Class I, clear anodic coating complying with AAMA 607.1  
Class I, color anodic coating complying with AAMA 606.1 or AAMA 608.1.

**PART 3 - EXECUTION**

**3.1 INSTALLATION**

- A. Install units level and plumb, attached to supporting structure with concealed fasteners.

**END OF SECTION 10416**

## **SECTION 10431 SIGNS**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. This Section includes the following:
  - 1. Panel signs.
  - 2. Dimensional characters (letters and numbers) for exterior use.
  - 3. Signage accessories.

#### **1.2 SUBMITTALS**

- A. Product Data: For each product indicated.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other Work.
  - 1. Verify dimensions by field measurements before fabrication and indicate measurements on Shop Drawings.
  - 2. Provide message list for each sign, including large-scale details of wording, lettering, and braille layout.
- C. Samples: For each sign material indicated that involves color selection.

#### **1.3 QUALITY ASSURANCE**

- A. Regulatory Requirements: Comply with the Americans with Disabilities Act (ADA) and with code provisions as adopted by authorities having jurisdiction.

### **PART 2 - PRODUCTS**

#### **2.1 MANUFACTURERS**

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply for product selection:
  - 1. 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.
  - 2. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers specified.

#### **2.2 PANEL SIGNS**

## **Section 10431 – Page 2**

### **Signs**

- A. General: Provide panel signs that comply with requirements indicated for materials, thicknesses, finishes, colors, designs, shapes, sizes, and details of construction.
- B. Manufacturers:
  - 1. Allenite Signs; Allen Marking Products, Inc.
  - 2. American Graphics Inc.
  - 3. Andco Industries Corp.
  - 4. APCO Graphics, Inc.
  - 5. ASI Sign Systems, Inc.
  - 6. Best Manufacturing Co.
  - 7. Grimco, Inc.
  - 8. Innerface Sign Systems, Inc.
  - 9. Kaltech Industries Group, Inc.
  - 10. Mills Manufacturing, Inc.
  - 11. Mohawk Sign Systems.
  - 12. Seton Identification Products.
  - 13. Signature Signs, Inc.
  - 14. Supersine Company (The).
  - 15. Or equivalent.
- C. Cast-Acrylic Sheet: Manufacturer's standard and as follows:
  - 1. Color: As selected from manufacturer's full range.
- D. Plastic Laminate: Provide high-pressure laminate engraving stock with face and core plies in contrasting colors as selected from manufacturer's full range.
- E. Laminated Panels: Permanently laminate face panels to backing sheets of material; use manufacturer's standard process.
- F. Graphic Content and Style: Provide sign copy that complies with requirements indicated in the Sign Schedule for size, style, spacing, content, mounting height and location, material, finishes, and colors of signage.
- G. Tactile and Braille Copy: Manufacturer's standard process for producing copy complying with ADA Accessibility Guidelines and ICC/ANSI A117.1. Text shall be accompanied by Grade 2 braille. Produce precisely formed characters with square cut edges free from burrs and cut marks.
  - 1. Panel Material: Opaque acrylic sheet Photopolymer Clear acrylic sheet with opaque color coating, subsurface applied.
  - 2. Raised-Copy Thickness: Not less than 1/32 inch.
- H. Engraved Copy: Machine engrave letters, numbers, symbols, and other graphic devices into panel sign on face indicated to produce precisely formed copy, incised to uniform depth.

1. Engraved Plastic Laminate: Engrave through exposed face ply of plastic-laminate sheet to expose contrasting core ply.
  2. Engraved Metal: Fill engraved copy with enamel.
  3. Engraved Opaque Acrylic Sheet: Fill engraved copy with enamel.
  4. Face-Engraved Clear Acrylic Sheet: Fill engraved copy with enamel. Apply opaque background color coating to back face of acrylic sheet.
- I. Subsurface Copy: Apply minimum 4-mil- thick vinyl copy to back face of clear acrylic sheet forming panel face to produce precisely formed opaque image. Image shall be free from rough edges.
- J. Subsurface Engraved Acrylic Sheet: Reverse-engrave back face of clear acrylic sheet. Fill resulting copy with enamel. Apply opaque background color coating over enamel-filled copy.
- K. Applied Copy: Die-cut characters from vinyl film of nominal thickness of 3 mils with pressure-sensitive adhesive backing. Apply copy to exposed face of wall surfaces.
1. Panel Material: Opaque acrylic sheet Clear acrylic sheet with opaque color coating, subsurface applied.
- L. Colored Coatings for Acrylic Sheet: For copy colors, provide Pantone Matching System (PMS) colored coatings, including inks and paints, that are recommended by acrylic manufacturers for optimum adherence to acrylic surface and are nonfading for application intended.

## 2.3 DIMENSIONAL CHARACTERS

### A. Manufacturers:

1. American Graphics Inc.
2. A.R.K. Ramos.
3. ASI Sign Systems, Inc.
4. Charleston Industries, Inc.
5. Gemini Incorporated.
6. Grimco, Inc.
7. Innerface Sign Systems, Inc.
8. Kaltech Industries Group, Inc.
9. Metal Arts; Div. of L&H Mfg.
10. Mills Manufacturing, Inc.
11. Mohawk Sign Systems.
12. Signature Sign Signs, Inc.
13. Southwell Co. (The).
14. Or equivalent.

### B. Cast-Acrylic Sheet: Manufacturer's standard and as follows:



**Signs**

1. Color: [As indicated by manufacturer's designations] [As selected from manufacturer's full range] <Insert color>.
- C. Cast Characters: Form individual letters and numbers by casting. Produce characters with smooth flat faces, sharp corners, and precisely formed lines and profiles, free from pits, scale, sand holes, and other defects. Cast lugs into back of characters and tap to receive threaded mounting studs. Comply with requirements indicated for finish, style, and size.

**2.4 ACCESSORIES**

- A. Mounting Methods: Use concealed fasteners hook-and-loop tape fabricated from materials that are not corrosive to sign material and mounting surface.
- B. Anchors and Inserts: Provide nonferrous-metal or hot-dip galvanized anchors and inserts for exterior installations and elsewhere as required for corrosion resistance. Use toothed steel or lead expansion-bolt devices for drilled-in-place anchors. Furnish inserts, as required, to be set into concrete or masonry work.
- C. Note Holders: Manufacturer's standard aluminum paper sheet holders.

**PART 3 - EXECUTION**

**3.1 INSTALLATION**

- A. General: Locate signs and accessories where indicated, using mounting methods of types described and in compliance with manufacturer's written instructions.
  1. Install signs level, plumb, and at heights indicated, with sign surfaces free from distortion and other defects in appearance.
  2. Exterior Wall Signs: Install signs on walls adjacent to latch side of door where applicable. Where not indicated or possible, such as double doors, install signs on nearest adjacent walls. Locate to allow approach within 3 inches of sign without encountering protruding objects or standing within swing of door.

**END OF SECTION 10431**

## **SECTION 10436 POST AND PANEL SIGNS**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. This Section includes the following:
  - 1. Nonilluminated, single-sheet-type post and panel signs.

#### **1.2 PERFORMANCE REQUIREMENTS**

- A. Structural Performance: Provide post and panel signs capable of withstanding the effects of gravity loads and the following loads and stresses within limits and under conditions indicated, determined according to ASCE 7, "Minimum Design Loads for Buildings and Other Structures":
  - 1. Wind Loads: Determine loads based on a uniform pressure of 30 mph, acting in any direction.

#### **1.3 SUBMITTALS**

- A. Product Data: For each product indicated.
- B. Shop Drawings: Include plans, elevations, sections of components and installation details.
- C. Samples: For each material, finish, and color.
  - 1. Include a sample of graphic-image process.

#### **1.4 WARRANTY**

- A. Warranty Period: Three (3) years from date of Substantial Completion.

### **PART 2 - PRODUCTS**

#### **2.1 MANUFACTURERS**

- A. Basis-of-Design Product: The design for post and panel signs is based on. Subject to compliance with requirements, provide the named product or a comparable product by one of the following manufacturers:
- B. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

**Post and Panel Signs**

- C. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Andco Industries Corporation.
2. APCO Graphics
3. ASI Sign System, Inc.
4. Best Manufacturing Co.
5. Charleston Industries, Inc.
6. Innerface Sign Systems, Inc.
7. Kaltech Industries Group, Inc.
8. Nelson-Harkins Industries; ABC Bulletin and Directory Division.
9. Signature Signs, Inc.
10. Supersine Company (The).
11. Vomar Products, Inc.
12. Or equivalent.

**2.2 MATERIALS**

- A. Aluminum Sheet and Plate: ASTM B 209, alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, and with at least the strength and durability properties of alloy 5005-H15.
- B. Aluminum Extrusions: ASTM B 221, alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, and with at least the strength and durability properties of alloy 6063-T5.
- C. Steel Tubing: Cold-formed steel tubing complying with ASTM A 500, Grade B.
- D. Vinyl Film: Opaque, nonreflective vinyl film, 0.0035-inch minimum thickness, with pressure-sensitive adhesive backing, suitable for exterior applications.
- E. Concrete for Postholes: Comply with requirements in Division 3 Section "Cast-in-Place Concrete" for normal-weight, air-entrained, ready-mix concrete with a minimum 28-day compressive strength of 2500 psi, unless otherwise indicated.

**2.3 POSTS**

- A. General: Fabricate posts to lengths required for mounting method indicated.
1. Direct-Burial Method: Provide posts 36 inches longer than height of sign to permit direct embedment in concrete foundations.
  2. Baseplate Method: Provide posts with baseplates, flanges, or other fittings, welded to bottom of posts. Drill holes in baseplate for anchor-bolt connection.
    - a. Provide anchor bolts of size required for connecting posts to concrete foundations.

- B. Steel Posts: Fabricate from 0.120-inch- thick, round steel tubing. Include post caps, fillers, spacers, junction boxes, access panels, and related accessories required for complete installation. Hot-dip galvanize post assemblies after fabrication to comply with ASTM A 123/A 123M.

- 1. Post Size: 2 inches round.
- 2. Post Finish: Baked enamel matching sign panel face or galvanized finish.

## 2.4 SIGN PANELS

- A. Unframed Single-Sheet Panels: Provide unframed single-sheet sign panels with edges mechanically and smoothly finished.

- 1. Panel Material: 0.125-inch- thick aluminum sheet.
  - a. Panel Finish: Baked enamel Class I, color anodic finish High-performance organic coating.
  - b. Panel Finish: Manufacturer's standard semigloss finish with UV inhibitors.
- 2. Edge Condition: Rounded.

## 2.5 GRAPHICS

- A. Surface-Applied, Die-Cut Vinyl Copy: Provide die-cut characters from nonreflective vinyl film with pressure-sensitive adhesive backing. Apply copy to exposed face of sign panel.
- B. Subsurface Copy: Apply copy to back of face panel by process indicated to produce opaque images.
  - 1. Use reverse silk-screen process to print copy; overspray copy with opaque background-color coating.
  - 2. Use DuPont's "Chromalin" heat- and pressure-laminated photopolymer film system to form copy and background color.

## 2.6 ALUMINUM FINISHES

- A. Class I, Clear Anodic Finish: Architectural Class I, clear coating 0.018 mm or thicker; complying with AAMA 611.
- B. High-Performance Organic Coating Finish: Fluoropolymer two-coat system containing not less than 70 percent polyvinylidene fluoride resin by weight; complying with AAMA 2604.
  - 1. Color and Gloss: As indicated by manufacturer's designations.

## 2.7 GALVANIZED STEEL FINISHES

**Post and Panel Signs**

- A. Surface Preparation: Clean surfaces of dirt, grease, and other contaminants. Clean welds, mechanical connections, and abraded areas and repair galvanizing according to ASTM A 780. Apply a conversion coating suited to the organic coating to be applied over it.
- B. Baked-Enamel Finish: Immediately after cleaning and pretreating, apply manufacturer's standard two-coat, baked-enamel finish consisting of prime coat and thermosetting topcoat.
  - 1. Color and Gloss: As indicated by manufacturer's designations As selected by Architect from manufacturer's full range.

**PART 3 - EXECUTION**

**3.1 INSTALLATION**

- A. Excavation: In firm, undisturbed or compacted soil, drill or (using a post-hole digger) hand-excavate holes for posts to diameters and spacing indicated.
- B. Excavation: In firm, undisturbed or compacted soil, drill or (using a post-hole digger) hand-excavate holes for each post to minimum diameter recommended by sign manufacturer, but at least four times the largest post cross-section.
  - 1. Excavate hole depths approximately 39 inches below finished grade.
- C. Setting Posts: Center and align posts in holes 3 inches above bottom of excavation. Place concrete and vibrate or tamp for consolidation. Check for alignment and hold in position until concrete has achieved its initial set.
- D. Set anchor bolts and other embedded items required for installation. Use templates furnished by suppliers of items to be attached.
- E. Install signs level, plumb, and at height indicated, with surfaces free from distortion.

**END OF SECTION 10436**

**SECTION 10801**  
**TOILET AND BATH ACCESSORIES**

**PART 1 - GENERAL**

**1.1 SUMMARY**

A. This Section includes the following:

1. Toilet and bath accessories.
2. Underlavatory guards.

**1.2 SUBMITTALS**

- A. Product Data: For each product indicated.
- B. Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required.

**1.3 WARRANTY**

- A. Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace accessories that develop defects within two (2) years from date of Substantial Completion.

**PART 2 - PRODUCTS**

**2.1 MANUFACTURERS**

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
- C. Basis-of-Design Products: The design for toilet and bath accessories described in Part 2 are based on products indicated. Subject to compliance with requirements, provide the named product or a comparable product by one of the following:
1. Toilet and Bath Accessories:
    - a. American Specialties, Inc.
    - b. Bobrick Washroom Equipment, Inc.
    - c. Bradley Corporation.
    - d. McKinney/Parker Washroom Accessories Corp.
    - e. Or equivalent.

**Section 10801 – Page 2**  
**Toilet and Bath Accessories**

**2.2 MATERIALS**

- A. Stainless Steel: ASTM A 666, Type 304, No. 4 finish (satin), 0.0312-inch minimum nominal thickness, unless otherwise indicated.
- B. Brass: ASTM B 19, ASTM B 16, or ASTM B 30 castings.
- C. Steel Sheet: ASTM A 366/A 366M, 0.0359-inch minimum nominal thickness.
- D. Galvanized Steel Sheet: ASTM A 653/A 653M, G60.
- E. Chromium Plating: ASTM B 456, Service Condition Number SC 2 (moderate service).
- F. Baked-Enamel Finish: Factory-applied, gloss-white, baked-acrylic-enamel coating.
- G. Galvanized Steel Mounting Devices: ASTM A 153/A 153M, hot-dip galvanized after fabrication.
- H. Fasteners: Screws, bolts, and other devices of same material as accessory unit, tamper and theft resistant when exposed, and of galvanized steel when concealed.
- I. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of six keys to State's representative.

**2.3 TOILET AND BATH ACCESSORIES**

- A. Toilet Tissue Dispenser:
  - 1. Basis-of-Design Product: Bobrick B-4288
- B. Grab Bar:
  - 1. Basis-of-Design Product: Bobrick B-6806 x 42" & 48" and B6861 with concealed anchors.
  - 2. Material: Stainless steel, 0.05 inch (1.3 mm) thick.
  - 3. Mounting: Concealed.
  - 4. Gripping Surfaces: Slip-resistant texture.
  - 5. Outside Diameter: 1 ½ inches for heavy-duty applications.
- C. Sanitary Napkin Disposal Unit :
  - 1. Basis-of-Design Product: Bobrick B-270.
  - 2. Material: Stainless steel.
  - 3. Door or Cover: Self-closing.

D. Underlavatory Guard:

1. Basis-of-Design Product: Brocar.
2. Insulating Piping Coverings: White, antimicrobial, molded-vinyl covering for supply and drain piping assemblies intended for use at accessible lavatories to prevent direct contact with and burns from piping. Provide components as required for applications indicated with flip tops at valves that allow service access without removing coverings.

E. Robe Hook:

1. Basis-of-Design Product: Bobrick B-76717.

F. Hand Dryer:

1. Basis-of-Design Product: Bobrick B-708.

**PART 3 - EXECUTION**

**3.1 INSTALLATION**

- A. Install accessories 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. Install grab bars to withstand a downward load of at least 250 lbf, when tested according to method in ASTM F 446.
- B. Adjust accessories for unencumbered, smooth operation and verify that mechanisms function properly. Replace damaged or defective items. Remove temporary labels and protective coatings.

**END OF SECTION 10801**



**SECTION 15050**  
**BASIC MECHANICAL MATERIALS AND METHODS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. This Section includes the following:
  - 1. Piping materials and installation instructions common to most piping systems.
  - 2. Dielectric fittings.
  - 3. Sleeves.
  - 4. Escutcheons.
  - 5. Grout.

**1.2 DEFINITIONS**

- A. Finished Spaces: Spaces other than mechanical and electrical equipment rooms.
- B. Exposed, Interior Installations: Exposed to view indoors. Examples include finished occupied spaces and mechanical equipment rooms.
- C. Exposed, Exterior Installations: Exposed to view outdoors or subject to outdoor ambient temperatures and weather conditions. Examples include rooftop locations.
- D. Concealed, Interior Installations: Concealed from view and protected from physical contact by building occupants.
- E. Concealed, Exterior Installations: Concealed from view and protected from weather conditions and physical contact by building occupants but subject to outdoor ambient temperatures.

**1.3 QUALITY ASSURANCE**

- A. Electrical Characteristics for Mechanical Equipment: Equipment of higher electrical characteristics may be furnished provided such proposed equipment is approved in writing and connecting electrical services, circuit breakers, and conduit sizes are appropriately modified. If minimum energy ratings or efficiencies are specified, equipment shall comply with requirements.

**PART 2 -**

**PART 3 - PRODUCTS**

**3.1 PIPE, TUBE, AND FITTINGS**

**Basic Mechanical Materials and Methods**

- A. Refer to individual Division 15 piping Sections for pipe, tube, and fitting materials and joining methods.
- B. Pipe Threads: ASME B1.20.1 for factory-threaded pipe and pipe fittings.

**3.2 JOINING MATERIALS**

- A. Refer to individual Division 15 piping Sections for special joining materials not listed below.
- B. Pipe-Flange Gasket Materials: ASME B16.21, nonmetallic, flat, asbestos-free, 1/8-inch maximum thickness unless thickness or specific material is indicated.
- C. Plastic, Pipe-Flange Gasket, Bolts, and Nuts: Type and material recommended by piping system manufacturer, unless otherwise indicated.
- D. Solder Filler Metals: ASTM B 32, lead-free alloys. Include water-flushable flux according to ASTM B 813.
- E. Brazing Filler Metals: AWS A5.8, BCuP Series or BAg1, unless otherwise indicated.
- F. Welding Filler Metals: Comply with AWS D10.12.
- G. Solvent Cements for Joining Plastic Piping:
  - 1. ABS Piping: ASTM D 2235.
  - 2. CPVC Piping: ASTM F 493.
  - 3. PVC Piping: ASTM D 2564. Include primer according to ASTM F 656.
  - 4. PVC to ABS Piping Transition: ASTM D 3138.

**3.3 DIELECTRIC FITTINGS**

- A. Description: Combination fitting of copper alloy and ferrous materials with threaded, solder-joint, plain, or weld-neck end connections that match piping system materials.
- B. Insulating Material: Suitable for system fluid, pressure, and temperature.
- C. Dielectric Unions: Factory-fabricated, union assembly, for 250-psig minimum working pressure at 180 deg F.
- D. Dielectric Flanges: Factory-fabricated, companion-flange assembly, for 150- or 300-psig minimum working pressure as required to suit system pressures.
- E. Dielectric Couplings: Galvanized-steel coupling with inert and noncorrosive, thermoplastic lining; threaded ends; and 300-psig minimum working pressure at 225 deg F.

- F. Dielectric Nipples: Electroplated steel nipple with inert and noncorrosive, thermoplastic lining; plain, threaded, or grooved ends; and 300-psig minimum working pressure at 225 deg F.

#### 3.4 SLEEVES

- A. Galvanized-Steel Sheet: 0.0239-inch minimum thickness; round tube closed with welded longitudinal joint.
- B. Steel Pipe: ASTM A 53, Type E, Grade B, Schedule 40, galvanized, plain ends.
- C. Cast Iron: Cast or fabricated "wall pipe" equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.
- D. Stack Sleeve Fittings: Manufactured, cast-iron sleeve with integral clamping flange. Include clamping ring and bolts and nuts for membrane flashing.
  - 1. Underdeck Clamp: Clamping ring with set screws.
- E. Molded PVC: Permanent, with nailing flange for attaching to wooden forms.
- F. PVC Pipe: ASTM D 1785, Schedule 40.
- G. Molded PE: Reusable, PE, tapered-cup shaped, and smooth-outer surface with nailing flange for attaching to wooden forms.

#### 3.5 ESCUTCHEONS

- A. Description: Manufactured wall and ceiling escutcheons and floor plates, with an ID to closely fit around pipe, tube, and insulation of insulated piping and an OD that completely covers opening.
- B. One-Piece, Deep-Pattern Type: Deep-drawn, box-shaped brass with polished chrome-plated finish.
- C. One-Piece, Cast-Brass Type: With set screw.
  - 1. Finish: Polished chrome-plated and rough brass.
- D. Split-Casting, Cast-Brass Type: With concealed hinge and set screw.
  - 1. Finish: Polished chrome-plated and rough brass.

#### 3.6 GROUT

- A. Description: ASTM C 1107, Grade B, nonshrink and nonmetallic, dry hydraulic-cement grout.

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1. Characteristics: Post-hardening, volume-adjusting, nonstaining, noncorrosive, nongaseous, and recommended for interior and exterior applications.
2. Design Mix: 5000-psi, 28-day compressive strength.
3. Packaging: Premixed and factory packaged.

**PART 4 - EXECUTION**

**4.1 PIPING SYSTEMS - COMMON REQUIREMENTS**

- A. Install piping according to the following requirements and Division 15 Sections specifying piping systems.
- B. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved on Coordination Drawings.
- C. Install piping in concealed locations, unless otherwise indicated and except in equipment rooms and service areas.
- D. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.
- E. Install piping to permit valve servicing.
- F. Install piping at indicated slopes.
- G. Install piping free of sags and bends.
- H. Install fittings for changes in direction and branch connections.
- I. Install piping to allow application of insulation.
- J. Select system components with pressure rating equal to or greater than system operating pressure.
- K. Install escutcheons for penetrations of walls, ceilings, and floors.
- L. Install sleeves for pipes passing through concrete and masonry walls, and concrete floor and roof slabs.
- M. Aboveground, Exterior-Wall Pipe Penetrations: Seal penetrations using sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.
  1. Install steel pipe for sleeves smaller than 6 inches in diameter.

2. Install cast-iron "wall pipes" for sleeves 6 inches and larger in diameter.
  3. Mechanical Sleeve Seal Installation: Select type and number of sealing elements required for pipe material and size. Position pipe in center of sleeve. Assemble mechanical sleeve seals and install in annular space between pipe and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.
- N. Underground, Exterior-Wall Pipe Penetrations: Install cast-iron "wall pipes" for sleeves. Seal pipe penetrations using mechanical sleeve seals. Select sleeve size to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.
1. Mechanical Sleeve Seal Installation: Select type and number of sealing elements required for pipe material and size. Position pipe in center of sleeve. Assemble mechanical sleeve seals and install in annular space between pipe and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.
- O. Verify final equipment locations for roughing-in.
- P. Refer to equipment specifications in other Sections of these Specifications for roughing-in requirements.
- 4.2 PIPING JOINT CONSTRUCTION
- A. Join pipe and fittings according to the following requirements and Division 15 Sections specifying piping systems.
  - B. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.
  - C. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.
  - D. Soldered Joints: Apply ASTM B 813, water-flushable flux, unless otherwise indicated, to tube end. Construct joints according to ASTM B 828 or CDA's "Copper Tube Handbook," using lead-free solder alloy complying with ASTM B 32.
  - E. Brazed Joints: Construct joints according to AWS's "Brazing Handbook," "Pipe and Tube" Chapter, using copper-phosphorus brazing filler metal complying with AWS A5.8.
  - F. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:

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1. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.
  2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.
- G. Flanged Joints: Select appropriate gasket material, size, type, and thickness for service application. Install gasket concentrically positioned. Use suitable lubricants on bolt threads.
- H. Plastic Piping Solvent-Cement Joints: Clean and dry joining surfaces. Join pipe and fittings according to the following:
1. Comply with ASTM F 402, for safe-handling practice of cleaners, primers, and solvent cements.
  2. ABS Piping: Join according to ASTM D 2235 and ASTM D 2661 Appendixes.
  3. CPVC Piping: Join according to ASTM D 2846/D 2846M Appendix.
  4. PVC Pressure Piping: Join schedule number ASTM D 1785, PVC pipe and PVC socket fittings according to ASTM D 2672. Join other-than-schedule-number PVC pipe and socket fittings according to ASTM D 2855.
  5. PVC Nonpressure Piping: Join according to ASTM D 2855.
  6. PVC to ABS Nonpressure Transition Fittings: Join according to ASTM D 3138 Appendix.

**4.3 PIPING CONNECTIONS**

- A. Make connections according to the following, unless otherwise indicated:
1. Install unions, in piping NPS 2 and smaller, adjacent to each valve and at final connection to each piece of equipment.
  2. Install flanges, in piping NPS 2-1/2 and larger, adjacent to flanged valves and at final connection to each piece of equipment.
  3. Wet Piping Systems: Install dielectric coupling and nipple fittings to connect piping materials of dissimilar metals.

**4.4 GROUTING**

- A. Clean surfaces that will come into contact with grout.
- B. Provide forms as required for placement of grout.
- C. Avoid air entrapment during placement of grout.
- D. Place grout around anchors.
- E. Cure placed grout.

END OF SECTION 15050

## **SECTION 15060 HANGERS AND SUPPORTS**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. This Section includes hangers and supports for mechanical system piping and equipment.

#### **1.2 PERFORMANCE REQUIREMENTS**

- A. Design channel support systems for piping to support multiple pipes capable of supporting combined weight of supported systems, system contents, and test water.

#### **1.3 SUBMITTALS**

- A. Product Data: For each type of pipe hanger, channel support system component, and thermal-hanger shield insert indicated.

### **PART 2 - PRODUCTS**

#### **2.1 MANUFACTURERS**

- A. In other Part 2 articles where subparagraph titles below introduce lists, the following requirements apply for product selection:
  - 1. 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.

#### **2.2 MANUFACTURED UNITS**

- A. Pipe Hangers, Supports, and Components: MSS SP-58, factory-fabricated components.
  - 1. Manufacturers:
    - a. B-Line Systems, Inc.
    - b. Globe Pipe Hanger Products, Inc.
    - c. Grinnell Corp.
    - d. GS Metals Corp.
    - e. National Pipe Hanger Corp.
  - 2. Galvanized, Metallic Coatings: For piping and equipment that will not have field-applied finish.



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**Hangers and Supports**

3. Nonmetallic Coatings: On attachments for electrolytic protection where attachments are in direct contact with copper tubing.
- B. Channel Support Systems: MFMA-2, factory-fabricated components for field assembly.
  1. Manufacturers:
    - a. B-Line Systems, Inc.
    - b. Grinnell Corp.
    - c. GS Metals Corp.
    - d. National Pipe Hanger Corp.
    - e. Unistrut Corp.
  2. Coatings: Manufacturer's standard finish, unless bare metal surfaces are indicated.
  3. Nonmetallic Coatings: On attachments for electrolytic protection where attachments are in direct contact with copper tubing.

**2.3 MISCELLANEOUS MATERIALS**

- A. Powder-Actuated Drive-Pin Fasteners: Powder-actuated-type, drive-pin attachments with pull-out and shear capacities appropriate for supported loads and building materials where used.
- B. Mechanical-Anchor Fasteners: Insert-type attachments with pull-out and shear capacities appropriate for supported loads and building materials where used.
- C. Grout: ASTM C 1107, Grade B, factory-mixed and -packaged, nonshrink and nonmetallic, dry, hydraulic-cement grout.
  1. Characteristics: Post hardening and volume adjusting; recommended for both interior and exterior applications.
  2. Properties: Nonstaining, noncorrosive, and nongaseous.
  3. Design Mix: 5000-psi, 28-day compressive strength.

**PART 3 - EXECUTION**

**3.1 APPLICATIONS**

- A. Specific hanger requirements are specified in Sections specifying equipment and systems.
- B. Comply with MSS SP-69 for pipe hanger selections and applications that are not specified in piping system Specification Sections.

**3.2 INSTALLATION**

- A. Pipe Hanger and Support Installation: Comply with MSS SP-69 and MSS SP-89. Install hangers, supports, clamps, and attachments as required to properly support piping from building structure.
- B. Channel Support System Installation: Arrange for grouping of parallel runs of piping and support together on field-assembled channel systems. Field assemble and install according to manufacturer's written instructions.
- C. Install building attachments within concrete slabs or attach to structural steel. Space attachments within maximum piping span length indicated in MSS SP-69. Install additional attachments at concentrated loads, including valves, flanges, guides, strainers, and expansion joints, and at changes in direction of piping. Install concrete inserts before concrete is placed; fasten inserts to forms and install reinforcing bars through openings at top of inserts.
- D. Install powder-actuated drive-pin fasteners in concrete after concrete is placed and completely cured. Use operators that are licensed by powder-actuated tool manufacturer. Install fasteners according to powder-actuated tool manufacturer's operating manual.
- E. Install mechanical-anchor fasteners in concrete after concrete is placed and completely cured. Install fasteners according to manufacturer's written instructions.
- F. Install hangers and supports complete with necessary inserts, bolts, rods, nuts, washers, and other accessories.
- G. Install hangers and supports to allow controlled thermal and seismic movement of piping systems, to permit freedom of movement between pipe anchors, and to facilitate action of expansion joints, expansion loops, expansion bends, and similar units.
- H. Load Distribution: Install hangers and supports so that piping live and dead loads and stresses from movement will not be transmitted to connected equipment.
- I. Pipe Slopes: Install hangers and supports to provide indicated pipe slopes and so maximum pipe deflections allowed by ASME B31.9, "Building Services Piping," is not exceeded.

### 3.3 ADJUSTING

- A. Hanger Adjustment: Adjust hangers to distribute loads equally on attachments and to achieve indicated slope of pipe.

### 3.4 PAINTING

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**Hangers and Supports**

- A. Touching Up: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces. Apply paint by brush or spray to provide a minimum dry film thickness of 2.0 mils. See Division 9, Section 09910 "Painting" for paint materials and application requirements.
- B. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

END OF SECTION 15060

## **SECTION 15110 VALVES**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. This Section includes the following general-duty valves:
  - 1. Copper-alloy ball valves.
  - 2. Bronze gate valves.
- B. See Division 2 piping Sections for general-duty and specialty valves for site construction piping.
- C. See Division 15 piping Sections for specialty valves applicable to those Sections only.

#### **1.2 SUBMITTALS**

- A. Product Data: For each type of valve indicated. Include body, seating, and trim materials; valve design; pressure and temperature classifications; end connections; arrangement; dimensions; and required clearances. Include list indicating valve and its application. Include rated capacities; furnished specialties; and accessories.

#### **1.3 QUALITY ASSURANCE**

- A. ASME Compliance: ASME B31.9 for building services piping valves.
  - 1. Exceptions: Domestic hot- and cold-water piping valves unless referenced.
- B. NSF Compliance: NSF 61 for valve materials for potable-water service.

### **PART 2 - PRODUCTS**

#### **2.1 MANUFACTURERS**

- A. In other Part 2 articles where subparagraph titles below introduce lists, the following requirements apply for product selection:
  - 1. 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.

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### **Valves**

#### **2.2 VALVES, GENERAL**

- A. Refer to Part 3 "Valve Applications" Article for applications of valves.
- B. Bronze Valves: NPS 2 and Smaller: Threaded ends, unless otherwise indicated.
- C. Valve Pressure and Temperature Ratings: Not less than indicated and as required for system pressures and temperatures.
- D. Valve Sizes: Same as upstream pipe, unless otherwise indicated.
- E. Valve Actuators:
  - 1. Handwheel: For valves other than quarter-turn types.
  - 2. Lever Handle: For quarter-turn valves NPS 6 and smaller, except plug valves.
- F. Valve Flanges: ASME B16.24 for bronze valves.
- G. Valve Grooved Ends: AWWA C606.
  - 1. Solder Joint: With sockets according to ASME B16.18.
    - a. Caution: Use solder with melting point below 840 deg F for angle, check, gate, and globe valves; below 421 deg F for ball valves.
  - 2. Threaded: With threads according to ASME B1.20.1.
- H. Valve Bypass and Drain Connections: MSS SP-45.

#### **2.3 COPPER-ALLOY BALL VALVES**

- A. Manufacturers:
  - 1. Copper-Alloy Ball Valves:
    - a. American Valve, Inc.
    - b. Crane Co.; Crane Valve Group; Jenkins Valves.
    - c. Grinnell Corporation.
    - d. NIBCO INC.
    - e. Watts Industries, Inc.; Water Products Div.
- B. Copper-Alloy Ball Valves, General: MSS SP-110.
- C. Copper-Alloy Ball Valves: Brass or bronze body with chrome-plated bronze ball, PTFE or TFE seats, and 400-psig minimum CWP rating.

## 2.4 BRONZE GATE VALVES

### A. Manufacturers:

#### 1. Type 1, Bronze, Nonrising-Stem Gate Valves:

- a. American Valve, Inc.
- b. Crane Co.; Crane Valve Group; Jenkins Valves.
- c. Grinnell Corporation.
- d. NIBCO INC.
- e. Red-White Valve Corp.
- f. Watts Industries, Inc.; Water Products Div.

#### 2. Type 2, Bronze, Rising-Stem, Solid-Wedge Gate Valves:

- a. American Valve, Inc.
- b. Crane Co.; Crane Valve Group; Jenkins Valves.
- c. Grinnell Corporation.
- d. NIBCO INC.
- e. Red-White Valve Corp.

### B. Bronze Gate Valves, General: MSS SP-80, with ferrous-alloy handwheel.

### C. Type 1, Class 125, Bronze Gate Valves: Bronze body with nonrising stem and bronze solid wedge.

### D. Type 2, Class 125, Bronze Gate Valves: Bronze body with rising stem and bronze solid wedge.

## PART 3 - EXECUTION

### 3.1 VALVE APPLICATIONS

#### A. Refer to piping Sections for specific valve applications. If valve applications are not indicated, use the following:

##### 1. Shutoff Service: Ball valves.

#### B. If valves with specified SWP classes or CWP ratings are not available, the same types of valves with higher SWP class or CWP ratings may be substituted.

#### C. Domestic Water Piping: Use the following types of valves:

1. Ball Valves, NPS 2 and Smaller: Two-piece, 400-psig CWP rating, copper alloy.
2. Gate Valves, NPS 2 and Smaller: Type 1 and 2, Class 125, bronze.

### 3.2 VALVE INSTALLATION

## **Section 15110 – Page 4**

### **Valves**

- A. Piping installation requirements are specified in other Division 15 Sections. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Install valves with unions or flanges at each piece of equipment arranged to allow service, maintenance, and equipment removal without system shutdown.
- C. Locate valves for easy access and provide separate support where necessary.
- D. Install valves in horizontal piping with stem at or above center of pipe.
- E. Install valves in position to allow full stem movement.

### **3.3 JOINT CONSTRUCTION**

- A. Refer to Division 15 Section 15050 "Basic Mechanical Materials and Methods" for basic piping joint construction.
- B. Grooved Joints: Assemble joints with keyed coupling housing, gasket, lubricant, and bolts according to coupling and fitting manufacturer's written instructions.
- C. Soldered Joints: Use ASTM B 813, water-flushable, lead-free flux; ASTM B 32, lead-free-alloy solder; and ASTM B 828 procedure, unless otherwise indicated.

### **3.4 ADJUSTING**

- A. Adjust or replace valve packing after piping systems have been tested and put into service but before final adjusting and balancing. Replace valves if persistent leaking occurs.

END OF SECTION 15110

## **SECTION 15140 DOMESTIC WATER PIPING**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. This Section includes domestic water piping from locations indicated to fixtures and equipment inside the building.

#### **1.2 SUBMITTALS**

- A. Water Samples: Specified in "Cleaning" Article in Part 3.

#### **1.3 QUALITY ASSURANCE**

- A. Piping materials shall bear label, stamp, or other markings of specified testing agency.
- B. Comply with NSF 61, "Drinking Water System Components-Health Effects; Sections 1 through 9," for potable domestic water piping and components.

### **PART 2 - PRODUCTS**

#### **2.1 PIPING MATERIALS**

- A. Transition Couplings: Coupling or other manufactured fitting the same size as, with pressure rating at least equal to and ends compatible with, piping to be joined.
- B. Hard Copper Tube: ASTM B 88, Type K, water tube, drawn temper.
  - 1. Copper Pressure Fittings: ASME B16.18, cast-copper-alloy or ASME B16.22, wrought- copper, solder-joint fittings. Furnish wrought-copper fittings if indicated.
  - 2. Bronze Flanges: ASME B16.24, Class 150, with solder-joint end. Furnish Class 300 flanges if required to match piping.
  - 3. Copper Unions: MSS SP-123, cast-copper-alloy, hexagonal-stock body, with ball-and-socket, metal-to-metal seating surfaces and solder-joint or threaded ends.

#### **2.2 VALVES**

- A. Refer to Division 15 Section 15110 "Valves" for copper, bronze and brass, general-duty valves.



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**Domestic Water Piping**

**PART 3 - EXECUTION**

**3.1 PIPING APPLICATIONS**

- A. Transition and special fittings with pressure ratings at least equal to piping rating may be used in applications below, unless otherwise indicated.
- B. Flanges may be used on aboveground piping, unless otherwise indicated.
- C. Domestic Water Piping: Use the following piping materials for each size range:
  - 1. NPS 1-1/2 and Smaller: Hard copper tube, Type K; copper pressure fittings; and soldered joints.
  - 2. NPS 2: Hard copper tube, Type K; copper pressure fittings; and soldered joints.

**3.2 VALVE APPLICATIONS**

- A. Drawings indicate valve types to be used. Where specific valve types are not indicated, the following requirements apply:
  - 1. Shutoff Duty: Use bronze ball or gate valves for piping NPS 2 and smaller.
  - 2. Throttling Duty: Use bronze ball or globe valves for piping NPS 2 and smaller.
  - 3. Drain Duty: Hose-end drain valves.

**3.3 PIPING INSTALLATION**

- A. Refer to Division 2 Section 02510 "Water Distribution" for site water distribution and service piping.
- B. Refer to Division 15 Section 15050 "Basic Mechanical Materials and Methods" for basic piping installation.
- C. Extend domestic water service piping to exterior water distribution piping in sizes and locations indicated.
- D. Install cast-iron sleeve with water stop and mechanical sleeve seal at each service pipe penetration through foundation wall. Refer to Division 15 Section 15050 "Basic Mechanical Materials and Methods" for sleeves and mechanical sleeve seals.
- E. Install wall penetration system at each service pipe penetration through foundation wall. Make installation watertight. Refer to Division 15 Section 15050 "Basic Mechanical Materials and Methods" for wall penetration systems.

- F. Install shutoff valve, hose-end drain valve, strainer, pressure gage, and test tee with valve, inside building at each domestic water service. Refer to Division 15 Section 15430 "Plumbing Specialties" for drain valves and strainers.
- G. Install water-pressure regulators downstream from shutoff valves. Refer to Division 15 Section 15430 "Plumbing Specialties" for water-pressure regulators.
- H. Install domestic water piping level with 0.25 percent slope downward toward drain and plumb.
- I. Fill water piping. Check components to determine that they are not air bound and that piping is full of water.
- J. Perform the following steps before operation:
  - 1. Close drain valves, hydrants, and hose bibbs.
  - 2. Open shutoff valves to fully open position.
  - 3. Remove plugs used during testing of piping and plugs used for temporary sealing of piping during installation.
  - 4. Remove and clean strainer screens. Close drain valves and replace drain plugs.
- K. Check plumbing equipment and verify proper settings, adjustments, and operation. Do not operate water heaters before filling with water.
- L. Check plumbing specialties and verify proper settings, adjustments, and operation.
  - 1. Water-Pressure Regulators: Set outlet pressure at 80 psig maximum, unless otherwise indicated.

### 3.4 JOINT CONSTRUCTION

- A. Refer to Division 15 Section 15050 "Basic Mechanical Materials and Methods" for basic piping joint construction.
- B. Soldered Joints: Use ASTM B 813, water-flushable, lead-free flux; ASTM B 32, lead-free-alloy solder; and ASTM B 828 procedure, unless otherwise indicated.

### 3.5 VALVE INSTALLATION

- A. Install sectional valve close to water main on each branch and riser serving plumbing fixtures or equipment. Use ball or gate valves for piping NPS 2 and smaller. Use butterfly or gate valves for piping NPS 2-1/2 and larger.
- B. Install shutoff valve on each water supply to equipment and on each water supply to plumbing fixtures without supply stops. Use ball or gate valves for

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**Domestic Water Piping**

piping NPS 2 and smaller. Use butterfly or gate valves for piping NPS 2-1/2 and larger.

- C. Install drain valves for equipment, at base of each water riser, at low points in horizontal piping, and where required to drain water piping.
  - 1. Install hose-end drain valves at low points in water mains, risers, and branches.
  - 2. Install stop-and-waste drain valves where indicated.

**3.6 HANGER AND SUPPORT INSTALLATION**

- A. Refer to Division 15 Section 15060 "Hangers and Supports" for pipe hanger and support devices. Install the following:
  - 1. Vertical Piping: MSS Type 8 or Type 42, clamps.
  - 2. Individual, Straight, Horizontal Piping Runs: According to the following:
    - a. 100 Feet and Less: MSS Type 1, adjustable, steel clevis hangers.
- B. Install supports according to Division 15 Section 15060 "Hangers and Supports."
- C. Install hangers for copper tubing with the following maximum horizontal spacing and minimum rod diameters:
  - 1. NPS 3/4 and Smaller: 60 inches with 3/8-inch rod.
  - 2. NPS 1 and NPS 1-1/4: 72 inches with 3/8-inch rod.
  - 3. NPS 1-1/2 and NPS 2: 96 inches with 3/8-inch rod.
- D. Install supports for vertical copper tubing every 10 feet.
- E. Support piping and tubing not listed above according to MSS SP-69 and manufacturer's written instructions.

**3.7 CONNECTIONS**

- A. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Install piping adjacent to equipment and machines to allow service and maintenance.
- C. Connect domestic water piping to exterior water service piping. Use transition fitting to join dissimilar piping materials.
- D. Connect domestic water piping to service piping with shutoff valve, and extend and connect to the following:

1. Water Heaters: Cold-water supply and hot-water outlet piping in sizes indicated, but not smaller than sizes of water heater connections.
2. Plumbing Fixtures: Cold- and hot-water supply piping in sizes indicated, but not smaller than required by plumbing code. Refer to Division 15 Section 15410 "Plumbing Fixtures."
3. Equipment: Cold- and hot-water supply piping as indicated, but not smaller than equipment connections. Provide shutoff valve and union for each connection.

### 3.8 FIELD QUALITY CONTROL

#### A. Inspect domestic water piping as follows:

1. Do not enclose, cover, or put piping into operation until it is inspected and approved by authorities having jurisdiction.
2. During installation, notify authorities having jurisdiction at least 24 hours before inspection must be made. Perform tests specified below in presence of the State's Representative:
  - a. Roughing-in Inspection: Arrange for inspection of piping before concealing or closing-in after roughing-in and before setting fixtures.
  - b. Final Inspection: Arrange for final inspection by the State's Representative to observe tests specified below and to ensure compliance with requirements.
3. Reinspection: If the State's Representative find that piping will not pass test or inspection, make required corrections and arrange for reinspection.
4. Reports: Prepare inspection reports and have them signed by the State's Representative.

#### B. Test domestic water piping as follows:

1. Test for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired. If testing is performed in segments, submit separate report for each test, complete with diagram of portion of piping tested.
2. Leave uncovered and unconcealed new, altered, extended, or replaced domestic water piping until it has been tested and approved. Expose work that was covered or concealed before it was tested.
3. Cap and subject piping to static water pressure of 50 psig above operating pressure, without exceeding pressure rating of piping system materials. Isolate test source and allow to stand for four hours. Leaks and loss in test pressure constitute defects that must be repaired.
4. Repair leaks and defects with new materials and retest piping or portion thereof until satisfactory results are obtained.
5. Prepare reports for tests and required corrective action.

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**Domestic Water Piping**

**3.9 CLEANING**

- A. Clean and disinfect potable domestic water piping as follows:
  - 1. Purge new piping and parts of existing domestic water piping that have been altered, extended, or repaired before using.
  - 2. Use purging and disinfecting procedures prescribed by authorities having jurisdiction or, if methods are not prescribed, procedures described in either AWWA C651 or AWWA C652 or as described below:
    - a. Flush piping system with clean, potable water until dirty water does not appear at outlets.
    - b. Fill and isolate system according to either of the following:
      - 1) Fill system or part thereof with water/chlorine solution with at least 50 ppm of chlorine. Isolate with valves and allow to stand for 24 hours.
      - 2) Fill system or part thereof with water/chlorine solution with at least 200 ppm of chlorine. Isolate and allow to stand for three hours.
    - c. Flush system with clean, potable water until no chlorine is in water coming from system after the standing time.
    - d. Submit water samples in sterile bottles to the State's Representative. Repeat procedures if biological examination shows contamination.
- B. Prepare and submit reports of purging and disinfecting activities.
- C. Clean interior of domestic water piping system. Remove dirt and debris as work progresses.

END OF SECTION 15140

**SECTION 15150**  
**SANITARY WASTE AND VENT PIPING**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. This Section includes soil and waste, sanitary drainage and vent piping inside the building.

**1.2 SUBMITTALS**

- A. Field quality-control test reports.

**1.3 QUALITY ASSURANCE**

- A. Piping materials shall bear label, stamp, or other markings of specified testing agency.
- B. Comply with NSF 14, "Plastics Piping Systems Components and Related Materials," for plastic piping components. Include marking with "NSF-dwv" for plastic drain, waste, and vent piping.

**PART 2 - PRODUCTS**

**2.1 PIPING MATERIALS**

- A. Flexible Transition Couplings for Underground Nonpressure Piping: ASTM C 1173 with elastomeric sleeve. Include ends of same sizes as piping to be joined and include corrosion-resistant metal band on each end.
- B. Transition Couplings for Underground Pressure Piping: AWWA C219 metal, sleeve-type coupling or other manufactured fitting same size as, with pressure rating at least equal to and ends compatible with, piping to be joined.
- C. ABS Pipe: ASTM D 2661, Schedule 40, solid wall.
  - 1. ABS Socket Fittings: ASTM D 2661, made to ASTM D 3311, drain, waste, and vent patterns.
- D. Cellular-Core, ABS Pipe: ASTM F 628, Schedule 40.
  - 1. ABS Socket Fittings: ASTM D 2661, made to ASTM D 3311, drain, waste, and vent patterns.
- E. ABS Special Fittings: ASTM F 409, drainage-pattern tube and tubular fittings with ends as required for application.

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**Sanitary Waste and Vent Piping**

- F. PVC Pipe: ASTM D 2665, solid-wall drain, waste, and vent.
  - 1. PVC Socket Fittings: ASTM D 2665, socket type, made to ASTM D 3311, drain, waste, and vent patterns.
- G. Cellular-Core, Schedule 40, PVC Pipe: ASTM F 891, Schedule 40.
  - 1. PVC Socket Fittings: ASTM D 2665, made to ASTM D 3311, drain, waste, and vent patterns and to fit Schedule 40 pipe.
- H. Cellular-Core, Sewer and Drain Series, PVC Pipe: ASTM F 891, Series PS 100.
  - 1. PVC Socket Fittings: ASTM D 2665, made to ASTM D 3311, drain, waste, and vent patterns and to fit Series PS 100 sewer and drain pipe.
- I. PVC Special Fittings: ASTM F 409, drainage-pattern tube and tubular fittings with ends as required for application.

**PART 3 - EXECUTION**

**3.1 PIPING APPLICATIONS**

- A. Transition and special fittings with pressure ratings at least equal to piping pressure ratings may be used in applications below, unless otherwise indicated.
- B. Flanges may be used on aboveground pressure piping, unless otherwise indicated.
- C. Aboveground, Soil, Waste, and Vent Piping: Use any of the following piping materials for each size range:
  - 1. NPS 1-1/4 and NPS 1-1/2: ABS pipe, ABS socket fittings, and solvent-cemented joints.
  - 2. NPS 1-1/4 and NPS 1-1/2: Cellular-core, ABS pipe; ABS socket fittings; and solvent-cemented joints.
  - 3. NPS 1-1/4 and NPS 1-1/2: PVC pipe, PVC socket fittings, and solvent-cemented joints.
  - 4. NPS 1-1/4 and NPS 1-1/2: Cellular-core, Schedule 40, PVC pipe; PVC socket fittings; and solvent-cemented joints.
  - 5. NPS 2 to NPS 4: Hubless, cast-iron soil piping and one of the following:
    - a. Couplings: Heavy-duty, Type 304, stainless steel.
    - b. Couplings: Compact, stainless steel.
  - 6. NPS 2 to NPS 4: ABS pipe, ABS socket fittings, and solvent-cemented joints.

7. NPS 2 to NPS 4: Cellular-core, ABS pipe; ABS socket fittings; and solvent-cemented joints.
  8. NPS 2 to NPS 4: PVC pipe, PVC socket fittings, and solvent-cemented joints.
  9. NPS 2 to NPS 4: Cellular-core, Schedule 40, PVC pipe; PVC socket fittings; and solvent-cemented joints.
- D. Underground, Soil, Waste, and Vent Piping: Use any of the following piping materials for each size range:
1. NPS 2 to NPS 4: Hubless, cast-iron soil piping and one of the following:
    - a. Couplings: Heavy-duty, Type 304, stainless steel.
    - b. Couplings: Compact, stainless steel.
  2. NPS 2 to NPS 4: ABS pipe, ABS socket fittings, and solvent-cemented joints.
  3. NPS 2 to NPS 4: Cellular-core, ABS pipe; ABS socket fittings; and solvent-cemented joints.
  4. NPS 2 to NPS 4: PVC pipe, PVC socket fittings, and solvent-cemented joints.
  5. NPS 2 to NPS 4: Cellular-core, Schedule 40, PVC pipe; PVC socket fittings; and solvent-cemented joints.

### 3.2 PIPING INSTALLATION

- A. Refer to Division 2 Section 02530 "Sanitary Sewerage" for Project-site sanitary sewer piping.
- B. Refer to Division 15 Section 15050 "Basic Mechanical Materials and Methods" for basic piping installation.
- C. Install cleanouts at grade and extend to where building sanitary drains connect to building sanitary sewers.
- D. Install wall penetration system at each service pipe penetration through foundation wall. Make installation watertight. Refer to Division 15 Section 15050 "Basic Mechanical Materials and Methods" for wall penetration systems.
- E. Install cast-iron soil piping according to CISPI's "Cast Iron Soil Pipe and Fittings Handbook," Chapter IV, "Installation of Cast Iron Soil Pipe and Fittings."
- F. Make changes in direction for soil and waste drainage and vent piping using appropriate branches, bends, and long-sweep bends. Sanitary tees and short-sweep 1/4 bends may be used on vertical stacks if change in direction of flow is from horizontal to vertical. Use long-turn, double Y-branch and 1/8-bend fittings if 2 fixtures are installed back to back or side by side with common drain pipe. Straight tees, elbows, and crosses may be used on vent lines. Do not change



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**Sanitary Waste and Vent Piping**

direction of flow more than 90 degrees. Use proper size of standard increasers and reducers if pipes of different sizes are connected. Reducing size of drainage piping in direction of flow is prohibited.

- G. Lay buried building drainage piping beginning at low point of each system. Install true to grades and alignment indicated, with unbroken continuity of invert. Place hub ends of piping upstream. Install required gaskets according to manufacturer's written instructions for use of lubricants, cements, and other installation requirements. Maintain swab in piping and pull past each joint as completed.
- H. Install soil and waste drainage and vent piping at the following minimum slopes, unless otherwise indicated:
  - 1. Building Sanitary Drain: 2 percent downward in direction of flow for piping NPS 3 and smaller; 1 percent downward in direction of flow for piping NPS 4 and larger.
  - 2. Horizontal Sanitary Drainage Piping: 2 percent downward in direction of flow.
  - 3. Vent Piping: 1 percent down toward vertical fixture vent or toward vent stack.
- I. Sleeves are not required for cast-iron soil piping passing through concrete slabs-on-grade if slab is without membrane waterproofing.
- J. Install ABS soil and waste drainage and vent piping according to ASTM D 2661.
- K. Install PVC soil and waste drainage and vent piping according to ASTM D 2665.
- L. Install underground ABS and PVC soil and waste drainage piping according to ASTM D 2321.
- M. Do not enclose, cover, or put piping into operation until it is inspected and approved by the State's Representative.

**3.3 JOINT CONSTRUCTION**

- A. Refer to Division 15 Section 15050 "Basic Mechanical Materials and Methods" for basic piping joint construction.
- B. Cast-Iron, Soil-Piping Joints: Make joints according to CISPI's "Cast Iron Soil Pipe and Fittings Handbook," Chapter IV, "Installation of Cast Iron Soil Pipe and Fittings."
  - 1. Gasketed Joints: Make with rubber gasket matching class of pipe and fittings.
  - 2. Hubless Joints: Make with rubber gasket and sleeve or clamp.

- C. PVC Nonpressure Piping Joints: Join piping according to ASTM D 2665.

### 3.4 HANGER AND SUPPORT INSTALLATION

- A. Refer to Division 15 Section 15060 "Hangers and Supports" for pipe hanger and support devices. Install the following:
  - 1. Vertical Piping: MSS Type 8 or Type 42, clamps.
  - 2. Individual, Straight, Horizontal Piping Runs: According to the following:
    - a. 100 Feet and Less: MSS Type 1, adjustable, steel clevis hangers.
- B. Install supports according to Division 15 Section 15060 "Hangers and Supports."
- C. Support vertical piping and tubing at base and at each floor.
- D. Install hangers for ABS and PVC piping with the following maximum horizontal spacing and minimum rod diameters:
  - 1. NPS 1-1/2 and NPS 2: 48 inches with 3/8-inch rod.
  - 2. NPS 3: 48 inches with 1/2-inch rod.
  - 3. NPS 4 and NPS 5: 48 inches with 5/8-inch rod.
- E. Install supports for vertical ABS and PVC piping every 48 inches.
- F. Support piping and tubing not listed above according to MSS SP-69 and manufacturer's written instructions.

### 3.5 CONNECTIONS

- A. Connect soil and waste piping to exterior sanitary sewerage piping. Use transition fitting to join dissimilar piping materials.
- B. Connect drainage and vent piping to the following:
  - 1. Plumbing Fixtures: Connect drainage piping in sizes indicated, but not smaller than required by plumbing code. Refer to Division 15 Section 15410 "Plumbing Fixtures."
  - 2. Plumbing Fixtures and Equipment: Connect atmospheric vent piping in sizes indicated, but not smaller than required by plumbing code.
  - 3. Plumbing Specialties: Connect drainage and vent piping in sizes indicated, but not smaller than required by plumbing code. Refer to Division 15 Section 15430 "Plumbing Specialties."

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**Sanitary Waste and Vent Piping**

**3.6 FIELD QUALITY CONTROL**

- A. During installation, notify authorities having jurisdiction at least 24 hours before inspection must be made. Perform tests specified below in presence of the State's Representative.
  - 1. Roughing-in Inspection: Arrange for inspection of piping before concealing or closing-in after roughing-in and before setting fixtures.
  - 2. Final Inspection: Arrange for final inspection by the State's Representative to observe tests specified below and to ensure compliance with requirements.
- B. Reinspection: If the State's Representative finds that piping will not pass test or inspection, make required corrections and arrange for reinspection.
- C. Reports: Prepare inspection reports and have them signed by the State's Representative.
- D. Test sanitary drainage and vent piping according to procedures of the State's Representative.
  - 1. Repair leaks and defects with new materials and retest piping, or portion thereof, until satisfactory results are obtained.
  - 2. Prepare reports for tests and required corrective action.

**3.7 CLEANING**

- A. Clean interior of piping. Remove dirt and debris as work progresses.
- B. Protect drains during remainder of construction period to avoid clogging with dirt and debris and to prevent damage from traffic and construction work.
- C. Place plugs in ends of uncompleted piping at end of day and when work stops.

**3.8 PROTECTION**

- A. Exposed ABS and PVC Piping: Protect plumbing vents exposed to sunlight with two coats of water-based latex paint. Color to match adjacent materials.

END OF SECTION 15150

## **SECTION 15410 PLUMBING FIXTURES**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. This Section includes plumbing fixtures and related components.
- B. See Division 15 Section 15430 "Plumbing Specialties" for backflow preventers and specialty fixtures not in this Section.

#### **1.2 DEFINITIONS**

- A. Accessible Fixture: Plumbing fixture that can be approached, entered, and used by people with disabilities.

#### **1.3 SUBMITTALS**

- A. Product Data: Include selected fixture and trim, fittings, accessories, appliances, appurtenances, equipment, and supports and indicate materials and finishes, dimensions, construction details, and flow-control rates for each type of fixture indicated.
- B. Operation and maintenance data.

#### **1.4 QUALITY ASSURANCE**

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in the current approved edition of Title 24, California Building Code, CEC, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Regulatory Requirements: Comply with requirements in ICC A117.1, "Accessible and Usable Buildings and Facilities"; Public Law 90-480, "Architectural Barriers Act"; Public Law 101-336, "Americans with Disabilities Act"; U.S. Architectural & Transportation Barriers Compliance Board's "Uniform Federal Accessibility Standards (UFAS), 1985-494-187" and the current approved edition of California Code of Regulations, Title 24, California Building Code and California Plumbing Code about plumbing fixtures for people with disabilities.
- C. Regulatory Requirements: Comply with requirements in Public Law 102-486, "Energy Policy Act," and the current approved edition of California Code of Regulations, Title 24, California Plumbing Code about water flow and consumption rates for plumbing fixtures.

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### **Plumbing Fixtures**

- D. NSF Standard: Comply with NSF 61, "Drinking Water System Components--Health Effects," for fixture materials that will be in contact with potable water.
- E. Select combinations of fixtures and trim, faucets, fittings, and other components that are compatible.
- F. Comply with the following applicable standards and other requirements specified for plumbing fixtures:
  - 1. Enameled, Cast-Iron Fixtures: ASME A112.19.1M.
  - 2. Water-Closet, Flush Valve, Tank Trim: ASME A112.19.5.
- G. Comply with the following applicable standards and other requirements specified for lavatory and sink faucets:
  - 1. Integral, Atmospheric Vacuum Breakers: ASSE 1001.
  - 2. NSF Materials: NSF 61.
  - 3. Pipe Threads: ASME B1.20.1.
  - 4. Supply and Drain Fittings: ASME A112.18.1M.
- H. Comply with the following applicable standards and other requirements specified for miscellaneous fittings:
  - 1. Atmospheric Vacuum Breakers: ASSE 1001.
  - 2. Brass and Copper Supplies: ASME A112.18.1M.
  - 3. Manual-Operation Flushometers: ASSE 1037.
  - 4. Plastic Tubular Fittings and Piping: ASTM F 409.
  - 5. Sensor-Operation Flushometers: ASSE 1037 and UL 1951.
  - 6. Tubular Brass Drainage Fittings and Piping: ASME A112.18.1M.
- I. Comply with the following applicable standards and other requirements specified for miscellaneous components:
  - 1. Floor Drains: ASME A112.21.1M.
  - 2. Grab Bars: ASTM F 446.
  - 3. Hose-Coupling Threads: ASME B1.20.7.
  - 4. Off-Floor Fixture Supports: ASME A112.6.1M.
  - 5. Pipe Threads: ASME B1.20.1.
  - 6. Plastic Toilet Seats: ANSI Z124.5.
  - 7. Supply and Drain Protective Shielding Guards: ICC A117.1.

## **PART 2 - PRODUCTS**

### **2.1 FIXTURES**

- A. See drawings for fixtures.

## **PART 3 - EXECUTION**

### 3.1 FIXTURE INSTALLATION

- A. Assemble fixtures, trim, fittings, and other components according to manufacturers' written instructions.
- B. For wall-hanging fixtures, install off-floor supports affixed to building substrate.
  - 1. Use carrier supports with waste fitting and seal for back-outlet fixtures.
  - 2. Use carrier supports without waste fitting for fixtures with tubular waste piping.
  - 3. Use chair-type carrier supports with rectangular steel uprights for accessible fixtures.
- C. Install back-outlet, wall-hanging fixtures onto waste fitting seals and attach to supports.
- D. Install floor-mounting fixtures on closet flanges or other attachments to piping or building substrate.
- E. Install wall-hanging fixtures with tubular waste piping attached to supports.
- F. Install fixtures level and plumb according to manufacturers' written instructions and roughing-in drawings.
- G. Install water-supply piping with stop on each supply to each fixture to be connected to water distribution piping. Attach supplies to supports or substrate within pipe spaces behind fixtures. Install stops in locations where they can be easily reached for operation.
  - 1. Exception: Use ball, gate, or globe valve if stops are not specified with fixture. Refer to Division 15 Section "Valves" for general-duty valves.
- H. Install trap and tubular waste piping on drain outlet of each fixture to be directly connected to sanitary drainage system.
- I. Install tubular waste piping on drain outlet of each fixture to be indirectly connected to drainage system.
- J. Install flushometer valves for accessible water closets and urinals with handle mounted on wide side of compartment. Install other actuators in locations that are easy for people with disabilities to reach.
- K. Install toilet seats on water closets.
- L. Install faucet-spout fittings with specified flow rates and patterns in faucet spouts if faucets are not available with required rates and patterns. Include adapters if required.

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**Plumbing Fixtures**

- M. Install water-supply, flow-control fittings with specified flow rates in fixture supplies at stop valves.
- N. Install faucet, flow-control fittings with specified flow rates and patterns in faucet spouts if faucets are not available with required rates and patterns. Include adapters if required.
- O. Install shower, flow-control fittings with specified maximum flow rates.
- P. Install traps on fixture outlets.
  - 1. Exception: Omit trap on fixtures with integral traps.
- Q. Install escutcheons at piping wall ceiling penetrations in exposed, finished locations. Use deep-pattern escutcheons if required to conceal protruding fittings. Refer to Division 15 Section 15050 "Basic Mechanical Materials and Methods" for escutcheons.
- R. Seal joints between fixtures and walls, floors, and counters using sanitary-type, one-part, mildew-resistant, silicone sealant. Match sealant color to fixture color. Refer to Division 7 Section 07920 "Joint Sealants" for sealant and installation requirements.

**3.2 CONNECTIONS**

- A. Connect water supplies from water distribution piping to fixtures.
- B. Connect drain piping from fixtures to drainage piping.
- C. Supply and Waste Connections to Plumbing Fixtures: Connect fixtures with water supplies, stops, risers, traps, and waste piping. Use size fittings required to match fixtures. Connect to plumbing piping.
- D. Supply and Waste Connections to Fixtures and Equipment Specified in Other Sections: Connect fixtures and equipment with water supplies, stops, risers, traps, and waste piping specified. Use size fittings required to match fixtures and equipment. Connect to plumbing piping.

**3.3 PROTECTION**

- A. Provide protective covering for installed fixtures and fittings.
- B. Do not allow use of fixtures for temporary facilities unless approved in writing by the State's Representative.

END OF SECTION 15410

## **SECTION 15430 PLUMBING SPECIALTIES**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. This Section includes the following plumbing specialties:

1. Trap seal primer valves.
2. Miscellaneous piping specialties.
3. Cleanouts.
4. Floor drains.

#### **1.2 PERFORMANCE REQUIREMENTS**

- A. Provide components and installation capable of producing piping systems with following minimum working-pressure ratings, unless otherwise indicated:

1. Domestic Water Piping: 125 psig.
2. Sanitary Waste and Vent Piping: 10-foot head of water.

#### **1.3 SUBMITTALS**

- A. Product Data: Include rated capacities and indicate materials, finishes, dimensions, required clearances, and methods of assembly of components; and piping and wiring connections for the following:

1. Water hammer arresters, air vents, and trap seal primer valves and systems.

- B. Operation and maintenance data for the following:

1. Trap seal primer valves and systems.

#### **1.4 QUALITY ASSURANCE**

- A. Plumbing specialties shall bear label, stamp, or other markings of specified testing agency.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in the current approved edition of the California Electrical Code, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- C. CCR Compliance: Comply with the current approved edition of the California Code of Regulations, Title 24, California Plumbing Code.



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**Plumbing Specialties**

- D. ASME Compliance: Comply with ASME B31.9, "Building Services Piping," for piping materials and installation.
- E. NSF Compliance:
  - 1. Comply with NSF 14, "Plastics Piping Components and Related Materials," for plastic domestic water piping components. Include marking "NSF-pw" on plastic potable-water piping and "NSF-dwv" on plastic drain, waste, and vent piping.

**PART 2 - PRODUCTS**

**2.1 MANUFACTURERS**

- A. In other Part 2 articles where subparagraph titles below introduce lists, the following requirements apply for product selection:
  - 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the products specified.
  - 2. 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.

**2.2 TRAP SEAL PRIMER VALVES**

- A. Supply-Type Trap Seal Primer Valves: ASSE 1018, water-supply-fed type, with the following characteristics:
  - 1. Available Manufacturers:
    - a. Josam Co.
    - b. Smith, Jay R. Mfg. Co.
    - c. Watts Industries, Inc.; Water Products Div.
    - d. Zurn Industries, Inc.; Jonespec Div.
    - e. or approved equal.
  - 2. 125-psig minimum working pressure.
  - 3. Bronze body with atmospheric-vented drain chamber.
  - 4. Inlet and Outlet Connections: NPS 1/2 threaded, union, or solder joint.
  - 5. Gravity Drain Outlet Connection: NPS 1/2 threaded or solder joint.
  - 6. Finish: Chrome plated, or rough bronze for units used with pipe or tube that is not chrome finished.

**2.3 MISCELLANEOUS PIPING SPECIALTIES**

- A. Water Hammer Arresters: ASSE 1010 or PDI-WH 201, metal-bellows type with pressurized metal cushioning chamber. Sizes indicated are based on ASSE 1010 or PDI-WH 201, Sizes A through F.

1. Available Manufacturers:

- a. Josam Co.
- b. Smith, Jay R. Mfg. Co.
- c. Tyler Pipe; Wade Div.
- d. Zurn Industries, Inc.; Specification Drainage Operation.
- e. or approved equal.

- B. Stack Flashing Fittings: Counterflashing-type, cast-iron fitting, with bottom recess for terminating roof membrane, and with threaded or hub top for extending vent pipe.

- C. Vent Caps: Cast-iron body with threaded or hub inlet and vandal-proof design. Include vented hood and set-screws to secure to vent pipe.

- D. Vent Terminals: Commercially manufactured, shop- or field-fabricated, frost-proof assembly constructed of galvanized steel, copper, or lead-coated copper. Size to provide 1-inch enclosed air space between outside of pipe and inside of flashing collar extension, with counterflashing.

- E. Downspout Boots: ASTM A 74, Service class, hub-and-spigot, cast-iron soil pipe.

- F. Conductor Nozzles: Bronze body with threaded inlet for connected conductor size, and bronze wall flange with mounting holes.

1. Finish: bronze.

## 2.4 CLEANOUTS

- A. Cleanouts, at locations shown on drawings: Comply with ASME A112.36.2M or ASME A112.3.1.

1. Application: Floor cleanout.

2. Available Products:

- a. Josam Co., 56010-15.
- b. Smith, Jay R. Mfg. Co., 4032L-U.
- c. Zurn Industries, Inc., Z1400-VP.
- d. or approved equal.

3. Body or Ferrule Material: Cast iron.

4. Clamping Device: Not required.

5. Outlet Connection: Spigot.

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**Plumbing Specialties**

6. Closure: Brass plug with straight threads and gasket.
7. Adjustable Housing Material: Cast iron with set-screws or other device.
8. Frame and Cover Material and Finish: Painted cast iron.
9. Frame and Cover Shape: Round.
10. Top Loading Classification: Medium Duty.

**2.5 FLOOR DRAINS**

- A. Floor Drains, at locations shown on drawings: Comply with ASME A112.21.1M.

1. Application: Floor drain.
2. Available Products:
  - a. Josam Co., 30000-2-8--VP.
  - b. Josam Co., 30000-12-14-80-92.
  - c. Smith, Jay R. Mfg. Co., 2005-(B)(G)(H)(S).
  - d. Tyler Pipe, Wade Div., 1100G-27-39-179.
  - e. Zurn Industries, Inc., Z-415-8SH-G-Y.
  - f. or approved equal
3. Body Material: Gray iron.
4. Outlet: Bottom.
5. Exposed Surfaces and Interior Lining: Galvanized.
6. Sediment Bucket: Required.
7. Top or Strainer Material: Gray iron.
8. Top Shape: Square.
9. Dimensions of Top or Strainer: 8" x 8".
10. Top Loading Classification: Medium Duty.

**PART 3 - EXECUTION**

**3.1 INSTALLATION**

- A. Refer to Division 15 Section 16050 "Basic Mechanical Materials and Methods" for piping joining materials, joint construction, and basic installation requirements.
- B. Install pressure regulators with inlet and outlet shutoff valves and balance valve bypass. Install pressure gages on inlet and outlet.
- C. Install strainers on supply side of each control valve, pressure regulator, and solenoid valve.
- D. Install trap seal primer valves with outlet piping pitched down toward drain trap a minimum of 1 percent and connect to floor-drain body, trap, or inlet fitting. Adjust valve for proper flow.

- E. Install backwater valves in building drain piping. For interior installation, provide cleanout deck plate flush with floor and centered over backwater valve cover, and of adequate size to remove valve cover for servicing.
- F. Install cleanouts in aboveground piping and building drain piping according to the following, unless otherwise indicated:
  - 1. Size same as drainage piping up to NPS 4.
- G. Install cleanout deck plates with top flush with finished floor, for floor cleanouts for piping below floors.
- H. Install vent flashing sleeves on stacks passing through roof. Secure over stack flashing according to manufacturer's written instructions.
- I. Install frost-proof vent caps on each vent pipe passing through roof. Maintain 1-inch clearance between vent pipe and roof substrate.
- J. Install floor drains at low points of surface areas to be drained. Set grates of drains flush with finished floor, unless otherwise indicated.
  - 1. Position floor drains for easy access and maintenance.
  - 2. Set floor drains below elevation of surrounding finished floor to allow floor drainage. Set with grates depressed according to the following drainage area radii:
    - a. Radius, 30 Inches or Less: Equivalent to 2 percent slope, but not less than 1/4-inch total depression.
    - b. Radius, 30 to 60 Inches: Equivalent to 2 percent slope.
    - c. Radius, 60 Inches or Larger: Equivalent to 2 percent slope, but not greater than 1 1/2 inch total depression.
  - 3. Install individual traps for floor drains connected to sanitary building drain, unless otherwise indicated.
- K. Fasten wall-hanging plumbing specialties securely to supports attached to building substrate if supports are specified and to building wall construction if no support is indicated.
- L. Fasten recessed-type plumbing specialties to reinforcement built into walls.
- M. Install individual shutoff valve in each water supply to plumbing specialties. Use ball, gate, or globe valve if specific valve is not indicated. Install shutoff valves in accessible locations. Refer to Division 15 Section "Valves" for general-duty ball, butterfly, check, gate, and globe valves.
- N. Install traps on plumbing specialty drain outlets. Omit traps on indirect wastes unless trap is indicated.

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- O. Install escutcheons at wall, floor, and ceiling penetrations in exposed finished locations and at millwork. Use deep-pattern escutcheons if required to conceal protruding pipe fittings.

**3.2 CONNECTIONS**

- A. Install piping adjacent to equipment to allow service and maintenance.
- B. Connect plumbing specialties and devices that require power according to Division 16 Sections.

**3.3 LABELING AND IDENTIFYING**

- A. Equipment Nameplates and Signs: Install engraved plastic-laminate equipment nameplate or sign on or near each backflow preventer, thermostatic tempering valves and trap seal primer system.
  - 1. Text: Distinguish among multiple units, inform operator of operational requirements, indicate safety and emergency precautions, and warn of hazards and improper operations, in addition to identifying unit.
  - 2. Refer to Division 15 Section 15050 "Basic Mechanical Materials and Methods Mechanical Identification" for nameplates and signs.

**3.4 PROTECTION**

- A. Protect drains during remainder of construction period to avoid clogging with dirt and debris and to prevent damage from traffic and construction work.
- B. Place plugs in ends of uncompleted piping at end of each day or when work stops.

END OF SECTION 15430

## **SECTION 16000 ELECTRICAL**

### **PART 1 - GENERAL**

#### **1.1 GENERAL**

- A. Provide all equipment, materials, labor, and services required for the complete, proper, and substantial installation of all work shown on the plans. Include all patching, repairing, and painting to match existing, of any existing areas damaged or otherwise disturbed in the course of work done under this contract.

#### **1.2 CODES**

- A. All work shall be in strict accordance with the rules and regulations of the 2007 California Electrical Code (CEC), and all applicable state laws and ordinances.

#### **1.3 FIELD CHECK**

- A. Contractor shall be held to have examined the site and compared it with the plans and to have satisfied himself as to the conditions under which the work is to be performed. No subsequent allowance shall be made for any extra expense due to failure to make such examinations.

#### **1.4 PERMITS/FEES**

- A. Contractor shall pay all inspections and other applicable fees and procure all licenses and permits necessary to the prosecution and completion of his work.
- B. Remove, replace, or relocate any existing electrical equipment or conduit, which may be necessary to complete the installation.
- C. Record "As-Built" drawings shall be kept up-to-date, and a complete reproducible set shall be furnished to the State's Representative at completion of work.

#### **1.5 PROTECTION**

- A. Protect all work, materials, and equipment from damage due to any cause. Materials should be brought on the job site in limited quantities to avoid storage problems.

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**Electrical**

**1.6 WORKMANSHIP**

- A. All equipment and material shall be installed in a neat and workman like manner, and workmanship of the entire job shall be first class in every way.

**1.7 MATERIALS**

- A. All materials and equipment shall be furnished as specified in strict accordance with these plans and specifications, and shall be new, listed by Underwriters' Laboratories, and meeting their requirements and bearing their labels wherever standards have been established and label service is regularly furnished by that agency.

**1.8 FINAL REVIEW**

- A. When Contractor considers the Work complete, submit written certification that:
  - 1. Contract Documents have been reviewed.
  - 2. Work has been inspected for compliance with Contract Documents.
  - 3. Work has been completed in accordance with Contract Documents.
  - 4. Equipment and systems have been tested in the presence of the State's Representative and are operational.
  - 5. Work is completed and ready for final review.

**1.9 GUARANTEE**

- A. Contractor shall guarantee all materials and equipment for a minimum of one (1) year from date of acceptance by the State's Representative.

**END OF SECTION 16000**

**SECTION 16050**  
**BASIC ELECTRICAL MATERIALS AND METHODS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. This Section includes the following:
  - 1. Raceways.
  - 2. Building wire and connectors.
  - 3. Supporting devices for electrical components.
  - 4. Electrical identification.
  - 5. Electrical demolition.
  - 6. Cutting and patching for electrical construction.

**1.2 SUBMITTALS**

- A. Product Data: For electrical components.

**1.3 QUALITY ASSURANCE**

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in the current approved edition of the California Electrical Code (CEC), Article 100, by a testing agency acceptable to the State's Representative, and marked for intended use.
- B. Comply with NFPA 70, CEC, and NEC.

**1.4 COORDINATION**

- A. Sequence, coordinate, and integrate installing electrical materials and equipment for efficient flow of the Work.
- B. Where electrical identification devices are applied to field-finished surfaces, coordinate installation of identification devices with completion of finished surface.

**PART 2 - PRODUCTS**

**2.1 RACEWAYS**

- A. EMT: Electrical metallic tubing; ANSI C80.3, zinc-coated steel, with set-screw fittings.



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- B. FMC: Flexible metal conduit; zinc-coated steel.
- C. IMC: Intermediate metal conduit; ANSI C80.6, zinc-coated steel, with threaded fittings.
- D. RMC: Rigid metal conduit; galvanized rigid steel; ANSI C80.1.
- E. RNC: Rigid nonmetallic conduit; NEMA TC 2, Schedule 40 PVC, with NEMA TC3 fittings.
- F. Raceway Fittings: Specifically designed for raceway type with which used.

**2.2 WIRES, CABLES, AND CONNECTIONS**

- A. Conductors, No. 10 AWG and Smaller: Solid copper.
- B. Conductors, Larger Than No. 10 AWG: Stranded copper.
- C. Insulation: Thermoplastic, rated 600 V, 75 deg C minimum, Type THW, THHN-THWN.
- D. Insulation for control wiring: Thermoplastic, rated 600 V, 75 deg C minimum, Type THW, THHN-THWN.
- E. Wire Connectors and Splices: Units of size, ampacity rating, material, type, and class suitable for service indicated.
  - 1. Connectors and splices for conductors sizes No. 10 AWG and smaller:
    - a. Wire pigtail connector of appropriate size for conductors. Ideal Pigtail connector or approved equal.
  - 2. Connectors and splices for conductors sizes No. 8 AWG and larger.
    - a. Compression connector of appropriate size for conductors, insulated with epoxy filled bag. Burndy compression connector and Scotch-Loc epoxy filled bags or approved equal.
  - 3. Connectors and splices for ground conductors sizes No. 10 AWG and smaller, inside building electrical:
    - a. Compression connector of appropriate size for conductor. Burndy compression connector or approved equal.
    - b. Wire nuts for connecting ground conductors sizes No. 10 AWG and smaller are not allowed.
  - 4. Connectors and splices for conductors in pull boxes:
    - a. Compression connector of appropriate size for conductors, insulated with epoxy filled bag. Burndy compression connector and Scotch-Loc epoxy filled bags or approved equal.

**2.3 SUPPORTING DEVICES**

- A. Material: Cold-formed steel, with corrosion-resistant coating.

- B. Metal Items for Use in Damp Locations: Hot-dip galvanized steel.
- C. Slotted-Steel Channel: Flange edges turned toward web, and 9/16-inch-diameter slotted holes at a maximum of 2 inches o.c., in webs. Strength rating to suit structural loading.
- D. Slotted Channel Fittings and Accessories: Recommended by the manufacturer for use with the type and size of channel with which used.
  - 1. Materials: Same as channels and angles, except metal items may be stainless steel.
- E. Pipe Sleeves: ASTM A 53, Type E, Grade A, Schedule 40, galvanized steel, plain ends.
- F. Expansion Anchors: Carbon-steel wedge or sleeve type.
- G. Toggle Bolts: All-steel springhead type.

#### 2.4 ELECTRICAL IDENTIFICATION

- A. Identification Device Colors: Use those prescribed by ANSI A13.1, CEC, and these Specifications.
- B. Colored Adhesive Marking Tape for Raceways, Wires, and Cables: Self-adhesive vinyl tape, not less than 1 inch wide by 3 mils thick.
- C. Tape Markers for Conductors: Vinyl or vinyl-cloth, self-adhesive, wraparound type with preprinted numbers and letters.
- D. Color-Coding Cable Ties: Type 6/6 nylon, self-locking type. Colors to suit coding scheme.
- E. Engraved-Plastic Labels, Signs, and Instruction Plates: Engraving stock, melamine plastic laminate punched or drilled for mechanical fasteners 1/16-inch minimum thickness for signs up to 20 sq. in. and 1/8-inch minimum thickness for larger sizes. Engraved legend in black letters on white background.
- F. Warning and Caution Signs: Preprinted; comply with 29 CFR 1910.145, Chapter XVII. Colors, legend, and size appropriate to each application.
  - 1. Interior Units: Aluminum, baked-enamel-finish, punched or drilled for mechanical fasteners.
  - 2. Exterior Units: Weather-resistant, nonfading, preprinted, cellulose-acetate butyrate with 0.0396-inch, galvanized-steel backing. 1/4-inch grommets in corners for mounting.

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- G. Fasteners for Nameplates and Signs: Self-tapping, stainless steel screws or No. 10/32 stainless-steel machine screws with nuts and flat and lock washers.

**PART 3 - EXECUTION**

**3.1 ELECTRICAL EQUIPMENT INSTALLATION**

- A. Headroom Maintenance: If mounting heights or other location criteria are not indicated, arrange and install components and equipment to provide maximum possible headroom.
- B. Materials and Components: Install level, plumb, and parallel and perpendicular to other building systems and components, unless otherwise indicated.
- C. Equipment: Install to facilitate service, maintenance, and repair or replacement of components. Connect for ease of disconnecting, with minimum interference with other installations.

**3.2 RACEWAY APPLICATION**

- A. Indoor Installations:
  - 1. Exposed: EMT except in wet or damp locations, use IMC.
  - 2. Concealed in Walls or Ceilings: EMT.
  - 3. In Concrete Slab: RMC.
  - 4. Below Slab on Grade or in Crawlspace: RNC
  - 5. Connection to Vibrating Equipment: FMC.
  - 6. Boxes and Enclosures: NEMA 250, Type 1, unless otherwise indicated.
- B. Outdoor Installations:
  - 1. Exposed: RNC.
  - 2. Concealed: RNC.
  - 3. Underground, Single Run: RNC.
  - 4. Underground, Grouped: RNC.
  - 5. Connection to Vibrating Equipment: LFMC.
  - 6. Boxes and Enclosures: NEMA 250, Type 3R or Type 4, unless otherwise indicated.

**3.3 RACEWAY AND CABLE INSTALLATION**

- A. Conceal raceways and cables, unless otherwise indicated, within finished walls, ceilings, and floors.
- B. Keep legs of raceway bends in the same plane and keep straight legs of offsets parallel.

- C. Use RMC elbows where RNC turns out of slab.
- D. Install pull wires in empty raceways. Use No. 10 AWG zinc-coated steel or woven polypropylene or monofilament plastic line with not less than 200-lb tensile strength. Leave at least 24 inches of slack at each end of pull wires.
- E. Install raceways, 2-inch trade size and smaller, in maximum lengths of 200 feet and with a maximum of three 90-degree bends (270-degrees of total bends) or equivalent. Add pull boxes where necessary to accomplish this.

### 3.4 WIRING METHODS FOR POWER, LIGHTING, AND CONTROL CIRCUITS

- A. Application: Use wiring methods specified below to the extent permitted by applicable codes as interpreted by the State's Representative.
- B. Exposed Feeders: Insulated single conductors in raceway.
- C. Concealed Feeders in Ceilings Walls, Gypsum Board Partitions: Insulated single conductors in raceway.
- D. Concealed Feeders in Crawlspace: Insulated single conductors in raceway.
- E. Exposed Branch Circuits Including in Crawlspace: Insulated single conductors in raceway.
- F. Concealed Branch Circuits in Ceilings, Walls, Gypsum Board Partitions: Insulated single conductors in raceway.
- G. Underground Feeders and Branch Circuits: Insulated single conductors in raceway.

### 3.5 WIRING INSTALLATION

- A. Make splices and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.

### 3.6 ELECTRICAL SUPPORTING DEVICE APPLICATION

- A. Damp Locations and Outdoors: Hot-dip galvanized materials or nonmetallic, slotted channel system components.
- B. Dry Locations: Hot-dip galvanized materials or nonmetallic, slotted channel system components.
- C. Strength of Supports: Adequate to carry present and future loads, times a safety factor of at least four with, 200-lb minimum design load for each support element.

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**3.7 SUPPORT INSTALLATION**

- A. Support parallel runs of horizontal raceways together on trapeze- or bracket-type hangers.
- B. Size supports for multiple raceway or cable runs so capacity can be increased by a 25 percent minimum in the future.
- C. Support individual horizontal single raceways with separate, malleable-iron pipe hangers or clamps
- D. Install sleeves for cable and raceway penetrations of concrete slabs and walls unless core-drilled holes are used.
- E. Secure electrical items and their supports to building structure, using the following methods unless other fastening methods are indicated:
  - 1. Wood: Wood screws or screw-type nails.
  - 2. Gypsum Board: Toggle bolts. Seal around sleeves with joint compound, both sides of wall.
  - 3. Masonry: Toggle bolts on hollow block and expansion bolts on solid block. Seal around sleeves with mortar, both sides of wall.
  - 4. Existing Concrete: Expansion bolts or threaded studs driven by powder charge and provided with lock washers.
  - 5. Fasteners for Damp, Wet, or Weather-Exposed Locations: Stainless steel.
  - 6. Light Steel: Sheet-metal screws.
  - 7. Fasteners: Select so load applied to each fastener does not exceed 25 percent of its proof-test load.

**3.8 IDENTIFICATION MATERIALS AND DEVICES**

- A. Install at locations for most convenient viewing without interference with operation and maintenance of equipment.
- B. Coordinate names, abbreviations, colors, and other designations used for electrical identification with corresponding designations indicated in the Contract Documents or required by codes and standards. Use consistent designations throughout Project.
- C. Self-Adhesive Identification Products: Clean surfaces before applying.
- D. Tag and label circuits designated to be extended in the future. Identify source and circuit numbers in each cabinet, pull and junction box, and outlet box. Color-coding may be used for voltage and phase identification.
- E. Install warning, caution, and instruction signs where required to comply with 29 CFR 1910.145, Chapter XVII, and where needed to ensure safe operation and maintenance of electrical systems and of items to which they connect.

Indoors install engraved plastic-laminated instruction signs with approved legend where instructions are needed for system or equipment operation. Install metal-backed butyrate signs for outdoor items.

### 3.9 DEMOLITION

- A. Protect existing electrical equipment and installations indicated to remain. If damaged or disturbed in the course of the Work, remove damaged portions and install new products of equal capacity, quality, and functionality.
- B. Accessible Work: Remove exposed electrical equipment and installations, indicated to be demolished, in their entirety.
- C. Abandoned Work: Cut and remove buried raceway and wiring, indicated to be abandoned in place, 2 inches below the surface of adjacent construction. Cap raceways and patch surface to match existing finish.
- D. Remove, store, clean, reinstall, reconnect, and make operational components indicated for relocation.
- E. All equipment shown on the plans to be salvaged shall be delivered to a location as designated by the State's Representative.

### 3.10 CUTTING AND PATCHING

- A. Cut, channel, chase, and drill floors, walls, partitions, ceilings, and other surfaces required to permit electrical installations. Perform cutting by skilled mechanics of trades involved.
- B. Repair, refinish and touch up disturbed finish materials and other surfaces to match adjacent undisturbed surfaces.

### 3.12 CONTINUITY OF SERVICE

- A. No interruption of services to any part of the existing facilities will be permitted without express permission in each instance from the State's Representative and State Park staff having jurisdiction over the project. Obtain written permission from the State's Representative for any interruption of the electrical power.
- B. The contractor shall organize their work to minimize the duration of the power interruption

END OF SECTION 16050

## **SECTION 16060 GROUNDING AND BONDING**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. This Section includes grounding of electrical systems and equipment. Requirements specified in this Section may be supplemented by requirements of other Sections.

#### **1.2 QUALITY ASSURANCE**

- A. Electrical Components, Devices, and Accessories: Listed and labeled under UL 467 as defined in the current approved edition of CEC, Article 100, by a testing agency acceptable to the State's Representative, and marked for intended use.

### **PART 2 - PRODUCTS**

#### **2.1 MANUFACTURERS**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Apache Grounding/Erico Inc.
  - 2. Boggs, Inc.
  - 3. Chance/Hubbell.
  - 4. Copperweld Corp.
  - 5. Dossert Corp.
  - 6. Erico Inc.; Electrical Products Group.
  - 7. Framatome Connectors/Burndy Electrical.
  - 8. Galvan Industries, Inc.
  - 9. Harger Lightning Protection, Inc.
  - 10. Hastings Fiber Glass Products, Inc.
  - 11. Heary Brothers Lightning Protection Co.
  - 12. Ideal Industries, Inc.
  - 13. ILSCO.
  - 14. Kearney/Cooper Power Systems.
  - 15. Korns, C. C. Co.; Division of Robroy Industries.
  - 16. Lightning Master Corp.
  - 17. Lyncole XIT Grounding.
  - 18. O-Z/Gedney Co.; a business of the EGS Electrical Group.
  - 19. Racor, Inc.; Division of Hubbell.
  - 20. Robbins Lightning, Inc.

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- 21. Salisbury, W. H. & Co.
- 22. Superior Grounding Systems, Inc.
- 23. Thomas & Betts, Electrical.

**2.2 GROUNDING CONDUCTORS**

- A. For insulated conductors, comply with Division 16 Section "Conductors and Cables."
- B. Equipment Grounding Conductors: Insulated with green-colored insulation.
- C. Bare, Solid-Copper Conductors: ASTM B 3.
- D. Assembly of Bare, Stranded-Copper Conductors: ASTM B 8.
- E. Copper Bonding Conductor: No. 4 or No. 6 AWG, stranded copper conductor.
- F. Copper Bonding Jumper: Bare copper tape, braided bare copper conductors, terminated with copper ferrules; 1-5/8 inches wide and 1/16 inch thick.
- G. Grounding Bus: Bare, annealed copper bars of rectangular cross section, with insulated spacer.
- H. Connectors: Comply with IEEE 837 and UL 467; listed for use for specific types, sizes, and combinations of conductors and connected items. Compression type.

**PART 3 - EXECUTION**

**3.1 INSTALLATION**

- A. Use only copper conductors for both insulated and bare grounding conductors in direct contact with earth, concrete, crushed stone, and similar materials.
- B. In raceways, use insulated equipment grounding conductors.
- C. Equipment Grounding Conductors: Comply with CEC, Article 250, for types, sizes, and quantities of equipment grounding conductors, unless specific types, larger sizes, or more conductors than required by CEC are indicated.
  - 1. Install insulated equipment grounding conductors in branch circuits receptacle circuits.
  - 2. Busway Supply Circuits: Install insulated equipment grounding conductor from the grounding bus in the switchgear, switchboard, or distribution panel to equipment grounding bar terminal on busway.



3. Nonmetallic Raceways: Install an equipment grounding conductor in nonmetallic raceways unless they are designated for telephone or data cables.
- D. Grounding Conductors: Route along shortest and straightest paths possible, unless otherwise indicated. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.
- E. Bonding Straps and Jumpers: Install so vibration by equipment mounted on vibration isolation hangers or supports is not transmitted to rigidly mounted equipment. Use exothermic-welded connectors for outdoor locations, unless a disconnect-type connection is required; then, use a bolted clamp. Bond straps directly to the basic structure taking care not to penetrate any adjacent parts. Install straps only in locations accessible for maintenance.
- F. Connections: Make connections so galvanic action or electrolysis possibility is minimized. Select connectors, connection hardware, conductors, and connection methods so metals in direct contact will be galvanically compatible.
  1. Use electroplated or hot-tin-coated materials to ensure high conductivity and to make contact points closer to order of galvanic series.
  2. Make connections with clean, bare metal at points of contact.
  3. Make aluminum-to-steel connections with stainless-steel separators and mechanical clamps.
  4. Make aluminum-to-galvanized steel connections with tin-plated copper jumpers and mechanical clamps.
  5. Coat and seal connections having dissimilar metals with inert material to prevent future penetration of moisture to contact surfaces.
  6. Exothermic-Welded Connections: Comply with manufacturer's written instructions. Welds that are puffed up or that show convex surfaces indicating improper cleaning are not acceptable.
  7. Noncontact Metal Raceway Terminations: If metallic raceways terminate at metal housings without mechanical and electrical connection to housing, terminate each conduit with a grounding bushing. Connect grounding bushings with a bare grounding conductor to grounding bus or terminal in housing. Bond electrically noncontinuous conduits at entrances and exits with grounding bushings and bare grounding conductors, unless otherwise indicated.
  8. Compression-Type Connections: Use hydraulic compression tools to provide correct circumferential pressure for compression connectors. Use tools and dies recommended by connector manufacturer. Provide embossing die code or other standard method to make a visible indication that a connector has been adequately compressed on grounding conductor.
  9. Moisture Protection: If insulated grounding conductors are connected to ground rods or grounding buses, insulate entire area of connection and seal against moisture penetration of insulation and cable.

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**3.2 FIELD QUALITY CONTROL**

A. Testing: Perform the following field quality-control testing:

1. After installing grounding system but before permanent electrical circuitry has been energized, test for compliance with requirements.

END OF SECTION 16060

**SECTION 16071**  
**SEISMIC CONTROLS FOR ELECTRICAL WORK**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. This Section includes seismic restraints and other earthquake-damage-reduction measures for electrical components. It applies to and complements optional seismic-restraint requirements in the various electrical component Sections of these Specifications.

**1.2 DEFINITIONS**

- A. Seismic Restraint: A fixed device (a seismic brace, an anchor bolt or stud, or a fastening assembly) used to prevent vertical or horizontal movement, or both vertical and horizontal movement, of an electrical system component during an earthquake.
- B. Mobile Structural Element: A part of the building structure such as a slab, floor structure, roof structure, or wall that may move independently of other structural elements during an earthquake.

**1.3 SUBMITTALS**

- A. Product Data: Illustrate and indicate types, styles, materials, strength, fastening provisions, and finish for each type and size of seismic-restraint component used. Include documentation of evaluation and approval of components by agencies acceptable to the State's Representative.
- B. Shop Drawings: For components, physical arrangements, and installation details not defined by Drawings. Indicate materials and show calculations, design analysis, details, and layouts, signed and sealed by a professional engineer.
- C. Pre-approval and Evaluation Documentation: By ICBO Evaluation Service, showing maximum ratings of restraints.
- D. Qualification data.

**1.4 QUALITY ASSURANCE**

- A. Comply with seismic-restraint requirements in the current approved edition of the California Building Code/Code of Regulations of OSHPD, unless requirements in this Section are more stringent.

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**Seismic Controls for Electrical Work**

**1.5 COORDINATION**

- A. Coordinate layout and installation of seismic bracing with building structure, architectural features, and mechanical, fire-protection, electrical, and other building systems.

**PART 2 - PRODUCTS**

**2.1 MANUFACTURERS**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Unistrut Corporation.
  - 2. B-Line Systems, Inc.
  - 3. Erico, Inc.
  - 4. GS Metals Corp.
  - 5. Loos & Company, Inc.
  - 6. Mason Industries, Inc,
  - 7. Powerstrut.
  - 8. Thomas & Betts Corp.
  - 9. Amber/Booth Company, Inc.

**2.2 MATERIALS**

- A. Use the following materials for restraints:
  - 1. Indoor Dry Locations: Steel, zinc plated.
  - 2. Damp Locations and Outdoors Steel, zinc plated.
  - 3. Locations where exposed to corrosive fumes: Stainless steel.
  - 4. Strength of Supports: Adequate to carry present and future loads, times a safety factor of at least four with, 200-lb minimum design load for each support element.

**2.3 ANCHORAGE AND STRUCTURAL ATTACHMENT COMPONENTS**

- A. Strength: Defined in reports by ICBO Evaluation Service or another agency acceptable to the State's Representative.
  - 1. Structural Safety Factor: Strength in tension and shear of components shall be at least twice the maximum seismic forces for which they are required to be designed.
- B. Concrete and Masonry Anchor Bolts and Studs: Steel-expansion wedge type.
- C. Concrete Inserts: Steel-channel type.

- D. Through Bolts: Structural type, hex head, high strength. Comply with ASTM A 325.
- E. Welding Lugs: Comply with MSS SP-69, Type 57.
- F. Bushing Assemblies for Wall-Mounted Equipment Anchorage: Assemblies of neoprene elements and steel sleeves designed for seismically rated rigid equipment mountings, and matched to the type and size of attachment devices used.

## 2.4 SEISMIC-BRACING COMPONENTS

- A. Slotted Steel Channel: 1-5/8-by-1-5/8-inch cross section, formed from 0.1046-inch-thick steel, with 9/16-by-7/8-inch slots at a maximum of 2 inches o.c. in webs, and flange edges turned toward web.
  - 1. Materials for Channel: ASTM A 570, GR 33.
  - 2. Materials for Fittings and Accessories: ASTM A 575, ASTM A 576, or ASTM A 36.
  - 3. Fittings and Accessories: Products of the same manufacturer as channels and designed for use with that product.
  - 4. Finish: Baked, rust-inhibiting, acrylic-enamel paint applied after cleaning and phosphate treatment, unless otherwise indicated.
- B. Channel-Type Bracing Assemblies: Slotted steel channel, with adjustable hinged steel brackets and bolts.
- C. Hanger Rod Stiffeners: Slotted steel channels, installed vertically, with internally bolted connections to hanger rod.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Install seismic restraints according to applicable codes and regulations and as approved by the State's Representative, unless more stringent requirements are indicated.
- B. Install structural attachments as follows:
  - 1. Use bolted connections with steel brackets, slotted channel, and slotted-channel fittings to spread structural loads and reduce stresses.
  - 2. Attachments to Existing Concrete: Use expansion anchors.
  - 3. Holes for Expansion Anchors in Concrete: Drill at locations and to depths that avoid reinforcing bars.
  - 4. Attachments to Hollow Walls: Bolt to slotted steel channels fastened to wall with expansion anchors.
  - 5. Attachments to Wood Structural Members: Install bolts through members.

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- C. Install electrical equipment anchorage as follows:
  - 1. Anchor panelboards, busway, and distribution units as follows:
    - a. Anchor equipment rigidly to a single mobile structural element or to a concrete base that is structurally tied to a single mobile structural element.
    - b. Bushings for Floor-Mounted Equipment Anchors: Install to allow for resilient media between anchor bolt or stud and mounting hole in concrete.
    - c. Anchor Bolt Bushing Assemblies for Wall-Mounted Equipment: Install to allow for resilient media where equipment or equipment-mounting channels are attached to wall.
    - d. Torque bolts and nuts on studs to values recommended by equipment manufacturer.
- D. Install seismic bracing as follows:
  - 1. Install bracing according to spacing and strengths indicated by approved analysis.
  - 2. Expansion and Contraction: Install to allow for thermal movement of braced components.
- E. Accommodation of Differential Seismic Motion: Make flexible connections in raceways, cables, wireway, cable trays, and busway where they cross expansion- and seismic-control joints, where adjacent sections or branches are supported by different structural elements, and where they terminate at electrical equipment anchored to a different mobile structural element from the one supporting them.

**3.2 FIELD QUALITY CONTROL**

- A. Testing Agency: The Contractor will engage a qualified testing and inspection agency to inspect seismic-control installation for compliance with indicated requirements.
- B. Reinspection: Correct deficiencies and verify by reinspection that work complies with requirements.
- C. Provide written report of tests and inspections.

**END OF SECTION 16071**

## **SECTION 16080 ELECTRICAL TESTING**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. This Section includes general requirements for electrical field testing and inspecting. Detailed requirements are specified in each Section containing components that require testing. General requirements include the following:
  - 1. Qualifications of testing agencies and their personnel.
  - 2. Suitability of test equipment.
  - 3. Calibration of test instruments.
  - 4. Coordination requirements for testing and inspecting.
  - 5. Reporting requirements for testing and inspecting.

#### **1.2 QUALITY ASSURANCE**

- A. Testing Agency Qualifications: As specified in each Section containing electrical testing requirements and in subparagraph and associated subparagraph below.
  - 1. Independent Testing Agencies: Independent of manufacturers, suppliers, and installers of components to be tested or inspected.
    - a. Testing Agency's Field Supervisor for Power Component Testing: Person currently certified by the InterNational Electrical Testing Association or the National Institute for Certification in Engineering Technologies to supervise on-site testing specified in Division 16 power component Sections.
- B. Test Equipment Suitability: Comply with NETA ATS, Section 5.2.
- C. Test Equipment Calibration: Comply with NETA ATS, Section 5.3.

### **PART 2 - PRODUCTS (Not Applicable)**

### **PART 3 - EXECUTION**

#### **3.1 GENERAL TESTS AND INSPECTIONS**

- A. If a group of tests are specified to be performed by an independent testing agency, prepare systems, equipment, and components for tests and inspections, and perform preliminary tests to ensure that systems, equipment, and components are ready for independent agency testing. Include the following minimum preparations as appropriate:

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**Electrical Testing**

1. Perform insulation-resistance tests.
  2. Perform continuity tests.
  3. Perform rotation test (for motors to be tested).
  4. Provide a stable source of single-phase, 240/120-V electrical power for test instrumentation at each test location.
- B. Test and Inspection Reports: In addition to requirements specified elsewhere, report the following:
1. Manufacturer's written testing and inspecting instructions.
  2. Tabulation of expected measurement results made before measurements.
  3. Tabulation of "as-found" and "as-left" measurement and observation results.

END OF SECTION 16080



## **SECTION 16120 CONDUCTORS AND CABLES**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. This Section includes building wires and cables and associated connectors, splices, and terminations for wiring systems rated 600 V and less.

#### **1.2 SUBMITTALS**

- A. Field quality-control test reports.

#### **1.3 QUALITY ASSURANCE**

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with NFPA 70.

### **PART 2 - PRODUCTS**

#### **2.1 MANUFACTURERS**

- A. In other Part 2 articles where subparagraph titles below introduce lists, the following requirements apply for product selection:

#### **2.2 CONDUCTORS AND CABLES**

- A. Manufacturers:
  - 1. Alcan Aluminum Corporation; Alcan Cable Div.
  - 2. American Insulated Wire Corp.; a Leviton Company.
  - 3. General Cable Corporation.
  - 4. Senator Wire & Cable Company.
  - 5. Southwire Company.
- B. Refer to Part 3 "Conductor and Insulation Applications" Article for insulation type, cable construction, and ratings.
- C. Conductor Material: Copper, solid conductor for No. 10 AWG and smaller, stranded for No. 8 AWG and larger.
- D. Conductor Insulation Types: Type THHN-THWN.

#### **2.3 CONNECTORS AND SPLICES**

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**Conductors and Cables**

- A. Manufacturers:
  - 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.
- B. Description: Factory-fabricated connectors and splices of size, ampacity rating, material, type, and class for application and service indicated.

**PART 3 - EXECUTION**

**3.1 CONDUCTOR AND INSULATION APPLICATIONS**

- A. Exposed Branch Circuits, including in Crawlspace: Type THHN-THWN, single conductors in raceway.
- B. Branch Circuits Concealed in Ceilings, Walls, and Partitions: Type THHN-THWN, single conductors in raceway.
- C. Branch Circuits Concealed in Concrete and below Slabs-on-Grade: Type THHN-THWN, single conductors in raceway.

**3.2 INSTALLATION**

- A. Conceal cables in finished walls, ceilings, and floors, unless otherwise indicated.
- B. 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.
- C. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.
- D. Install exposed cables parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.
- E. Support cables according to Division 16 Section 16050 "Basic Electrical Materials and Methods."
- F. Identify and color-code conductors and cables according to Division 16 Section 16050 "Basic Electrical Materials and Methods."

- G. Make splices and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.
- H. Wiring at Outlets: Install conductor at each outlet, with at least 6 inches (150 mm).

### 3.3 FIELD QUALITY CONTROL

- A. Testing: Perform each electrical test and visual and mechanical inspection stated in NETA ATS, Section 7.3.1. Certify compliance with test parameters.
- B. Test Reports: Prepare a written report to record the following:
  - 1. Test procedures used.
  - 2. Test results that comply with requirements.
  - 3. Test results that do not comply with requirements and corrective action taken to achieve compliance with requirements.

END OF SECTION 16120

## **SECTION 16130 RACEWAYS AND BOXES**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. This Section includes raceways, fittings, boxes, enclosures, and cabinets for electrical wiring.
- B. See Division 16 Section 16050 "Basic Electrical Materials and Methods" for supports, anchors, and identification products.
- C. See Division 16 Section 16071 "Seismic Controls for Electrical Work" for seismic restraints and bracing of raceways, boxes, enclosures, and cabinets.
- D. See Division 16 Section 16140 "Wiring Devices" for devices installed in boxes and for floor-box service fittings.

#### **1.2 SUBMITTALS**

- A. Product Data: For surface raceways, wireways and fittings, floor boxes, hinged-cover enclosures, and cabinets indicated.
- B. Shop Drawings: Show fabrication and installation details of components for raceways, fittings, boxes, enclosures, and cabinets.

#### **1.3 QUALITY ASSURANCE**

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with NFPA 70.

### **PART 2 - PRODUCTS**

#### **2.1 MANUFACTURERS**

- A. In other Part 2 articles where subparagraph titles below introduce lists, the following requirements apply for product selection:
  - 1. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers specified.

#### **2.2 METAL CONDUIT AND TUBING**

- A. Manufacturers:

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### **Raceways and Boxes**

1. AFC Cable Systems, Inc.
2. Alflec Inc.
3. Anamet Electrical, Inc.; Anaconda Metal Hose.
4. Electri-Flex Co.
5. Grinnell Co./Tyco International; Allied Tube and Conduit Div.
6. LTV Steel Tubular Products Company.
7. Manhattan/CDT/Cole-Flex.
8. O-Z Gedney; Unit of General Signal.
9. Wheatland Tube Co.

B. Rigid Steel Conduit: ANSI C80.1.

C. Aluminum Rigid Conduit: ANSI C80.5.

D. IMC: ANSI C80.6.

E. EMT and Fittings: ANSI C80.3.

1. Fittings: Compression type.

F. FMC: Aluminum.

G. LFMC: Flexible steel conduit with PVC jacket.

H. Fittings: NEMA FB 1; compatible with conduit and tubing materials.

## **2.3 NONMETALLIC CONDUIT AND TUBING**

A. Manufacturers:

1. American International.
2. Anamet Electrical, Inc.; Anaconda Metal Hose.
3. Arnco Corp.
4. Cantex Inc.
5. Certainteed Corp.; Pipe & Plastics Group.
6. Condux International.
7. ElecSYS, Inc.
8. Electri-Flex Co.
9. Lamson & Sessions; Carlon Electrical Products.
10. Manhattan/CDT/Cole-Flex.
11. RACO; Division of Hubbell, Inc.
12. Spiraldut, Inc./AFC Cable Systems, Inc.
13. Thomas & Betts Corporation.

B. RNC: NEMA TC 2, Schedule 40 and Schedule 80 PVC.

C. RNC Fittings: NEMA TC 3; match to conduit or tubing type and material.

- D. LFNC: UL 1660.

## 2.4 BOXES, ENCLOSURES, AND CABINETS

### A. Manufacturers:

1. Cooper Crouse-Hinds; Div. of Cooper Industries, Inc.
2. Emerson/General Signal; Appleton Electric Company.
3. Erickson Electrical Equipment Co.
4. Hoffman.
5. Hubbell, Inc.; Killark Electric Manufacturing Co.
6. O-Z/Gedney; Unit of General Signal.
7. RACO; Division of Hubbell, Inc.
8. Robroy Industries, Inc.; Enclosure Division.
9. Scott Fetzer Co.; Adalet-PLM Division.
10. Spring City Electrical Manufacturing Co.
11. Thomas & Betts Corporation.
12. Walker Systems, Inc.; Wiremold Company (The).
13. Woodhead, Daniel Company; Woodhead Industries, Inc. Subsidiary.

### B. Sheet Metal Outlet and Device Boxes: NEMA OS 1.

### C. Cast-Metal Outlet and Device Boxes: NEMA FB 1, Type FD, with gasketed cover.

### D. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.

### E. Cast-Metal Pull and Junction Boxes: NEMA FB 1, cast aluminum with gasketed cover.

### F. Hinged-Cover Enclosures: NEMA 250, Type 1, with continuous hinge cover and flush latch.

1. Metal Enclosures: Steel, finished inside and out with manufacturer's standard enamel.
2. Nonmetallic Enclosures: Plastic, finished inside with radio-frequency-resistant paint.

### G. Cabinets: NEMA 250, Type 1, galvanized steel box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel. Hinged door in front cover with flush latch and concealed hinge. Key latch to match panelboards. Include metal barriers to separate wiring of different systems and voltage and include accessory feet where required for freestanding equipment.

## 2.5 FACTORY FINISHES

**Section 16130 - Page 4**  
**Raceways and Boxes**

- A. Finish: For raceway, enclosure, or cabinet components, provide manufacturer's standard prime-coat finish ready for field painting.
- B. Finish: For raceway, enclosure, or cabinet components, provide manufacturer's standard paint applied to factory-assembled surface raceways, enclosures, and cabinets before shipping.

**PART 3 - EXECUTION**

**3.1 RACEWAY APPLICATION**

- A. Outdoors:
  - 1. Exposed: Rigid steel.
  - 2. Concealed: Rigid steel or IMC.
  - 3. Underground, Single Run: Pabco wrapped rigid steel.
  - 4. Underground, Grouped: RNC.
  - 5. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFMC.
  - 6. Boxes and Enclosures: NEMA 250, Type 3R.
- B. Indoors:
  - 1. Exposed: EMT.
  - 2. Concealed: EMT.
  - 3. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): FMC; except use LFMC in damp or wet locations.
  - 4. Damp or Wet Locations: Rigid steel conduit.
  - 5. Boxes and Enclosures: NEMA 250, Type 1, except as follows:
    - a. Damp or Wet Locations: NEMA, Type 4.
- C. Minimum Raceway Size 3/4-inch trade size (DN 21).
- D. Raceway Fittings: Compatible with raceways and suitable for use and location.
  - 1. Intermediate Steel Conduit: Use threaded rigid steel conduit fittings, unless otherwise indicated.
  - 2. PVC Externally Coated, Rigid Steel Conduits: Use only fittings approved for use with that material. Patch all nicks and scrapes in PVC coating after installing conduits.
- E. Install nonferrous conduit or tubing for circuits operating above 60 Hz. Where aluminum raceways are installed for such circuits and pass through concrete, install in nonmetallic sleeve.
- F. Do not install aluminum conduits embedded in or in contact with concrete.

### 3.2 INSTALLATION

- A. Keep raceways at least 6 inches (150 mm) away from parallel runs of flues and steam or hot-water pipes. Install horizontal raceway runs above water and steam piping.
- B. Complete raceway installation before starting conductor installation.
- C. Support raceways as specified in Division 16 Section 16050 "Basic Electrical Materials and Methods."
- D. Install temporary closures to prevent foreign matter from entering raceways.
- E. Protect stub-ups from damage where conduits rise through floor slabs. Arrange so curved portions of bends are not visible above finished slab.
- F. Make bends and offsets so ID is not reduced. Keep legs of bends in same plane and keep straight legs of offsets parallel, unless otherwise indicated.
- G. Conceal conduit and EMT within finished walls, ceilings, and floors, unless otherwise indicated.
  - 1. Install concealed raceways with a minimum of bends in shortest practical distance, considering type of building construction and obstructions, unless otherwise indicated.
- H. Raceways Embedded in Slabs: Install in middle 1/3 of slab thickness where practical and leave at least 2 inches (50 mm) of concrete cover.
  - 1. Secure raceways to reinforcing rods to prevent sagging or shifting during concrete placement.
  - 2. Space raceways laterally to prevent voids in concrete.
  - 3. Run conduit larger than 1-inch trade size (DN 27) parallel or at right angles to main reinforcement. Where at right angles to reinforcement, place conduit close to slab support.
  - 4. Change from nonmetallic tubing to Schedule 80 nonmetallic conduit, rigid steel conduit, or IMC before rising above floor.
- I. Install exposed raceways parallel or at right angles to nearby surfaces or structural members and follow surface contours as much as possible.
  - 1. Run parallel or banked raceways together on common supports.
  - 2. Make parallel bends in parallel or banked runs. Use factory elbows only where elbows can be installed parallel; otherwise, provide field bends for parallel raceways.
- J. Join raceways with fittings designed and approved for that purpose and make joints tight.



**Section 16130 - Page 6**  
**Raceways and Boxes**

1. Use insulating bushings to protect conductors.
  - K. Tighten set screws of threadless fittings with suitable tools.
  - L. Terminations:
    1. Where raceways are terminated with locknuts and bushings, align raceways to enter squarely and install locknuts with dished part against box. Use two locknuts, one inside and one outside box.
    2. Where raceways are terminated with threaded hubs, screw raceways or fittings tightly into hub so end bears against wire protection shoulder. Where chase nipples are used, align raceways so coupling is square to box; tighten chase nipple so no threads are exposed.
  - M. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 200-lb (90-kg) tensile strength. Leave at least 12 inches (300 mm) of slack at each end of pull wire.
  - N. Install raceway sealing fittings at suitable, approved, and accessible locations and fill them with UL-listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank cover plate having a finish similar to that of adjacent plates or surfaces. Install raceway sealing fittings at the following points:
    1. Where conduits pass from warm to cold locations, such as boundaries of refrigerated spaces.
    2. Where otherwise required by NFPA 70.
  - O. Stub-up Connections: Extend conduits through concrete floor for connection to freestanding equipment. Install with an adjustable top or coupling threaded inside for plugs set flush with finished floor. Extend conductors to equipment with rigid steel conduit; FMC may be used 6 inches (150 mm) above the floor. Install screwdriver-operated, threaded plugs flush with floor for future equipment connections.
  - P. Flexible Connections: Use maximum of 72 inches (1830 mm) of flexible conduit for recessed and semirecessed lighting fixtures; for equipment subject to vibration, noise transmission, or movement; and for all motors. Use LFMC in damp or wet locations. Install separate ground conductor across flexible connections.
  - Q. Surface Raceways: Install a separate, green, ground conductor in raceways from junction box supplying raceways to receptacle or fixture ground terminals.
  - R. Install hinged-cover enclosures and cabinets plumb. Support at each corner.
- 3.3 PROTECTION

- A. Provide final protection and maintain conditions that ensure coatings, finishes, and cabinets are without damage or deterioration at time of Substantial Completion.
  - 1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
  - 2. Repair damage to PVC or paint finishes with matching touchup coating recommended by manufacturer.

END OF SECTION 16130

## **SECTION 16140 WIRING DEVICES**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. This Section includes the following:
  - 1. Single and duplex receptacles, ground-fault circuit interrupters, and integral surge suppression units.
  - 2. Single- and double-pole snap switches.
  - 3. Device wall plates.

#### **1.2 SUBMITTALS**

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: List of legends and description of materials and process used for premarking wall plates.
- C. Samples: One for each type of device and wall plate specified, in each color specified.
- D. Field quality-control test reports.

#### **1.3 QUALITY ASSURANCE**

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with NFPA 70.

### **PART 2 - PRODUCTS**

#### **2.1 MANUFACTURERS**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Wiring Devices:
    - a. Bryant Electric, Inc./Hubbell Subsidiary.
    - b. Eagle Electric Manufacturing Co., Inc.
    - c. Hubbell Incorporated; Wiring Device-Kellems.
    - d. Leviton Mfg. Company Inc.

## **Section 16140 – Page 2**

### **Wiring Devices**

- e. Pass & Seymour/Legrand; Wiring Devices Div.

#### **2.2 RECEPTACLES**

- A. Straight-Blade-Type Receptacles: Comply with NEMA WD 1, NEMA WD 6, DSCC W-C-596G, and UL 498.
- B. Straight-Blade and Locking Receptacles: Heavy-Duty grade.
- C. Straight-Blade Receptacles: Hospital grade.
- D. GFCI Receptacles: Straight blade, non-feed-through type, Heavy-Duty grade, with integral NEMA WD 6, Configuration 5-20R duplex receptacle; complying with UL 498 and UL 943. Design units for installation in a 2-3/4-inch- (70-mm-) deep outlet box without an adapter.

#### **2.3 SWITCHES**

- A. Single- and Double-Pole Switches: Comply with DSCC W-C-896F and UL 20.
- B. Snap Switches: General-Duty grade, quiet type.
- C. Combination Switch and Receptacle: Both devices in a single gang unit with plaster ears and removable tab connector that permit separate or common feed connection.
  - 1. Switch: 20 A, 120/277-V ac.
  - 2. Receptacle: NEMA WD 6, Configuration 5-15R.

#### **2.4 WALL PLATES**

- A. Single and combination types to match corresponding wiring devices.
  - 1. Plate-Securing Screws: Metal with head color to match plate finish.
  - 2. Material for Finished Spaces: Steel with white baked enamel, suitable for field painting 0.035-inch- (1-mm-).
  - 3. Material for Unfinished Spaces: Galvanized steel.
  - 4. Material for Wet Locations: Cast aluminum with spring-loaded lift cover, and listed and labeled for use in "wet locations."

#### **2.5 FINISHES**

- A. Color:
  - 1. Wiring Devices: Ivory , unless otherwise indicated or required by NFPA 70

### **PART 3 - EXECUTION**

#### **3.1 INSTALLATION**

- A. Install devices and assemblies level, plumb, and square with building lines.
- B. 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.
- C. Remove wall plates and protect devices and assemblies during painting.

### 3.2 IDENTIFICATION

- A. Comply with Division 16 Section 16050 "Basic Electrical Materials and Methods."
  - 1. Receptacles: Identify panelboard and circuit number from which served. Use hot, stamped or engraved machine printing with black-filled lettering on face of plate, and durable wire markers or tags inside outlet boxes.

### 3.3 CONNECTIONS

- A. Ground equipment according to Division 16 Section 16060 "Grounding and Bonding."
- B. Connect wiring according to Division 16 Section 16120 "Conductors and Cables."

### 3.4 FIELD QUALITY CONTROL

- A. Perform the following field tests and inspections and prepare test reports:
  - 1. After installing wiring devices and after electrical circuitry has been energized, test for proper polarity, ground continuity, and compliance with requirements.
  - 2. Test GFCI operation with both local and remote fault simulations according to manufacturer's written instructions.
- B. Remove malfunctioning units, replace with new units, and retest as specified above.

END OF SECTION 16140

## **SECTION 16145 LIGHTING CONTROL DEVICES**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

A. This Section includes the following:

1. Photoelectric relays.
2. Occupancy sensors.
3. Multipole lighting contactors.
4. Timeclocks.

#### **1.2 SUBMITTALS**

- A. Product Data: For each type of lighting control device indicated.
- B. Field quality-control test reports.
- C. Operation and maintenance data.

#### **1.3 QUALITY ASSURANCE**

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in the current approved edition of CEC, Article 100, by a testing agency acceptable to the State's Representative, and marked for intended use.
- B. Comply with 47 CFR 15, Subparts A and B, for Class A digital devices.
- C. Comply with NFPA 70, CEC and NEC.

### **PART 2 - PRODUCTS**

#### **2.1 MANUFACTURERS**

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
1. Contactors:
    - a. Dayton Electric Manufacturing Co
    - b. Automatic Switch Co.
    - c. Challenger Electrical Equipment Corp.
    - d. Cutler-Hammer Products; Eaton Corporation.

**Section 16145 – Page 2**  
**Lighting Control Devices**

- e. Furnas Electric Co.
- f. GE Lighting Controls.
- g. Hubbell Lighting, Inc.
- h. Siemens Energy and Automation, Inc.
- i. Square D Co.; Power Management Organization.
- j. Zenith Controls, Inc.
- 2. Photoelectric Relays:
  - a. Allen-Bradley/Rockwell Automation.
  - b. Area Lighting Research, Inc.
  - c. Fisher Pierce.
  - d. Grasslin Controls, Corp.
  - e. Intermatic, Inc.
  - f. Paragon Electric Co., Inc.
  - g. Rhodes, M H, Inc.
  - h. SSAC, Inc.
  - i. Tork, Inc.
- 3. Occupancy Sensors:
  - a. Honeywell, Inc.; Home and Building Controls.
  - b. Hubbell Lighting, Inc.
  - c. Leviton Lighting Control Division
  - d. Lightolier.
  - e. Lithonia Control Systems.
  - f. MyTech Corporation.
  - g. Novitas, Inc.
  - h. RAB Electric Manufacturing Co., Inc.
  - i. SenTec, Inc.
  - j. Sterner Lighting Systems, Inc.
  - k. Tork, Inc.
  - l. Touchplate.
  - m. Unenco Electronics (A Hubbell Co.).
  - n. Watt Stopper, Inc. (The).
- 4. Timeclocks:
  - a. Honeywell Inc.; Home and Building Controls
  - b. Leviton Lighting Control Division
  - c. Lithonia Control Systems
  - d. MyTech Corporation
  - e. Paragon
  - f. Tork, Inc.
  - g. Watt Stopper, Inc (The)

**2.2 GENERAL LIGHTING CONTROL DEVICE REQUIREMENTS**

- A. Line-Voltage Surge Protection: Include in all 120 solid-state equipment. Comply with UL 1449 and with ANSI C62.41 for Category A locations.

## **2.3 PHOTOELECTRIC RELAYS**

- A. Outdoor Sealed Units: Solid state, with single-pole, double-throw dry contacts rated to operate connected relay or contactor coils or microprocessor input, and complying with UL 773A Weathertight housing, resistant to high temperatures and equipped with sun-glare shield and ice preventer.
  - 1. Light-Level Monitoring Range: 0 to 3500 fc, with an adjustment for turn-on/turn-off levels.
  - 2. Time Delay: Prevents false operation.

## **2.4 OCCUPANCY SENSORS**

- A. Ceiling Mounted Units: Dual technology ultrasonic and passive infrared type with adjustable 5 minute to 30 minute time delay and 360 degrees of coverage Unit power directly from switch leg of the 120- V ac circuit it controls and operates integral power switching contacts rated 800 W at 120-V ac minimum.
- B. Wall Mounted Units: Infrared type with adjustable off time delay from 30 seconds to 30 minutes and provide 20% to 100% adjustable unit sensitivity. Unit power directly from switch leg of the 120- V ac circuit it controls and operates integral power switching contacts rated 800 W at 120-V ac minimum.
- C. Operation: Turns lights on when room or covered area is occupied and off when unoccupied, unless otherwise indicated.
  - 1. Time Delay for Turning Lights Off: Adjustable over a range from 1 to 15 minutes, minimum.
  - 2. Ambient-Light-Level Control: Adjustable for setting a level of ambient illumination above which sensor will not turn lights on when occupancy is sensed.
- D. Passive-Infrared Type: Detects occupancy by a combination of heat and movement in zone of coverage. Each sensor detects occupancy anywhere in an area of 500 sq. ft. by detecting movement of any portion of a human body that presents a target to the sensor.

## **2.5 TIMECLOCKS**

- A. Furnish and Install where noted on the plans a single channel digital time switch.
- B. Timeclock shall program in am/pm or 24 hour format by jumper selection.
- C. Timeclock shall program in one minute resolution.
- D. Timeclock shall program using 2 buttons only for all its basic settings.



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**Lighting Control Devices**

- E. Display shall be LCD type.
- F. Timeclock shall be capable of 48 events per week with separate scheduling for each day of the week.
- G. Timeclock shall have 365 day holiday capabilities with 16 single dates and 5 holiday blocks or unlimited utilizing 8<sup>th</sup> and 9<sup>th</sup> day schedules.
- H. Timeclock shall have user selectable daylight saving or standard time.
- I. Timeclock shall have automatic leap year correction.
- J. Timeclock shall have 72 hour memory backup with rechargeable battery.
- K. Timeclock shall be capable of manual override on or off to the next scheduled event using 1 button.
- L. Description: Solid-state programmable type with astronomic dial and alphanumeric display complying with UL 917. Tork model 'DWZ100A' or approved equal

**PART 3 - EXECUTION**

**3.1 INSTALLATION**

- A. Mounting heights indicated are to bottom of unit for suspended devices and to center of unit for wall-mounting devices.
- B. Bundle, train and support wiring in enclosures.

**3.2 IDENTIFICATION**

- A. Identify components and power and control wiring according to Division 16 Section "Basic Electrical Materials and Methods."

**3.3 FIELD QUALITY CONTROL**

- A. Inspect components for defects and physical damage, testing laboratory labeling, and nameplate compliance with the Contract Documents.
- B. Electrical Tests: Use particular caution when testing devices containing solid-state components. Perform the following according to manufacturer's written instructions:
  - 1. Continuity tests of circuits.
  - 2. Operational Tests: Set and operate devices to demonstrate their functions and capabilities in a methodical sequence that cues and reproduces

actual operating functions. Record control settings, operations, and functional observations.

3. Correct deficiencies, make necessary adjustments, and retest. Verify that specified requirements are met.

#### 3.4 DEMONSTRATION

- A. Engage a factory-authorized service representative to train the State's maintenance personnel to adjust, operate, and maintain lighting control devices.

END OF SECTION 16145

## **SECTION 16410 DISCONNECT SWITCHES**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. This Section includes individually mounted enclosed switches and circuit breakers, rated 600 V and less, used for disconnecting and protection functions.

#### **1.2 SUBMITTALS**

- A. Product Data: For each type of switch and circuit breaker indicated.
- B. Field quality-control test reports.
- C. Operation and maintenance data.

#### **1.3 QUALITY ASSURANCE**

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Source Limitations: Obtain switches and circuit breakers through one source from a single manufacturer.
- C. Comply with NFPA 70.

### **PART 2 - PRODUCTS**

#### **2.1 MANUFACTURERS**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Eaton Corp.; Cutler-Hammer Products.
  - 2. General Electric Co.; Electrical Distribution & Control Division.
  - 3. Siemens Energy & Automation, Inc.
  - 4. Square D Co.
- B. For circuit breakers to be installed into existing distribution equipment and panelboards, match existing.

#### **2.2 ENCLOSED SWITCHES**

**Section 16410- Page 2**  
**Disconnect Switches**

- A. Enclosed, Nonfusible Switch: NEMA KS 1, Type HD, with lockable handle, interlocked with cover.
- B. Enclosed, Fusible Switch, 800 A and Smaller: NEMA KS 1, Type HD, with clips to accommodate specified fuses, and lockable handle, interlocked with cover.

**2.3 ENCLOSED CIRCUIT BREAKERS**

- A. Molded-Case Circuit Breaker: NEMA AB 1, with interrupting capacity to meet available fault currents.
  - 1. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads, and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.
  - 2. GFCI Circuit Breakers: Single- and two-pole configurations with 5-mA trip sensitivity.
- B. Molded-Case Circuit-Breaker Features and Accessories: Standard frame sizes, trip ratings, and number of poles.
  - 1. Lugs: Suitable for number, size, trip ratings, and material of conductors.
  - 2. Application Listing: Appropriate for application; Type SWD for switching fluorescent lighting loads; Type HACR for heating, air-conditioning, and refrigerating equipment.
  - 3. Ground-Fault Protection: Integrally mounted relay and trip unit with adjustable pickup and time-delay settings, push-to-test feature, and ground-fault indicator.

**2.4 ENCLOSURES**

- A. Listed for environmental conditions of installed locations, including:
  - 1. Outdoor Locations: NEMA 250, Type 3R.
  - 2. Food Service Areas: NEMA 250, Type 4X, stainless steel.
  - 3. Other Wet or Damp Indoor Locations: NEMA 250, Type 4.

**PART 3 - EXECUTION**

**3.1 INSTALLATION**

- A. Temporary Provisions: Remove temporary lifting provisions and blocking of moving parts.

- B. Identify components; provide warning signs as specified in Division 16 Section 16050 "Basic Electrical Materials and Methods."

### 3.2 FIELD QUALITY CONTROL

- A. Testing: After installing disconnect switches and circuit breakers and after electrical circuits have been energized, demonstrate product capability and compliance with requirements.
- B. Inspections and Tests for Switches and Circuit Breakers: Make internal and external inspections and perform tests, including the following:
  - 1. Inspect for freedom from physical damage, proper unit rating, mechanical condition, enclosure integrity, cover operation, unit anchorage, clearances, and tightness of electrical connections. If a loose electrical connection is observed on any unit, check each electrical connection for each switch and circuit breaker with a torque wrench for compliance with manufacturer's torquing instructions.
  - 2. Test insulation resistance of each pole, phase-to-phase, and phase-to-ground, following manufacturer's written instructions. Test insulation resistance of shunt trip circuits. Use 500-V minimum test voltage for units and circuits rated up to 250 V, 1000-V minimum test voltage for units rated more than 250 V. Measured insulation resistance must be 25 megohms, minimum, for switches rated up to 250 V, and 100 megohms, minimum, for switches rated more than 250 V.
  - 3. Test cover and other interlocks and interlock release devices for proper operation.
- C. Additional Inspections and Tests for Switches: Include the following:
  - 1. Inspect for proper rating and fuse provisions.
  - 2. Check adequacy and integrity of fuseholders by removing and installing fuses.
  - 3. Check integrity of phase barriers.
  - 4. Inspect blade alignment visually while operating switch to observe adequacy of blade pressure.
- D. Additional Inspections and Tests for Circuit Breakers: Include the following:
  - 1. Inspect for proper frame, trip, and fault current interrupting rating.
  - 2. Test shunt trip devices, circuits, and actuating components for proper operation.

**Section 16410- Page 4**  
**Disconnect Switches**

- E. Correct defective and malfunctioning units on-site, where possible, and reinspect and retest to demonstrate compliance; otherwise, remove and replace with new units and retest.

END OF SECTION 16410

## **SECTION 16442 PANELBOARDS**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. This Section includes distribution and branch-circuit panelboards.

#### **1.2 SUBMITTALS**

- A. Product Data: For each type of overcurrent protective device, accessory, and component indicated.
- B. Panelboard Schedules: For installation in panelboards. Submit final versions after load balancing.
- C. Field quality-control test reports.
- D. Operation and maintenance data.

#### **1.3 QUALITY ASSURANCE**

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with NEMA PB 1.
- C. Comply with NFPA 70.

### **PART 2 - PRODUCTS**

#### **2.1 MANUFACTURERS**

- 1. Manufacturers: Match existing.

#### **2.2 OVERCURRENT PROTECTIVE DEVICES**

- A. Molded-Case Circuit Breaker: NEMA AB 1, with interrupting capacity to meet available fault currents.
  - 1. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads, and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.
  - 2. GFCI Circuit Breakers: Single- and two-pole configurations with 5-mA trip sensitivity.

**Section 16442-Page 2**  
**Panelboard**

- 3. Application Listing: Appropriate for application; Type SWD for switching fluorescent lighting loads; Type HACR for heating, air-conditioning, and refrigerating equipment.
- B. Fused Switch: NEMA KS 1, Type HD; clips to accommodate indicated fuses; lockable handle.

**PART 3 - EXECUTION**

**3.1 INSTALLATION**

- A. Install panelboard accessories according to NEMA PB 1.1.
- B. Install filler plates in unused protective device spaces.
- C. Wiring in Panelboards: Arrange conductors into groups and bundle and wrap with wire ties after completing load balancing.

**3.2 IDENTIFICATION**

- A. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs as specified in Division 16 Section "Basic Electrical Materials and Methods and Electrical Identification."
- B. Panelboard Nameplates: Label each panelboard with engraved metal or laminated-plastic nameplate mounted with corrosion-resistant screws.
- C. Circuit Directory: Create a directory to indicate installed circuit loads after balancing panelboard loads. Obtain approval before installing. Use a computer or typewriter to create directory; handwritten directories are not acceptable.

**3.3 FIELD QUALITY CONTROL**

- A. Testing and Inspection: After installing overcurrent devices and after electrical circuitry has been energized, demonstrate product capability and compliance with requirements.
  - 1. Procedures: Perform each electrical test and visual and mechanical inspection indicated in NETA ATS, Section 7.5 for switches and Section 7.6 for molded-case circuit breakers.
  - 2. Correct defective and malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.
- B. Balancing Loads: After Substantial Completion, but not more than 60 days after Final Acceptance, measure load balancing and make circuit changes as follows:



1. Measure as directed during period of normal system loading.
2. Perform load-balancing circuit changes outside normal occupancy/working schedule of the facility and at time directed. Avoid disrupting critical 24-hour services such as fax machines and on-line data-processing, computing, transmitting, and receiving equipment.
3. After circuit changes, recheck loads during normal load period. Record all load readings before and after changes and submit test records.
4. Tolerance: Difference exceeding 20 percent between phase loads, within a panelboard, is not acceptable. Rebalance and recheck as necessary to meet this minimum requirement.

END OF SECTION 16442

## **SECTION 16511 LIGHTING FIXTURES**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. This Section includes the following:
  - 1. Interior lighting fixtures with lamps and ballasts.
  - 2. Lighting fixtures mounted on exterior building surfaces.

#### **1.2 SUBMITTALS**

- A. Product Data: For each type of lighting fixture scheduled, arranged in order of fixture designation. Include data on features, accessories, and finishes.
- B. Shop Drawings: Show details of nonstandard or custom fixtures. Indicate dimensions, weights, methods of field assembly, components, features, and accessories.
  - 1. Include wiring diagrams.
- C. Operation and maintenance data.

#### **1.3 QUALITY ASSURANCE**

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with NFPA 70.

### **PART 2 - PRODUCTS**

#### **2.1 MANUFACTURERS**

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
  - 1. Products: Subject to compliance with requirements, provide one of the products specified.

#### **2.2 LIGHTING FIXTURES**

- A. Fixture Schedules:
  - 1. Products:
    - a. As noted in fixture schedule.

## **Section 16511 – Page 2**

### **Lighting Fixtures**

2. Voltage: 120-V ac.
3. Mounting: Surface wall.
4. Lamps: As noted on plans.
5. Ballast Types and Features: Electronic, Low temperature.

#### **2.3 FLUORESCENT LAMP BALLASTS**

- A. Description: Include the following features, unless otherwise indicated:
1. Designed for type and quantity of lamps indicated at full light output.
  2. Externally fused with slow-blow type rated between 2.65 and 3.0 times the line current.
- B. Ballasts for compact lamps in recessed fixtures shall have the following features, unless otherwise indicated:
1. Type: Electronic.
  2. Power Factor: 90 percent, minimum.
  3. Flicker: Less than 5 percent.
  4. Lamp Current Crest Factor: Less than 1.7.
  5. Electronic Ballast Operating Frequency: 20 kHz or higher.
  6. Lamp end-of-life detection and shutdown circuit.
  7. Transient Protection: Comply with IEEE C62.41 for Category A1 locations.
- C. Ballasts for compact lamps in nonrecessed fixtures shall include the following features, unless otherwise indicated:
1. Power Factor: 90 percent, minimum.
  2. Ballast Coil Temperature: 65 deg C, maximum.
  3. Transient Protection: Comply with IEEE C62.41 for Category A1 locations.

#### **2.4 FLUORESCENT LAMPS**

- A. Compact Fluorescent Lamps: CRI 80 (minimum), color temperature 3500 , average rated life of 10,000 hours at 3 hours operation per start, unless otherwise indicated.
1. T4, Twin Tube: Rated 5 W, 250 initial lumens (minimum).
  2. T4, Twin Tube: Rated 7 W, 400 initial lumens (minimum).
  3. T4, Twin Tube: Rated 9 W, 600 initial lumens (minimum).
  4. T4, Twin Tube: Rated 13 W, 825 initial lumens (minimum).
  5. T4, Double-Twin Tube: Rated 13 W, 900 initial lumens (minimum).
  6. T4, Double-Twin Tube: Rated 18 W, 1200 initial lumens (minimum).
  7. T4, Double-Twin Tube: Rated 26 W, 1800 initial lumens (minimum).

#### **2.5 FIXTURE SUPPORT COMPONENTS**

- A. Comply with Division 16 Section 16050 "Basic Electrical Materials and Methods" for channel- and angle-iron supports and nonmetallic channel and angle supports.

**PART 3 - EXECUTION**

**3.1 INSTALLATION**

- A. Fixtures: Set level, plumb, and square with ceilings and walls. Install lamps in each fixture.

**END OF SECTION 16511**

# APPENDIX A



A Creative Joint Venture For Better Environmental Solutions

**Rancho Del OSO Visitor Center  
3600 Highway 1  
Davenport, CA 95017**



**KELLCO-MACS Job #0901-10**

**Pre-Renovation  
Limited Asbestos and Lead Inspection Report**

**for**

**Department Of Parks and Recreation  
One Capital Mall  
Suite 500  
Sacramento, Ca 95813**

**February 5, 2009**



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A Creative Joint Venture For Better Environmental Solutions

**Pre-Renovation  
Limited Asbestos and Lead Paint Inspection Report**

**Date:** February 5, 2009

**KELLCO-MACS Job #:** 0901-10

**Client:** Mr. Jim Trapani  
Department of Parks and Recreation  
One Capital Mall  
Suite #500  
Sacramento, CA 95813

**Location:** Rancho Del OSO Visitor Center

**Date of Inspection:** January 16, 2009 & January 30, 2009

**Inspectors:** Derrik Quach SST #02-3214, DHS Lead #2280  
Phil Bradley CAC #01-2966, DHS Lead #4403

**Description Of The Inspected Area:** The inspection was conducted on single story Nature History Center at Big Basin State Park. There is a Nature Center, Work Shop/Garage and a Second Garage and a Storage Area.

The interior of the Nature Center is drywall walls and ceilings with a combination of vinyl sheeting, ceramic tiles and wood flooring. The exterior has wood walls with rolled shingle roofing. There is a concrete foundation.

The interior of the Garage/Shop/Storage Area has wood on the walls and ceilings with cement flooring. The exterior of this structure is wood.

## **Background**

This is a limited pre-renovation asbestos and lead inspection of the floors, walls and ceilings of the Nature Center, Work Shop/Garage and a Second Garage and a Storage Area. These areas are scheduled for renovation.

## Synopsis

Asbestos was NOT found in the tested materials.

Lead paint was found in the following tested materials:

- Brown Wood Stain –Shop/Garage
- Interior Paint on Drywall –Nature (Visitor) Center Restrooms
- Interior Ceramic Tile –Nature (Visitor) Center Restrooms

Twelve four foot long Fluorescent lights were noted at the subject location and may contain PCB's and mercury.

## About the Inspection

The inspection performed was both visual and tactile. Samples were taken of suspect materials located at the interior and exterior of the survey area.

The inspection was a reasonable attempt to find suspect materials that were hidden within walls, behind structures, in vertical shafts or in areas not normally accessible. If any non-sampled materials are uncovered, these should be submitted for asbestos and/or lead paint analysis.

The following numbering convention was used for this inspection:

| LETTER                   | STANDS FOR                                                                                                 | EXAMPLE   | MEANING                                                              |
|--------------------------|------------------------------------------------------------------------------------------------------------|-----------|----------------------------------------------------------------------|
| RDO                      | Building DESIGNATION<br>based on information provided<br>on drawings provided to us<br>prior to inspection | RDO       | Rancho Del Oso Visitor<br>Center                                     |
| VC                       |                                                                                                            | VC        | Visitor Center                                                       |
| Y & <i>Optional</i><br>F | Building SYSTEM (W: wall;<br>F: Flooring; C: Ceiling; T:<br>TSI; M: Misc)                                  | F         | Flooring Sample                                                      |
| W                        |                                                                                                            | W         | Wall Sample                                                          |
| C                        |                                                                                                            | C         | Ceiling Sample                                                       |
| 01                       | Sample number and layer                                                                                    | RDO-F-01  | Rancho Del Oso Visitor<br>Center – Flooring Sample –<br>First Sample |
| 01a                      |                                                                                                            | RDO-F-01a |                                                                      |

- ***Asbestos Findings***

Asbestos samples were analyzed in the KELLCO-MACS laboratory, by Polarized Light Microscopy, the EPA's recommended method. Copies of the full laboratory reports are attached. These valuable reports can be utilized as future reference to determine if a particular material was tested.



Photographs of sampled materials are included. Sample locations are noted on the attached not-to-scale drawing.

The determination of a material to be Asbestos Containing Material (ACM) was made either by direct sampling or by homogeneity with at least one positive sample of the same material.

Materials that tested **positive** for asbestos are: NONE

Tested materials that were **none detected** for asbestos are:

| Lab Sample # | Field Sample # | Field Description                                                |
|--------------|----------------|------------------------------------------------------------------|
| L185707-1    | VC-F-01        | Visitor Ctr., Shop Garage - Grey - Concrete - SW. Side Of Entry  |
| L185707-2    | VC-F-02        | Visitor Ctr., Shop Garage - Grey - Concrete - N. Side Of W. Door |
| L185707-3    | VC-F-03        | Visitor Ctr., Shop Garage - Grey - Concrete - S. Side Of W. Door |
| L185707-4    | VC-F-04        | Visitor Ctr., Garage - Grey - Concrete - E. Side, Doorway        |
| L185707-5    | VC-F-05        | Visitor Ctr., Storage Area - Grey - Concrete - E. Side, Doorway  |
| L185707-6    | VC-F-06        | Visitor Ctr., Storage Area - Grey - Concrete - W. Side, Doorway  |
| L186215-1    | RDO-F-1        | Display Area #3 - Vinyl Sheet Floor                              |
| L186215-2    | RDO-F-2        | Display Area #2 - Vinyl Sheet Floor                              |
| L186215-3    | RDO-F-3        | Closet #1 - Vinyl Sheet Floor                                    |
| L186215-4    | RDO-F-3a       | Closet #1 - Vinyl Sheet Floor/adhesive                           |
| L186215-5    | RDO-W-4        | Closet #1 - Covebase Mastic                                      |
| L186215-6    | RDO-W-5        | Closet #3 - Texture, Joint Tape, Drywall                         |
| L186215-7    | RDO-W-5a       | Closet #3 - Texture, Joint Tape, Drywall/2nd layer               |
| L186215-8    | RDO-W-6        | Restroom #2 - Texture                                            |
| L186215-9    | RDO-W-7        | Hallway - Texture, Joint Tape, Drywall                           |
| L186215-10   | RDO-W-8        | Display Area #3 - Texture                                        |
| L186215-11   | RDO-C-9        | Closet #1 - Texture                                              |
| L186215-12   | RDO-C-10       | Hallway - Texture                                                |
| L186215-13   | RDO-F-11       | Closet #3 - Vinyl Sheet Floor                                    |
| L186215-14   | RDO-F-12       | Restroom #2 - Vinyl Sheet Floor                                  |
| L186215-15   | RDO-F-13       | Concession Area - Vinyl Sheet Floor                              |
| L186215-16   | RDO-F-13a      | Concession Area - Vinyl Sheet Floor/adhesive                     |
| L186215-17   | RDO-W-14       | Concession Area - Cove base Mastic                               |
| L186215-18   | RDO-W-15       | Restroom #2 - Ceramic - Grout                                    |

- **Paint Findings**

Lead samples were analyzed by Atomic Absorption in the KELLCO-MACS laboratory. OSHA requires protection of workers from exposure to any lead. Paint should be considered as containing lead if it is the same color as any positive tested material, unless it has specifically been tested and shown to be **none detected** for lead.

The following materials tested **positive** for lead:

| Lab Sample # | Field Sample # | Field Description                                                | PPM   | Wt %   |
|--------------|----------------|------------------------------------------------------------------|-------|--------|
| P185705-1    | VC-PB-01       | Visitor Ctr. Shop/Garage - Brown - Wood Stain - At Both Doorways | 328   | 0.0328 |
| P185705-2    | VC-PB-02       | Visitor Ctr. Garage - Brown - Wood Stain - At Both Doorways      | 1,030 | 0.103  |
| P186216-1    | RDO-Pb-01      | Restroom #1 – Interior Paint – Paint and Drywall                 | 523   | 0.0523 |
| P186216-2    | RDO-Pb-02      | Restroom #2 – Interior – Ceramic Tiles                           | 30    | 0.0030 |

**Paint of the same color as the above samples should be considered positive unless proven otherwise by direct sampling with results of “None Detected.”**

The following are materials for which the lead was **none detected**:

| Lab Sample # | Field Sample # | Field Description                                                  |
|--------------|----------------|--------------------------------------------------------------------|
| P185705-3    | VC-PB-03       | Visitor Ctr. Storage Area - Brown - Wood Stain - At Both Entrances |

**Although there are some materials that are negative for lead paint, for the purposes of demolition it is recommended that all painted materials be considered as lead containing.**

- ***Other Hazardous Materials***

The building contains light fixtures with fluorescent bulbs and ballasts that may contain PCB's. These should be handled in accordance with regulations. Twelve four foot long fluorescent light bulbs were noted at the subject location.

It is also anticipated that the fluorescent light tubes may contain mercury. If they are to be removed, they should be recycled properly

## **Regulatory Requirements**

The Environmental Protection Agency (EPA) defines Asbestos Containing Material as any material that contains greater than 1% asbestos.

Removal or disturbance of any amount of lead paint requires adherence to the Cal-OSHA and DHS regulations, including proper training and certification for workers and supervisors

The OSHA lead (1532) regulations require that a Negative Initial Determination for lead exposure be made with paint that contains greater than 0.06% (600 ppm) of lead. Paint with less than 0.06% lead should still be treated within the OSHA guidelines, but with reasonable work practices should not generate OSHA action levels of lead exposure.

Building components with intact lead paint and no other hazardous materials can be disposed of as non-hazardous construction waste. Paint chips and debris must be disposed of as lead containing hazardous waste.

### **Comment Regarding All Lead Containing Materials:**

Lead is a known health hazard. Lead containing materials in good condition do not necessarily need to be removed if they are not disturbed; they should however be respected.

Painted surfaces that contain lead should be made known to contractors who may disturb them during their work. OSHA guidelines for workers in contact with lead paint apply if ANY detectable lead is found.

Anyone coming in contact with leaded paint should be advised not to disturb it without taking precautionary measures appropriate to avoid lead contamination or lead exposure.

### **Areas Needing Immediate Corrective Action**

Chipping and peeling lead paint should be removed prior to renovation or demolition of the survey site.

### **Analytical Procedures**

- ***POLARIZED LIGHT MICROSCOPY (PLM)***

Bulk samples were analyzed in accordance with U.S. EPA "Test Method for Determination of Asbestos in Bulk Building Materials, 1993," with inclusion of area percent estimates of the sample components. The use of the McCrone Color Dispersion Staining Technique supplements the analysis when considered useful by the analyst. The samples are prepared with refractive immersion oil and are examined under Polarized Light Microscopy (PLM). The accuracy of the visual estimate method is 1%.

As per the standard "...The accuracy in the determination of the presence or absence of asbestos of greater than 1 area percent asbestos is greater than 99%." ASTM Committee D22.05, 1/18/88, *Standard Method of Testing for Asbestos Containing Materials by Polarized Light Microscopy*. If the sample matrix is reduced to minimize non-asbestos components, the detection limit can be mathematically enhanced, based on the amount of material remaining after matrix reduction. This method is called gravimetric reduction. This method involves ashing and chemical dissolution of the sample.

- ***ATOMIC ABSORPTION FOR LEAD***

Paint samples were collected for atomic absorption (AA) analysis. The detection limit for each sample depends upon many factors including the sensitivity of the instrument and the sample

size. In the KELLCO-MACS laboratory utilizing flame AA, the detection limit is normally .01% or 100 parts per million (ppm).

## **KELLCO-MACS Qualifications**

KELLCO-MACS is a creative joint venture offering hazardous materials and AIHA laboratory analyses. Our credentials include:

- The KELLCO-MACS asbestos inspector is licensed with the State of California Department of Occupational Safety and Health (CAL-OSHA).
- The KELLCO-MACS lead inspector is licensed by the Department of Health Services (DHS).
- The laboratory accreditations include:
  - o **NVLAP PLM** for Asbestos: NIST National Voluntary Laboratory Accreditation Program certificate of accreditation for bulk **asbestos** analysis by polarized light microscopy (Accreditation #101948-1).
  - o **AIHA** Accreditation for **Industrial Hygiene** Analytical Laboratory for PCM, and AA for lead (Accreditation #101786).
  - o **AIHA Analyst Proficiency (NIOSH PAT)** (Accreditation # 11172)
  - o **AIHA ELLAP** Accreditation for Lead: Accreditation for the **Environmental Lead** Laboratory recognized by the EPA as meeting the requirements of the National Lead Laboratory Accreditation Program established under Title X (Lab ID #11109).
  - o **ELAP PLM** for Asbestos: California Department of Health Services, Environmental Laboratory Accreditation Program, certificate for bulk asbestos analysis (Certificate #2027)
  - o **USDA Soil** permit #39484

The following supporting documents are attached to this report:

- Laboratory analytical reports
- Photographs of sample locations
- Floor plan or sketch showing sample locations

Please call KELLCO if there are any questions and/or clarifications regarding this report. We look forward to working with you in the future.

Sincerely,

**KELLCO-MACS**

A handwritten signature in black ink, appearing to read 'Tim C. Cannard', is written over a light gray rectangular background.

Tim C. Cannard CAC #94-1395, DHS Lead #764  
Senior Project Manager