

# MERIDIAN FIRE STATION APPARATUS BAY EXPANSION

Paso Robles, CA

## PROJECT MANUAL



San Luis Obispo County Project No. 320062  
Bid Document Set  
May 24, 2016

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Prepared by:  
**San Luis Obispo County**

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*UPDATED GEOTECHNICAL ENGINEERING REPORT  
MERIDIAN FIRE STATION  
APPARATUS BAY EXPANSION  
40505 BRANCH ROAD  
PASO ROBLES CALIFORNIA*

April 16, 2014

SECTION REFERENCE:  
31 00 00 – 1.03.B

*GEOTECHNICAL RECOMMENDATIONS FOR  
NEW WATER STORAGE TANKS*

October 6, 2014

NOTICE OF EXEMPTION  
ED13-125  
DATED JANUARY 8, 2014

SAN LUIS OBISPO COUNTY DEPARTEMENT OF  
BUILDING AND PLANNING

NOTICE OF EXPEMPTION  
ED13-211  
DATED APRIL 17, 2014

SAN LUIS OBISPO COUNTY DEPARTEMENT OF  
BUILDING AND PLANNING

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**SECTION 00 11 16**  
**INVITATION TO BIDDERS**

**1. PROJECT IDENTIFICATION**

Notice is hereby given that sealed bids will be received by the County Clerk of the County of San Luis Obispo, California, at the **New County Government Center at 1055 Monterey Street, Suite D120 (1st Floor), San Luis Obispo, CA 93408**, until 3:00 P.M. on **Thursday, June 23, 2016** for the project entitled: **“MERIDIAN FIRE STATION APPARATUS BAY EXPANSION, #320062”**, located at **4050 Branch Road, Paso Robles, CA**, with drawings and specifications for said Work on file in the office of the Clerk of the Board of Supervisors.

**2. DESCRIPTION OF THE WORK**

- a. The Base Scope of Work required to be performed by the Contractor comprises:

The Contract involves construction of an addition to an existing building of Type V-N light wood frame construction, adding fire protection water storage tanks, and related plumbing and site improvements and accessibility upgrades. The job site is located at 4050 Branch Road, Paso Robles, in San Luis Obispo County, California. The scope of the Work is described in these Specifications and in Working Drawings identified by name, as Architect's project number 1407, and as County Job No. 320062.

- b. Alternates: Refer section 01 03 00 for a description of Bid Alternate Scope of Work

**3. EXAMINATION AND PROCUREMENT OF DOCUMENTS**

Contract Documents may be obtained from the following website:

[http://www.slocounty.ca.gov/GS/Purchasing/Current\\_Formal\\_Bids\\_and\\_Proposals.htm](http://www.slocounty.ca.gov/GS/Purchasing/Current_Formal_Bids_and_Proposals.htm)

**4. NON-MANDATORY PRE-BID SITE VISIT:**

**Tuesday, June 7, 2016 at 10:00am local time at the Meridian Fire Station (#52) located at 4050 Branch Road, Paso Robles, CA.** This is a **non-mandatory** pre-bid site visit.

All requests for information/interpretation (RFI), clarification, questions, etc., shall be submitted in writing through the Questions section of the bid on the Public Purchase website. Request for information/interpretation (RFI), clarification, questions, etc., will not be accepted after 5:00 pm on **Monday, June 13, 2016**, and shall be submitted through the following website:

[http://www.slocounty.ca.gov/GS/Purchasing/Current\\_Formal\\_Bids\\_and\\_Proposals.htm](http://www.slocounty.ca.gov/GS/Purchasing/Current_Formal_Bids_and_Proposals.htm)

All Product Substitution Requests shall be submitted in writing on the Substitution Request Form found in specification section 01 60 00 - Product Requirements. Product Substitution Requests and all supporting documents shall be submitted through the Questions section of the bid on the Public purchase website. Product Substitution Requests shall be submitted by 5:00 pm on **Monday, June 13, 2016**. Product substitution requests received after that time will be considered late and may be rejected at the discretion of the County. Refer to specification section 01 60 00 for additional requirements.

**5. BID OPENING**

**5.1.** All bids must be addressed to: Chair of the Board of Supervisors, County of San Luis Obispo, and delivered to the County Clerk, New County Government Center, 1055 Monterey Street, Suite D-120 (1st Floor), San Luis Obispo, CA 93408, and shall bear the Project Title, Project Number and Name of the Bidder.

**5.2.** Said bids shall be opened and read aloud by the County Clerk, on the date specified above promptly at 3:15 PM local time in a public setting.

**5.3.** The Bidder must satisfy themselves by personal examination of the location of the proposed Work



and by such other means as they prefer as to the actual conditions and requirements of the Work. It is the sole responsibility of the bidder to ensure that their bid is received in proper time and at the proper location. Any bid received after the scheduled closing time for receipt of bids shall be returned to the bidder unopened.

Bidders must satisfy themselves by personal examination of the location of the proposed work and by such other means as they prefer as to the actual conditions and requirements of the work, and shall not at any time after submission of the bid dispute, complain, or assert that there was any misunderstanding in regard to the nature or amount of work to be done.

## **6. CERTIFICATION OF BIDS (BID BOND)**

Bid must be accompanied by Cash, Certified or Cashier's Check, or a Bidder's Bond secured from a company ADMITTED to transact surety business in the State of California, in the sum of not less than 10% of the total aggregate amount of the Bid, and said Check or Bond shall be made payable to the order of the County of San Luis Obispo as liquidated damages in case the successful bidder fails to file satisfactory bonds and insurance as required by the Contract Documents, or fails or refuses to enter into a Contract within the specified time.

## **7. GOVERNING LAWS AND REGULATIONS**

### **7.1. Public Contract Code**

The bidding of this project is governed by the California State Public Contract Code. The Contract will be awarded to the lowest responsible bidder, subject to the County's right to reject any or all bids and to waive any informality in the bids or in the bidding. If two or more bids are the same and the lowest, the County may accept the one it chooses.

The State of California Public Contract Code makes provisions for the rejection of bids and sets forth alternate Contract procedures. If all bids are rejected, the County Board of Supervisors, after re-evaluating its project cost estimates, may, subject to the provisions of Section 22038 of the Public Contract Code; (1) abandon the project, (2) re-advertise for bids, (3) proceed with the project utilizing County personnel or force account if a resolution is passed by a 4/5 vote of the Board declaring that the project can be performed more economically by the employees of the County. If no bids are received, the project may be performed by County employees by force account or by negotiated Contract. In the event any action is taken by the Board of Supervisors, pursuant to Section 22038 all bidders will be notified in writing.

### **7.2. Specific Materials, Products And Control Systems Designated By Brand Or Name**

Pursuant to Public Contract Code Section 3400(c), the County may make a finding that is described in the invitation for bids that designates certain products, things, or services by specific brand or trade name for the statutorily enumerated purposes. As required by Section 3400(c)(2), the County Board of Supervisors has made such findings. These findings, as well as the particular materials, products and control systems and their specific brand or trade names that must be used for the Project may be found in Section 01 13 00. Unless specifically designated in Section 01 13 00, whenever in specifications any material, process or article is indicated or specified by grade, patent, or proprietary name or by name of manufacturer, such specifications shall be deemed to be used for the purpose of facilitating the description of the material, process or article desired and shall be deemed to be followed by words "or equal".

### **7.3. Contractor's License**

A Contractor is required to be licensed in accordance with the provisions of Chapter 9, Division III of the Business and Professions Code.

Pursuant to Section 3300, of the Public Contract Code, the classification of the bidder's Contractor's License shall be "**B**". Failure of a bidder to obtain adequate licensing for an award of a Contract shall constitute a failure to execute the Contract and shall result in the forfeiture of the Bidder's Bond.

**7.4. Public Works Contractor Registration and Certified Payrolls**

This project is subject to compliance monitoring and enforcement by the Department of Industrial Relations. Pursuant to Section 1771.1 of the Labor Code, no contractor or subcontractor shall be qualified to bid on, be listed in a bid proposal (submitted on or after March 1, 2015), or engage in the performance of any contract for public work unless currently registered with the Department of Industrial Relations to perform public work pursuant to Section 1725.5 of the Labor Code. No contractor or subcontractor may be awarded a contract for public work on a public works project (awarded on or after April 1, 2015) unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5.

All contractors and subcontractors must furnish electronic certified payroll records directly to the Labor Commissioner (Division of Labor Standards Enforcement). Additionally, the awarded Contractor shall submit certified payroll records to the County on a weekly basis, unless directed otherwise by the County. In addition, awarded Contractor must post job site notices prescribed by regulations.

**7.5. Payment of General Prevailing Rate**

Pursuant to the provisions of Section 1773 of the California Labor Code, the County of San Luis Obispo has obtained from the Director of the California Department of Industrial Relations the general prevailing rate of per diem wages and the general prevailing rate for holiday and overtime work for the locality in which the work is to be performed for each needed craft, classification, or type of workman. Copies of said prevailing rate of per diem wages are on file in IFC-3 the Office of the County Clerk-Recorder and available at the California Department of Industrial Relations' web site address at: [www.dir.ca.gov/DLSR/PWD](http://www.dir.ca.gov/DLSR/PWD).

**7.6. Classification Not Covered By Prevailing Rate**

Any laborer or mechanic employed to perform Work on the project under this Contract, which Work is not covered by any of the stipulated classifications, shall be paid not less than the minimum rate of wages specified for the classification which most nearly corresponds to the Work to be performed by him and such minimum wage rate shall be retroactive to the time of initial employment of such person in such classification. In the event of any dispute on that question, the question and the information shall be referred for determination to the Board of Supervisors or to any official designated by the Board of Supervisors, whose decision on the question shall be conclusive on the parties to this Contract with the same effect as if the Work performed by such laborer or mechanic had been classified and the minimum rate specified herein.

**7.7. Overtime, Sundays And Holidays**

Not less than one and one-half (1-1/2) times the basic hourly rate plus applicable employer payments. The holidays upon which such rates shall be paid shall be all holidays recognized in the collective bargaining agreement applicable to the particular craft, classification or type of worker employed on the project.

**7.8. Apprentices**

Attention is directed to the provisions in Sections 1777.5 and 1777.6 of the Labor Code concerning the employment of apprentices by the Contractor or any sub-contractor under them. It is the Contractor's responsibility to submit contract award information to the Department of Industrial relations as required by the Labor Code.

BY ORDER OF THE BOARD OF SUPERVISORS of the County of San Luis Obispo, California, this 24<sup>th</sup> day of May, 2016.

Clerk of the Board of Supervisors

By: \_\_\_\_\_  
Deputy Clerk

**END OF SECTION**

**SECTION 00 21 13**  
**INSTRUCTIONS TO BIDDERS**

**1. DESCRIPTION OF WORK**

- a. The Base Scope of work required to be performed by the Contractor comprises:

The Contract involves construction of an addition to an existing building of Type V-N light wood frame construction, adding fire protection water storage tanks, and related plumbing and site improvements and accessibility upgrades. The job site is located at 4050 Branch Road, Paso Robles, in San Luis Obispo County, California. The scope of the Work is described in these Specifications and in Working Drawings identified by name, as Architect's project number 1407, and as County Job No. 320062.

- b. The Alternate work will include: Refer section 01 03 00 for a description of Bid Alternate Scope of Work

- c. **The lowest responsible bid shall be the lowest total of the bid prices on the Base Bid.**

- 2. TIME AND PLACE FOR RECEIVING BIDS:** Sealed bids will be received from bidders attending the non-mandatory pre-bid site visit by the San Luis Obispo County Clerk's Office at:

**New County Government Center –  
1055 Monterey Street Ground Floor, Suite D-120  
San Luis Obispo, CA 93408  
until, Thursday, June 23, 2016 at 3:00 PM local time.**

- 3. NON-MANDATORY PRE-BID SITE VISIT:** A Pre-Bid Site Visit is scheduled for **Tuesday, June 7, 2016 at 10:00am local time at Meridian Fire Station** located at 4050 Branch Road, Paso Robles, CA. This is a **non-mandatory** pre-bid site visit.

All requests for information/interpretation (RFI), clarification, questions, etc., shall be submitted in writing through the Questions section of the bid on the Public Purchase website. Request for information/interpretation (RFI), clarification, questions, etc., will not be accepted after 5:00 pm on **Monday, June 13, 2016**, and shall be submitted through the following website:

[http://www.slocounty.ca.gov/GS/Purchasing/Current\\_Formal\\_Bids\\_and\\_Proposals.htm](http://www.slocounty.ca.gov/GS/Purchasing/Current_Formal_Bids_and_Proposals.htm)

All Product Substitution Requests shall be submitted in writing on the Substitution Request Form found in specification section 01 60 00 - Product Requirements. Product Substitution Requests and all supporting documents shall be submitted through the Questions section of the bid on the Public purchase website. Product Substitution Requests shall be submitted by 5:00 pm on **Monday, June 13, 2016**. Product substitution requests received after that time will be considered late and may be rejected at the discretion of the County. Refer to specification section 01 60 00 for additional requirements.

- 4. TIME OF COMPLETION:** The overall time of completion for the Project is **one hundred and eighty (180)** calendar days. Additional time limitations and limitations on construction are contained in Article 7, of the General Conditions.

- 5. LIQUIDATED DAMAGES:** The Contract is subject to liquidated damages that are described in Article 7, Paragraph 7.4 - Work Not Completed in Time and Assessment of Damages.

- 6. PROCUREMENT OF CONTRACT DOCUMENTS:** Contract Documents may be obtained from the following website:

[http://www.slocounty.ca.gov/GS/Purchasing/Current\\_Formal\\_Bids\\_and\\_Proposals.htm](http://www.slocounty.ca.gov/GS/Purchasing/Current_Formal_Bids_and_Proposals.htm)

- 7. EXAMINATION OF PROJECT LOCATION & CONTRACT DOCUMENTS:** Bidder shall, prior to submitting a bid, carefully examine the location of the proposed project, and review the Contract Documents, to become fully aware of the Work and of the conditions relating to construction and labor under which the

Work will be or is performed, and, so far as possible, the successful bidder must employ such methods and means regarding the Work of any subcontractor or worker, and in carrying out their Work as will not cause any interruption or interference with any other contractor, subcontractor or worker, it being specifically understood and agreed that the County shall be in no way responsible for any loss or damage occurring as a result thereof.

The limit of the Work area is designated on the drawings and the Contractor shall confine their operations to this area and along the adjacent public areas under the control of and with express permission of the County of San Luis Obispo.

Bidders must satisfy themselves by personal examination of the location of the proposed work and by such other means as they prefer as to the actual conditions and requirements of the work, and shall not at any time after submission of the bid dispute, complain, or assert that there was any misunderstanding in regard to the nature or amount of work to be done.

**8. INTERPRETATION OF CONTRACT DOCUMENTS:** If any Bidder is in doubt as to the true meaning of any part of the Plans, Specifications, or other Contract Documents, or finds discrepancies in, or omissions from the Plans or Specifications, they may submit questions in writing through the County's Purchasing website. All questions will receive a response within five (5) business days. Questions and responses will be posted (anonymously) on the Purchasing website. The County reserves the right to determine the appropriateness of comments / questions that will be posted on the website. The County will not be responsible for any other explanation or interpretation of the Contract Documents.

**9. BIDDER'S REPRESENTATION:** No person, firm, or corporation shall be allowed to make or file or be interested in more than one bid for the same Work, unless alternate bids are called for. A person, firm, or corporation submitting a sub-proposal to a bidder, or who has quoted prices on materials to a bidder, is not thereby disqualified from submitting a sub-proposal or quoting prices to other bidders.

**10. CONTENT & VALIDITY OF BIDS:**

- a. **Validity:** All bids shall be valid for a period of One Hundred Twenty (120) days from the bid opening date.
- b. **Alternate Proposals:** Bids shall not contain any recapitulations of the Work to be done. Alternate proposals will not be considered unless specifically called for.
- c. **Sales Taxes:** Bids shall include any and all Federal, State and Local taxes of whatever nature in connection with material to be furnished to the County. Absolutely no extras shall be allowed for such by the County.
- d. **Payment of General Prevailing Rate of Wages:** Pursuant to the provisions of Section 1773 of the California Labor Code, the County of San Luis Obispo has obtained from the Director of the California Department of Industrial Relations the general prevailing rate of per diem wages and the general prevailing rate for holiday and overtime work for the locality in which the work is to be performed for each needed craft, classification, or type of workman. Copies of said prevailing rate of per diem wages are on file in IFC-3 the Office of the County Clerk-Recorder and available at the California Department of Industrial Relations' web site address at: [www.dir.ca.gov/DLSR/PWD](http://www.dir.ca.gov/DLSR/PWD).
- e. **Payment of Minimum Wage:** Labor on this project shall be paid no less than the greater of the minimum wage rates established by the U.S. Secretary of Labor or by the State of California's Director of the Department of Industrial Relations.

**11. BIDDING PROCEDURES:** In order to receive consideration, all bids shall be made in accordance with the following instructions:

- a. **Bid Form:** Bids shall be made upon the form provided therefor, properly executed and with all items filled out; numbers shall be stated both in writing and in figures, the signature of all persons signing shall be in longhand.

- b. **Addenda**: Any Addenda issued before the time in which to submit bids expires shall form a part of the Contract Documents and shall be covered in the bid. Each bidder shall confirm receipt of any and all addenda in the space provided in the Bid Form.
- c. **Certification of Bids (Bidders Bond)**: Each bid must be accompanied by cash, a certified or cashier's check or a Bidder's Bond secured from a company **ADMITTED** to transact surety business in the State of California in the sum of not less than ten percent (10%) of the total aggregate amount of the bid and said checks or bond shall be made payable to the order of the County of San Luis Obispo as liquidated damages in the event the successful bidder fails to file satisfactory bonds as otherwise required by the Contract Documents, or fails to or refuses to enter into a Contract within the specified time.
- d. **Bidder and Subcontractor Registration**: Pursuant to Section 1771.1 of the Labor Code, no contractor or subcontractor shall be qualified to bid on, be listed in a bid proposal (submitted on or after March 1, 2015), or engage in the performance of any contract for public work unless currently registered with the Department of Industrial Relations to perform public work pursuant to Section 1725.5 of the Labor Code. No contractor or subcontractor may be awarded a contract for public work on a public works project (awarded on or after April 1, 2015) unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5.
- e. **Subcontractor List**: All bidders must submit with their bids a list of all proposed subcontractors in compliance with Sections 4100, et seq, of the State Public Contract Code. Forms for this designation are furnished on the Bid Form.
- f. **Designation of Insurance Company and Agent or Broker**: All bidders must submit with their bids the name and address of the company proposed to provide the required insurance as described in the General Conditions. Any and all insurance companies must be **AUTHORIZED** to transact business in the State of California by the California Department of Insurance. All bidders must also submit the name, address, and telephone number of the agent or broker procuring the insurance. A form for this purpose is furnished with the Bid Form.
- g. **Designation of Bonding/Surety Company and Agent or Broker**: All bidders must submit with their bids the name and address of the company proposed to provide the required payment, performance and maintenance bonds as described in the General Conditions. Any and all bonds must be issued by a company **ADMITTED** to do surety business in the State of California by the California Department of Insurance. All bidders must also submit the name, address, and telephone number of the agent or broker procuring the bonds. A form for this purpose is furnished with the Bid Form.
- h. **Non-Collusion Affidavit**: All bidders shall submit with their bids a fully executed Non-Collusion Affidavit in compliance with Section 7106 of the State of California Public Contract Code. A form for this purpose is furnished with the Bid Form.
- i. **Contractor's License**: Each bidder must possess a Class **"B"** California Contractor's License as required under provisions of the California Business and Professions Code

## **12. WITHDRAWAL OF BIDS**

- a. **Withdrawal of Bids prior to Bid Opening**: Any bidder may withdraw their bid, either personally or by a written request, at any time prior to the scheduled time for opening of bids, as allowed in State Public Contract Code.
- b. **Withdrawal of Bids after Bid Opening**: No bidder shall withdraw their bid for a period of **One Hundred Twenty (120)** days after the date set for the opening thereof.
- c. **Relief of Bidder Due to Clerical Error**: A Bidder may not be relieved of their bid unless by consent of the awarding authority nor shall any change be made in the bid because of a mistake except as provided in the State Public Contract Code Section 5101, et seq.

**13. BONDING REQUIREMENTS:** The Bonding Company or Companies/Surety or Sureties on all bonds furnished shall be secured from a surety company **ADMITTED** to transact surety business in the State of California by the California Department of Insurance and must be satisfactory to the County Board of Supervisors. No Contract shall arise until all bonds and insurance have been approved. All bonds shall be furnished by the bidder to whom the Contract has been awarded at its own cost and expense.

Should any surety or sureties be deemed unsatisfactory at any time by the County, notice will be given to the Contractor to that effect, and the Contractor shall forthwith substitute a new surety or surety satisfactory to the County. No further payment shall be deemed due or will be made under the Contract until the new sureties qualify and are accepted by the County.

All alterations, time extensions, extra and additional Work, and other changes authorized by the Specifications or any part of the Contract may be made without securing the consent of the surety or sureties on the Contract bonds.

- a. **Performance Bond:** Pursuant to Section 20129 of the State of California Public Contract Code, the successful bidder shall, within ten (10) days of award of a Contract simultaneously with the execution and delivery of the Agreement, execute a faithful performance bond in an amount equal to 100% of the Contract Sum, secured from a surety company **ADMITTED** to transact surety business in the State of California by the California Department of Insurance and must be satisfactory to the County and on the Performance Bond form contained in these Contract Documents.
- b. **Payment Bond:** Pursuant to Section 9550 through 9566, inclusive, of the Civil Code of the State of California, the successful bidder shall, within ten (10) days of award of a Contract exceeding \$25,000, simultaneously with the execution and delivery of the Agreement, execute a Payment Bond in the amount equal to 100% of the Contract price, secured from a surety company **ADMITTED** to transact surety business in the State of California by the California Department of Insurance and must be satisfactory to the County and on the Payment Bond form contained in these Contract Documents.
- c. **Maintenance Bond:** Contractor shall furnish, in addition to the Bonds elsewhere required by the Contract Documents, an approved Surety Company Bond, secured from a surety company **ADMITTED** to transact surety business in the State of California by the California Department of Insurance must be satisfactory to the County and on the Maintenance Bond form contained in these Contract Documents., equal to five percent (5%) of the total amount of the Contract which shall hold good for a period of one year after the date the County's Notice of Completion and Acceptance is filed with the Clerk of the County of San Luis Obispo. Said Bond shall protect the County against the result of faulty material or workmanship during that time. Recordation of the Notice of Completion and Acceptance shall not be deemed an acceptance of latent defects nor shall it constitute a waiver of any of the provisions of this Contract. Recordation of the Notice of Completion and Acceptance shall not be deemed an acceptance of latent defects nor shall it constitute a waiver of any of the provisions of this Contract.

**14. BID PROTESTS AND OTHER CHALLENGES TO AWARDS OF CONSTRUCTION CONTRACTS:** Bid protests and any other challenges to the award of this construction contract must comply with the requirements described in the "Rules Governing Bid Protests and Other Challenges to Awards of Construction Contracts" ("Rules"), a copy of which is attached to this contract. In addition to the requirements described in the Rules, any bid protest must be submitted in writing to the Department of Public Works, Room 206, County Government Center, 976 Osos Street, San Luis Obispo, CA 93408; Attention: Design Engineer.

**15. COPIES OF CONTRACT DOCUMENTS & FORMS:**

- a. **General:** The complete Contract shall consist of the following identified documents herein referred to as the Contract Documents: Invitation to Bidders, Instructions to Bidders, Bid Form, Supplements to Bid Form, Agreement, Guarantees, Insurance, General Conditions, Specifications, Soils Reports and attached supplemental information, Drawings, any Addenda, and any Change Orders, Field Orders, or the County's Directives issued thereto and all are intended to cooperate and be complementary so that any Work called for in one and not mentioned in the other, or vice versa, shall be executed the same as if mentioned in all said documents. The Contract shall include all labor, materials, equipment,

transportation, and services necessary for the proper execution of the Work.

- b. **Plans and Specifications:** County Furnished Drawings and Project Manuals: Upon award of Contract, the County will provide a single digital copy (.pdf format) of Drawings, Project Manuals and Addenda for the Contractor to use. Printed sets of Drawings, Project Manuals and Addenda can be furnished upon request. Contractor will be responsible for costs of printing and delivery of all printed sets requested. Partial sets will not be available.
- c. **Agreements & Bonds:** The form of Agreement that the successful bidder, as Contractor, will be required to execute and the form of bonds which they will be required to furnish are included in the Contract Documents and should be carefully examined by each bidder. The Agreement shall be executed in two (2) original counterparts.
- d. **Supporting Contract Documents:** The County has commissioned the following reports, plans and/or permits for the Project, The Contractor will be required to comply with any and all requirements therein.
  - 1. Updated Geotechnical Engineering Report, dated April 16, 2014
  - 2. Geotechnical Recommendations for New Water Storage Tanks, dated October 6, 2014.
  - 3. Notice of Exemption, ED13-125, San Luis Obispo County Department of Building and Planning, dated January 8, 2014.
  - 4. Notice of Exemption, ED13-211, San Luis Obispo County Department of Building and Planning, dated April 17, 2014.

These documents are available at:

[http://www.slocounty.ca.gov/GS/Purchasing/Current\\_Formal\\_Bids\\_and\\_Proposals.htm](http://www.slocounty.ca.gov/GS/Purchasing/Current_Formal_Bids_and_Proposals.htm)

- e. A copy of these reports can be downloaded from Public Purchase, and reproduced at the Contractor's expense.

**END OF SECTION**

**SECTION 00 41 13**  
**BID FORM**

**TO: The County of San Luis Obispo, State of California, as Owner herein called the County:**

**1. BID**

**1.1. BASE BID**

Pursuant to and in compliance with the Notice to Bidders and Contract Documents relating to the project:

**MERIDIAN FIRE STATION APPARATUS BAY EXPANSION, #320062**

Including all Addenda, the undersigned bidder, having become thoroughly familiar with the terms and conditions of the Contract Documents and with local conditions affecting the performance and the costs of the Work at the place where the Work is to be done, hereby proposes and agrees to fully perform the Work within the time stated in strict accordance with the Contract Documents (including the furnishing of any and all labor, materials, tools expendable equipment, and utility and transportation services necessary to fully perform the Work and complete it in a workmanlike manner) for the total Base Bid sum of:

\_\_\_\_\_ Dollars  
(\$ \_\_\_\_\_)

***NOTE: Failure to acknowledge Addenda may be grounds for rejection of the bid. Failure to include pricing for unit costs and alternates will be grounds for rejection of the bid.***

**1.2. ALTERNATE BID ITEMS:** (NOTE: A Bidder must bid on each alternate and must indicate if each alternate is additive)

**ALTERNATE #1 - Rear Driveway Concrete Apron**

Add:

\_\_\_\_\_ Dollars (\$ \_\_\_\_\_)

**ALTERNATE #2 - Roof Mounted Solar Electric System**

Add:

\_\_\_\_\_ Dollars (\$ \_\_\_\_\_)

Contractor:

\_\_\_\_\_

**1.3. DETERMINATION OF LOWEST RESPONSIBLE BID:**

The lowest responsible bid shall be the lowest total of the bid prices on the **Base Bid**.

**2. CONDITIONS OF BID**

It is understood and agreed that if written notice of the acceptance of this proposal is mailed or delivered personally to the undersigned bidder within **one hundred twenty (120) days** after the opening of the proposal, or at any time thereafter before it is withdrawn, the undersigned bidder will execute and deliver the signed Agreement (two originals) to the County in accordance with the proposal as accepted together with the insurance documents specified in the General Conditions, and will also furnish and deliver to the County the Performance Bond and Payment Bond as specified, all within ten (10) days after personal delivery or deposit in the mail, as the case may be, of the Notice of Award and that the Work under the Contract shall be commenced by the undersigned bidder on the date to be stated in the County's Notice to Proceed, and shall be completed in the time specified in the Agreement of said Contract Documents.



The Notice of Award or any request for additional information may be addressed to the undersigned bidder at the business address set forth herein.

Wherever in this proposal an amount is stated in both words and figures, in case of discrepancy between words and figures the words shall prevail; if all or any portion of the proposal is required to be given in unit prices and totals and a discrepancy exists between any such unit prices and totals so given, the unit prices shall prevail.

### **3. CONTRACTOR'S LICENSE**

Section 7028.15(a) of the Business and Profession Code states that it is a misdemeanor for any person to submit a bid to a public agency in order to engage in the business or act in the capacity of a Contractor within this state without having a license therefor, except in any of the following cases:

- 3.1. The person is specifically exempted from licensing under the Business and Professions Code.
- 3.2. If the bidder is making a bid as a joint venture, each person submitting the bid shall be subject to the section in regard to their individual license.
- 3.3. The section does not affect the right or ability of a licensed architect or registered professional engineer to form a joint venture with licensed Contractors to render those services within their respective licenses.
- 3.4. For those projects where Federal funds are involved, per Section 20103.5 of the State of California Public Contract Code, the Contractor must be properly licensed at the time of award of Contract. Contractors may be subject to penalties for failure to comply with the provisions of Section 7028.15 of the Business and Professions Code and 20103.5 of the Public Contract Code.

The County is required to verify licensure before awarding a bid. The Contractor is requested to provide the information regarding its license. Failure of the Contractor to be properly licensed upon submission of a bid, except as noted above, shall cause the bid to be considered non-responsive and it shall be rejected.

### **4. FORMS**

Bidder shall execute and submit with their proposal, each of the following:

- DESIGNATION OF SUBCONTRACTORS
- DESIGNATION OF INSURANCE COMPANY AND INSURANCE AGENT/BROKER
- DESIGNATION OF BONDING COMPANY / SURETY AND AGENT
- BIDDER'S NON-COLLUSION DECLARATION (STATE FORM)
- IRAN CONTRACTING ACT OF 2010 COMPLIANCE AFFIDAVIT
- BIDDER'S BOND

### **5. WITHDRAWAL OF BIDS**

This bid proposal may be withdrawn, in writing, prior to the time fixed in the Notice to Bidders for the opening of bids. It is understood and agreed that this bid proposal will not be withdrawn after the time fixed in the Notice of Bidders for the opening of bids. Bidders further agree that the failure of the County to open bids for this project exactly at the time fixed in said Notice shall not extend the time within which bids may be withdrawn.

The undersigned bidder will sign and deliver to the County of San Luis Obispo the written contract, together with the certificates of insurance and bonds described in the Notice to Bidders, within ten (10) calendar days, not including Saturday, Sundays, and legal holidays, after the undersigned has received notice that the contract has been awarded to him/her.

The undersigned, as bidder, declares that he/she is aware of the provisions of Section 3700 of the California Labor Code which require every employer to be insured against liability for workers' compensation or to

undertake self insurance in accordance with the provisions of that code, and will comply with such provisions before commencing the performance of the work of this contract.

The bidder's execution of the signature portion of this bid proposal shall also constitute and endorsement and execution of those certifications, questionnaires, and assurances which are a part of this proposal.

**ADDENDA:** The undersigned acknowledges and confirms the receipt of the following Addenda:

<u>Addenda Number</u>	<u>Date</u>
_____	_____
_____	_____
_____	_____

and agrees that said addenda are covered in the bid proposal and shall form a part of the Contract Documents.

If bidder or other interested person is a corporation, state legal name of corporation, also names of the president, secretary, treasurer, and manager thereof; if a partnership, state true name of firm, also names of all individual co-partners composing firm; if bidder or other interested person is an individual, state first and last names in full.

\_\_\_\_\_  
\_\_\_\_\_

Bidder warrants and represents that he/she is licensed in accordance with an Act providing for the registration of Contractors, License, No.\_\_\_\_\_, Class \_\_\_\_\_, License Expiration Date \_\_\_\_\_. (Note: the successful bidder must possess the license classification specified in the Notice to Bidders upon award of this contract.)

Name of Bidder \_\_\_\_\_

Signature of Bidder \_\_\_\_\_

Printed Name and Title \_\_\_\_\_

Business Address \_\_\_\_\_

Email Address \_\_\_\_\_

Telephone Number \_\_\_\_\_

Date \_\_\_\_\_

DIR Registration No.\* \_\_\_\_\_

**NOTICE.** . . . .If bidder is a corporation, the legal name of the corporation shall be set forth above together with the signature of the officer or officers authorized to sign contract in behalf of the corporation; if bidder is a partnership, the true name of the firm shall be set forth above together with the signature of the partner or partners authorized to sign contracts in behalf of the partnership; and if the bidder is an individual, his or her signature shall be placed above. If signature is by an agent, other than an officer of a corporation or a member of a partnership, a Power of Attorney must be on file with the County prior to opening of bids or submitted with the bid; otherwise, the bid will be disregarded as irregular and unauthorized.

\* Pursuant to Labor Code Section 1771.1, no contractor or subcontractor may be listed on the bid proposal for this public works project unless registered with the Department of Industrial Relations pursuant to Labor Code Section 1725.5.

**END OF SECTION**

**SECTION 00 43 00**  
**SUPPLEMENTS TO BID FORMS**

**1. DESIGNATION OF SUBCONTRACTORS FORM**

In compliance with the provisions of Sections 4100-4113 of the Public Contract Code of the State of California, and any amendments thereto, the undersigned bidder sets forth the following:

- 1.1. The name and location of the place of business of each subcontractor who will perform work or labor, or render service to the undersigned Prime Contractor in or about the construction of the work or improvement, or a subcontractor licensed by the State of California who, under subcontract to the Prime Contractor, specially fabricates and installs a portion of the work or improvement according to detailed drawings contained in the plans and specifications, in an amount in excess of one-half of one percent of the undersigned Prime Contractor's total bid or in the case of bids for the construction of streets and highways, including bridges, in excess of one-half of one percent or ten thousand dollars (\$10,000), whichever is greater.\*
- 1.2. The portion of the work which will be done by each such subcontractor. Only one subcontractor shall be listed for each such portion. If the subcontractor is not performing all of the work under the bid item number(s) listed for that subcontractor, the bidder shall set forth the portion of the work relating to said bid item number(s) that will be done by the subcontractor.

Bid Schedule Item No.	Description of Portion of Work (if applicable)	Subcontractor	License No.	DIR Reg. No.**	Address	Percent of Total Bid Price

By: \_\_\_\_\_ (Bidder's Signature/Printed Name and Title/Company Name)

NOTES: \* When there is a failure to list a subcontractor, as required, the law provides that the Contractor agrees to do the work with his or her own forces. In such case, bidder must be authorized to perform said work. Any bid not complying with the provisions hereof may be rejected.  
 \*\* Pursuant to Labor Code Section 1771.1, no contractor or subcontractor may be listed on the bid proposal for this public works project unless registered with the Department of Industrial Relations pursuant to Labor Code Section 1725.5.

**RETURN THIS FORM WITH YOUR BID PROPOSAL**

**2. DESIGNATION OF INSURANCE COMPANY, INSURANCE AGENT OR BROKER**

The State of California has specific laws regarding the **AUTHORIZATION** of Insurance Agents, Brokers and Insurance Companies doing business within the State. Failure to conform to those requirements requires immediate replacement of the non-conforming individual or entity, acceptable to the County. No contract shall arise until all insurance has been approved by the County.

**The County of San Luis Obispo requires all insurance to be issued by a company that is "AUTHORIZED" to transact business in the State of California.**

The following insurance agent/broker and insurance company is proposed to provide policies of insurance or insurance certificates as are required by the General Conditions:

**2.1. Name of Insurance Company(ies) providing coverage:**

**(Corporate Name and dba Name)** \_\_\_\_\_  
(Use a separate sheet of paper if necessary)  
**Address** \_\_\_\_\_  
**Phone Number** \_\_\_\_\_  
**FAX Number** \_\_\_\_\_

**2.2. Name of Agent or Broker procuring Insurance coverage:**

**(Corporate Name and dba Name)** \_\_\_\_\_  
(Use a separate sheet of paper if necessary)  
**License # of Agent or Broker** \_\_\_\_\_  
**Address** \_\_\_\_\_  
**Phone Number** \_\_\_\_\_  
**FAX Number** \_\_\_\_\_

**3. DESIGNATION OF BONDING COMPANY/SURETY AND AGENT**

The State of California has specific laws regarding the **ADMITTANCE** of Bonding Companies, Sureties, Agents and Brokers doing business within the State. Failure to conform to those requirements requires immediate replacement of the non-conforming individual or entity, acceptable to the County. No contract shall arise until all insurance and bonds have been approved by the County.

**The County of San Luis Obispo requires all insurance to be issued by a company that is “ADMITTED” to transact business in the State of California.**

The following Bonding Company or Surety is proposed to provide payment, performance and maintenance bonds as required by the General Conditions:

**3.1. Name of Insurance Company(ies) providing coverage:**

**(Corporate Name and dba Name)**

(Use a separate sheet of paper if necessary)

\_\_\_\_\_

**Address**

\_\_\_\_\_

**Phone Number**

\_\_\_\_\_

**FAX Number**

\_\_\_\_\_

**3.2. Name of Agent or Broker procuring Insurance coverage:**

**(Corporate Name and dba Name)**

(Use a separate sheet of paper if necessary)

\_\_\_\_\_

**Address**

\_\_\_\_\_

**Phone Number**

\_\_\_\_\_

**FAX Number**

\_\_\_\_\_

**4. BIDDER'S NON-COLLUSION DECLARATION (STATE FORM)**

Bidder hereby states, under penalty of perjury, 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 or 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.

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

\_\_\_\_\_  
(Name of Company)

By: \_\_\_\_\_

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
Title

Date: \_\_\_\_\_

**RETURN THIS FORM WITH YOUR BID PROPOSAL**

**IRAN CONTRACTING ACT OF 2010 COMPLIANCE AFFIDAVIT**

(California Public Contract Code Sections 2200-2208)

The California Legislature adopted the Iran Contracting Act of 2010 to respond to policies of Iran in a uniform fashion (PCC § 2201(q)). The Iran Contracting Act prohibits bidders engaged in investment activities in Iran from bidding on, submitting proposals for, or entering into or renewing contracts with public entities for goods and services of one million dollars (\$1,000,000) or more (PCC § 2203(a)). A bidder who “engages in investment activities in Iran” is defined as either:

1. A bidder providing goods or services of twenty million dollars (\$20,000,000) or more in the energy sector of Iran, including provision of oil or liquefied natural gas tankers, or products used to construct or maintain pipelines used to transport oil or liquefied natural gas, for the energy sector of Iran; or
2. A bidder that is a financial institution (as that term is defined in 50 U.S.C. § 1701) that extends twenty million dollars (\$20,000,000) or more in credit to another person, for 45 days or more, if that person will use the credit to provide goods or services in the energy sector in Iran and is identified on a list created by the California Department of General Services (DGS) pursuant to PCC § 2203(b) as a person engaging in the investment activities in Iran.

The bidder shall certify that at the time of submitting a bid for new contract or renewal of an existing contract, the bidder is **not** identified on the DGS list of ineligible businesses or persons and that the bidder is **not** engaged in investment activities in Iran in violation of the Iran Contracting Act of 2010.

**California law establishes penalties for providing false certifications, including civil penalties equal to the greater of \$250,000 or twice the amount of the contract for which the false certification was made; contract termination; and three-year ineligibility to bid on contracts (PCC § 2205).**

To comply with the Iran Contracting Act of 2010, the bidder shall provide its vendor or financial institution name, and City Business Tax Registration Certificate (BRTC) if available, in completing **ONE** of the options shown below.

**OPTION #1: CERTIFICATION**

I, the official named below, certify that I am duly authorized to execute this certification on behalf of the bidder or financial institution identified below, and that the bidder or financial institution identified below is **not** on the current DGS list of persons engaged in investment activities in Iran and is **not** a financial institution extending twenty million dollars (\$20,000,000) or more in credit to another person or vendor, for 45 days or more, if that other person or vendor will use the credit to provide goods or services in the energy sector in Iran and is identified on the current DSG list of persons engaged in investment activities in Iran.

<i>Vendor Name/Financial Institution (printed)</i>		<i>BTRC (or n/a)</i>
<i>By (Authorized Signature)</i>		
<i>Print Name and Title of Person Signing</i>		
<i>Date Executed</i>	<i>City Approval (Signature)</i>	<i>(Print Name)</i>

**OPTION #2: EXEMPTION**

Pursuant to PCC § 2203(c) and (d), a public entity may permit a bidder or financial institution engaged in investment activities in Iran, on a case-by-case basis, to be eligible for, or to bid on, submit a proposal for, or enter into, or renew, a contract for goods and services. If the bidder or financial institution identified below has obtained an exemption from the certification requirement under the Iran Contracting Act of 2010, the bidder or financial institution shall complete and sign below and attach documentation demonstrating the exemption approval.

<i>Vendor Name/Financial Institution (printed)</i>		<i>BTRC (or n/a)</i>
<i>By (Authorized Signature)</i>		
<i>Print Name and Title of Person Signing</i>		
<i>Date Executed</i>	<i>City Approval (Signature)</i>	<i>(Print Name)</i>

**CERTIFICATION OF BIDS (BID BOND)**

Each bid must be accompanied by cash, a certified or cashier's check or a Bidder's Bond secured from a company **ADMITTED** to transact business in the State of California in the sum of not less than ten percent (10%) of the total aggregate amount of the bid and said checks or bond shall be made payable to the order of the County of San Luis Obispo as liquidated damages in the event the successful bidder fails to file satisfactory bonds as otherwise required by the Contract Documents, or fails to or refuses to enter into a Contract within the specified time.

**BIDDER'S CERTIFICATE (BID BOND)**

KNOW ALL MEN BY THESE PRESENTS:

That we, \_\_\_\_\_ as Principal, and \_\_\_\_\_, as Surety, are held and firmly bound unto the County of San Luis Obispo, State of California, (hereinafter called "County") in the penal sum of ten percent (10%) of the total aggregate amount of the bid of the Principal above named, submitted by said Principal to the County 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. In no case shall the liability of the Surety \_\_\_\_\_ hereunto exceed the sum of \_\_\_\_\_ Dollars (\$ \_\_\_\_\_).

The condition of this obligation is such that a bid to the County for certain construction specifically described as follows, for which bids are to be opened on \_\_\_\_\_ 20\_\_ has been submitted by Principal to the County:

- a. The Base Scope of Work required to be performed by the Contractor comprises:

The Contract involves construction of an addition to an existing building of Type V-N light wood frame construction, diesel fire pump system, fire protection water storage tanks, and related site improvements. The job site is located at 4050 Branch Road in San Luis Obispo County, California. The scope of the Work is described in these Specifications and in Working Drawings identified by name, as Architect's project number 1407, and as County Job No. 320062.

- b. Alternates: Refer section 01 03 00 for a description of Bid Alternate Scope of Work

NOW, THEREFORE, if the aforesaid Principal shall not withdraw said bid within the period specified therein after the opening of the same, or, if no period be specified, within one hundred twenty (120) days after said opening, and shall within the period specified therefore, or, if no period be specified, within ten (10) days after the prescribed forms are presented for signature, enter into a written Contract with the County, in the prescribed form, in accordance with the bid as accepted, and file the two bonds with the County, 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, virtue and effect. And the said Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of said Contract or to the Work to be performed there-under or the specifications accompanying the same shall in any manner affect its obligations of this bond, and it does hereby waive notice of any such change, extension, alteration, or addition.

In the event suit is brought upon said bond by the County and judgment is recovered, the Surety shall pay all costs incurred by the County in such suit, including a reasonable attorney's fee to be fixed by the court. Death of the Principal shall not relieve Surety of its obligations hereunder.



IN WITNESS WHEREOF, this document has been duly executed by the Principal and Surety named above  
on the \_\_\_\_\_ day of \_\_\_\_\_, 201 \_\_\_\_.

**CONTRACTOR AS PRINCIPAL:**

\_\_\_\_\_  
*Signature*

\_\_\_\_\_  
*Please Print Name*

\_\_\_\_\_  
*Title*

\_\_\_\_\_  
*Full Name of Business*

**SURETY:**

*Note: Signature of those executing for Surety must be properly acknowledged and notarized.*

\_\_\_\_\_  
*Signature*

\_\_\_\_\_  
*Please Print Name*

\_\_\_\_\_  
*Title*

**(SEAL)**

\_\_\_\_\_  
*Type of Business*

\_\_\_\_\_  
*Full Name of Business, including dba*

**NOTARY:**

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

On \_\_\_\_\_ before me, the undersigned notary public, personally appeared \_\_\_\_\_ personally known to me (or proved to me on the basis of satisfactory evidence) to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies) and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

WITNESS my hand and official seal.

Signature \_\_\_\_\_ **(NOTARY SEAL)**  
(Secretary)

**SECTION 00 50 00**  
**AGREEMENT**

THIS IS AN AGREEMENT made and entered into this \_\_\_\_ day of \_\_\_\_\_, 20\_\_, by and between the County of San Luis Obispo, a political subdivision and one of the counties of the State of California, hereinafter referred to as "County", and (complete **one** of the following):

**Corporation:** \_\_\_\_\_  
*(insert Corporation Name)*  
a corporation organized and existing under the laws of the State of:

\_\_\_\_\_  
*(insert Name of State)*

**Partnership:** \_\_\_\_\_  
*(insert Name of Partnership)*

**Individual:** \_\_\_\_\_  
*(insert Name of Individual)*

**Doing business as:** \_\_\_\_\_  
*(insert dba Name)*

hereinafter referred to as "Contractor". In consideration of the mutual covenants, conditions, promises, and agreements herein contained, the County and Contractor hereby mutually covenant and agree as follows:

**ARTICLE 1 - SCOPE OF WORK:**

Said Contractor agrees to furnish all tools, equipment, apparatus, facilities, expendable equipment, utility and transportation services, and labor and materials necessary to perform and complete in a workmanlike manner, and in strict accordance with the Contract Documents, (defined in Article 6 herein) the Work of:

**MERIDIAN FIRE STATION APPARATUS BAY EXPANSION. #320062**

in the County of San Luis Obispo, State of California, as called for in the drawings and specifications adopted by the County, which said drawings and specifications are identified by the signature of the parties of this Agreement. It is understood and agreed that said tools, equipment, apparatus, facilities, expendable equipment, utility and transportation services, labor and materials shall be furnished, and said Work performed and completed as required in said Contract Documents, and subject to the approval of the County and the County's duly authorized representatives.

**ARTICLE 2 - TIME OF COMPLETION:**

The Work shall be commenced within **ten (10)** calendar days from date of the County's "Notice to Proceed", and shall be fully completed no later than **one hundred and eighty (180)** calendar days from and after the aforementioned date. Time is of the essence in this Contract.

**ARTICLE 3 - CONTRACT PRICE:**

The County will pay the Contractor in current funds for the full and complete performance of this Contract, subject to any additions or deductions as provided in the Contract Documents, the sum of:

\_\_\_\_\_ Dollars  
(\$\_\_\_\_\_).

**ARTICLE 4 - DELAYS:**

If, after the Work has been substantially completed, full completion thereof is materially delayed through no fault of Contractor, and the Public Works Director so certifies, the County shall, without terminating this Contract, make payment of the balance due for that portion of the Work completed and accepted. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

**ARTICLE 5 - ACCEPTANCE OF FINAL PAYMENT AS RELEASE:**

The acceptance by the Contractor of final payment shall be and shall operate as a release to the County of all claims and all liability to the Contractor for all things done or furnished in connection with this Work and for every act and neglect of the County and others relating to or arising out of this Work. No payment, however, final or otherwise, shall operate to release the Contractor or its sureties from any obligations under this Contract or the Performance and Payment Bond.

**ARTICLE 6 - CONTRACT DOCUMENTS:**

The complete Contract between the parties hereto shall consist of the following identified documents herein referred to as the Contract Documents:

- Invitation to Bidders, Instructions to Bidders, Bid Form,
- Supplements to Bid Form, Agreement,
- Insurance and Guarantees,
- General Conditions, Specifications,
- Soils Reports, Environmental Documents and attached supplemental information,
- Drawings, any Addenda,
- Executed Change Orders and Modifications.
- Erosion Control Plans

The Contract shall include all labor, materials, equipment, expendable equipment, utility and transportation services, and any other services necessary for the proper execution of the Work.

**PUBLIC WORKS DIRECTOR:** Means the Director of Public Works and Transportation (hereinafter, also the Department of Public Works) of the County of San Luis Obispo, State of California, acting either directly or through properly authorized agent(s), acting within the scope of the particular duties delegated to them, including registered engineers employed by the Department of Public Works and Transportation.

**COUNTY CLERK:** Means the Clerk of the County of San Luis Obispo, State of California.

**ARTICLE 7 - LAW AND VENUE:**

This Agreement has been executed and delivered in the State of California and the validity, enforceability and interpretation of any of the clauses of this Agreement shall be determined and governed by the laws of the State of California. The duties and obligations of the parties created hereunder are performable in SAN LUIS OBISPO COUNTY and such COUNTY shall be the venue for any action of proceeding that may be brought or arise out of, in connection with or by reason of this Agreement.

**ARTICLE 8 - CONFLICTS OF INTEREST:**

No official of the County who is authorized on behalf of the County to negotiate, make, accept, or approve, or to take part in negotiating, making, accepting, or approving any architectural, engineering, inspection, construction, or material supply contract or any subcontract in connection with the construction of the project, shall become directly or indirectly interested personally in this Contract or in any part thereof. No officer, employee, architect, attorney, engineer, or inspector of or for the County who is authorized on behalf of the County to exercise any executive, supervisory or other similar function in connection with the construction of the project shall become directly or indirectly interested personally in this Contract or in any part thereof. Contractor is aware of the requirements of Government Code section 1090 et seq. and the Political Reform Act (Gov. Code sec. 80000 et seq.) and agrees to comply with those laws' requirements.

## **ARTICLE 9**

The Contractor agrees that the Public Works Director shall decide as to the meaning of the Standard Specifications, Standard Plans, and Special Provisions for the work, including without limitation the Project Plans incorporated therein, where the same may be found to be obscure or in dispute and the decision shall be final. The Public Works Director shall have the right to correct any errors or omissions therein when such corrections are necessary to the proper fulfillment of the intention of the Special Provisions, Standard Specifications and Standard Plans; the action of such corrections is to take effect from the time said Public Works Director gives notice thereof to the Contractor.

## **ARTICLE 10 - INSURANCE REQUIREMENTS**

Contractor, at its sole cost, shall purchase and maintain the insurance policies set forth below on all of its operations under this Agreement. All of the insurance companies providing insurance for Contractor shall have, and provide evidence of, an A.M. Best & Co. rating of A:VII or above, unless exception is granted by Risk Manager. Further, all policies shall be maintained for the full term of this Agreement and related warranty period if applicable.

### **10.01 Scope and Limits of Required Insurance Policies**

#### **a. COMMERCIAL GENERAL LIABILITY**

Policy shall include coverage at least as broad as set forth in Insurance Services Office Commercial General Liability Coverage (CG 00 01) with policy limits of not less than \$2 million dollars combined single limit per occurrence. Policy shall be endorsed with the following specific language or contain equivalent language in the policy:

- i. The County of San Luis Obispo, its officers, officials, employees, and volunteers are named as an additional insured for all liability arising out of the operations by or on behalf of the named insured in the performance of this Agreement. General liability coverage can be provided in the form of an endorsement to the Contractor's insurance as least as broad as ISO Form CG 20 10 11 85 or if not available, through the addition of both CG 20 10 and CG 20 37 (if a later edition is used).
- ii. The insurance provided herein shall be considered primary coverage to the County of San Luis Obispo with respect to any insurance or self insured retention maintained by the County. Further, the County's insurance shall be considered excess insurance only and shall not be called upon to contribute to this insurance.
- iii. The policy shall not be cancelled or materially changed without first giving thirty days prior written notice to the County of San Luis Obispo, Department of Public Works.

#### **b. BUSINESS AUTOMOBILE POLICY**

Policy shall include coverage at least as broad as set forth in the liability section of Insurance Services Office Business Auto Coverage (CA 00 01) with policy limits of no less than \$1 million dollars combined single limit for each occurrence. Said insurance shall include coverage for owned, non-owned, and hired vehicles. Policy shall be endorsed with the following specific language or contain equivalent language in the policy:

- i. The County of San Luis Obispo, its officers, officials, employees, and volunteers are named as an additional insured for all liability arising out of the operations by or on behalf of the named insured in the performance of this Agreement.
- ii. The policy shall not be cancelled or materially changed without first giving thirty days prior written notice to the County of San Luis Obispo, Department of Public Works.

#### **c. WORKERS' COMPENSATION / EMPLOYERS' LIABILITY INSURANCE**

- i. Workers' Compensation: policy shall provide statutory limits as required by State of California. Policy shall be endorsed with the following specific language or contain equivalent language in the policy:
  - a. Contractor and its insurer shall waive all rights of subrogation against the County, its officers and employees for workers' compensation losses arising out of this Agreement.
  - b. The policy shall not be cancelled or materially changed without first giving thirty days prior written notice to the County of San Luis Obispo, Department of Public Works.

- ii. Employer's Liability: policy shall provide \$1 million dollars per accident for bodily injury or disease.

If the Contractor maintains higher limits than the minimum shown above, the County requires and shall be entitled to coverage for the higher limits maintained by the Contractor.

**10.02 Deductibles and Self-Insurance Retentions**

All deductibles and/or self-insured retentions which apply to the insurance policies required herein will be declared in writing and approved by the County prior to commencement of this Agreement.

**10.03 Documentation**

Prior to commencement of work and annually thereafter for the term of this Agreement, Contractor will provide to the County of San Luis Obispo, Department of Public Works, Room 206, County Government Center, CA 93408, Attention: Design Engineer, Meridian Fire Station Apparatus Bay Expansion, properly executed certificates of insurance clearly evidencing the coverage, limits, and endorsements specified in this Agreement. Further, at the County's request, the Contractor shall provide certified copies of the insurance policies within thirty days of request.

Failure of the County to demand such certificates or other evidence of Contractor's full compliance with these insurance requirements or failure of the County to identify a deficiency in compliance from the evidence provided shall not be construed as a waiver of Contractor's obligation to maintain such insurance.

**10.04 Absence of Insurance Coverage**

County may direct Contractor to immediately cease all activities with respect to this Agreement if it determines that Contractor fails to carry, in full force and effect, all insurance policies with coverage levels at or above the limits specified in this Agreement. Any delays or expense caused due to stopping of work and change of insurance shall be considered Contractor's delay and expense.

**10.05 Special Risks or Circumstances**

The County reserves the right to modify these requirements, including limits, based on the nature of the risk, prior experience, insurer, coverage, or other special circumstances.

- 10.07 Builder's Risk:** The County maintains Builder's Risk insurance for this project. The Contractor therefore, is not required to procure nor maintain said insurance.

**ARTICLE 11 – INDEMNIFICATION**

**11.01 A.1 General**

To the fullest extent permitted by law, the Contractor assumes liability for and agrees, at the Contractor's sole cost and expense, to promptly and fully indemnify, protect, hold harmless and defend (even if the allegations are false, fraudulent, or groundless), the County, its Board and each member thereof, and their respective officials, officers, directors, employees, commission members, representatives, and agents ("Indemnitees"), from and against any and all claims, allegations, actions, suits, arbitrations, administrative proceedings, regulatory proceedings, or other legal proceeds, causes of action, demands, costs, judgments, liens, stop payment notices, penalties, liabilities, damages, losses, anticipated losses of revenues, and expenses (including, but not limited to, any fees of accountants, attorneys, experts, or other professionals, or investigation expenses), or losses of any kind or nature whatsoever, whether actual, threatened, or alleged, arising out of, resulting from, or in any way (either directly or indirectly), related to the Work, the Project or any breach of the Contract by Contractor or any of its officers, agents, employees, Subcontractors, Sub-subcontractors, or any person performing any of the Work, pursuant to a direct or indirect contract with the Contractor ("Indemnity Claims"). Such Indemnity Claims include, but are not limited to, claims for:

1. Any activity on or use of the County's premises or facilities;
2. Any liability incurred due to Contractor acting outside the scope of its authority pursuant to the Contract, whether or not caused in part by an Indemnified Party;
3. The failure of Contractor or the Work to comply with any applicable law, permit, or orders;
4. Any misrepresentation, misstatement or omission with respect to any statement made in the Contract Documents or any document furnished by the Contractor in connection therewith;
5. Any breach of any duty, obligation or requirement under the Contract Documents, including,

but not limited to any breach of Contractor's warranties, representations, or agreements set forth in the Contract Documents;

6. Any failure to coordinate the Work with the County's separate contractors;
7. Any failure to provide notice to any party as required under the Contract Documents;
8. Any failure to act in such a manner as to protect the Project from loss, cost, expense, or liability;
9. Bodily or personal injury, emotional injury, sickness or disease, or death at any time to any persons including without limitation employees of Contractor;
10. Damage or injury to real property or personal property, equipment and materials (including, but without limitation, property under the care and custody of the Contractor or the County) sustained by any person or persons (including, but not limited to, companies, corporations, utility company or property owner, Contractor and its employees or agents, and members of the general public);
11. Any liability imposed by applicable law including, but not limited to criminal or civil fines or penalties;
12. Any dangerous, hazardous, unsafe or defective condition of, in or on the site, of any nature whatsoever, which may exist by reason of any act, omission, neglect, or any use or occupation of the site by Contractor, its officers, agents, employees, or Subcontractors;
13. Any operation conducted upon or any use or occupation of the site by Contractor, its officers, agents, employees, or Subcontractors under or pursuant to the provisions of the Contract or otherwise;
14. Any acts, errors, omission or negligence of Contractor, its officers, agents, employees, or Subcontractors;
15. Infringement of any patent rights, licenses, copyrights or intellectual property which may be brought against the Contractor or the County arising out of Contractor's Work, for which the Contractor is responsible; and
16. Any and all claims against the County seeking compensation for labor performed or materials used or furnished to be used in the Work or alleged to have been furnished on the Project, including all incidental or consequential damages resulting to the County from such claims.

#### **A.2 Effect on Indemnitees' Active Negligence**

Contractor's obligations to indemnify and hold the Indemnitees harmless exclude only such portion of any Indemnity Claim which is attributable to the active negligence or willful misconduct of the Indemnitee, provided such active negligence or willful misconduct is determined by agreement of the parties or by findings of a court of competent jurisdiction. In instances where an Indemnitee's active negligence accounts for only a percentage of the liability for the Indemnity Claim involved, the obligation of Contractor will be for that entire percentage of liability for the Indemnity Claim not attributable to the active negligence or willful misconduct of the Indemnitee(s). Such obligation shall not be construed to negate, abridge or otherwise reduce any other right or obligation of indemnity which would otherwise exist as to any party or person described in this Article 8 A. Subject to the limits set forth herein, the Contractor, at its own expense, shall satisfy any resulting judgment that may be rendered against any Indemnitee resulting from an Indemnity Claim. The Indemnitees shall be consulted with regard to any proposed settlement.

#### **A.3 Independent Defense Obligation**

The duty of the Contractor to indemnify and hold harmless the Indemnitees includes the separate and independent duty to defend the Indemnitees, which duty arises immediately upon receipt by Contractor of the tender of any Indemnity Claim from an Indemnitee. The Contractor's obligation to defend the Indemnitee(s) shall be at Contractor's sole expense, and not be excused because of the Contractor's inability to evaluate liability or because the Contractor evaluates liability and determines that the Contractor is not liable. This duty to defend shall apply whether or not an Indemnity Claim has merit or is meritless, or which involves claims or allegations that any or all of the Indemnitees were actively, passively, or concurrently negligent, or which otherwise asserts that the Indemnitees are responsible, in whole or in part, for any Indemnity Claim. The Contractor shall respond within thirty (30) calendar days to the tender of any Indemnity Claim for defense and/or indemnity by an

Indemnitee, unless the Indemnitee agrees in writing to an extension of this time. The defense provided to the Indemnitees by Contractor shall be by well qualified, adequately insured and experienced legal counsel acceptable to the County.

**A.4 Intent of Parties Regarding Scope of Indemnity**

It is the intent of the parties that the Contractor and its Subcontractors of all tiers shall provide the Indemnitees with the broadest defense and indemnity permitted by Applicable Law. In the event that any of the defense, indemnity or hold harmless provisions in the Contract Documents are found to be ambiguous, or in conflict with one another, it is the parties' intent that the broadest and most expansive interpretation in favor of providing defense and/or indemnity to the Indemnitees be given effect.

**A.5 WAIVER OF INDEMNITY RIGHT AGAINST INDEMNITEES**

With respect to third party claims against the Contractor, to the fullest extent permitted by law, the Contractor waives any and all rights to any type of express or implied indemnity against the Indemnitees.

**A.6 SUBCONTRACTOR REQUIREMENTS**

In addition to the requirements set forth hereinabove, Contractor shall ensure, by written subcontract agreement, that each of Contractor's Subcontractors of every tier shall protect, defend, indemnify and hold harmless the Indemnitees with respect to Indemnity Claims arising out of, in connection with, or in any way related to each such Subcontractors' Work on the Project in the same manner in which Contractor is required to protect, defend, indemnify and hold the Indemnitees harmless. In the event Contractor fails to obtain such defense and indemnity obligations from others as required herein, Contractor agrees to be fully responsible to the Indemnitees according to the terms of this Article 8 A.

**A.7 NO LIMITATION OR WAIVER OF RIGHTS**

Contractor's obligations under this Article 8 A are in addition to any other rights or remedies which the Indemnitees may have under the law or under the Contract Documents. Contractor's indemnification and defense obligations set forth in this Article 8 A are separate and independent from the insurance provisions set forth in the Contract Documents, and do not limit, in any way, the applicability, scope, or obligations set forth in such insurance provisions. The purchase of insurance by the Contractor with respect to the obligations required herein shall in no event be construed as fulfillment or discharge of such obligations. In any and all claims against the Indemnitees by any employee of the Contractor, any Subcontractor, any supplier of the Contractor or Subcontractors, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, the obligations under this Article 8 A shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any Subcontractor or any supplier of either of them, under workers' or workmen's compensation acts, disability benefit acts or other employee benefit acts. Failure of the County to monitor compliance with these requirements imposes no additional obligations on the County and will in no way act as a waiver of any rights hereunder.

**A.8 WITHHOLDING TO SECURE OBLIGATION**

In the event an Indemnity Claim arises prior to final payment to Contractor, the County may, in its sole discretion, reserve, retain or apply any monies due Contractor for the purpose of resolving such Indemnity Claims; provided, however, the County may release such funds if the Contractor provides the County with reasonable assurances of protection of the Indemnitees' interests. The County shall, in its sole discretion, determine whether such assurances are reasonable.

**A.9 SURVIVAL OF INDEMNITY OBLIGATIONS**

Contractor's obligations under this Article 8 A are binding on Contractor's and its Subcontractors' successors, heirs and assigns and shall survive the completion of the Work or termination of the Contractor's performance of the Work.

**B.01 RESPONSIBILITY TO OTHER ENTITIES**

You are responsible for any liability imposed by law and for injuries to or death of any person, including workers and the public, or damage to property. Indemnify and save harmless any county, city or district and its officers and employees connected with the work, within the limits of which county, city, or district the work is being performed, all in the same manner and to the same extent specified for the protection of the State.



## **ARTICLE 12 – FINAL PAYMENT**

It is mutually agreed between the parties hereto, that no certificate given or payments made under this contract, except the final payment, shall be evidence of the performance of this contract, either wholly or in part, against any claim of the Contractor. Final payment for the work performed under this contract shall not be made until the lapse of thirty-five (35) calendar days after the notice of completion of said work has been filed for record and no payment shall be construed to be an acceptance of any defective work or improper materials. The Contractor further agrees that acceptance by the Contractor of the final payment due under this contract, and the adjustment and payment of his/her bill rendered for any work done in accordance with any amendments of this Contract, shall be and shall operate as a release to the County of San Luis Obispo from any and all claims or liabilities on account of work performed under this Contract except claims or liabilities for which written notice of claim or protest has been filed with the Public Works Director. Besides guarantees required elsewhere, the Contractor shall and does hereby guarantee all workmanship and material for a period of one year from and after both the date of acceptance of the work and the recordation of the notice of completion by the County and shall repair or replace any or all work and material, together with any other portions of the work which may be displaced in so doing, that in the opinion of the County is or becomes defective during the period of said guarantee without expense whatsoever to the County.

## **ARTICLE 13 – CONTRACTOR’S REPRESENTATIONS**

The Contractor hereby declares that he/she has read the Contract Documents pertaining to the work to be accomplished hereunder, has carefully examined the plans and detail drawings of the work to be performed and fully understands the intent and meaning of the same.

It is further stipulated and agreed that the Contractor shall keep himself/herself fully informed of all laws, ordinances, and regulations which do or may affect the conduct of the work, the materials used therein or persons engaged or employed thereupon and all such orders of bodies and tribunals having any jurisdiction over the same. If it be found that the Special Provisions or Standard Specifications for the work conflict with any such law, ordinance or regulation the Contractor shall immediately report same to the Public Works Director in writing. The Contractor shall at all times observe and comply with and shall cause all his/her agents, employees, and independent contractors hired by the Contractor to observe and comply with all such existing and future laws, ordinances, regulations, or decrees.

## **ARTICLE 14 – APPRENTICES**

Attention is directed to the provisions in Sections 1777.5, 1777.6, and 1777.7 of the Labor Code concerning the employment of apprentices by the Contractor or any subcontractor.

The Contractor and any subcontractor shall comply with the requirements of Sections 1777.5, 1777.6, and 1777.7 of the Labor Code in the employment of apprentices.

To insure compliance and complete understanding of the law relating to apprentices, and specifically the required ratio thereunder, each contractor or subcontractor should, where some question exists, contact the Division of Apprenticeship Standards, 455 Golden Gate Avenue, San Francisco, California, or one of its branch offices prior to commencement of work on this contract. Responsibility for compliance with said Labor Code Sections lies with the prime contractor.

## **ARTICLE 15 – PAYROLL RECORDS**

Attention is directed to the provisions in Section 1776 of the Labor Code concerning Contractor and subcontractor payroll records.

The Contractor and any subcontractor shall comply with the requirements of Section 1776 of the Labor Code.

## **ARTICLE 16 – EQUAL EMPLOYMENT OPPORTUNITY**

During the performance of this contract, Contractor agrees to comply with all of the Equal Employment Opportunity provisions of Executive Order No. 11246 of September 24, 1965, as amended by Executive Order 11375 of October 13, 1967, and as supplemented in Department of Labor regulations (41 CFR Chapter 60), including the following:

1. The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoffs or termination, rates of pay or other forms of compensation, and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Department of Public Works setting forth the provisions of this nondiscrimination clause.
2. The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.
3. The Contractor will send to each labor union or representative of workers with which he/she has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the Department of Public Works, advising the said labor union or worker's representative of the Contractor's commitments under this Article 14 and shall post copies of the Notice in conspicuous places available to employees and applicants for employment.
4. The Contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations (41 CFR, Part 60) and relevant orders of the Secretary of Labor.
5. The Contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the County of San Luis Obispo and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.
6. In the event of the Contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations or orders, this contract may be cancelled, terminated or suspended in whole or in part and the Contractor may be declared ineligible for further government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation or order of the Secretary of Labor, or as otherwise provided by law.
7. The Contractor will include the provisions of this Article in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as the Public Works Director or the Secretary of Labor may direct as a means of enforcing such provisions including sanctions for noncompliance: provided, however, that in the event a contractor becomes involved in, or is threatened with litigation with a subcontractor or vendor as a result of such direction by the Secretary of Labor, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

## **ARTICLE 17 - SAFETY**

All work conducted by the Contractor and/or subcontractors in the execution of this contract shall be in accordance with current CAL OSHA requirements. Full compensation for compliance with the provisions of this Article shall be considered as included in the other items of work and no additional compensation will be allowed therefor.

## **ARTICLE 18 – BONDS**

Contractor agrees that the Payment Bond, Performance Bond and Maintenance Bond attached to this Agreement are for reference purposes only, and shall not be considered a part of this Agreement or any other Contract Document. Contractor further agrees that said bonds are separate obligations of the Contractor and its surety, and that any attorney's fee provision contained in any payment bond or performance bond shall not apply to any legal action between Contractor and County to enforce any provision of the Contract Documents.

## **ARTICLE 19 – ATTORNEYS FEES**

No provisions of the Contract Documents provide either the Contractor or the County the right to be awarded any attorney's fees and/or costs under Civil Code section 1717 in any legal action brought by either party to enforce any provision of the Contract Documents against the other party. The parties agree that any references to attorney's fees in language describing indemnification obligations do not constitute a contractual provision that would provide either the Contractor or the County the right to be awarded any attorney's fees and/or costs under Civil Code section 1717 in any legal action brought by either party to enforce any provision of the Contract Documents against the other party. Any other language in the Contract Documents providing for a recovery of attorney's fees shall be strictly construed as not including the recovery of any attorney's fees incurred by either Contractor or County in any legal action brought by either party to enforce any provision of the Contract Documents against the other party.

The parties agree that the Contract Documents contain no provisions that would allow either the Contractor or the County to be awarded attorney's fees and/or costs under Civil Code section 1717. Nothing in this Article affects any right by Contractor or County to recover attorney's fees or costs by operation of any law other than Civil Code section 1717.

In the event of any conflict between language in this Article and any other language in the Contract Documents, the language in this Article shall prevail.

## **ARTICLE 20 – FEDERAL AND STATE LAWS & REGULATIONS**

The project shall be constructed under the complete jurisdiction of all applicable laws of the United States and State of California governing construction including, but not limited to, the following:

1. The California Health and Safety Code and all applicable administrative code regulations pursuant thereto.
2. All laws governing the employment of labor, qualifications for employment of aliens, payment of employees, convict-made materials, domestic and foreign materials and accident prevention.
3. Title 19 of the California Code of Regulations entitled "Public Safety", Division 1, State Fire Marshal, Chapter 1, "General Fire and Panic Safety Standards".
4. All laws and regulations governing construction on behalf of public entities, including but not limited to the California Public Contract Code.
5. General Industrial Safety Orders: Each and every Contractor shall observe and conform to the provisions of Title 8, California Code of Regulations bearing upon safe and proper use, construction disposal, etc., of materials, machinery, and building appurtenances as therein set forth.
6. Code Rules and Safety Orders: All Work and materials shall be in full accordance with the latest substantive rules and regulations of the State Fire Marshal, the safety orders of the Division of Industrial Safety, Department of Industrial Relations; the Uniform Building Code, National Electric Code, Uniform Mechanical Code, Uniform Plumbing Code, and other applicable State Laws or Regulations. Nothing in these plans and specifications is to be construed to permit Work not conforming to these codes.

Note: The procedural aspects of the Uniform Codes referred to above may not apply to the Work of this Contract, but the substantive provisions do apply.

All of the above laws and regulations though referred to herein, are as much a part of the Contract as if they were incorporated in their entirety in these General Conditions.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement the day and year first above written.

COUNTY OF SAN LUIS OBISPO

CONTRACTOR

By: \_\_\_\_\_  
Chairperson of the Board of Supervisors

By: \_\_\_\_\_

Date: \_\_\_\_\_

Date \_\_\_\_\_

ATTEST:  
CLERK OF THE BOARD OF  
SUPERVISORS

Printed Name and Title  
(If Contractor is a corporation, a partnership,  
or a joint venture, attach evidence of  
authority to sign)

By: \_\_\_\_\_  
Deputy Clerk

By: \_\_\_\_\_

Date: \_\_\_\_\_

APPROVAL RECOMMENDED  
WADE HORTON

\_\_\_\_\_  
(Printed Name and Title

By:   
Director of Public Works

Date: \_\_\_\_\_

Date: 12 MAY 2016

Address for giving notices

APPROVED AS TO FORM AND  
LEGAL EFFECT:

RITA L. NEAL  
County Counsel

By:  \_\_\_\_\_

Date: 5/11/16

\_\_\_\_\_  
(Name, Official Title)

\_\_\_\_\_  
(Telephone)

\_\_\_\_\_  
Contractor's License Number  
Classification(s)

**CORPORATE CERTIFICATE**

I, \_\_\_\_\_, certify that I am the Secretary of the Corporation  
named as Contractor in the foregoing Contract, that, \_\_\_\_\_ who signed said Contract  
on behalf of the Contractor, was then \_\_\_\_\_  
of said Corporation, that said Contract was duly signed for and in behalf of said Corporation by authority  
of its governing body and is within the scope of its corporate powers.

***(Corporate Seal)***

\_\_\_\_\_  
(Secretary)

**SECTION 00 60 00 BOND  
REQUIREMENTS AND FORMS,  
AND GUARANTEES**

**1. REQUIRED BONDS:**

The following bonds are required to perform this Work. The County may require Contractor to obtain additional Performance and Payment Bonds or increases of bonding capacity in the event that there are significant additive Change Orders applied to the Work.

**1.1. PERFORMANCE BOND:**

Pursuant to Section 20129 of the State Public Contract Code, the successful Bidder shall, within ten (10) days of award of a Contract simultaneously with the execution and delivery of the Agreement, execute a faithful Performance Bond in an amount equal to one hundred percent (100%) of the Contract price, secured from a surety company **ADMITTED** in the State of California and satisfactory to the County. Said Bond shall be issued on the Performance Bond form contained in these Contract Documents.

**1.2. PAYMENT BOND:**

Pursuant to Section 9550 through 9566, inclusive, of the Civil Code of the State of California, the successful bidder shall, within ten (10) days of award of a Contract exceeding \$25,000, simultaneously with the execution and delivery of the Agreement, execute a Payment Bond in the amount equal to 100% of the Contract price, secured from a surety company **ADMITTED** in the State of California and satisfactory to the County. Said Bond shall be issued on the Payment Bond form contained in these Contract Documents.

**1.3. MAINTENANCE BOND:**

Contractor shall furnish, in addition to the Bonds elsewhere required by the Contract Documents, a Maintenance Bond in the amount equal to five percent (5%) of the final Contract price, secured from a surety company **ADMITTED** in the State of California and satisfactory to the County. Said bond shall protect the County against the result of faulty material or workmanship and shall remain in effect for a period of one year after the date the County's Notice of Completion and Acceptance is filed with the Clerk of the County of San Luis Obispo.

Recordation of the Notice of Completion and Acceptance shall not be deemed an acceptance of latent defects nor shall it constitute a waiver of any of the provisions of this Contract.

**1.4. PREMIUMS:** The premiums for all bonds required by the Contract Documents to be provided by Contractor are included in the Contractor's Adjustment Factors and shall be paid by Contractor.

**1.5. OBLIGEE:** All bonds required by the Contract Documents to be provided by Contractor shall name the County as obligee. All bonds purchased by Subcontractors shall name Contractor and County as dual obligees.

**1.6. NO EXONERATION:** Changes, Field Orders, Modifications, and adjustments to the Maximum Contract Value or Contract Time shall in no way release or exonerate the Contractor or its Surety(ies) from their obligations and notice thereof shall be waived by the Surety(ies). The foregoing provision shall be included in the terms of all bonds required by the Contract Documents to be provided by Contractor.

**1.7. COMMUNICATIONS:** Owner and Construction Manager, if used, shall have the right to communicate with Contractor's Surety(ies) with respect to matters that are related to Contractor's performance of its obligations under the Contract Documents. Contractor shall be provided with a copy of all such written communications. Such communications shall not create or be interpreted as creating any contractual relationship between the County or Construction Manager and Surety(ies).

**1.8. NO LIMITATION:** The foregoing requirements for providing Performance, Payment and Maintenance Bonds shall be without limitation to any other obligations Contractor may have under law to provide bonding for the benefit of and to assure payment to Subcontractors performing Work for the Project.

**PERFORMANCE BOND**

WHEREAS, the Board of Supervisors of the County of San Luis Obispo, State of California, has awarded to

\_\_\_\_\_ (hereinafter designated as "Principal"), a Contract for the:

**MERIDIAN FIRE STATION APPARATUS BAY EXPANSION. #320062**

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

NOW, THEREFORE, we, the Principal and \_\_\_\_\_ as Surety, are held and firmly bound unto the Owner, the County of San Luis Obispo, (hereinafter called "County"), in the sum of \_\_\_\_\_ Dollars (\$ \_\_\_\_\_), lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

The condition of this obligation is such that if the above bonded Principal, his or her heirs, executors, administrators, successors, or assigns, shall in all things stand to and abide by, and well and truly keep and perform all the undertakings, terms, covenants, conditions and agreements in the said Contract and any alteration thereof made as therein provided, including but not limited to provisions regarding contract duration and liquidated damages, all within the time and in the manner therein designated and in all respects according to their true intent and meaning, and shall indemnify and save harmless the County, its officers, agents, and employees, as therein stipulated, then this obligation shall become null and void; otherwise it shall be and remain in full force, virtue and effect.

Whenever Contractor/Principal shall be, and is declared by the County to be, in default under the contract, the County, having performed the County's obligations thereunder, the Surety shall promptly remedy the default, or shall promptly:

1. Complete the contract in accordance with its terms and conditions; or
2. Obtain a bid or bids for completing the contract in accordance with its terms and conditions, and upon determination by Surety of the lowest responsive and responsible bidder, arrange for a contract between such bidder and the County, and make available as work progresses sufficient funds to pay the cost of completion less the balance of the contract price, but not exceeding, including other costs and damages for which Surety may be liable hereunder, the amount set forth above the term "balance of the contract price" as used in this paragraph shall mean the total amount payable to Contractor/Principal by the County under the contract and any modifications thereto, less the amount previously properly paid by the County to the Contractor/Principal.

Surety expressly agrees that the County may reject any Contractor or subcontractor that may be proposed by Surety in fulfillment of its obligations in the event of default by the Principal. Surety shall not utilize Contractor/Principal in completing the contract nor shall Surety accept a bid from Contractor/Principal for completion of the Work if the County, when declaring the Contractor/Principal in default, notifies Surety of the County's objection to Contractor's/Principal's further participation in the completion of the Work.

And the said Surety for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract or to the Work to be performed thereunder or the specifications accompanying the same, shall in any manner affect its obligations on this Bond, and it does hereby waive notice of any such change, extension of time, alteration or additions, to the terms of the Contract or to the Work or specifications. In the event suit is brought upon this bond by the County and judgment is recovered, Surety shall pay all costs incurred by the County in such suit, including a reasonable attorney's fee to be fixed by the Court.

Death of the Principal shall not relieve Surety of its obligations hereunder.

IN WITNESS WHEREOF, this document has been duly executed by Principal and Surety above named on the \_\_\_\_ day of \_\_\_\_\_, 201\_\_.

**CONTRACTOR AS PRINCIPAL:** \_\_\_\_\_  
*Signature*

\_\_\_\_\_  
*Please Print Name*

\_\_\_\_\_  
*Title*

\_\_\_\_\_  
*Full Name of Business, including dba*

**SURETY:**

*Note: Signature of those executing for Surety must be properly acknowledged and notarized.*

\_\_\_\_\_  
*Signature*

\_\_\_\_\_  
*Please Print Name*

\_\_\_\_\_  
*Title*

\_\_\_\_\_  
*Type of Business*

\_\_\_\_\_  
*Full Name of Business, including dba*

**(SEAL)**

**NOTARY:**

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

On \_\_\_\_\_ before me, the undersigned notary public, personally appeared \_\_\_\_\_ personally known to me (or proved to me on the basis of satisfactory evidence) to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies) and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

WITNESS my hand and official seal.

**(NOTARY SEAL)**

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



**PAYMENT BOND**

WHEREAS, the Board of Supervisors of the County of San Luis Obispo, State of California, and \_\_\_\_\_ (hereinafter designated as "Principal"), have entered into an Agreement for the furnishing of all materials, labor, services and transportation, necessary, convenient and proper to the project entitled:

**MERIDIAN FIRE STATION APPARATUS BAY EXPANSION. #320062**

which said Agreement, effective upon execution by all parties, and all of the contract Documents attached to or forming a part of said Agreement, are hereby referred to and made a part hereof, and

WHEREAS, pursuant to law, the Principal is required before entering upon the performance of Work, to file a good and sufficient bond with the body by whom the Contract is awarded, to secure claims to which reference is made in Chapter 5 of the Civil Code of California.

NOW, THEREFORE, said Principal and the undersigned \_\_\_\_\_, as corporate Surety, are held and firmly bound unto the Owner, the County of San Luis Obispo, (hereinafter called "County"), and unto all laborers, material men and other persons referred to in said statutes in the sum of \_\_\_\_\_ Dollars (\$ \_\_\_\_\_), lawful money of the United States, for the payment of which sum well and truly 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 if the above bonded Principal, his or her subcontractors, or the heirs, executors, administrators, successors, or assigns of any all or either of them, shall fail to pay any of the persons named in Civil Code Section 9100, or amounts due under the Unemployment Insurance Code with respect to Work or labor performed by any such claimant, or any amounts required to be deducted, withheld, and paid over to the Franchise Tax Board from the wages of employees of the Principal and their subcontractors pursuant to Section 18806 of the Revenue and Taxation Code, with respect to such Work and labor, that the surety herein will pay for the same in an amount not exceeding the sum specified in this bond, otherwise the above obligation shall be void. In case suit is brought upon this bond, the said surety will pay a reasonable attorney's fee to be fixed by the court.

This bond shall inure to the benefit of any of the persons named in Civil Code Section 9100 as to give a right of action to such persons or their assigns in any suit brought upon this bond.

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

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

Death of the Principal shall not relieve Surety of its obligations hereunder.

IN WITNESS WHEREOF, this document has been duly executed by Principal and Surety above named on the \_\_\_\_\_ day of \_\_\_\_\_, 201 .

**CONTRACTOR AS PRINCIPAL:** \_\_\_\_\_

*Signature*

\_\_\_\_\_  
*Please Print Name*

\_\_\_\_\_  
*Title*

\_\_\_\_\_  
*Full Name of Business, including dba*

**SURETY:**

*Note: Signatures of those executing for Surety must be properly acknowledged and notarized.*

\_\_\_\_\_  
*Signature*

\_\_\_\_\_  
*Please Print Name*

\_\_\_\_\_  
*Title*

\_\_\_\_\_  
*Type of Business*

\_\_\_\_\_  
*Full Name of Business, including dba*

**(SEAL)**

**NOTARY:**

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

On \_\_\_\_\_ before me, the undersigned notary public, personally appeared \_\_\_\_\_ personally known to me (or proved to me on the basis of satisfactory evidence) to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies) and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

WITNESS my hand and official seal.

**(NOTARY SEAL)**

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

**MAINTENANCE BOND**

WHEREAS, the Board of Supervisors of the County of San Luis Obispo, State of California, and \_\_\_\_\_ (hereinafter designated as "Principal"), have entered into an Agreement for the furnishing of all materials, labor, services and transportation, necessary, convenient and proper to the project entitled:

**MERIDIAN FIRE STATION APPARATUS BAY EXPANSION. #320062**

which said Agreement, effective upon execution by all parties, and all of the contract Documents attached to or forming a part of said Agreement, are hereby referred to and made a part hereof, and

WHEREAS, pursuant to law, the Principal is required after completion of the Work, and before the filing and recordation of a Notice of Completion for the Work, to file a good and sufficient bond with the body by whom the Contract is awarded, to secure claims for Maintenance equal to five percent (5%) of the total amount of the contract which shall hold good for a period of one (1) year from the date the county's Notice of Completion and Acceptance is filed with the County Recorder, to protect the County against the result of faulty material or workmanship during that time.

NOW, THEREFORE, said Principal and the undersigned \_\_\_\_\_, as corporate Surety, are held and firmly bound unto the Owner, the County of San Luis Obispo, (hereinafter called "County"), for repair or replacement of any and all of our Work together with any other adjacent Work which may be displaced by so doing, that proves to be defective in its workmanship or material for the period of one (1) year (except when otherwise required in the Contract to be for a longer period) from the date the County's Notice of Completion and Acceptance is filed with the County Recorder, ordinary wear and tear and unusual abuse or neglect excepted. Said date of acceptance shall be as defined in **Article 8.2, C. FINAL COMPLETION AND ACCEPTANCE OF THE WORK of Division 00 70 00 - GENERAL CONDITIONS** of these Contract Documents, in the sum of:

\_\_\_\_\_ Dollars (\$ \_\_\_\_\_), lawful money of the United States, for the payment of which sum well and truly 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 if the above bonded Principal, his or her subcontractors, or the heirs, executors, administrators, successors, or assigns of any all or either of them, shall fail to execute within a reasonable amount of time, or fail to respond within seven (7) days with a written schedule acceptable to the County for same, repair or replacement of any and all Work, together with any other adjacent Work which may be displaced by so doing, that proves to be defective in its workmanship or material for the period of one (1) year (except when otherwise required in the Contract to be for a longer period) from the date the County's Notice of Completion and Acceptance is filed with the County Recorder, ordinary wear and tear and unusual abuse or neglect excepted with respect to such Work and labor, the Surety herein shall pay for the same, in an amount not exceeding the sum specified in this Bond, otherwise the above obligation shall be void. In case suit is brought upon this bond, the said Surety will pay a reasonable attorney's fee to be fixed by the court.

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

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

Death of the Principal shall not relieve Surety of its obligations hereunder. IN WITNESS WHEREOF, this document has been duly executed by Principal and Surety above named on the \_ \_\_\_\_ day of \_\_\_\_\_ 20 \_\_ .

**CONTRACTOR AS PRINCIPAL:** \_\_\_\_\_

*Signature*

\_\_\_\_\_  
*Please Print Name*

\_\_\_\_\_  
*Title*

\_\_\_\_\_  
*Full Name of Business, including dba*

**SURETY:**

*Note: Signatures of those executing for Surety must be properly acknowledged and notarized.*

\_\_\_\_\_  
*Signature*

\_\_\_\_\_  
*Please Print Name*

\_\_\_\_\_  
*Title*

\_\_\_\_\_  
*Type of Business*

\_\_\_\_\_  
*Full Name of Business, including dba*

**(SEAL)**

**NOTARY:**

State of California, County of \_\_\_\_\_

On \_\_\_\_\_ before me, the undersigned notary public,  
personally appeared \_\_\_\_\_ personally known to me (or proved to me on the basis  
of satisfactory evidence) to be the person(s) whose name(s) is/are subscribed to the within instrument and  
acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies) and that by  
his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted,  
executed the instrument.

WITNESS my hand and official seal.

**(NOTARY SEAL)**

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

## **2. SUBSTITUTIONS OF SECURITIES FOR RETENTION AMOUNTS**

Substitution of certain securities for retention amounts are allowed under the State of California Public Contract Code at the option of the Contractor. The Contractor is required to formally request the substitution and to conform to the specific provisions of Section 22300.

- 2.1. Acceptable Securities:** Whenever retention of monies is authorized to insure performance of Contract conditions, the Contractor shall be permitted to substitute securities for the amount withheld in accordance with Public Contract Code section 22300. Securities eligible for deposit under this procedure shall consist of bank or savings and loan certificates of deposit, interest bearing demand deposit accounts, standby letters of credit, securities listed in Government Code Section 16430, or any other security mutually agreed to by the Contractor and the public agency. The Contractor shall be the beneficial owner of any securities substituted for monies withheld and shall receive any interest thereon.
- 2.2. Value of Securities:** The value of securities being deposited shall be based upon market value as of the date of deposit and not necessarily on face value of the securities. Market value shall be determined by the County Public Works Director. If deposit is made into an escrow, escrow instructions must clearly state, in addition to the items mentioned in the Public Contract Code, that the escrow agent must convert the securities to cash in whole or in part upon a unilateral written demand for such conversion by the County Public Works Director or the County Administrative Officer and further, that any amount demanded by the County shall be paid to the County upon unilateral written demand for payment. Escrow instructions used must be substantially similar to the form set forth in Public Contract Code Section 22300. The County will only make such demand for conversion in payment when the conditions of the Contract would have warranted an expenditure by the County of a cash retention expenditure without any securities substitution. All escrow expenses shall be paid by Contractor.
- 2.3. Release of Securities:** Securities deposited hereunder shall be released back to Contractor when the County Public Works Director or the County Administrative Officer has certified in writing to the escrow holder that the project has been satisfactorily completed. The recording of Notice of Completion does not constitute such certification. All retention times called for in these Contract Documents must have passed, including the time after recording of Notice of Completion, before the County will certify to satisfactory completion of the Contract.

## **3. GUARANTEES**

- 3.1. GUARANTEE FOR TOTAL WORK:** Prior to acceptance of the Work by the County, the Contractor shall submit a guarantee in the form of a written warranty on Contractor's own letterhead as follows, and signed under penalty of perjury:

- 3.2. WARRANTY FOR:**

**MERIDIAN FIRE STATION APPARATUS BAY EXPANSION. #320062:**

This Work has been constructed in accordance with the Contract Documents, and the Work as installed will fulfill the requirements of this warranty, and any other warranty therefor, included in the Contract Documents. We agree to repair or replace any and all of our Work together with any other adjacent Work which may be displaced by so doing, that prove to be defective in its workmanship or material for the period of one (1) year (except when otherwise required in this Contract to be for a longer period) from date of acceptance of the above mentioned structure by the County, ordinary wear and tear and unusual abuse or neglect excepted. Said date of acceptance shall be the date of acceptance and filing of the Notice of Completion by the Board of Supervisors.

**In the event of our failure to comply with the above-mentioned conditions within seven (7) days after being notified in writing we, collectively or separately, do hereby authorize the County to proceed to have said defects repaired and made good at our expense and we will honor and pay the cost and charges therefor on demand.**

**Signed:** \_\_\_\_\_  
Contractor License Number

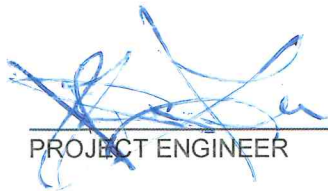
- 3.3. ADDITIONAL GUARANTEES:** Additional Guarantees shall be provided as required in the technical sections of the Contract Documents.

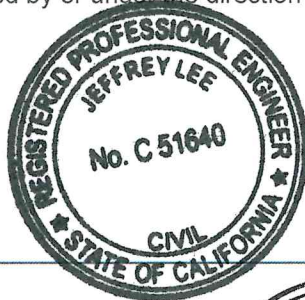
**END OF SECTION**

SAN LUIS OBISPO COUNTY  
MERIDIAN FIRE STATION APPARATUS BAY EXPANSION  
PROJECT NO. 320062

Division 00 has been prepared by or under the direction of the following registered engineer(s):

PREPARED BY:

  
PROJECT ENGINEER



5/11/2016  
DATE

  
DESIGN ENGINEER



5/11/16  
DATE

RECOMMENDED FOR APPROVAL AND ADVERTISING BY:

  
DEPUTY PUBLIC WORKS DIRECTOR

5/11/16  
DATE

APPROVED BY:

  
PUBLIC WORKS DIRECTOR

12 MAY 2016  
DATE

All other Divisions of the Contract Documents have been prepared by the professionals listed on Page 2 of Section 00 61 00.

SIGNATURE PAGE

Architect:



Civil Engineer:



Mechanical Engineer



Electrical Engineer:



EXPIRES: 06/30/17



**SECTION 00 70 00**  
**GENERAL CONDITIONS**

**1. GENERAL PROVISIONS**

**1.1. Basic Definitions**

**Architect:** Any person, firm, or corporation hired by the County to represent the County as the Architect for the Work.

**As Built Drawings:** The set of the Drawings marked by the Contractor during the performance of the Work to indicate completely and accurately the actual as-built condition of the Work. The As Built Drawings shall be sufficient for a capable and qualified drafter to modify the Drawings to reflect and indicate the Work actually in place at Final Completion of the Work.

**Change Order (CO):** A document issued by the County, directing the Contractor to change the Work in a manner different than described in the original Contract Documents and in agreement on adjustment in the Contract Sum and/or Contract Time. The change must have an effect on the price and/or time of the contract in order to constitute a Change Order. If the price or time is not affected, then the change is considered as a Field Order rather than a Change Order.

**Claims Dispute Resolution Process:** The process for resolution of Claims is set forth in Article 11 of these General Conditions.

**Construction Change Directive (CCD):** A document issued by the County, directing the Contractor to change the Work in a manner different than described in the original Contract Documents, prior to agreement on adjustment in the Contract Sum and/or Contract Time. The County may issue a Construction Change Directive as a mechanism by which the County exercises a unilateral right to order changes in the Work without invalidating the Contract. It is used when a Change Order cannot be obtained due to limited time or disagreement between the parties with regard to associated changes in the Contract Sum or Contract Time.

**Contract Documents (CD's):** The contract documents consist of all component parts of the contract as specified in the Agreement.

**Contract Sum:** The Contract sum shall be the actual bid amount including additive or deductive Bid Alternates as selected for Award of Bid by the Board of Supervisors and as subsequently adjusted by Change Orders.

**Contractor:** The person, firm, partnership, or corporation to whom this Contract is awarded by the County and who is subject to the terms hereof. The Contractor is referred to throughout the Contract Documents as if singular in number and masculine in gender. The term Contractor means the Contractor or its authorized representative.

**Correction Notice:** Written notice from the County to the Contractor requiring correction or repairs to the Work to bring the Work into conformity with any laws, codes, ordinances, safety orders or practices determined to be deficient at the work site and surrounding areas affected by the Work, or to correct deficiencies in the Work in regard to compliance with the Contract Documents. Correction Notices shall be promptly executed and are not grounds for adjustment to the time or cost of Contract.

**County:** The County of San Luis Obispo as Owner. The County acts under this Contract either by action of its Board of Supervisors or by action of its Public Works Director or his designee when authorized by the Board of Supervisors, or by action of such other County officer as the Board of Supervisors may authorize.

**County Holiday:** Any day designated by action of the Board of Supervisors as a County Holiday.

**County's Representative:** Any person, firm, agent or corporation employed by or hired by the County to act as Project Manager, Construction Manager, Project Administrator and/or Project Coordinator for the Work.

**Days:** Calendar days, unless otherwise indicated.

**Drawings:** Graphic representation of intent of Work.

**Engineer:** Any person, firm, or corporation hired by the County to represent the County as the Engineer for the Work.

**Field Order:** A document issued by the County, directing the Contractor to change the Work in a manner different than described in the original Contract Documents, but with no effect on the contract price or contract time.

**Final Completion:** The point at which all of the Work, including "punch list" items, is complete in accordance with the Contract Documents, the County has formally accepted the Work, and the transfer of deliverables, including but not limited to warranties, manuals, Record Documents, as-builts and releases, has occurred. The Architect, Construction Manager and the County upon request of the Contractor shall determine final Completion. The good faith and reasonable determination of Final Completion by the County, Construction Manager and the Architect shall be controlling and final.

**Final Payment:** Compensation equivalent to the balance owed to the Contractor by the County for completion of the Work of the Contract, less 5% retention.

**Governing Body of the County:** The Board of Supervisors of the County of San Luis Obispo.

**Inspector:** Any person, firm, or corporation employed by or hired by the County to perform Resident Inspection or part time inspection during construction of the Work.

**Landscape Architect:** Any person, firm, or corporation hired by the County to represent the County as the Landscape Architect for the Work.

**Project:** The entire Work of improvement proposed by the County to be constructed in whole or in part pursuant to this Contract.

**Record Documents:** The Drawings, specification, addenda, change orders, change directives, approved shop drawings and other approved submittals, showing the base work and changes to the Work.

**Retention:** The amount of money (5%) withheld from payment to the Contractor by the County as a means of security and/or assurance of performance.

**Schedule of Values:** A document submitted by the Contractor and approved by the County to establish the values allocated to various portions of the Work and used as a basis for reviewing the Contractor's Applications for Payment.

**Specifications:** The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, construction systems, standards, criteria and workmanship for the Work and related services.

**Subcontractor:** A person, firm, partnership, or corporation having a direct Contract with Contractor for the performing of Work or labor or the rendering of service to Contractor for the Work.

**Substantial Completion:** "Substantial Completion" means the state in the progress of the Work, as determined by the Architect, when all of the Work is complete and in accordance with the Contract Documents except only for correction of minor items which do not impair the County's ability to occupy and fully utilize the Work for its intended purposes.

**Surety:** Any person, firm, partnership, or corporation that executes as Surety for Contractor's Performance Bond and/or the Contractor's Payment Bond and/or the Bidder's Bond and/or Maintenance Bond.

**Unusual Action of the Elements:** The term "unusual action of the elements" is limited to extraordinary adverse weather conditions or conditions immediately resulting therefrom that cause a cessation in the progress of the Work that will delay the time of completion of the Contract. Reference 7.3.C.

**Work:** The "Work" is the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment or services provided or to be provided by the Contractor to fulfill the Contractor's obligations under the Contract Documents. The Work may constitute the whole or a part of the Project.

**Work Hours:** Normal working hours for the project shall be Monday thru Friday 8:00am to 5:00pm local time, less specified holidays and County training days. In the event the Contractor performs work outside of the normal working hours requiring inspection and/or testing services, the Contractor will be responsible for the hourly rate of the inspector, inspection and/or testing services required.

**1.2. Execution, Correlation and Intent:**

The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all. Work not covered in the Contract Documents will not be required unless it is consistent therewith and is reasonably inferred therefrom as being necessary to produce the intended results. Words and abbreviations that have well-known technical or trade meanings are used in the Contract Documents in accordance with such recognized meanings.

**1.3. Existing Conditions:**

Existing conditions are indicated on attached drawings as accurately as possible and in some cases are approximate. All Work shall be done as closely to drawings as actual conditions will allow. Contractor shall be responsible for verifying all conditions, sizes, and dimensions of new construction or existing conditions.

**1.4. Discovery of Hazardous Waste or Other Unusual Conditions:**

- a. **Contractor Notification to the County:** The contractor shall promptly, and before the following conditions are disturbed, notify the County through the Project Coordinator, in writing of any:
  1. Material that the Contractor believes may be material that is hazardous waste, as defined in Section 25117 of the Health and Safety Code, that is required to be removed to a Class I, Class II, or Class III disposal site in accordance with provisions of existing law.
  2. Subsurface or latent physical conditions at the site differing from those indicated.
  3. Unknown physical conditions at the site of any unusual nature, different materially from those ordinarily encountered and generally recognized as inherent in Work of the character provided for in the Contract.
- b. **County Investigation:** The County shall promptly investigate the conditions, and if it finds that the conditions do materially so differ, or do involve hazardous waste, and cause a decrease or increase in the Contractor's cost of, or the time required for, performance of any part of the Work shall issue a Change Order under the procedures described in the Contract Documents. Contractor shall be solely and exclusively responsible for the disposal of any Hazardous Materials on or about the Site.

The Contractor's obligations hereunder shall include without limitation, the transportation and disposal of any Hazardous Materials in strict conformity with the Laws.

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

## 2. **THE COUNTY**

- 2.1. **Ownership and Use of Documents:** All Drawings, Specifications and copies furnished are and shall remain property of the County. They are to be used with respect to this project and are not to be used on any other project. With the exception of one Contract set for each party to the Contract, such documents are to be returned or suitably accounted for to the County on request at completion of the Work. Submission or distribution to meet official regulatory requirements or for other purposes in connection with the Project is not to be construed as publication in derogation of the County's common law copyright of other reserved rights.
- 2.2. **Interpretation:** If the Contractor observes any errors, discrepancies or omissions in the Contract Documents, he/she shall promptly notify the County requesting clarification. If the Contractor proceeds with Work affected by such errors, discrepancies, or omissions, without having received such clarification, he/she so does at its own risk.
- 2.3. **Information and Services Required of the County:** Information or services under the County's control shall be furnished with reasonable promptness to avoid delay in the orderly progress of the Work.
- 2.4. **County's Right to Stop Work:** If the Contractor fails to correct defective Work or persistently fails to carry out the Work in accordance with the Contract Documents the County may order the Contractor to stop the Work, or any portion thereof until the cause for such order has been eliminated. The Contractor shall bear all costs of such Work stoppage unless it is determined by the County that no fault existed in the Contractor's Work. Any Work stoppage for the correction of defective Work or removal and replacement of unacceptable materials and equipment will not be considered as the basis for any time extension.
- 2.5. **Occupancy of Work by the County**
- a. **Use of Completed Work:** Whenever, in the opinion of the County, the Work, or any part thereof, is in a condition suitable for use, and the best interest of the County required such use, the County may take possession of, connect to, open for public use, or use the Work or such part thereof.

The use by the County of the Work or part thereof as contemplated in this article shall in no case be construed as constituting acceptance of the Work or any part thereof. Such use shall neither relieve the Contractor of any of their responsibilities under this Contract, nor act as a waiver by the County of any of the terms and conditions hereof. A Notice of Completion will not be filed with the County Clerk until all phases of the Work are complete and accepted by the County.

- b. **Repairs or Renewals in the Work:** Prior to the date of acceptance of Work by the County, all necessary repairs or renewals in the Work or part thereof so used not due to ordinary wear and tear, but due to defective material or workmanship or to the operation of the Contractor, shall be made at the expense of the Contractor.

- 2.6. County's Right to Carry Out the Work:** If the County determines that the Contractor, without just cause, fails or refuses, for any reason and at any time, to provide sufficient materials, labor, equipment, tools and services, in the opinion of the County to complete the Work in accordance with the approved project schedule or within the time previously approved by the County for extension thereto, then after formal notice to the Contractor, the County shall have right to complete the Work or have the Work completed by such means and in such manner, by Contract or otherwise as permitted by law, as the County may deem necessary and deduct the actual costs, including additional administrative cost, from the Contract by Change Order.

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within 48 hours after written notice from the County to commence and continue correction of such default or neglect with diligence and promptness, the County may after written notice and without prejudice to any other remedy the County may have, make good such deficiencies, including compensation for additional services for the Architect, Engineer, Construction Manager, Inspector, Staff, and for testing made necessary by such default, neglect or failure.

### **3. CONTRACTOR**

- 3.1. Examination of Proposed Project Location and Contract Documents:** Contractor agrees that prior to bidding they carefully examined the location of the proposed project, that they reviewed the Contract Documents, and that they became fully aware of the Work to be done. Contractors attending the non-mandatory pre-bid walk will be required to sign a site visit certification. Contractor shall immediately report to the County, any error, inconsistency or omission they may or reasonably should discover. If the Contractor performs any Work knowing, or with reasonable diligence should have known that, it involves an error, inconsistency or omission in the Contract Documents without prior notice to the County of the same, the Contractor shall assume full responsibility for such performance and shall bear all attributable costs for correction of the same.

- 3.2. Supervision and Construction Procedures:** Unless personally present on the premises where the Work is to be done, Contractor shall designate and keep a Superintendent on the Work at all times during its progress. The Superintendent shall not be changed except with the consent of the County, acting through the Public Works Director unless the Superintendent proves to be unsatisfactory to the Contractor and ceases to be in its employ. The Superintendent shall represent the Contractor in their absence and all directions given to them shall be as binding as if given to the Contractor. Important decisions shall be confirmed in writing to the Contractor. The Contractor shall dismiss the superintendent or any of his/her assistants if they are deemed, in the sole reasonable judgment of the County, to be unfit, insubordinate, disorderly, unsatisfactory, incompetent or incapable of performing the functions assigned to them. If the Superintendent proves to be unsatisfactory to the County, they shall be replaced within ten (10) days after written notice from the County to the Contractor. In such event, the County shall have the right to approve of the replacement superintendent or assistant.

The Contractor shall supervise and direct the Work, using the best skill and attention. They shall be solely responsible for all construction, methods, techniques, sequences and procedures and for coordinating all portions of Work under the Contract.

- 3.3. Discipline and Order:** Contractor shall at all times enforce strict discipline and order among its employees, subcontractors or vendors. Contractor shall not allow smoking, drinking of alcoholic beverages, use of illegal substances or playing of music on County property. Proper attire shall be maintained, which includes the wearing of shirts and shoes at all times and safety gear as required. Clothing shall be void of political slogans or otherwise inappropriate or objectionable decoration, as determined by the County. Discrimination or sexual harassment of any degree will not be tolerated and infractions thereof, as determined by the County, remain grounds for immediate dismissal of the offender(s) from the job site per Article 3.4 below.

- 3.4. Unacceptable Employee of Contractor or Subcontractor:** Upon written notice to the Contractor that any employee of the Contractor or any Subcontractor, including but not limited to the Superintendent, Foreman, Leadworker, Worker, or other person, is unacceptable to the County, Contractor shall, if there is good and sufficient reason, immediately terminate the services of any such person on this project. Only competent and skilled workers shall be employed. If, in the opinion of the County, any

worker is incompetent, unfaithful, disorderly or otherwise unsatisfactory, such person shall be dismissed from the Work and shall not again be employed on it except with the County's express written consent.

- 3.5. Inspection of the Work of Other Contractors:** It shall be the duty and responsibility of the Contractor and each subcontractor before beginning any of this Work, to examine all construction and Work of other Contractors and subcontractors that may affect their Work and to satisfy themselves that everything is in proper condition to receive their Work. They shall notify the County in writing of any exception. Failure on their part to do so shall constitute acceptance of the construction as suitable in all ways to receive their Work.

**3.6. Legal Responsibility of Contractor:**

- a. **Assignments:** Contractor shall not assign this Contract or any part thereof or any monies due or to become due thereunder without the prior written consent of the County. Purported assignment without such consent shall be void. No such assignment shall be valid unless it shall contain a provision that the funds to be paid to the assignee under the assignment are subject to a prior lien for services rendered or material supplied for performance of the Work called for under this Contract in favor of all persons, firms, or corporations rendering such services or supplying such materials, and a further provision that said assignment is subordinate to rights of the County under this Contract.
- b. **Responsibility for the Work:** Contractor shall take and assume all responsibility for the Work. As between the Contractor and the County, the Contractor shall bear all losses and damages directly or indirectly resulting to him, to the County, or to others on account of the character or performance of the Work.

The Contractor shall be responsible to the County for the acts and omissions of its employees and all its subcontractors and their agents and employees and other persons performing any of the Work under Contract with the Contractor.

- 3.7. Fees, Permits and Licenses:** Contractor shall, at its expense, obtain all necessary encroachment and other permits and licenses, give all necessary notices, pay all direct and indirect fees required by law, and comply with all laws, ordinances, rules, and regulations relating to the Work and to the preservation of the public and safety. Fees, including utility company line extension fees, will be paid by the Contractor, unless otherwise noted in the Specifications or Drawings.

- 3.8. Allowances:** The County reserves the right to establish and state allowances in dollars for items of Work to be provided by the Contractor when, in the opinion of the County it is most practical to the Work of the Contract and for purposes of bidding by the Contractor to set such value. Any such allowances and further provisions for inclusion and implementation shall be fully described in the appropriate sections of the specifications.

The Contractor will be entitled to add normal markup for purposes of administration, coordination, superintendence, Bonds, insurance, overhead and profit when preparing its bid. The County reserves the right to subsequently adjust the value or delete the Work under change order provision described elsewhere in the Contract Documents.

**3.9. Labor and Wages**

**General Prevailing Wage** determined by the Director of Industrial Relations pursuant to California Labor Code, Part 7, Chapter 1, Article 2, Section 1770, 1773, 1773.1, and 1773.2 shall be paid all workers employed on public work projects.

- a. **Restriction of Employees:** No person under the age of 16 years, or currently serving sentence in a penal or correctional institution, or an inmate of an institution for mental defective, or whose age or physical condition is such as to make their employment dangerous to their health or safety or the health or safety of others shall be employed to perform any Work under this Contract, except that physically handicapped persons otherwise employable may be employed under this Contract where such persons may be safely assigned to Work which they can ably perform. Any person or firm who may be in the employ of Contractor and whom the County may deem incompetent or unfit

shall be dismissed from the Work and shall not again be employed on it except by the express written consent of the County.

- b. **Legal Day's Work and Standard Workweek:** Eight hours of labor shall constitute a legal day's work upon all Work done under this Contract, and forty hours per week shall constitute a standard work week.
- c. **Classification of Labor:** Claims and disputes pertaining to classification of labor employed on the Work under this Contract shall be decided by the County, whose decision shall be final and binding on parties hereto.
- d. **Penalties:** Contractor shall comply with Articles 2 and 3 of Chapter 1, Part 7, Division 2 of the California Labor Code regulating wages and working hours on public works. In accordance with Articles 2 and 3, Contractor shall forfeit to the County as a penalty the amount of funds as prescribed by the Labor Code and governing agency seeking sanctions against the Contractor:
  - 1. For each calendar day, or portion thereof, for each worker paid less than the stipulated prevailing rates for any public work done under this Contract by them or by any subcontractor under them.
  - 2. For each worker employed in the execution of this Contract by Contractor or by any subcontractor for each calendar day during which such worker is required or permitted to work more than eight hours in any one calendar day and forty hours in any one calendar week in violation of the provisions of said Article 3.
- e. **Prevailing Rate of Locality:** Attention is directed to the provisions in Section 7-1.01A(2), "Prevailing Wage," of the Standard Specifications and these Special Provisions. Pursuant to the provisions of Section 1773 of the California Labor Code, the County of San Luis Obispo has obtained from the Director of the California Department of Industrial Relations the general prevailing rate of per diem wages and the general prevailing rate for holiday and overtime work for the locality in which the work is to be performed for each needed craft, classification, or type of workman. Copies of said prevailing rate of per diem wages are on file in the Office of the County Clerk-Recorder and available at the California Department of Industrial Relations' web site at: [www.dir.ca.gov/DLSR/PWD](http://www.dir.ca.gov/DLSR/PWD).

The wage rates determined by the Director of Industrial Relations refer to expiration dates. Prevailing wage determinations with a single asterisk after the expiration date are in effect on the date of advertisement for bids and are good for the life of the contract. Prevailing wage determinations with double asterisks after the expiration date indicate that the wage rate to be paid for work performed after this date has been determined. If work is to extend past this date, the new rate shall be paid and incorporated in the contract. The Contractor shall contact the Department of Industrial Relations as indicated in the wage rate determinations to obtain predetermined wage changes. Pursuant to Section 1773.2 of the Labor Code, a copy of said general prevailing rates shall be posted by the Contractor in a prominent place at the site of the work.

Additionally, the Director of Industrial Relations has reserved the right to issue corrected wage determinations for certain crafts contained in the prevailing wage determinations applicable to this contract. These corrected prevailing wage rates shall apply to this contract in the same manner as if they had been published in the prevailing wage determinations applicable to this contract. These revisions to the general prevailing wage rates are on file at the Office of the County Clerk-Recorder and available at the California Department of Industrial Relations' web site at: [www.dir.ca.gov/DLSR/PWD](http://www.dir.ca.gov/DLSR/PWD).

Additionally, changes in general prevailing wage determinations which conform to Labor Code Section 1773.6 and Title 8 California Code of Regulations Section 16204 shall apply to the contract when issued by the Director of Industrial Relations at least ten (10) calendar days prior to the date of the Notice to Bidders for the project. Changes, if any, to the general IFC-53 prevailing wage rate will be on file at the Office of the County Clerk-Recorder and available at the California Department of Industrial Relations' web site at: [www.dir.ca.gov/DLSR/PWD](http://www.dir.ca.gov/DLSR/PWD)

- f. **Payment of Minimum Rates:** It shall be mandatory upon Contractor and upon any subcontractor under them to pay not less than the specified prevailing rates of wages to all workers employed by them in the execution of this Contract.
- g. **Classification Not Covered by Prevailing Rate:** Any laborer or mechanic employed to perform Work on the project under this Contract, which Work is not covered by any of the stipulated classifications, shall be paid not less than the minimum rate of wages specified for the classification which most nearly corresponds to the Work to be performed by them, and such minimum wage rate shall be retroactive to the time of initial employment of such person in such classification. In the event of any dispute on that question, the question and the information, shall be referred for determination to the Board of Supervisors or to any person designated by the Board of Supervisors whose decision on the question shall be conclusive on the parties to this Contract with the same effect as if the Work performed by such laborer or mechanic has been classified and the minimum rate specified herein.
- h. **Claims for Additional Compensation:** The specified wage rates are minimum only, and the County will not consider any claims for additional compensation made by Contractor because of payment by Contractor of any wage rate in excess of the applicable rate contained in the Contract Documents. All disputes in regard to the payment of wages in excess of those specified in the Contract Documents, shall be adjusted by Contractor.
- i. **Underpayment of Wages:** Contractor agrees that in case of underpayment of wages to any worker on the project under this Contract by Contractor or any subcontractor, the County may withhold from Contractor out of payments due, an amount sufficient to pay such worker the difference between the wages required to be paid under this Contract and the wages actually paid such worker for the total number of hours worked, and the County may disburse such amount so withheld by it for and on account of Contractor to the employee to whom such amount is due. Contractor further agrees that any amount withheld pursuant to this paragraph shall be in addition to the percentages or amounts that may be retained by the County pursuant to law or other provisions of this Contract.
- j. **Wage Rate for Craft Not Listed:** In case the County orders the Contractor to perform extra or additional Work which may make it necessary for Contractor or any subcontractor under this Contract to employ in the performance of such Work any craft, classification or type of worker for which no prevailing wage rate is herein specified, the County will include in the Change Order for such extra or additional Work the prevailing wage rate for such craft, classification or type, and, insofar as such extra or additional Work is concerned, there shall be paid each worker engaged in the Work in such craft, classification or type not less than the prevailing wage rate so included.
- k. **Employees on Payrolls:** Contractor shall not carry on its payrolls any person not employed by them, nor shall they carry on their payrolls employees of a subcontractor. Subcontractor's employees must be carried only on the payrolls of the employing subcontractor.
- l. **Work After Regular Working Hours:** Any Work necessary to be performed after regular working hours or on Sundays or other legal holidays shall be performed without additional expense to the County, unless the County, by Change Order, shall have expressly directed Contractor to perform said Work at said time.
- m. **Records of Hours Worked and Wages:** Per Section 1776 and 1812 of the California Labor Code, each Contractor and Subcontractor shall maintain an accurate payroll record, showing the name, address, social security number, work classification, straight time and overtime hours worked each day and week, and the actual per diem wages paid to each journeyman apprentice, worker or other employee employed by them in connection with the Work. All contractors and subcontractors must furnish electronic certified payroll records directly to the Labor Commissioner (Division of Labor Standards Enforcement). Additionally, the awarded Contractor shall submit certified payroll records to the County. Certified Payroll Records shall be furnished to the Project Coordinator with each monthly payment request.



- n. **Employment of Apprentices:** Attention is directed to the provisions in Section 1777.5 and 1777.6 of the Labor Code concerning the employment of apprentices by the Contractor or any subcontractor under them.

The Contractor and subcontractor under them, shall comply with the requirements of Sections 1776, 1777.5 and 1777.6 in the employment of apprentices. It is the Contractor's responsibility to submit notification of their award of a public works contract to the State of California, Department of Industrial Relations, Division of Apprenticeship Standards per the requirements set forth in the Labor Code.

Information relative to apprenticeship standards, wage schedules, and other requirements may be obtained from the Department of Industrial Relations, Division of Apprenticeship Standards, San Francisco, California or from its branch offices.

- o. **Travel and Subsistence Pay:** Contractor shall include in the bid all required travel and subsistence amounts required to perform the Work. Travel and subsistence payments shall be in accordance with Section 1773.8 of the Labor Code.
- p. **Contractor Registration:** This project is subject to compliance monitoring and enforcement by the Department of Industrial Relations. Pursuant to Section 1771.1 of the Labor Code, no contractor or subcontractor shall be qualified to bid on, be listed in a bid proposal (submitted on or after March 1, 2015), or engage in the performance of any contract for public work unless currently registered with the Department of Industrial Relations to perform public work pursuant to Section 1725.5 of the Labor Code. No contractor or subcontractor may be awarded a contract for public work on a public works project (awarded on or after April 1, 2015) unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5.

BIDDERS AND THEIR SUBCONTRACTORS (Listed on the Designation of Subcontractors List) must provide an extract (pdf) at time of bid showing active registration from the Public Works Contractor Registration online registration at <https://efiling.dir.ca.gov/PWCR/Search>

All contractors and subcontractors must furnish electronic certified payroll records directly to the Labor Commissioner (Division of Labor Standards Enforcement). Additionally, the awarded Contractor shall submit certified payroll records to the County. In addition, awarded Contractor must post job site notices prescribed by regulations.

- 3.10. **Labor Disputes:** Whenever the Contractor has knowledge that any actual or potential labor dispute is delaying or threatens to delay the timely performance of the Work of the Contract, the Contractor shall immediately give notice thereof to the County. The Contractor shall then confirm the notice in writing within 24 hours of giving thereof, and shall include all relevant information with respect thereto. No claims will be accepted or costs incurred as a result of jurisdictional or labor practice disputes.
- 3.11. **Contractor's Use of Site:** Contractor shall confine all apparatus, material, and equipment required in the performance of this Contract to the limits indicated by law, ordinances, permits, or directions of the County, and shall not unreasonably encumber the premises therewith. Material and equipment shall be brought and used upon the premises in such manner as to leave driveways and parking areas for regular use of the public and employees of the County.
- 3.12. **Protection of the Public and Adjacent Public Property:** All laws and ordinances for the protection of the public shall be complied with. The Contractor shall be responsible for any damage of any kind to adjacent property. The County may reject any means, methods, techniques, sequences or procedures proposed by the Contractor which might constitute or create a hazard to the Work or to persons or property, or which will not provide Work in accordance with the Contract Documents. However, neither the acceptance nor the failure to reject any means, techniques, sequences and procedures by the County shall relieve the Contractor of their responsibilities to safely and properly complete the Work.

**3.13. Use of Streets and Sidewalks:**

- a. **Obstruction or Interference with Travel:** Contractor shall not unnecessarily, in the judgment of the County, obstruct or otherwise interfere with travel over any public streets, way or sidewalk, nor shall Contractor store, stockpile or place thereon any equipment, materials or supplies without first obtaining the authorization of the County, and then only within such limits as the County may designate.
- b. **Vacate for Public Use:** Those parts of public streets, ways and sidewalks that are occupied by Contractor shall be immediately vacated by Contractor and returned to public use when Contractor's use thereof is no longer necessary for the prosecution of the Work.

**3.14. Safety Precaution and Programs:** The Contractor expressly undertakes, both directly and through its subcontractors, to take every precaution at all times for the protection of persons, including employees, and property. The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work.

**3.15. Emergency Safety Action:** In an emergency affecting the safety of life or property, including adjoining property, Contractor, without special instructions or authorization from the County, is authorized to act at Contractor's discretion to prevent such threatened loss or injury. Contractor shall also so act if instructed to do so by the County.

**3.16. Cleaning Up:** If a dispute arises between separate Contractors as to their responsibility for cleaning up, or the Contractor fails to maintain the Work in a clean and safe manner in the opinion of the County, the County may clean up and charge the cost thereof to the Contractor. It remains the responsibility of the Contractor to maintain the Work in a clean and safe manner.

**3.17. As-Built Drawings and Specifications:** The following shall be inserted and dimensioned on said drawings and specifications in RED: exact locations of all pipes and conduits, all changes in construction, materials and installed equipment. Upon Substantial Completion of the Work, said as-built shall be returned to the County's designated Representative for the project along with electronic version of document(s) in AutoCad format.

**3.18. Access to Work:** The County and its agents shall at all times have complete access to the Work wherever it is in preparation and progress. When directed by the County, the Contractor shall provide facilities for such access so that the County and its agents may observe the Work and perform necessary or desired inspections, monitoring, and testing to assure compliance with the Contract Documents.

**3.19. Patent Fees and Infringement:** All fees or claims for any patented invention, article or arrangement that may be used upon or in any manner connected with the doing of the Work, or any part thereof, shall be included in the price bid for doing the Work herein proposed, and Contractor and its sureties shall protect and hold any and all departments of the County, together with all its officers and employees, harmless against any and all demands made for such fees or claims and against any and all suits and claims brought or made by the holder of any invention, patent, copyright, or trademark, or growing out of any alleged infringement of any inventions, patent, copyright, or trademark; and before the final payment is made on account of this Contract, Contractor shall furnish acceptable proof to the County of a proper release from all such fees or claims

**3.20. W-9:** Contractor shall submit a completed Request for Taxpayer Identification Number and Certification form W-9 to the Project Coordinator, Department of Public Works, 1087 Santa Rosa Street, San Luis Obispo, California 93408 (telephone 781-5200).

**4. SUBCONTRACTORS**

**4.1. Subcontracting:** If Contractor shall subcontract any of the Work under this Contract, Contractor shall be as fully responsible to the County for the acts and omissions of its subcontractor and of the persons either directly or indirectly employed by its subcontractor, as it is for the acts and omissions of persons

directly employed by itself. Nothing contained in this Contract shall create any contractual relation between any subcontractor and the County. Contractor shall bind every subcontractor (and every subcontractor of a subcontractor) by the terms of this Contract applicable to their Work unless specifically noted to the contrary in the sub-contract in question approved in writing by the County.

- 4.2. Loss or Damage to Subcontractor:** If, through acts of neglect on the part of Contractor, any other Contractor, subcontractor or man shall suffer loss or damage on the Work, Contractor agrees to settle with such other Contractor, subcontractor or worker by agreement or arbitration. If such other Contractor, subcontractor or worker shall assert any claim against the County on account of any damage alleged to have been so sustained, the County shall notify Contractor, who shall defend, indemnify and save harmless the County against such claim.

## **5. ADMINISTRATION OF THE CONTRACT**

- 5.1. Architect or Engineer:** The Architect or Engineer is the person lawfully licensed to practice Architecture or Engineering in the State of California and who has entered into an agreement with the County to serve as Architect or Engineer respectively for the Work or the Architect or Engineer may be an employee of the County or other governmental entity.

The Architect or Engineer will communicate with the Contractor through the County's Representative. In the case of the termination of the employment of the Architect or Engineer, the County may retain a different Architect or Engineer. The status under the Contract of the new Architect or Engineer so retained shall be the same as that of the former Architect or Engineer. The County shall notify the Contractor whenever the Architect or Engineer is replaced.

The Architect or Engineer shall at all times have access to the Work wherever it is in preparation and progress. When directed by the County's Representative, the Contractor shall provide facilities for such access at the Contractor's cost so the Architect or Engineer may perform their functions under the Contract Documents. The Architect or Engineer will be the interpreter of the requirements of the Drawings and Specifications. Written interpretations necessary for the proper execution or progress of the Work, in the form of drawings or otherwise, will be issued with reasonable promptness by the Architect or Engineer through the County and in accordance with any schedule agreed upon. The Contractor shall submit dated Requests for Clarification through the County's Representative to the Architect or Engineer for such interpretations. Such interpretations shall be consistent with and reasonably inferable from the Contract Documents. The Contractor shall execute and complete the Work in accordance with such interpretations. The Architect or Engineer shall not be liable to the Contractor for the result of any interpretation or decisions rendered in good faith in such capacity.

The Architect or Engineer will visit the site at intervals appropriate to the stage of construction to become generally familiar with the progress and quality of Work and to determine in general if the Work is being performed in a manner indicating that the Work, when completed, will be in accordance with the Contract Documents. However, the Architect or Engineer will not be required to make exhaustive or continuous on-site inspections to check quality or quantity of the Work. On the basis of on-site observations as an Architect or Engineer, they will keep the County informed of progress of the Work and will endeavor to guard the County against defects and deficiencies in the Work.

The Architect or Engineer shall assist the County in preparation of Change Orders and shall decide all other questions of design intent in connection with the Work. It shall be the responsibility of the Architect or Engineer to assist in interpretation and render opinions in regard to all claims to the County or the County's Representative involving question of the intent of the drawings and specifications. Such opinions and interpretations, together with the reasons, therefore, shall be furnished in writing by the Architect or Engineer to the County, for issuance to the County's Representative and Contractor, within ten (10) days after a request is made thereof.

The Architect or Engineer has no authority to issue Change Orders. All Change Orders, Field Orders and Cost Request Bulletins shall be approved and issued by the County to the Contractor through the County's Representative.

Neither the Contractor, the County's Representative nor the County shall be bound by any determination, interpretation or opinion of the Architect or Engineer if it determined that such is not in accord with the true intent of the Contract Documents. The party taking issue with the determination, interpretation, or decision of the Architect or Engineer shall give the other party or parties, as the case may be, written notice of such fact within ten (10) days after the determination, interpretation, or opinion rendered by the Architect or Engineer.

The Architect or Engineer may recommend suspension of the Work whenever suspension may be necessary to ensure the proper execution of the Work.

The Architect or Engineer will review and approve, or take other appropriate action, on Contractor's Submittals such as Shop Drawings, Product Data and Samples, but only for conformance with the design concept of the Work and with the information given in the Contract Documents. Such action shall be taken within fifteen (15) days. The Architect or Engineer approval of a specific item shall not indicate approval of an assembly of which item is a component.

The Architect or Engineer along with the County's Representative will conduct inspections to determine the dates of Substantial Completion and Final Completion and will receive and review written warranties and related documents required by the Contract and assembled by the Contractor.

The Architect or Engineer will not have control over or charge of and will not be responsible for construction means, methods, techniques, sequences or procedures, or for safety precaution and programs in connection with the Work, since these are solely the Contractor's responsibility. The Architect or Engineer will not be responsible for the Contractor's failure to carry out the Work in accordance with the Contract Documents. The Architect or Engineer will not have control or charge of and will not be responsible for acts or omissions of the Contractor, Subcontractor, or their agents or employees, or of any other persons performing portions of the Work.

**5.2. County's Representative:** The County's Representative is the person or entity who has been identified in writing by the County to serve as designated County's Representative. The County's Representative is referred to throughout the Contract Documents as if singular in number and masculine in gender. When the County's Representative is an entity, other than a singular person, the term includes the designated County's Representative acting through their authorized representatives as indicated to the Contractor in writing at the Pre-Construction meeting or whenever change in personnel assignments occur.

The County's Representative will provide the general administration support services for the Work as herein described.

The County's Representative will represent the County during the construction until final payment and shall have the responsibility to monitor the Work of the Contractor. Their activities shall in no way supersede or dilute the Contractor's obligation to perform the Work in conformance with all Contract requirements, but he/she is empowered, by the County, to act on its behalf with respect to the proper execution of the Work and shall give instructions to require such corrective measure as may be necessary, in their opinion, to ensure the proper execution of the Contract or to protect the County's interest. The County's Representative shall have the authority to require prompt execution of Work whenever such action may be necessary, in their opinion, to ensure the proper execution of the Work or to protect the interests of the County. Except as otherwise provided herein, the County's Representative shall determine the amount, quality, acceptability, fitness and progress of the Work covered by the Contract without, however, assuming any of the Architect or Engineer' statutory or customary obligation.

The County's Representative shall be deemed to be the County's designated representative to the extent set forth below and elsewhere in this Contract. The County's Representative shall have no authority to obligate or otherwise bind the County.

The County's Representative shall review and monitor the Contractor's Work and construction schedule and establish specific measures and actions which the Contractor shall take to maintain the current approved schedule.

The County's Representative shall examine the Contractor's Work to determine if the construction conforms to the requirement of this Contract (provided, however, that such action by the County's Representative shall not supersede or diminish the Contractor's obligation to furnish materials and perform the Work in conformity with all requirements of this Contract).

The County's Representative shall determine any corrective measures which may be necessary to bring the Contractor's performance into conformity with Contract requirements.

The County's Representative shall monitor the Contractor's performance in coordinating the Contractor's Work under this Contract with the Work being performed or to be performed by other separate Contractors.

The County's Representative shall assist the County and the Architect or Engineer in the resolution of questions of Contract interpretation.

The County's Representative shall establish and recommend administrative procedures for coordinating the activities of the Contractor, the Architect or Engineer, himself and the County.

The County's Representative shall monitor the Contractor's submittal schedule.

The County's Representative shall coordinate the activities of the Resident Inspector with the activities of the Contractor.

The County's Representative shall coordinate the activities of the Testing Agencies with the activities of the Contractor.

The County's Representative shall review all requests or recommendations for changes affecting this Contract, review proposals, assist in negotiating and submit recommendations thereon to the County.

The County's Representative shall make recommendations, together with the Architect or Engineer where appropriate, to the County as to the qualifications of Subcontractors or Suppliers wherever submittal of Subcontractors and Suppliers are required to be furnished under this Contract.

The County's Representative shall transmit to the County all written guarantees and warranties which the Contractor is required to furnish under this Contract.

The County's Representative may call meetings which shall be attended by the Contractor, Subcontractors and material Suppliers, as he/she may deem necessary.

The County's Representative shall, at all times, have access to the Work wherever it is in preparation and progress. When directed by the County's Representative, the Contractor shall provide facilities for such access so the County's Representative may perform their functions under the Contract Documents. The County's Representative shall have the authority to reject Work which does not conform to the Contract Documents and to require any Special Inspection and Testing.

The County's Representative shall review all applications by the Contractor for progress payments and final payment and make recommendations to the Architect or Engineer and the County for approval thereof in accordance with the County's procedures.

The County's Representative along with the Architect or Engineer will conduct inspections to determine the dates of Substantial Completion and Final Completion and will receive and review written warranties and related documents required by the Contract and assembled by the Contractor.

In the event any claim is made or any action brought in any way relating to the design or construction of the Project, the County's Representative will render to the County any and all assistance required for resolution.

The County may, at their option, designate the County's Representative as their representative to perform additional functions, including functions for which other authorized representatives may be designated by the provisions of this Contract.

It shall be the duty of the Contractor to comply with all procedures established and implemented by the County's Representative and approved by the County as stated above. In the event any such procedures are at a variance with other provisions of the Contract Documents, the procedures described above shall prevail.

In no event shall any act or omission on the part of the County's Representative relieve the Contractor from its obligation to perform its Work in full compliance with the Contract.

**Inspector of Record:** The Resident Inspector shall act as an agent for the County at the project site. During the construction Work, Resident Inspector shall inspect for compliance with code, plans, specifications and quality assurance required of a public works facility. Resident Inspector shall issue correction and stop work notices and notify the Construction Manager and County in writing if work does not conform to contract documents. The services of the County's inspector shall not relieve the Contractor of compliance with the Contract documents, codes, and regulations. |

### 5.3. **Documents Issued After Contract Award**

- a. **Requests for Interpretation (RFI):** If the Contractor encounters any condition which the Contractor believes, in good faith and with reasonable basis, is the result of an ambiguity, conflict, error or omission in the Contract Documents it shall be affirmative obligation of the Contractor to timely address all Requests for Interpretation and questions in writing to the County, Architect, and sub-consultants through the County's Representative to request information necessary to address and resolve any such Conditions before proceeding with any portion of the Work affected or which may be affected by such Conditions. If the Contractor fails to timely notify the County in writing of the Conditions encountered and the Contractor proceeds to perform any portion of the Work containing or affected by such Conditions, the Contractor shall bear all costs associated with or required to correct, remove, or otherwise remedy any portion of the Work affected thereby without adjustment of the Contract Time or the Contract Price. In requesting information of the Architect to address and resolve any Conditions the Contractor shall act with promptness in submitting any such written request so as to allow the Architect a reasonable period of time to review, evaluate and respond to any such request, taking into account the then current status of the progress and completion of the Work and the actual or potential impact of any such Conditions upon the completion of the Work within the Contract Time. The County will respond with clarifications within Fourteen (14) Days. It is incumbent upon the Contractor to submit RFIs in a timely manner. RFIs shall not constitute justification for time extension to the Contract. See also Section 01 26 00 of the General Requirements.
- b. **Cost Request Bulletins (CRB):** The County may, from time to time during the course of the Work, issue Cost Request Bulletins describing additional Work that may be desirable to include or delete from the Contract, by subsequent Change Order. The Contractor shall respond to Cost Request Bulletins in a thorough manner and within **15 days**, identifying separately and fully the costs of the proposed additional or deleted Work as described in the Change Order provisions. Failure by the Contractor to respond within **15 days**, or adequately describe the costs fully to Cost Request Bulletins and as a result, delaying the timely performance of the Contract, shall not constitute justification for time extension.
- c. **Field Orders (FO):** The County shall retain the right to issue Field Orders to the Contractor describing changes necessary or desirable to the Work that do not involve additional cost or extension of the Contract time. Field Orders shall be promptly executed and are not grounds for adjustment to the time or cost of Contract. Should the Contractor determine that there is cost or time impact to the Work due to the Field Order, they shall immediately notify that fact in writing to the County, describing the anticipated impacts, and request issuance of a Change Order. Each Field Order shall receive a written response from the Contractor, acknowledging receipt, describing the action and time of completion for the Work. A subsequent written notice shall be submitted by the Contractor to the County upon completion of the Work required by the Field Order stating that the Work is complete and ready for inspection.
- d. **Change Orders (CO):** The County anticipates changes in the Work. The County, therefore, reserves the right to require the Contractor to process and implement Change Orders in a timely

fashion to add to or delete from the Work of the Contract. Provisions for change orders and methods of implementation are described in **00 70 00 GENERAL CONDITIONS Article 6. CHANGES IN THE WORK** and are intended to comply with Public Contract Code Section 20152.

- e. **Construction Change Directives (CCD):** The County retains the right to direct the Contractor to change the Work in a manner different than described in the original Contract Documents, prior to agreement on adjustment in the Contract Sum and/or Contract Time. The County may issue a Construction Change Directive as a mechanism by which the County exercises a unilateral right to order changes in the Work without invalidating the Contract.
- f. **Correction Notices:** The County reserves the right to issue Correction Notices to require correction or repairs to the Work, or to require the Contractor to bring into conformity with any laws, codes, ordinances, safety orders or practices determined to be deficient at the work site and surrounding areas affected by the Work, or to correct deficiencies in the Work in regard to compliance with the Contract Documents. Correction Notices shall be promptly executed and are not grounds for adjustment to the time or cost of Contract. Each Correction Notice shall receive a written response from the Contractor, acknowledging receipt, describing the action and the time of completion for the Work. A subsequent written notice shall be submitted by the Contractor to the County upon completion of the Work required stating that the Work is complete and ready for inspection.

## **6. CHANGES IN THE WORK**

- 6.1. **Generally:** The County anticipates changes in the Work. The County therefore, reserves the right to issue written Change Orders ordering changes in the Contract at any time prior to the acceptance of the project without voiding the Contract, and the Contractor shall comply with such order. The Contractor may request changes in the Work, but shall not act on the changes until approved in writing by the County. Any change made without authority in writing from the County shall be the responsibility of the Contractor, and no increase in compensation will be made for a change involving greater expense to the Contractor and changes involving greater or lesser expense may be rejected by the County with the consequent responsibility of the Contractor to replace at its own expense the changed Work with that originally specified.

On the basis set forth herein, the Contract price shall be adjusted for any Change Order requiring a different quantity or quality of labor, materials or equipment from the originally required and the partial payments to Contractor, shall be adjusted to reflect the change. Whenever the necessity for change arises, and when so ordered by the County in writing, the Contractor shall take all necessary steps to halt such other Work in the area of the change that might be affected by the ultimate change. The Contractor shall promptly commence and diligently complete any Change to the Work subject to the County's written authorization issued pursuant to the preceding sentence; the Contractor shall not be relieved or excused from its prompt commencement and diligent completion of any Change subject to the County's written authorization by virtue of the absence or inability of the Contractor and the County to agree upon the extent of any adjustment to the Contract Time or the Contract Price on account of such Change. Changed Work shall be performed in accordance with the original Contract requirements except as modified by the Change Order. Except as herein provided, the Contractor shall have no claim for any other compensation due to change in the Work.

- 6.2. **Proposed Change Orders:** The County will issue to the Contractor a Cost Request Bulletin for a Proposed Change Order describing the intended change and shall require the Contractor to indicate thereon a proposed amount to be added to or subtracted from the Contract price due to the change supported by a detailed estimate of cost properly itemized and supported by sufficient substantiating data to permit evaluation of the same, and the extent of adjustment of the Contract Time, if any, required by such Change. Upon request by the County, the Contractor shall permit inspection of the original Contract estimate, subcontract agreements, or Purchase Orders relating to the change. Any request for adjustment in time of final completion of the project which is directly attributable to the changed Work, shall also be included by the Contractor on the response to the Cost Request Bulletin. Failure to request adjustment of time on the response to the Cost Request Bulletin shall waive any right to subsequently claim an adjustment of the time for final completion based on the changed Work. Contractor shall submit the response to the Cost Request Bulletin with the estimates and any time

extension request thereon to the County within fifteen calendar days after issuance of the Cost Request Bulletin. If not submitted within the required fifteen (15) calendar days and the Contractor has not obtained the County's permission for a delay in submission, the County may order Contractor in writing to begin the Work immediately, and the Contract price shall be adjusted in accordance with the County's estimate of cost, unless Contractor within fifteen (15) days following completion of the changed Work presents proof that the County's estimate was in error.

**6.3. Execution of Change Orders:** When the County and Contractor agree on the amount to be added to or deducted from the Contract price and the time to be added to or deducted from the completion date, and if the County determines it desirable to implement the Change Order, the Contract Change Order shall be signed by the County, Contractor and Architect/Engineer if applicable, and the Contractor shall proceed with the changed Work. If agreement is reached to the adjustment in compensation for the performance of changed Work but agreement is not reached as to the time adjustment for such Work, Contractor shall proceed with the Work at the agreed price, reserving the right to further pursue its claim for a time adjustment.

a. **Labor:** The cost to Contractor for labor, and direct field supervision directly required for the performance of the changed Work, including payments assessments, or benefits required by lawful labor union collective bargaining agreements, compensation insurance payments, contributions made to the State pursuant to the Unemployment Insurance Code, and for taxes paid to the Federal Government pursuant to the Social Security Act of August 14, 1935, as amended.

No labor cost will be recognized at a rate in excess of the wages prevailing in the locality at the time the Work is performed, nor will the use of a classification that would increase the labor cost be permitted unless Contractor established to the satisfaction of the County the necessity for payment at a higher rate. Labor costs shall exclude costs incurred by the Contractor in preparing estimate(s) of the costs of the Change, in the maintenance of records relating to the costs of the Change, coordination and assembly of materials and information relating to the Change or performance thereof, or the supervision and other overhead and general conditions costs associated with the Change or performance thereof.

b. **Materials:** The cost to Contractor for the materials directly required for the performance of the changed Work. Such cost of materials may include the costs of procurement, transportation, and delivery if necessarily incurred. If a trade discount by the actual supplier is available to Contractor, it shall be credited to the County. If the materials are obtained from a supply or source owned wholly or in part by Contractor, payment therefore, will not exceed the current wholesale price for such materials.

If, in the opinion of the County, the cost of materials is excessive, or if Contractor fails to furnish satisfactory evidence of the cost from the actual supplier thereof, then in either case the cost of the materials shall be deemed to be the lowest wholesale price at which similar materials are available in the quantities required at the time they were needed. The County reserves the right to furnish such materials as they deem advisable, and Contractor shall have no claim for costs or profits on materials so furnished.

c. **Equipment:** The cost to Contractor for the use of equipment directly required in the performance of the changed Work except that no payment will be made for time while equipment is inoperative due to breakdowns or for non-working days. The rental time shall include the time required to move the equipment to the Work from the nearest available source for rental of such equipment and to return it to the source. If such equipment is not moved by its own power, then loading and transportation costs will be paid. However, neither moving time nor loading and transportation costs will be paid if the equipment is used on the project in any other way than upon the changed Work. Individual pieces of equipment having a replacement value of \$ 2,000 or less shall be considered to be tools or small equipment, and no payment therefore will be made. No markup for overhead, profit, or bonds will be allowed for use of equipment supplied by an equipment rental firm. For equipment owned, furnished, or rented by Contractor, no cost therefore shall be recognized in excess of the rental rates established by distributors or equipment rental agencies in the locality where the Work is performed.



The amount to be paid to Contractor for the use of equipment as set forth above shall constitute full compensation to Contractor for the cost of fuel, power, oil, lubrication, supplies, small tools, small equipment, necessary attachments, repairs and maintenance of any kind, depreciation, storage, insurance, labor (except for equipment operators who shall be paid for as provided in 6.3.A above), and any and all costs to Contractor incidental to the use of such equipment.

- d. **Work by Subcontractors and Vendors:** For any portion of the changed Work that is to be performed by a subcontractor, Contractor shall furnish to the County a detailed estimate prepared and signed by Subcontractor of the cost to Subcontractor for performing the changed Work. At the option of the County, a lump sum estimate of such cost to Subcontractor may be accepted in lieu of the detailed estimate. The combined costs for Subcontractor's home office and field overhead, profit, taxes, supervision, and bonds shall not exceed fifteen (15%) percent. The foregoing limitation on mark-up shall be enforced as an aggregate total and apply regardless of the number of subcontractors, of any tier, performing any portion of such additive Change in the work. Estimates of the amount to be deleted from Subcontractor's portion of the Work shall be the gross cost of the deducted Work plus at least six (6%) percent for overhead, bonds, insurance, and related savings. For changed Work to be furnished by a Vendor, Contractor shall furnish upon demand of the County, a lump sum estimate of the cost of the items including taxes and cartage to Contractor prepared by the Vendor. No markup for overhead, profit, layout, supervision or bonds will be allowed for changed Work furnished by a Vendor. Markup shall be computed as stated above, and in no case shall compounded mark-up be allowed.
- E. **Contractor's Markup for Added Work / Credit for Deleted Work:** Where changed Work is self-performed by the Contractor, Contractor may add to the total cost estimate for such Work no more than fifteen percent (15%) for profit, home office and field overhead, insurance, taxes, supervision, and bonds. Where changed Work is performed by Subcontractor(s), Contractor may add to the total cost estimate for such Work no more than five percent (5%) for profit, home office and field overhead, insurance, taxes, supervision, and bonds. Estimates of the amount to be deducted from the Contract price shall be the gross cost of the deducted Work plus at least six percent (6%) for overhead, bonds, insurance, taxes, and related savings. Markup shall be computed as stated above, and in no case shall compounded mark-up be allowed.

For proposed Change Orders which involve both added and omitted Work, Contractor shall separately estimate the cost of the added Work before markups, and separately estimate the cost of the omitted Work before allowance of a credit. If the difference between the costs results in an increase to the Contract price, the markup for added Work shall be applied to the difference, and if the difference in the costs results in a decrease, then the markup for deleted Work shall be applied to the difference.

- F. **Market Values:** Cost for added Work shall be based on market values prevailing at the time of the change, unless Contractor can establish to the satisfaction of the County that it investigated all possible means of obtaining Work at prevailing market values and that the excess cost could not be avoided.

When a Change Order deletes Work from the Contract, the computation of the cost thereof shall be the values that prevailed at the time bids for the Work were opened.

- G. **Cost to Acquire Information:** All costs incurred to acquire information relative to a proposed Change Order shall be borne by the Contractor.

- 6.4. **Minor Changes in the Work:** The County anticipates minor changes in the Work. The County therefore, retains the right to request the Contractor to make minor changes in the Work by a Field Order. Minor changes generally do not impact the cost of the performance of the Work or detrimentally or significantly impact the Contract time.

- 6.5. **Emergency Changes:** Changes in the Work made necessary due to unforeseen site conditions, discovery of errors in plans or specifications requiring immediate clarification in order to avoid a serious work stoppage or changes of a kind where the extent cannot be determined until completed or under

any circumstances whatsoever, when deemed necessary by the County, are types of emergency changes which may be authorized by the County in writing to Contractor. Contractor shall commence performance of the emergency change immediately upon receipt of a written Emergency Change Order.

Within fifteen (15) days after receiving the Emergency Change Order, Contractor shall submit a detailed estimate of cost and any proposed extension in Contract time in the same manner as required under Article 7.1 Adjustment of Contract Time and Allowable Time Extensions. If agreement is reached as to compensation adjustment for the purpose of any emergency change, then compensation will be as provided in Article 6.4 Allowable Costs Upon Change Orders relating to ordinary changes. If agreement is not reached as to compensation, then compensation will be as provided in Article 6.7 Failure to Agree to Cost.

- 6.6. Adjustment of Contract Time and Allowable Time Extensions:** For adjustments to contract time, whether granted as a result of changed Work or at the request of the Contractor, see Article 7 Contract Time.
- 6.7. Failure to Agree to Cost:** Both parties possess the obligation to bargain in good faith to reach agreement concerning adjustments to the Contract Sum and/or Contract Time as a result of changes to the Work. In the event that an agreement fails to occur the procedures described within these General Conditions shall be followed.

- a. **For Added Work:** Notwithstanding the failure of the County and Contractor to agree as to the cost of the proposed Change Order, Contractor, upon written notice from the County, shall proceed immediately with the changed Work. At the completion of each day's work, Contractor shall furnish to the County a detailed summary of all labor, materials, and equipment employed in the changed Work. The County or its agent will compare their records with Contractor's daily summary and may make any necessary adjustments to the summary. After the County and Contractor agree upon and sign the daily summary, the summary shall become the basis for determining costs for the additional Work. The sum of these costs when added to an appropriate markup will constitute the payment for the changed Work. Subsequent adjustments, however, may be made based on later audits by the County. When changed work is performed at locations away from the job site, Contractor shall furnish in lieu of the daily summary, a summary submitted at the completion of the Work containing a detailed statement of labor, material, and equipment used in the Work. The latter summary shall be signed by Contractor, who shall certify, thereon, that the information is true.

Contractor shall maintain and furnish on demand of the County itemized statements of cost from all Vendors or Subcontractors who perform changed Work or furnish materials and equipment for such Work. All statements must be signed by the Vendors and Subcontractors.

- b. **For Deleted Work:** When a proposed Change Order contains a deletion of any Work and the County and Contractor are unable to agree upon the cost thereof, the County's estimate shall be deducted from the Contract price and may be withheld from any payment due Contractor until Contractor presents proof that the County's estimate was in error. The amount to be deducted shall be the costs to Contractor for labor, materials, and equipment that would have been used on the deleted Work together with an amount of overhead and bonds. The guidelines set forth in Article 6.4 Allowable Costs Upon Change Orders above, shall be used in computing the amounts involved.
- c. **Contractor Notice of Change Order Claim:** Contractor may initiate a Change Order Claim by providing formal written Notice of Claim to the County. Claims must be initiated within 21 days after the Contractor first recognizes the condition giving rise to the Claim. See Article 11.0 for Claims Dispute Resolution Process.
- d. **Continuing Contract Performance:** Pending final resolution of a Change Order Claim, unless otherwise agreed upon in writing, the Contractor shall diligently proceed with performance of the Contract and the County shall continue to make payments in accordance with the Contract Documents.

- 6.8. **Change Order Limits:** The Board of Supervisors as the County has authorized the County Public Works Director to order changes or additions in the Work being performed under construction Contracts, pursuant to Public Contract Code Section 20152. This authorization allows any change or addition in the Work to be ordered in writing by the County Public Works Director if the extra cost to the County for any such change or addition shall not exceed Five Thousand Dollars (\$5,000) when the total amount of the original Contract does not exceed Fifty Thousand Dollars (\$50,000), nor ten percent (10%) of the amount of any original Contract which exceeds Fifty Thousand dollars (\$50,000) but does not exceed Two Hundred Fifty Thousand Dollars (\$250,000). For Contracts whose original cost exceeds Two Hundred Fifty Thousand Dollars (\$250,000), the extra cost for any change or addition to the Work so ordered shall not exceed Twenty-Five Thousand Dollars (\$25,000), plus 5 percent (5%) of the amount of the original Contract cost in excess of Two Hundred Fifty Thousand Dollars (\$250,000). In no event shall such change or alteration exceed One Hundred Fifty Thousand Dollars \$150,000.

## 7. **CONTRACT TIME**

- 7.1. **Time is of the Essence:** All time limits established herein are of the essence to this Contract and any breach of said limits due to failure to comply is considered "material".

- 7.2. **Commencement and Completion of Work:** The Work shall be commenced within ten (10) days of issuance of the date stated in County's Notice to Contractor to Proceed, and shall be completed by Contractor in the time specified in Article 2 of the Agreement plus any extensions granted by approved Change Order. Work not completed within the time specified above, may be subject to liquidated damages as described in 7.4, Work Not Completed in Time and Assessment of Damages.

### 7.3. **Adjustment of Contract Time and allowable Time Extensions**

- a. **Measurement Basis:** Adjustment in Contract Time will be measured on a calendar day basis, except that if the new Contract completion date falls on a Saturday, Sunday or legal holiday, it shall be extended through the next full working day.
- b. **Change in Work:** For any change in the Work, Contractor shall be entitled only to such adjustments in time by which completion of the entire Work is delayed due to performance of the changed Work. Contract float time is jointly owned as a resource and shall be consumed on a first-come, first served basis. Float time is not for the exclusive benefit of either Contractor or the County. No extension of time will be granted unless Contractor demonstrates to the satisfaction of the County that he/she has made every reasonable effort to complete all Work under the Contract not later than the date prescribed or as soon as possible thereafter. No extension of time shall be granted for a change in the Work until all float time is consumed and the Contractor demonstrates to the satisfaction of the County by means of a Proposed Revised Project Schedule that it is making, or has made, every reasonable effort to guarantee completion of the additional Work called for by the change within the time originally allotted for the Contract. Contractor shall not use zero free float or zero total float constraints in the Project Schedule program.
- c. **Weather Delays and Unusual Circumstances:** Contractors shall not be assessed with liquidated damages, nor the actual cost of engineering and inspection during any delay in the completion of the project caused by acts of God, the public enemy, fire, flood, epidemic, quarantine restriction, strike, freight embargo, or unusual action of the elements; provided that Contractor shall notify the County in writing of the causes of delay within three days from the beginning of any such delay. The County shall determine the facts with regard to the delay and determine a reasonable period of time by which the date of completion shall be extended by reason thereof. The findings of the County shall be final and conclusive.

If adverse weather conditions are the basis of a claim for additional time, such claim shall be documented by data substantiating the weather conditions were abnormal for the month they occurred and that the weather conditions had an adverse impact on the timely performance of the Work beyond the control of the Contractor. In all cases, approved weather delays are non-compensable time extensions to the contract.

The term unusual action of the elements" is limited to extraordinary adverse weather conditions or conditions immediately resulting therefrom which cause a cessation in the progress of the Work which will delay the time of completion of the Contract.

Contractor shall have no right to an adjustment in the time of completion due to weather conditions or industrial conditions that are normal for the locality of the site. The time period for completion of the project has been determined with consideration given to the five year average rainfall statistics and usual industrial conditions prevailing in the locality of the site as documented by NOAA – reference specification section 01 32 10. Inclement weather will not be considered severe and unusual unless it results in precipitation which exceeds the maximum daily precipitation or the maximum precipitation for indicated duration.

- d. **Emergency Changes and other Delays:** If Contractor is delayed in completing the Work by reason of any act of the County or its Agents not provided by the Contract, or by reason of changes made pursuant to **6.5 Emergency Changes** without agreement being reached as to any time adjustments, the time for completion of the Work shall be extended for a period commensurate with the delay. Contractor shall notify the County in writing of the causes of the delay within the time period specified above which shall be subject to the same determinations as above stated.
- e. **Requests by Contractor:** Even though Contractor has no right to an extension of time for completion of the Work, the County may extend the time at the request of Contractor if the County determines it to be in the best interest of the County. If the time is extended at the request of the Contractor, the County may charge damages as allowed in Article 7.4 Work Not Completed in Time and Assessment of Damages.
- f. **Extensions due to Litigation:** Should the County be prevented or enjoined from proceeding with Work either before or after the start of construction by reason of any litigation or other reason beyond their control, Contractor shall not be entitled to make or assert claim for damage by reason of said delay; but time for completion of the Work will be extended to such reasonable time as the County may determine. Any such determination will be set forth in writing.

**7.4. Work Not Completed in Time and Assessment of Damages:** Time is of the essence hereto. If the Work is not completed in accordance with the foregoing, the County shall have the right to extend the time for completion if it determines such extension to be in the best interest of the County; and in case the County decides to extend the time limit for the completion of the Work, it shall have the further right to charge to Contractor, its executors, administrators, heirs, assigns, or sureties, all or any part, as it may deem proper, of the actual costs of engineering, inspection, supervision, incidental, and other overhead expenses that are directly chargeable to this Contract that accrue during the period of such extension, and to deduct the amount thereof from the final payment for the Work; provided, however, that the cost of the final inspection survey and the preparation of the final Notice of Completion will not be included in such charges, OR;

If the County determines it is impracticable and infeasible to determine the amount of actual damage, it is agreed that Contractor shall pay as fixed and liquidated damages, not as a penalty, the amount of **\$1000 per day** until the work is completed and accepted in accordance with the Contract Documents.

Liquidated damages will accrue until the Work is completed and accepted, and Contractor and its surety shall be liable for the amount thereof, the County may deduct said sums from any money due or that may become due Contractor; provided, however, that the cost of the final inspection survey and the preparation of the final Notice of Completion will not be included in such charges. The Contractor shall not be charged liquidated damages because of any delays in the completion of the Work due to unforeseeable causes beyond the control and without the fault or negligence of Contractor (including, but not restricted to, acts of God, the public enemy, fire flood, epidemic, quarantine restriction, strike, freight embargo, and/or unusual action of the elements; provided that the Contractor shall, within fifteen (15) days from the beginning of any such delay, notify the County in writing of the cause of the delay; whereupon the County shall ascertain the facts and the extent of the delay and extend the time for completing the Work when in its judgment the findings of fact

justify such an extension. The County's findings of fact thereon shall be final and conclusive on the parties hereto. All time extensions granted due to unforeseeable causes beyond the control and without the fault or negligence of Contractor shall be non-compensable.

## 8. **PAYMENT AND COMPLETION**

### 8.1. **Payments**

- a. **Schedule of Values:** Contractor shall furnish, on forms approved by the County, within seven (7) Days after receiving the Notice of Intent to Award the Construction Contract, a detailed Schedule of Values giving a complete breakdown of Contract Sum for each component of the Work. The Schedule of Values shall be in sufficient detail that the County may, in its discretion, deem necessary to evaluate progress at any point in the performance of the Work, including, without limitation, a breakdown of the general categories of Subcontractor work, direct overhead, profit and contingency, and a further breakdown of the categories of Subcontractor work into separate trade line items of costs for Subcontractor services, labor and material, which is based on actual Subcontractor contract, subcontract, purchase order or vendor prices.

If requested by the County, Contractor shall revise the Schedule of Values so as to allocate sums for Contractor overhead, profit and/or contingency among the individual line items for trade portions of the Work. No amounts shall be reflected in the Schedule of Values or in the Application for Payment for Extra Work or Deleted Work for which a Change Order has not been executed by Contractor and County. Amounts that have been mutually agreed to by Change Order shall, at the direction of the County, be either separately listed by line item in the Schedule of Values or incorporated into the existing line item(s) of the trade(s) performing such Work. The Schedule of Values must be prepared in sufficient detail and supported by such data to substantiate its accuracy as County may require.

Said schedule shall be on a Payment Request Form supplied by the County and shall be subject to the County's approval prior to approval of any progress payment. The values in said schedule shall then be used by the County for verifying the amount of each progress payment. If, at any time, it is determined that the Schedule of Values does not allocate the Contract Sum in a manner that reasonably and fairly reflects the actual costs anticipated to be progressively incurred by Contractor, it shall be revised and resubmitted for approval by County.

- b. **Application for Payment / Payment Request:** Once each month, Contractor shall prepare and forward to the County a statement in writing, updating the approved Schedule of Values, indicating the total amount of the Work done and the acceptable materials furnished and delivered by Contractor on the ground and not used, or acceptable materials furnished and stored (if such storage is subject to or under the control of the County), for use in the performance of this Contract to the time of such statement and the value thereof. Payment of undisputed Contract amounts is contingent upon the Contractor furnishing the County with a release of all claims against the County arising by virtue of this Contract related to those amounts. Disputed Contract claims in stated amounts may be specifically excluded by the Contractor from the question of the release as provided upon the Schedule of Major Parts.
- c. **Payment Processing:** Per Section 20104.50 of the Public Contract Code:
1. **Payment Request Review by the County:** Each Payment Request shall be reviewed by the County as practicable after receipt for the purpose of determining that the Payment Request is accurate and proper.
  2. **Rejected Payment Request:** Any Payment Request determined not to be a proper Payment Request suitable for payment shall be returned to the Contractor as soon as practicable, but not later than seven (7) days, after receipt. A request returned pursuant to this paragraph shall be accompanied by a document setting forth in writing the reasons why the Payment Request is not proper.

3. **Interest:** The number of days available to the County to make a payment without incurring interest pursuant to this section shall be reduced by the number of days by which a local agency exceeds the seven (7) day return requirement.
4. **Progress Payment:** A "Progress Payment" includes all payment due to Contractors, except the portion of the final payment designated by the Contract as Retention Earnings.

Upon Public Works Director's written approval of Contractor's Payment Request, the County shall, within 30 days of receipt, pay to Contractor, while carrying on the Work, the balance not retained, as described below, after deducting therefrom all previous payments and all sums to be kept or retained under the provisions of law or of this Contract. No such payment shall be construed to be an acceptance of any defective Work or improper materials.

- d. **Retaining Five Percent (5%) As Security:** The County shall retain five (5%) of the value of the Work done, and five percent (5%) of the value of the materials so estimated to have been furnished and delivered and unused or furnished and stored as aforesaid as part security for the fulfillment of this Contract by Contractor.
- e. **Correction of Statement and Withholding of Payment:** No inaccuracy or error in said statement shall operate to release Contractor or any surety from damages arising from such Work or from enforcing each and every provision of this Contract. The County shall have the right to adjust any payment request, or to recover any payment made for Work performed, so long as any lawful or proper direction concerning the Work or any portion thereof given by the County shall remain uncompleted.
- f. **Withholding Additional Amounts:** In addition to the amounts which the County may retain as provided herein above, the County may withhold a sufficient amount or amounts of any payment or payments otherwise due to Contractor as in its judgment may be necessary to cover:
  1. Payments which may be past due and payable for just claims against Contractor or any subcontractor for labor or materials furnished in or about the performance of the Work on the project under this Contract;
  2. For defective Work not remedied;
  3. For failure of Contractor to make proper payments to any subcontractors; and
  4. Reasonable doubt that the Contract can be completed for the balance then unpaid.
- g. **Disbursement of Withheld Amounts:** The County may apply such withheld amount or amounts to the payment of such claims, in its discretion. In so doing, the County shall be deemed the agent of Contractor and any payment so made by the County shall be considered as a payment made under this Contract by the County to Contractor, and the County shall not be liable to Contractor for such payment made in good faith. Such payment may be made without prior judicial determination of the claim or claims. The County will render to Contractor a proper accounting of such funds disbursed on behalf of Contractor.
- h. **Liens and Stop Notices:**
  1. **Withholding by the County:** Should Stop Notices be filed with the Clerk of the Board of Supervisors or the County Auditor/Controller, the County shall withhold the amount required from payments until such claims shall have been resolved pursuant to law, (Civil Code Section 9000, et seq). County will not be responsible for the filing of Stop Notice on behalf of any Claimant.
  2. **Certified Copy:** Upon filing a Stop Notice, the Claimants shall provide a certified copy of the copy of the Stop Notice to the County as prescribed in General Conditions Section 12.2,

Notices. Failure to provide a copy to The County's Public Works may impact the effectiveness of the ability of the County to withhold funds in a timely or effective manner.

3. **Unconditional Waiver and Release of Liens:** At the election of the County, the Contractor shall provide, within **thirty (30)** days of receipt of each progress payment, unconditional waivers and release of lien rights, conditional subcontractor and material waivers, and unconditional waivers of previous payments, signed by Contractor and each of its subcontractors and materials suppliers, in the form established therefor by Section 8122 of the Civil Code of the State of California.
- i. **Audits:** The County retains the right to audit the Contractor's records, including but not limited to cost reports, material invoices and other such documents.

## 8.2. **Project Completion**

### a. **Substantial Completion:**

When the Contractor feels that "Substantial Completion" has been achieved and at least 30 days prior to the completion date established in the Notice to Proceed plus any extensions granted in approved Change Orders, the following items shall be submitted:

1. **Request for Inspection for Substantial Completion of the Work:** The Contractor shall, in writing, submit a Request for Inspection for Substantial Completion of the Work. The County shall determine the validity of the request and respond stating a time and date of the inspection, including for attendance by any Consultants responsible for review of the Work and other parties as the County may desire in attendance.
  2. **Contractor's Punch List:** A Punch List of items to be completed and/or corrected shall be prepared by the Contractor and presented to the County with the Request for Inspection for Substantial Completion of the Work. The Contractor shall certify that the remaining items of Work shall be completed within 30 days and that the remaining items of Work do not in any way negatively impact the County's full and complete use of the Work. Failure to include any items on the punch lists shall not alter the responsibility of the Contractor to complete all the Work in accordance with the Contract Documents.
  3. **Closeout Submittals:** Prior to the Inspection for Substantial Completion and within sufficient time for review by the County and its Consultants, the Contractor shall submit all record drawings, catalog data, complete operating and maintenance instructions, certificates, warranties, written guarantees and related documents as required by the Contract.
  4. **County Inspection and Final Punch List:** The County and its consultants shall review the submittals, and if the Request for the Inspection is valid, conduct an inspection of the Work. The County shall review the Punch List, incorporating additional comments from the inspection for completion and/or correction by the Contractor for a Final Punch List.
- b. **Final Completion and Acceptance of the Work:** The Public Works Director, upon agreeing that the Work is complete after completion of all Final Punch List items, and upon receipt of the fully executed Affidavit of Final Payment and the required Maintenance Bond and in accordance with all other provisions for project close out described herein, shall issue a Certificate of Completion to the Contractor and present a recommendation for acceptance and filing of a Notice of Completion and Acceptance at the next regularly scheduled meeting of the Board of Supervisors.

Final Completion and Acceptance of the Work shall be made in accordance with the following steps and conditions:

1. **Contractor's Notice of Final Completion:** Within 30 days of the Request for Inspection and upon completion of all of the Final Punch List items, the Contractor shall submit a Contractor's Notice of Final Completion" in conformance with the Final Close Out Procedures within the

Contract Documents, indicating that the Work is complete and ready for final inspection and acceptance. Failure by the Contractor to complete any items on the Final Punch List within 30 days of the request for Substantial Completion Inspection enables the County to require performance of same by the Contractor's Surety or otherwise arrange for completion of those items of Work and to deduct all costs thereof, as well as any liquidated damages or actual damages incurred from the Final Payment by means of deductive Change Order.

2. **Final Inspection:** Upon receipt of "Contractor's Notice of Final Completion" the County shall promptly make final inspection.
3. **Contractor Close-Out Documents:** Contractor shall submit the following to the County before Final Inspection and after required corrections and/or repairs have been made:
  - a. **Affidavit for Final Payment:** After the completion of the Work of this Contract, the Contractor shall file with the County his or her affidavit signed under penalty of perjury stating that all workers and persons employed, all firms supplying the materials and all subcontractors upon the project have been paid in full and that there are no bills outstanding against the project for either labor or materials except certain items, if any, to be set forth in connection with which notices to withhold have been filed under the statutes of the State of California. The filing of such affidavits by the Contractor shall be required prior to Contractor's receipt of the final payment on this Contract.
  - b. **Guarantees:** Contractor shall submit a Guarantee in accordance with Division 00 60 00 Guarantee for Total Work of these Contract Documents, and any additional Guarantees required by the technical provisions of the Contract Documents.
  - c. **Owner Training/Systems Commissioning:** Refer to Specification 01 79 00 and 01 91 10
  - d. **As-Built Drawings and Specifications:** Contractor shall submit As-Built Drawings and Specifications in accordance with **General Conditions Article 3.15 As-built Drawings and Specifications.**
  - e. **Maintenance Bond:** Contractor shall furnish a Maintenance Bond in the amount equal to five percent (5%) of the final Contract price, secured from a surety company **admitted** in the State of California and satisfactory to the County. Said bond shall protect the County against the result of faulty material or workmanship and shall remain in effect for a period of one year after the date the County's Notice of Completion and Acceptance is filed with the Clerk of the County of San Luis Obispo.
4. **County's Final Certificate of Completion:** Following satisfactory completion of the above, the County shall file a certificate, over the County Director of Public Works signature, stating the Work has been given a final inspection and is approved by them, that the above required documents have been submitted, and that the Work provided for in this Contract has been completed and is accepted by them under the terms and conditions thereof. The Work, however, will not be deemed as accepted by the County until the County's Notice of Completion and Acceptance is filed with the Clerk of the County of San Luis Obispo.
5. **Notice of Completion and Acceptance:** The Notice of Completion and Acceptance shall be submitted by the County Public Works Director for approval by the Board of Supervisors stating the final completion date and defining the project and the parties of the project Agreement. The Notice will then be submitted to the Board of Supervisors for acceptance of the Work by the Board as County in regular session. See Article 8.2, C., 6 below.
6. **Resolution authorizing Execution of Notice of Completion and Acceptance of Contract by the County:** Acceptance of the Work by the County, and the subsequent recording of the "Resolution Authorizing Execution of Notice of Completion and Acceptance of Contract by the County" by the County Clerk-Recorder, provided the Work shall be then fully completed and the provisions of this



Contract fully performed in all completed respects will be made only by action of the Board of Supervisors for the County in regular session.

Recordation of the Notice of Completion and Acceptance shall not be deemed an acceptance of latent defects nor shall it constitute a waiver of any of the provisions of this Contract.

7. **Certificate of Final Payment:** : Within thirty-five (35) days after the filing of the above described Resolution with the County Clerk-Recorder, the Director of Public Works shall present a "Certificate of Payment" to the County Auditor stating that the entire balance found to be due Contractor, less any retentions held, and noted in said Certificate, is due and payable.
8. **Approval of Final Payment:** Following receipt of said "Certificate of Final Payment" by the County Auditor, said Auditor will issue final payment (full amount of Contract Sum less 5% retention) to be paid on account thereof to the Contractor.
9. **Release of Retention:** Pursuant to the Public Contract Code Section 7107, within 60 days of the recording of the Resolution Authorizing Execution of the Notice of Completion and Acceptance of Contract by the County with the Clerk-Recorder, the retention withheld shall be released. The Contractor is required to submit a payment request for release of the retention amounts.

## 9. **TERMINATION**

- 9.1. **Cause and Performance of Termination of Contract:** If Contractor should be adjudged as bankrupt, or if it should make a general assignment for the benefit of its creditors, or if a receiver should be appointed on account of its insolvency, or if it or any of its subcontractors should violate any of the provisions of the Contract, or if it should persistently or repeatedly refuse or should fail except in cases for which extension of time is provided, to supply enough properly skilled workers or proper materials, or if it should fail to make prompt payment to subcontractors or for material or for labor, or persistently disregard laws, ordinances or the instructions of the County, then the County, upon the determination of the County Public Works Director that sufficient cause exists to justify such action, may, without prejudice to any other right or remedy, give written notice to Contractor and its Surety of its intention to terminate the Contract, and unless within five (5) days after the giving of such notice such violation shall cease and satisfactory arrangements for correction thereof be made, the Contract shall, upon expiration of said five (5) days, cease and terminate. In the event of any such termination, the County shall immediately give written notice thereof to the Surety and the Contractor, and the Surety shall have the right to take over and perform the Contract, provided, however, that if the Surety within the ten (10) days after the giving of notice of termination does not give the County written notice of its intention to take over and perform the Contract or does not commence performance thereof within the ten (10) days stated above from the date of the giving of such notice, the County may take over the Work and prosecute the same to completion by Contract or by any other method it may deem advisable, for the account and at the expense of the Contractor, and the Contractor and its Surety shall be liable to the County for any excess cost occasioned by the County thereby, and in such event the County may without liability for so doing, take possession of and utilize in completing the Work, such as may be on the site of the Work and necessary therefor.
- 9.2. **Option in Case of Loss:** In the event that destruction or loss should exceed twenty percent (20%) of the completed value of the construction as determined at the end of the preceding month, it shall be optional with the County to terminate this Contract or to proceed to completion.
- 9.3. **Expense of Finishing Work – Contractor's Liability:** If the unpaid balance of the Contract price shall exceed the expense of finishing the Work, including compensation for additional managerial and administrative services, such excess shall be paid to the Contractor. If such expense shall exceed such unpaid balance, the Contractor shall pay the difference to the County. The expense incurred by the County as herein provided, and damage incurred through the Contractor's default, shall be certified by the Public Works Director. In such cases the Contractor shall not be entitled to receive any further payment until the Work is finished.

- 9.4. **Provisions for Termination of Contract:** This Contract is subject to termination as provided by Sections 4410 and 4411 of the Government Code of the State of California, being portions of the Emergency Termination of Public Contracts Act of 1949.

## 10. **CONSTRUCTION BY THE COUNTY OR SEPARATE CONTRACTORS**

Contractor must ascertain to its own satisfaction the scope of the Work and the nature of any other Contracts that have been or may be awarded by the County in the prosecution of the Work to the end that Contractor may perform this Contract in the light of such other Contracts, if any. Nothing herein contained shall be interpreted as granting to Contractor exclusive occupancy of the site of the Work. The Contractor shall work in harmony with and be compatible with all other labor being used by the County or other Contractors on the site. The Contractor shall coordinate its Work with the Work of the County and other Contractors, and shall provide adequate information and planning of its Work to allow effective coordination by others with its operations. The Contractor shall not cause any unnecessary hindrance or delay to any other Contractor, subcontractor or workers working on any Project that encompasses the Work. If the performance of any Contract for the Work is likely to be interfered with by the simultaneous execution of some other Contract or Contracts, the Contractor shall immediately give notice thereof to the County. The County shall decide which Contractor shall cease work temporarily and which Contractors may proceed simultaneously. The County shall not be responsible for any damages suffered or extra costs incurred by Contractor or any other Contractor, subcontractor or worker resulting directly or indirectly from the award or performance or attempted performance of the Contracts awarded for the completion of the Work, and Contractor agrees to indemnify and hold the County harmless against any claims for such damages or costs.

## 11. **RESOLUTION OF CONSTRUCTION CLAIMS:**

### 11.1 **SUBMISSION OF CLAIMS**

- a. **By Contractor.** Contractor's right to commence the Claims Dispute Resolution Process shall arise upon County's written response denying all or part of a Claim. Contractor shall submit a written Statement of Dispute to County within seven (7) Days after County rejects all or a portion of Contractor's Claim. Contractor's Statement of Dispute shall be signed under penalty of perjury and shall state with specificity the events or circumstances giving rise to the Claim, the dates of their occurrence and the asserted effect, if any, on the compensation due or time of performance obligations of Contractor under the Construction Contract. Such Statement of Dispute shall include adequate supporting data to substantiate the disputed Claim. Adequate supporting data for a Claim relating to an adjustment of the Contractor's obligations relative to time of performance shall include a detailed, event-by-event description of the impact of each Delay on Contractor's time for performance. Adequate supporting data to a Statement of Dispute submitted by Contractor involving Contractor's compensation shall include a detailed cost breakdown and supporting cost data in such form and including such detailed information and other supporting data as required to demonstrate the grounds for, and precise amount of, the Claim.
- b. **By County.** County's right to commence the Claims Dispute Resolution Process shall arise at any time following County's actual discovery of the circumstances giving rise to the Claim. Nothing contained herein shall preclude County from asserting Claims in response to a Claim asserted by Contractor. A Statement of Dispute submitted by County shall state the events or circumstances giving rise to the Claim, the dates of their occurrence and the damages or other relief claimed by County as a result of such events.

### 11.2 **CLAIMS DISPUTE RESOLUTION PROCESS**

The parties shall utilize each of the following steps in the Claims Dispute Resolution Process in the sequence they appear below. Each party shall participate fully and in good faith in each step in the Claims Dispute Resolution Process, which good faith effort shall be a condition precedent to the right of each party to proceed to the next step in the Claims Dispute Resolution Process.

- a. **Direct Negotiations.** Designated representatives of County and Contractor shall meet as soon as possible (but not later than ten (10) Days after receipt of the Statement of Dispute) in a good faith effort to negotiate a resolution to the Claim. Each party shall be represented in such negotiations by an authorized representative with full knowledge of the details of the Claim or defenses being asserted by such party, and with full authority to resolve such Claim then and there, subject only to County's right and obligation to obtain Board of Supervisors approval of any agreed settlement or resolution. If the Claim involves the assertion of a right or claim by a Subcontractor against Contractor that is in turn being asserted by Contractor against County, then such Subcontractor shall also have a representative attend such negotiations, with the same authority and knowledge as just described. Upon completion of the meeting, if the Claim is not resolved, the parties may either continue the negotiations or either party may declare negotiations ended. All discussions that occur during such negotiations and all documents prepared solely for the purpose of such negotiations shall be confidential and privileged pursuant to California Evidence Code Sections 1119 and 1152.
- b. **Deferral of Claims.** Following the completion of the negotiations required by Paragraph 14.4.1, all unresolved Claims, excepting those that do not involve parties other than the Contractor and County, shall be deferred pending Final Completion of the Work, subject to County's right, in its sole and absolute discretion, to require that the Claims Dispute Resolution Process proceed prior to Final Completion. In the event that County does not elect to proceed with the Claims Dispute Resolution Process prior to Final Completion of the Work, all Claims that have been deferred until such Final Completion shall be consolidated within a reasonable time after such Final Completion and thereafter pursued to resolution pursuant to the Claims Dispute Resolution Process. Nothing contained in this Article 14 shall be interpreted as limiting the parties' right to continue informal negotiations of Claims that have been deferred until such Final Completion; provided, however, that such informal negotiations shall not be interpreted as altering the provisions of this Article 14 deferring final determination and resolution of unresolved Claims until after Final Completion of the Work.
- c. **Legal Proceedings.** If the Claim is not resolved by direct negotiations, then the party wishing to further pursue resolution or determination of the Claim shall submit the Claim for determination by commencing legal proceedings in a court of competent jurisdiction.
- d. **Public Contract Code Sec. 10240 et seq.** Claims submitted for resolution by legal proceedings in accordance with Paragraph 14.2.3 that have a value of \$375,000.00 or less shall be thereafter submitted to judicial arbitration and mediation pursuant to the provisions of California Public Contract Code Sections 20104, *et seq.*
- e. **Mediation.** Claims having a value of \$375,000.00 or less shall be submitted to non-binding mediation pursuant to California Public Contract Code Sections 20104.04 (a).
- f. **Arbitration.** Claims having a value of \$375,000.00 or less that remain in dispute following non-binding mediation, shall be submitted to judicial arbitration pursuant to California Public Contract Code Sections 20104.04 (b) before an arbitrator who shall be a retired judge or an attorney with at least five (5) years of experience with public works construction contract law and in arbitrating public works construction disputes.

### 11.3 NO WAIVER

Participation in the Claims Dispute Resolution Process shall not constitute a waiver, release or compromise of any defense of either party, including, without limitation, any defense based on the assertion that the rights of Contractor that are the basis of a Claim were previously waived by Contractor due to failure to comply with the Contract Documents, including, without limitation, Contractor's failure to comply with any time periods for providing notices or for submission of Claims or supporting documentation of Claims.

## 12. MISCELLANEOUS PROVISIONS

- 12.1. **Anti-Trust Assignment:** By entering into this Contract or subcontract, Contractor, or subcontractor offers and agrees to assign to the awarding body all rights, title and interest in and to all causes of action it may have under Section 4 of the Clayton Act (15 U.S.C. Section 15) or under the Cartwright Act

(Chapter 2 commencing with Section 16700 of Part 2 of Division 7 of the Business and Professions Code, arising from purchases of goods, services or materials pursuant to this public works Contract or sub-contract. This assignment shall be made and become effective at the time the awarding body tenders final payment to the Contractor, without further acknowledgment to the parties.

**12.2. Notices:** Any formal Notice from one party to the other under this Contract shall be in writing and shall be dated and signed by the party giving such notice or by a duly authorized representative of such party. Any such notice shall not be effective for any purpose whatsoever unless served in the following manner:

- a. **Notice to County:** If the notice is given to the County, it must be personal delivery thereof to Public Works Director or by depositing the same in the United States mail, enclosed in a sealed envelope, addressed to Public Works Director for the attention of signer of "Notice to Contractor to Proceed" at the return address indicated on that letterhead, with postage prepaid.
- b. **Notice to Contractor:** If the notice is given to Contractor, it must be by personal delivery thereof to Contractor, or to Contractor's superintendent at the site of the Work, or by depositing the same in the United States mail, enclosed in a sealed envelope addressed to its regular place of business, or at such other address as may have been established for the conduct of the Work, with postage prepaid; or
- c. **Notice to Surety or Others:** If the notice is given to the surety or any other person, it must be by personal delivery to such surety or depositing the same in the United States mail, enclosed in a sealed envelope, addressed to such surety or person at the address of such surety or person last communicated by them to the party giving the notice, with postage prepaid.

**12.3. Notice of Potential Claims:**

- a. **Submittal of Notice of Potential Claim:** The Contractor shall not be entitled to the payment of any additional compensation for any cause, including any act, or failure to act, by the County, or the happening of any event, thing or occurrence, unless they shall have given the County due written Notice of Potential Claims as hereinafter specified, provided, however, that compliance with the Article shall not be a prerequisite as to matters within the scope of the notice provisions of **Article 7.4 Work Not Completed in Time and Assessment of Damages.**
- b. **Contents of Notice of Potential Claim:** The written Notice of Potential Claim shall set forth the reasons for which the Contractor believes additional compensation will or may be due, the nature of the costs involved, and, insofar as possible, the amount of the potential claim. The Notice of Potential Claim must have been given to the County prior to the time that the Contractor shall have performed the Work giving rise to the potential claim for additional compensation if based on an act or failure to act by the County, or in all other cases within fifteen (15) days after the happening of the event, thing or occurrence giving rise to the potential claim.
- c. **Failure to Submit Notice of Potential Claim:** It is the intention of this article that differences between the parties arising under and by virtue of the Contract be brought to the attention of the County at the earliest possible time in order that such matters may be settled, if possible, or other appropriate action promptly taken. The Contractor hereby agrees that they shall have no right to additional compensation for any claim that may be based on any such act, failure to act, event, thing or occurrence for which no written Notice of Potential Claim as herein required was filed.

**12.4. Non-Waiver:** Neither acceptance of, nor payment for, the Work or any part thereof, nor any extension of time nor any possession taken by the County, shall operate as a waiver of any of the provisions of this Contract, nor shall a waiver of any breach of this Contract, be held to be a waiver of any other or subsequent breach. In addition, recordation of Notice of Completion shall not be deemed an acceptance of latent defects nor shall it constitute a waiver of any of the provisions of this Contract.

**END OF SECTION**

**SECTION 00 81 00**  
**NON-DISCRIMINATION**

Contractor shall comply with all laws and regulations governing nondiscrimination in employment, including the Americans with Disabilities Act of 1990, the Fair Employment and Housing Act (California Government Code §§ 12900, et seq.), and the applicable regulations promulgated thereunder (2 California Code of Regulations §§ 7285, et seq.).

- 1.1 Nondiscrimination:** The Contractor, with regard to the work performed by them during the Contract, shall not discriminate on the grounds of race, color or national origin or other legally protected criteria in employment or the selection and retention of subcontractors, including procurement of materials and leases of equipment. The Contractor shall not participate either directly or indirectly in the discrimination prohibited by Section 21.5 of the Regulations, including employment practices when the Contract covers a program set forth in Appendix B of the Regulation.
- 1.2 Solicitation for Subcontracts, Including Procurement of Materials and Equipment.** In all solicitation, either by competitive bidding or negotiation, made by the Contractor for work to be performed under a subcontract, including procurement of materials or leases of equipment, each potential subcontractor or supplier shall be notified by the Contractor of the Contractor's obligations under this Contract and the regulations relative to nondiscrimination on the grounds of race, color or national origin.

**END OF SECTION**

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**SECTION 00 85 00**  
**DRAWINGS AND**  
**SPECIFICATIONS**

1. **COORDINATION OF DRAWINGS AND SPECIFICATIONS:** Figured dimensions on the drawings shall govern, but Work not dimensioned shall be as directed. Work not particularly shown or specified shall be the same as similar parts that are shown or specified or as directed. Full-sized details shall take precedence over scale drawings as to shape and details of construction. Should a conflict occur between the drawings and specifications, the costlier and/or stringent material and method of construction shall be used. Scale drawings, full-sized details and specifications are intended to be fully cooperative and to agree but should any discrepancy or apparent difference occur between drawings and specifications or should errors affect the Work, Contractor shall notify the County at once by means of a **Request for Information/Interpretation (RFI)**. If Contractor proceeds with the Work affected without instructions from the County, Contractor shall make good any resultant damage or defect. All misunderstandings of drawings and specifications shall be clarified by the County, whose decision shall be final. Any Work called for by the drawings and not mentioned in the specifications, or vice versa, is to be furnished as though fully set forth by both. Where not specifically stated otherwise, all Work and materials necessary for each unit of construction, including special construction for any specific brand or shape of materials called for, even though only briefly mentioned or indicated, shall be furnished and installed fully and completely, including, but not limited to, manufacturer's instructions and/or recommendations, as part of this Contract.
  
2. **FURNISHING SUPPLEMENTAL DETAILS:** The Contractor may request and/or the County may independently furnish details to fully explain the Work and the same shall be considered a part of this Contract. If, in the opinion of Contractor, any details are more elaborate than warranted, written notice thereof must be given to the County within five (5) days of receipt of the supplemental details. The County will then consider that notice as a Claim and, if determined by the County as justified, the drawings will be amended or the extra Work authorized in accordance with the Change Order provisions of the General Conditions.
  
3. **TESTING SAMPLES:** The costs of testing samples will be borne by the County except where otherwise specified in this Contract, or where retests or additional tests are required to ascertain conformance with the plans and specifications. All said laboratory tests and additional tests shall be made by bureaus, laboratories or agencies approved by the County and all costs of said retests and/or additional tests shall be borne by Contractor, and said tests shall be paid for by the County but the amount paid shall be deducted from the Contract price. Examples of such additional tests are: Tests of material substituted for previously accepted materials, retests made necessary by the failure of materials to comply with the requirements of the specifications, and load tests necessary because certain portions of the structures have not fully met specification or plan requirements. All samples and specimens for testing shall be selected by the inspector or by the testing laboratory, but not by the Contractor. The Contractor shall, at its own expense, furnish, package, mark and deliver all samples to be tested, when so directed by the inspector, testing laboratory or as otherwise required by the specifications. Delivery of samples to the testing laboratory shall be made in ample time to allow tests to be made without delaying construction. No extra time will be allowed for the completion of the Work by reason of delay in testing samples. The Contractor shall allow free access at all times to the representatives of the testing laboratory to the sources from which samples are taken. All test reports shall be sent to all parties designated by the County.

**END OF SECTION**

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**SECTION 01 01 00  
SUMMARY OF WORK**

**PART 1 GENERAL**

**1.1 WORK INCLUDED**

- A. Work required to be performed by the Contractor comprises:  
The Contract involves construction of an addition to an existing building of Type V-N light wood frame construction, adding fire protection water storage tanks and related plumbing, site improvements and accessibility upgrades. The job site is located at 4050 Branch Road in San Luis Obispo County, California. The scope of the Work is described in these Specifications and in Working Drawings identified by name, as Architect's project number 1407, and as County Job No. 320062.
- B. Alternates: Refer section 01 03 00 for a description of Bid Alternate Scope of Work

**1.2 WORK NOT INCLUDED**

- A. Except for such auxiliary work as is shown or specified or is necessary as a part of the construction, the following work is NOT included in this Contract.
- Work shown, but marked "NIC" (Not in Contract). "BUA" (By Using Agency), or otherwise designated to be done by others.

**1.3 LOCATION OF SITE**

The Site is located at 4050 Branch Road, Paso Robles, CA.

**1.4 SPECIFICATIONS**

The Specifications are those bound in the Project Manual, and supporting contract documents as enumerated in the Table of Contents. The General Conditions of the Contract for Construction and Division 1 of the Specifications apply to all Work of this Contract.

**1.5 DRAWINGS**

The Drawings consist of Drawing Sheets listed below:

<b>SHEET NO.</b>	<b>SHEET TITLE</b>	<b>LATEST REVISION DATE</b>
T1	PROJECT DATA	12-15-2015 PC1
T2	GENERAL NOTES, SYMBOLS AND ABBREVIATIONS	12-15-2015 PC1
T3	CGBSC COMPLIANCE	12-15-2015 PC1
T4	CGBSC COMPLIANCE / SOLAR ELECTRIC	12-15-2015 PC1
	TOPOGRAPHIC SURVEY	NOV 24, 2014
C1	GENERAL NOTES	12-15-2015 PC1
C2	GRADING, DRAINAGE, & COMPOSITE UTILITY PLAN	12-15-2015 PC1
C3	CONSTRUCTION DETAILS	12-15-2015 PC1
C3.1	CONSTRUCTION DETAILS	12-15-2015 PC1
C4	EROSION CONTROL PLAN	12-15-2015 PC1
C5	EROSION CONTROL NOTES & DETAILS	12-15-2015 PC1

C6	EROSION CONTROL DETAILS	12-15-2015 PC1
A1.0	DEMOLITION SITE PLAN	12-15-2015 PC1
A1.1	SITE PLAN	12-15-2015 PC1
A1.2	ACCESSIBILITY UPGRADES	01-20-2016 PC2
A2.0	DEMOLITION FLOOR PLAN	12-15-2015 PC1
A2.1	FLOOR PLAN	12-15-2015 PC1
A3.1	ROOF PLAN	12-15-2015 PC1
A4.1	REFLECTED CEILING PLAN	12-15-2015 PC1
A5.1	EXTERIOR ELEVATIONS	12-15-2015 PC1
A6.1	BUILDING SECTIONS	12-15-2015 PC1
A6.2	BUILDING SECTIONS	12-15-2015 PC1
A7.1	INTERIOR ELEVATIONS	12-15-2015 PC1
A8.1	SCHEDULES	01-20-2016 PC2
A9.1	ARCHITECTURAL DETAILS	12-15-2015 PC1
S1.1	GENERAL STRUCTURAL NOTES	01-20-2016 PC2
S1.2	GENERAL STRUCTURAL NOTES	01-20-2016 PC2
S2.0	STRUCTURAL DEMOLITION	12-15-2015 PC1
S2.1	FOUNDATION PLAN	12-15-2015 PC1
S2.2	SLAB DRAINAGE PLAN	12-15-2015 PC1
S3.1	ROOF FRAMING PLAN	12-15-2015 PC1
S4.1	STRUCTURAL DETAILS	12-15-2015 PC1
S4.2	STRUCTURAL DETAILS	12-15-2015 PC1
M1.0	MECHANICAL SHEDULES, NOTES, LEGEND & ABBREVIATIONS	12-15-2015 PC1
M1.1	MECHANICAL DETAILS	12-15-2015 PC1
M2.0	MECHANICAL DEMOLITION FLOOR PLAN	12-15-2015 PC1
M3.0	MECHANICAL FLOOR PLAN	12-15-2015 PC1
P1.0	PLUMBING SCHEDULES, NOTES, LEGEND, AND DETAILS	12-15-2015 PC1
P2.0	PLUMBING DEMOLITION FLOOR PLAN	12-15-2015 PC1
P3.0	PLUMBING FLOOR PLAN	12-15-2015 PC1
T24.0	ENERGY COMPLIANCE FORMS	12-15-2015 PC1
T24.1	ENERGY COMPLIANCE FORMS	12-15-2015 PC1
E1	GENERAL NOTES, LEGEND, AND ABBREVIATIONS	12-15-2015 PC1
E2	ELECTRICAL SITE PLAN	12-15-2015 PC1
E3	LIGHTING FLOOR PLAN	12-15-2015 PC1
E4	POWER FLOOR PLAN	12-15-2015 PC1
E5	PANEL SCHEDULES, SINGLE LINE, & DETAILS	12-15-2015 PC1
E6	INTERIOR TITLE 24 COMPLIANCE FORMS	12-15-2015 PC1
E7	EXTERIOR TITLE 24 COMPLIANCE FORMS	12-15-2015 PC1
L1	IRRIGATION REMOVAL & REPLACEMENT	12-15-2015 PC1
L2	PLANTING REMOVAL & REPLACEMENT	12-15-2015 PC1

## **1.6 CONTRACTOR'S SETS OF DRAWINGS AND PROJECT MANUALS**

- A. County Furnished Drawings and Project Manuals: Upon award of Contract, the County will provide a single digital copy (.pdf format) and a single paper copy of Drawings, Project Manuals and Addenda for the Contractor to use.
- B. Printed Sets Furnished at Contractor's Expense: Printed sets of Drawings, Project Manuals and Addenda can be furnished upon request. Contractor will be responsible for costs of printing and delivery of all printed sets requested. Partial sets will not be available

## **1.7 SEQUENCE OF CONSTRUCTION OPERATIONS**

- A. Before starting construction operations, Contractor shall confer with the County to review sequence of construction operations.
- B. Prior to commencement of work and within 7 calendar days of Notice to Proceed, Contractor is responsible to verify and confirm, to the County Representative in writing, the existing grades, elevations and conditions of the site. Any discrepancies between existing conditions and the contract documents must be brought to the County's attention during that time frame. Certification and acceptance of the existing conditions are to be submitted on the Site Acceptance Form.
- C. Contractor shall prepare schedules as set forth in Section 01 32 10, Construction Progress Documentation.
- D. Liquidated Damages:
  - 1. In the event of failure on the part of the Contractor to complete work, including all milestone and completion dates, within the specified time, including any approved extensions thereof, the Contractor shall pay County liquidated damages for each calendar day past the specified time that is required to substantially complete these portions of work in accordance with the General Conditions.

## **1.8 HOURS OF WORK**

- A. Contractor shall perform Work of this Contract on normal workdays and within the work hours; 8:00 am to 5:00pm. After hours work and work on Saturdays, Sundays, and holidays, may be permitted if approval is received from the County at least 3 working days in advance.

## **1.9 SITE CONDITIONS AND REQUIREMENTS**

- A. Contractor shall meet the requirements of the project BMP's and continuously keep drainage facilities, walks, and paved areas clean and free of mud and dirt, obstacles, etc. so that normal drainage and pedestrian and vehicular travel may be maintained.

## **1.10 EXCAVATIONS OR TRENCHING FOR UNDERGROUND UTILITIES**

- A. Time intervals between excavation or trenching and installation of conduit or piping or other work concerned, and backfilling operations shall be kept to absolute minimum.
- B. Excavations or trenching crossing roadways, walks, or other traffic ways shall be provided with traffic bearing steel plate or wood planking temporary covers; as most suitable.
- C. Contractor shall conduct operations on the basis that underground installations exist which are not indicated on the Contract Drawings. Refer to the following Paragraph 1.12 for additional requirements.

**1.11 DE-WATERING EXCAVATIONS**

- A. Divert water from excavations. Do not use footing excavations for drainage trenches. Remove water from excavations by pumping.
- B. Provide pumps, well points, piping, and hoses or a combination of these, as may be required, to keep excavations dry.
- C. Continue de-watering operations until concrete and backfill are placed.
- D. No debris, soil, silt, sand, rubbish, oil, cement washing, etc., shall be allowed to enter into, or placed so that it may be washed by rainfall or runoff into, storm drains or surface drains to cause damage to or have deleterious effect upon the drainage system.

**1.12 PROTECTION OF EXISTING STRUCTURES AND UTILITIES**

- A. Damage to existing improvements caused by Contractor's operations, either on-site or on adjacent sites, shall be repaired to restore damaged items to their original condition. Cost of such repair shall be borne entirely by Contractor.
- B. Drawings indicate existing structures, drainage lines, water, gas, electrical and other similar items and utilities which are known.
- C. Locate known existing structures and utilities before proceeding with operations which may damage same. Maintain them in service, except as otherwise specified, provide protection and repair damage to them caused by the Work at no increase in Contract price.
- D. Additional utilities whose locations are unknown to the County may exist. Contractor shall be alert to their existence. If encountered, immediately report to the County for disposition of same.

**PART 2 PRODUCTS (Not Used)**

**PART 3 EXECUTION (Not Used)**

**END OF SECTION**

**SECTION 01 03 00  
ALTERNATES**

**PART 1 GENERAL**

**1.1 WORK INCLUDED**

To allow the County to compare total costs where an alternate project scope might be constructed, and to enable the County's decision prior to awarding the Contract, certain alternatives have been established as described in this section of these Specifications.

**1.2 RELATED WORK**

- A. The alternates discussed herein impact building materials, assemblies and procedures described in various sections of these Specifications.
- B. The method for stating the proposed Contract Sum is described on the Bid Form.
- C. If the County elects to proceed on the basis of one of the alternatives, make all modifications to the work required in the furnishing and installation of the selected alternative to the approval of the Architect and at no additional cost to the County than as proposed on the Bid Form.

**1.3 SELECTION AND AWARD OF ALTERNATES**

- A. Indicate variation of Bid Price for Alternates described below and include in Bid Proposal Form.
- B. Alternates quoted on Bid Proposal Form will be reviewed and accepted or rejected at the County's option.
- C. Accepted Alternates will be identified in the Contractor Agreement.

**1.4 SUBMITTALS**

- A. All alternatives described in this section of these Specifications are required to be reflected in the bid submitted on the Bid Form for the work. Do not submit substitute alternatives to those described in this section.

**PART 2 PRODUCTS**

**2.1 ALTERNATE NUMBER 1 - REAR DRIVEWAY CONCRETE PAVING**

- A. General: The Owner wishes to determine in advance the cost increase to replace the existing asphaltic concrete (AC) paving and adjacent AC edge berms of the rear (east) driveway, as described in the Drawings and identified as **Bid Alternate 1**.
- B. Base Bid: For the Base Bid, include in the Contract Sum preserving and protecting the existing AC paving at the rear driveway, with cutting and patching as necessary to install below grade utilities through the existing pavement.
- C. Alternate Bid: Under Alternate Number 1 on the Bid Form, propose an amount which can be added to the Contract Sum to replace the existing rear driveway AC paving and berm with concrete in the location described in the Drawings.

**2.2 ALTERNATE NUMBER 2 - ROOF MOUNTED SOLAR ELECTRIC SYSTEM**

- A. General: The Owner wishes to determine in advance the cost increase involved in the installation of the solar electric (photovoltaic) as described in the Drawings and identified as Bid Alternate 2.
- B. Base Bid: For the Base Bid, include in the Contract Sum all new work designed to connect to or integrate with the solar electric system except those components specifically identified as Bid Alternate 2.
- C. Alternate Bid: Under Alternate Number 2 on the Bid Form, propose an amount which can be added to the Contract Sum to provide a complete solar electric system is installed in compliance with the requirements described on Sheet T4 and elsewhere in the contract documents, including all supporting calculations, product information, performance analyses, electrical diagrams, panel array layout and dimensions, support and anchorage details, submittals and shop drawings to demonstrate compliance.
- D. For Bid Alternate 2, omit the two new tubular skylights that would interfere with the installation of the solar electric panels.

### **PART 3 EXECUTION**

#### **3.1 ADVANCE COORDINATION**

- A. Immediately after award of Contract, and to the maximum extent practical, thoroughly and clearly advise all necessary personnel and suppliers as to the nature and extent of any alternate selected by the County; use all means necessary to alert those personnel and suppliers involved as to all changes in the work caused by the County's selection of an alternate.

#### **3.2 SURFACE CONDITIONS**

- A. Prior to executing the work of an alternate, verify that all surfaces/assemblies have been modified as necessary to accept the installation and that the work may be completed in accordance with the applicable manufacturer's current recommendations. In the event of a discrepancy immediately notify the Architect for resolution prior to proceeding.

**END OF SECTION**

**SECTION 01 05 00  
FIELD ENGINEERING**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Provision of surveying to lay out Work.

**1.2 QUALITY ASSURANCE**

- A. The Contractor is solely responsible for the complete, timely and accurate layout of the Work, including, but not necessarily limited to, horizontal and vertical control and dimensional coordination as necessary to execute the Work in accordance with the Contract Documents.
- B. Civil Engineers or Land Surveyors retained by the Contractor agree to cooperate with the County Representative, if necessary, to accommodate any discovered variations or deviations from the Contract Documents so that the progress of the Work is not adversely affected..
- C. Civil Engineers or Land Surveyors involved in field engineering shall be currently registered or licensed in California.

**1.3 SUBMITTALS**

- A. Certification signed by the Civil Engineer or Land Surveyor that the elevations and locations of the Work are in conformance with the Contract Documents, or documenting variations therefrom, shall be submitted in accordance with the project close-out provisions of Section 01 70 00.
- B. Prior to construction, submit: name, address and license of surveyor and professional engineer to County Representative.
- C. Prepare survey notes and records for staking and layout; submit copies of notes, drawings, and calculations to County Representative.

**PART 2 PRODUCTS (Not Used)**

**PART 3 EXECUTION**

**3.1 PREPARATION**

- A. Verify locations of survey control points prior to starting work. Promptly notify the County Representative of any discrepancies discovered.

**3.2 SURVEY REFERENCE POINTS**

- A. Existing basic horizontal and vertical control points for the Project are indicated on the plans.
- B. Locate and protect control points prior to starting site work, and preserve permanent reference points during construction. Make no changes or relocations without prior notice to the County Representative.
- C. Promptly report to the County Representative when a control or reference point is lost or destroyed or requires relocation because of necessary changes in grades, locations or other reasons. Replace lost or destroyed control or reference points based on original survey control. The Contractor shall bear the expense of replacing any control or reference points disturbed without the permission of the County.

### 3.3 LAYOUT

- A. Contractor shall provide all surveying required for accurate location of the Work, and shall retain and pay expenses for Civil Engineer or Land Surveyor to do actual required survey work.
- B. Maintain a complete, accurate log of control and survey work as it progresses.
- C. Establish a minimum of one permanent bench mark on site, referenced to established control points.
- D. Record location(s) of permanent bench marks(s), with horizontal and vertical data, on Record Drawings under provisions of Section 01 70 00.
- E. Lay out necessary lines for various parts of the Work as shown or dimensioned on the Drawings, or as directed by the County Representative from established base lines and bench marks.
- F. Establish lines and levels, locate and lay out by instrumentation and similar appropriate means:
  - 1. Existing known above and below grade utilities (identify, stake and flag).
  - 2. Stakes for grading, cut and fill, utility locations, slopes and invert elevations.
  - 3. Drainage system flow lines and component locations.
- G. Periodically verify layout by same means.
- H. After laying out the Work, inform workers and subcontractors accordingly.
- I. On completion of foundation and major site improvements prepare "as-built" notes on a copy of the Record Drawings showing any dimensions, locations, angles, and elevations of construction which vary from those indicated in the Drawings, under provisions of Section 01 70 00.

**END OF SECTION**



**SECTION 01 06 00  
REGULATORY REQUIREMENTS**

**PART 1 GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Submittals;
  - 1. Quality assurance;
  - 2. Regulatory requirements;
  - 3. Field quality control;
  
- B. Related sections:
  - 1. Document 00 70 00 -- General Conditions of the Contract
  - 2. Section 01 11 50 -- Environmental Procedures
  - 3. Section 01 12 00 -- Recycling
  - 4. Section 01 14 00 -- Special Project Procedures
  - 5. Section 01 30 00 -- Submittals Procedures

**1.2 SUBMITTALS**

- A. Submit under provisions of Section 01 30 00.
  
- B. Submit certification of inspection confirming approval by authority having jurisdiction when required by individual Section.
  
- C. Where required by individual Sections, submit the following to the Construction Manager for Owner and A/E review before submitting to enforcing authorities. When submittal has been reviewed and found acceptable to Owner and A/E, submit directly to enforcing authorities and obtain approval for installation.
  - 1. Shop drawings;
  - 2. Product data;
  - 3. Design data;
  - 4. Test reports;
  - 5. Certificates;
  - 6. Manufacturer's instructions;
  - 7. Manufacturer's field reports;
  - 8. Operation and maintenance data;
  - 9. Guarantee;
  - 10. Other items indicated.

**1.3 QUALITY ASSURANCE**

- A. Perform work in accordance with specific standards indicated. Maintain one copy of each document on site.
  
- B. UL Assemblies:

1. UL Design Numbers are indicated for various fire-rated floor/ceiling, roof/ceiling, wall, and structural frame assemblies.
  2. Where documents indicate UL Assemblies, the materials and installation shall comply exactly with the particulars of the Design Number indicated.
  3. Components may not be interchanged or substituted from different assemblies.
- C. Contractor shall abide by all applicable codes, regulations, policies, and procedures as indicated on the plans and in the specifications or mandated by agencies having authority over this project.

**PART 2 PRODUCTS (Not Used)**

**PART 3 EXECUTION**

**3.1 FIELD QUALITY CONTROL**

- A. When required by individual Section, arrange for enforcing authority to witness indicated tests.

**END OF SECTION**

**SECTION 01 11 50  
ENVIRONMENTAL PROCEDURES**

**PART 1 GENERAL**

**1.1 SUMMARY**

A. Section Includes

1. Potential Pollutants.
1. Environmental Mitigation and Air Quality Management.
2. Erosion control.
3. Concrete waste management.
4. Vehicle and equipment fueling and maintenance.
5. Spill prevention and control.
6. Temporary containment removal.
7. Non-storm water management.

B. Related Sections

1. Refer to requirements of Division 0.
2. Section 01 12 00 - Recycling
3. Section 01 31 00 - Project Management and Coordination.
4. Section 01 50 00 - Temporary Facilities and Controls.
5. Other Sections: Equipment and materials that may contain potential site pollutants.

**1.2 POTENTIAL POLLUTANTS**

A. Identify potential pollutants that are used in the Work.

B. Certain potential pollutants are identified in Attachment A, immediately following this Section.

**1.3 SUBMITTALS**

A. Submit under provisions of Section 01 30 00.

B. Implementation Drawings: Indicate the areas of the construction site for storage of potential pollutants.

C. Hazardous Material Clean Up and Solid Waste Management Data: List the employees trained in emergency spill cleanup procedures and indicate the training procedures for employees and subcontractors in spill prevention and cleanup and solid waste management.

D. Concrete Waste Management Data: Indicate concrete washout areas and the procedures to train employees and subcontractors in proper concrete waste management.

E. Vehicle and Equipment Fueling and Maintenance Data: Indicate fueling and maintenance areas and the procedures to train employees and subcontractors in proper fueling, spill prevention and clean up procedures, and maintenance.

- F. Dust Control and Monitoring Plan. Provide a document that will indicate the contractor and subcontractors shall employ to eliminate or substantially minimize the generation of dust during construction for the life of the project. Plan shall incorporate the applicable air quality mitigation measures and any requirements for dust control of the San Luis Obispo Air Pollution Control District. Plan shall also describe site monitoring and dust control protocols during non-construction hours, weekends, and holidays to assure dust is controlled at all times for the duration of the project.

#### **1.4 PRECONSTRUCTION CONFERENCE**

- A. In accordance with Section 01 31 00.
- B. Review delivery routes, storage areas, spill prevention and clean up procedures, and training procedures.

#### **1.5 DELIVERY, STORAGE AND HANDLING**

- A. Keep an accurate, current inventory of materials containing potential pollutants, delivered and stored onsite.
- B. Use personnel trained in spill prevention and emergency spill clean-up procedures to unload and store materials containing potential pollutants.
- C. Store construction raw materials containing potential pollutants off the ground in designated areas in secondary containment structures or surrounded by earth berms away from storm drain inlets, waterways, and drainage paths. Store chemicals in their original labeled containers. Cover the materials with plastic tarps when not in use.
  - 1. Store hazardous waste and materials in sealed containers; protect from vandalism. Place in areas that will be paved and surround the areas with earth berms.
  - 2. Store reactive, ignitable, or flammable liquids in accordance with fire codes.
  - 3. Store materials in a covered area during wet weather.
  - 4. Small amounts of material may be secondarily contained in "bus boy" trays or concrete mixing trays.
- D. Remove and dispose of residual materials and contaminated soil after construction is complete.

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

### **PART 3 EXECUTION**

#### **3.1 ENVIRONMENTAL MANAGEMENT AND MITIGATION**

##### **A. Cultural Resources**

- 1. If cultural resources are encountered during project grading, a qualified archaeologist or paleontologist shall be empowered to temporarily halt or redirect construction equipment

while resources are evaluated and appropriate recommendations made. Any measures to be formulated shall be in accordance with applicable County guidelines.

### **3.2 EROSION CONTROL PLAN**

- A. Comply with requirements of the Erosion Control Plan described in the Drawings.

### **3.3 CONCRETE WASTE MANAGEMENT**

- A. Wash out concrete trucks in approved areas only. Locate washout area at least 50 feet from storm drains, open ditches, streams, streets, or water bodies. Prevent runoff from washout area.
- B. Wash out wastes and allow to harden. Break the hardened concrete into pieces and dispose offsite.
- C. Do not wash recently placed concrete unless runoff will be drained to a bermed or level area, away from water ways and storm drain inlets.
- D. Do not dump excess concrete on-site, except in approved designated areas.

### **3.4 VEHICLE AND EQUIPMENT FUELING AND MAINTENANCE**

- A. Fuel vehicles and equipment at approved areas. Do not "top-off" fuel tanks.
- B. Provide stationary above ground storage tanks and dispense fuel in accordance with all federal, County and local requirements.
- C. Use personnel trained in emergency spill cleanup procedures to dispense fuel.
- D. Regularly inspect onsite vehicles and equipment for leaks, and repair immediately. Do not allow leaking vehicles or equipment onsite.
- E. Clean oil and grease build up from vehicles and equipment at approved areas.
- F. Segregate and recycle wastes, such as greases, used oil, oil filters, anti-freeze, cleaning solutions, automotive batteries, hydraulic, and transmission fluids.

### **3.5 SPILL PREVENTION AND CONTROL**

- A. Use secondary containment devices such as drain pans or drop cloths at all areas when fueling, removing, or changing fluids.
- B. Place a stockpile of spill cleanup materials where it will be readily accessible.
- C. Use personnel trained in emergency spill clean-up procedures.
- D. Clean up leaks and spills immediately, in accordance with waste management regulations.
- E. Clean up spills on paved surfaces with minimal water usage. Clean small spills with cloths and larger spills with absorbent material. Immediately send used hazardous cleanup cloth material to a certified laundry or remove and dispose as hazardous waste, in accordance with waste management regulations.

- F. Do not hose down or bury dry material spills.

### **3.6 TEMPORARY CONTAINMENT REMOVAL**

- A. Remove all temporary containment structures, devices and equipment when directed by County Representative. Clean and repair damage caused by installation and use of temporary work.

### **3.7 NON-STORM WATER MANAGEMENT**

- A. Minimize the use of water sprayed for dust control and irrigation, to avoid causing runoff and erosion.
- B. Remove sediment from dewatering operations using sediment basins. Filter sediment from sediment basins with a sump pit and perforated standpipe, wrapped in filter fabric, or a floating suction hose.
- C. Discharge water, used for flushing and disinfection, into onsite detention basins or temporary earthen basins.

**END OF SECTION**

**SECTION 01 11 50 - ATTACHMENT A**  
**PARTIAL LIST OF POTENTIAL POLLUTANTS**

1.1 Contractor shall identify the pollutants present during construction and take the necessary measures to restrict their entry into the natural drainage system, based on the National Pollutant Discharge Elimination System (NPDES) applicable laws, codes and regulations.

1.2 Potential pollutants that may be used at the site and that have the potential to enter the storm water drainage system are included in the list below. This is not intended to be a complete list of categories, products and pollutants.

**1.3 CONSTRUCTION SITE POTENTIAL POLLUTANTS**

<b>CATEGORY</b>	<b>PRODUCT, ACTIVITY</b>	<b>POLLUTANTS</b>
Adhesives	Adhesives, Glues Resins, Epoxy Synthetics Calks, Sealers, Putty, Sealing Agents Coal Tars (Naptha, Pitch)	Phenolics, Formaldehydes Phenolics, Formaldehydes Asbestos, Phenolics, Formaldehydes Benzene, Phenols, Naphthalene
Cleaners	Polishes, (Metal, Ceramic, Tile) Etching Agents Cleaners, Ammonia, Lye, Caustic Sodas Bleaching Agents Chromate Salts	Metals Metals Acidity/Alkalinity Acidity/Alkalinity Chromium
Plumbing	Solder (Lead, Tin), Flux (Zinc Chloride) Pipe Fitting (Cut Shavings) Galvanized Metals	Lead, Copper, Zinc, Tin Copper Zinc
Electrical	Wiring	Copper, Lead
Painting	Paint Thinner, Acetone, MEK, Stripper Paints, Lacquers, Varnish, Enamels Turpentine, Gum Spirit, Solvents Sanding, Stripping Paints (Pigments), Dyes	VOC's Metals, Phenolics, Mineral Spirits VOC's Metals Metals
Woods	Sawdust Particle Board Dusts Treated Woods	BOD Formaldehyde Copper, Creosote
Floors & Walls	Flashing Drywall Tile Cutting (Ceramic Dusts)	Copper, Aluminum Dusts Minerals

Remodeling & Demolition	Insulation Venting Systems	Asbestos Aluminum, Zinc
Air Conditioning & Heating	Insulation Coolant Reservoirs	Asbestos Freon
Yard O&M	Vehicle and Machinery Maintenance Gasoline, Oils, Additives Marking Paints (Sprays) Grading, Earth Moving Portable Toilets Fire Hazard Control (Herbicides) Wash Waters	Oils and grease, Coolants Benzene & Derivatives, Oils & Grease Vinyl Chloride, Metals Erosion (Sediments) BOD, Disinfectants (Spills) Sodium Arsenite, Dinitro Rodenticides, Insecticides, Herbicides, Concrete, Oils, Greases
Landscaping & Earthmoving	Planting, Plant Maintenance Excavation, Tilling Solid Wastes (Trees, Shrubs) Exposing Natural Lime or Other Mineral Deposits Soils Additives Revegetation of Graded Areas	Pesticides, Herbicides, Nutrients Erosion (Sediments) BOD Acidity/Alkalinity, Metals Aluminum Sulfate, Sulfur Fertilizers
Materials Storage	Waste Storage (Used Oils, Solvents, Etc.) Hazardous Waste Containment Raw Material Piles	Spills, Leaks Spills, Leaks Dusts, Sediments

**Note:** VOC = Volatile Organic Compounds.  
BOD = Biochemical Oxygen Demand due to the use of oxygen by decomposing materials.

**END OF ATTACHMENT A**



**SECTION 01 12 00  
RECYCLING**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Requirements to comply with all Sections of the San Luis Obispo County Construction and Demolition Debris Recycling Ordinance for County Sponsored Construction Projects.

**1.2 RELATED SECTIONS**

- A. Section 01 00 00 - Summary of Work
- B. Section 01 30 00 - Submittal Procedures
- C. Section 01 74 00 - Cleaning
- D. Section 01 70 00 - Closeout Procedures

**1.3 GENERAL**

- A. All County-sponsored construction and renovation activity within incorporated or unincorporated areas, the areas of which are greater than 1,000 square feet, and/or the costs of which are or are estimated to be, greater than or equal to \$50,000 shall be required to divert at least 70% by weight or volume of all construction and demolition debris in compliance with the County Ordinance, which implements AB 939, the California Integrated Waste Management Act.
- B. Reference Title 19 of the San Luis Obispo County Code, Chapter 8, Green Building Standards, Section 19.08.060 – Additional requirements, (a) Waste Recycling. See the following link to San Luis Obispo County Building and Construction Ordinance, under the ‘Ordinances’ subdirectory:  
  
<http://www.slocounty.ca.gov/planning/Forms-Docs.htm>
- C. The Contractor shall make every *effort* to provide opportunities for the reuse, recycling or diversion of any construction waste or by-products, including but not limited to:
  - 1. Demolition proceeds.
  - 2. Recyclable glass, metal, paper, or plastic containers and wrappers.
  - 3. Lumber end cuts, scrap, dunnage or rejects.
  - 4. Packing crates, boxes, or skids.
  - 5. Miscellaneous clean discards, over-orders, and scrap products.
- D. The Contractor shall register the construction site in the local curbside recycling program and use provided containers for all acceptable glass, metal, paper, or plastic products.
- E. The Contractor shall complete and submit a Construction Waste Management Plan (CWMP) within 30 days of the issuance of a Notice to Proceed.
- F. The Contractor shall submit periodic Waste Disposal Reports with each application for payment. All landfill disposal, recycling, salvage and reuse must be reported regardless of to whom the cost or savings accrues. Use the same units of measure on all reports.
- G. The Contractor shall submit documentation that the Diversion Requirements have been met prior to issuance of a Notice of Completion.

- H. Civil Penalties will be assessed to the Contractor if documentation is not submitted or if Diversion Requirements are not met as established in the County Ordinance.
- I. Regulatory Requirements: Contractor is responsible for knowing and complying with regulatory requirements, including but not limited to Federal, State and local requirements, pertaining to legal disposal of all construction and demolition waste materials.

#### 1.4 SUBMITTALS AND PROCEDURES

- A. Construction Waste Management Plan: A Construction Waste Management Plan (CWMP) shall be completed and submitted on an approved Recycling Plan form and shall indicate the following:
  - 1. Project Location, Project Number and Project Contractor
  - 2. Identification of the designated on-site person or persons responsible for instructing workers and overseeing and documenting results of the CWMP.
  - 3. Analysis of the trash and waste projected to be generated during the entire project construction cycle, including types and quantities.
  - 4. Landfill Options: The name, address, and telephone number of the landfill(s) where trash/waste will be disposed of, the applicable landfill tipping fee(s), and the projected cost of disposing of all project trash/waste in the landfill(s).
  - 5. Landfill Alternatives: List all waste materials that will be diverted from landfills by reuse, salvage, or recycling. The maximum volume or weight of such materials that can feasibly be diverted to reuse or recycling.
  - 6. Meetings: Describe regular meetings to be held to address waste prevention, reduction, recycling, salvage, reuse, and disposal.
  - 7. Materials Handling Procedures: Describe the means by which materials to be diverted from landfills will be protected from contamination and prepared for acceptance by designated facilities; including separation procedures for recyclables, storage, and packaging.
  - 8. Transportation: Identify the destination and means of transportation of materials to be recycled; i.e. whether materials will be site-separated and self-hauled to designated centers, or whether mixed materials will be collected by a waste hauler. The vendor or facility that the Contractor proposes to use to collect or receive that material.
- B. Calculating Volume and Weight of Debris: In estimating the volume or weight of materials identified in the Recycling Plan, the Contractor shall use the standardized Conversion Rates established by the County Public Works Director for this purpose and revised from time to time.
- C. Deconstruction: Projects involving the removal of all or part of an existing structure shall be deconstructed to the maximum extent feasible. The materials generated thereby shall be available for salvage.
- D. Approval of CWMP: No County-sponsored project shall proceed unless the CWMP Compliance Official has first approved the CWMP. The CWMP compliance Official shall only approve a CWMP if all of the following conditions have been met:
  - 1. The CWMP Plan provides all of the information set forth in 8.12.460 of the San Luis Obispo County Construction and Demolition Debris Recycling Ordinance.
  - 2. The CWMP indicates that at least 70% by weight of all construction and Demolition debris generated by the project will be diverted.
- E. If the CWMP Compliance Official determines that these conditions have been met, the Official

shall mark the CWMP 'Approved', return a copy of the Plan to the Contractor, and notify the Department of Public Works' Project Coordinator that the CWMP has been approved.

- F. If the CWMP Compliance Official determines that the CWMP is incomplete or fails to indicate that at least 70% by weight of all Construction and Demolition debris generated by the project will be reused or recycled, the Officer shall either:
1. Return the CWMP to the Contractor marked 'Denied', including a document of reasons, and so notify the Department of Public Works' Project Coordinator.
  2. Return the CWMP to the Contractor marked, 'Further Explanation Required'.
- G. Documentation:
1. Waste Disposal Reports: Submit at specified intervals, with details of quantities of trash and waste, means of disposal or reuse, and costs; show both totals to date and since last report.
    - a. Submit updated Report with each Application for Progress Payment; failure to submit Report will delay payment.
    - b. Submit Report on a form acceptable to County.
    - c. Landfill Disposal: Include the following information:
      1. Identification of material.
      2. Amount, in tons or cubic yards, of trash/waste material from the project disposed in landfills.
      3. Identity of landfills, total amount of tipping fees paid to landfill, and total disposal cost.
      4. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.
    - d. Recycled and Salvaged Materials: Include the following information for each:
      1. Identification of material, including those retrieved by installer for use on other projects.
      2. Amount, in tons or cubic yards, date removed from the project site, and receiving party.
      3. Transportation cost, amount paid or received for the material, and the net total cost or savings of salvage or recycling each material.
      4. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.
      5. Certification by receiving party that materials will not be disposed of in landfills or by incineration.
    - e. Material Reused on Project: Include the following information for each:
      1. Identification of material and how it was used in the project.
      2. Amount, in tons or cubic yards.
      3. Include weight tickets as evidence of quantity.
- H. Other Disposal Methods: Include information similar to that described above, as appropriate to disposal method.
1. As part of Closeout procedures and prior to receiving Notice of Completion for the project, the Contractor shall submit to the CWMP Compliance Official the CWMP Disposal Report and documentation that the Diversion Requirement for the project has been met. The Diversion Requirement is satisfied if the contractor has diverted at least 70% of the total Construction And Demolition debris generated by the project *via* reuse or recycling, unless an Exemption has been granted pursuant to 8.12.475 of the Ordinance, in which case the Diversion Requirement shall be the maximum feasible diversion rate established by the Waste Management Plan Compliance Official for the project. The Disposal Report documentation shall include all of the following:
    - a. All receipts from the vendor or facility that collected or received each material showing the actual weight or volume of that material.
    - b. A copy of the previously approved CWMP for the project with a completed Disposal Report section showing the actual volume or weight of each material diverted and landfilled.

- c. Any additional information the Contractor believes is relevant to determining its efforts to comply in good faith with the County's Ordinance.
- I. Weighing of Wastes: The Contractor shall make reasonable efforts to ensure that all Construction and Demolition debris diverted or landfilled is measured and recorded using the most accurate method of measurement available. To the extent practical, all construction and Demolition debris shall be measured by weight on scales. Such scales shall be in compliance with all regulatory requirements for accuracy and maintenance. For Construction and Demolition debris for which weighing is not practical due to small size or other considerations, a volumetric measurement shall be used.
- J. Determination of Compliance: The Recycling Plan Compliance Official shall review the documentation and determine whether the Contractor has complied with the Diversion Requirement as follows:
  - 1. Full Compliance: If the Official determines that the Contractor has fully complied with the documentation and Diversion Requirements applicable to the project, the Disposal Report shall be approved and the Contractor and the Department of Public Works' Project Coordinator shall be informed.
  - 2. Substantial Compliance: If the Official determines that the Diversion Requirement has not been achieved, the Official shall determine whether the Contractor has made a good faith effort and is in substantial compliance with the County's Ordinance. In making this determination, the Official shall consider the availability of markets for the Construction and Demolition debris landfilled, the size of the project, and the documented efforts of the Contractor to divert Construction and Demolition debris. If the Official determines that the Contractor has made a good faith effort to comply with the Ordinance, the Disposal Report shall be approved and the Contractor and the Department of Public Works' Project Coordinator shall be informed.
  - 3. Non-Compliance: If the Official determines that the Contractor is not in Substantial Compliance with the County Ordinance or if the Contractor failed to submit proper documentation, the Contractor shall be assessed and be responsible for any civil penalty arising from the project's failure to comply with the Ordinance. The penalty shall be calculated as 2% of the total Project Valuation or Contract Award Amount and shall be paid within 30 days of the finding on non-compliance by the Official. The civil penalty shall be payable to the County of San Luis Obispo and sent to the Public Works Director. Interest shall accrue on any penalty at the legal rate of interest from the date of imposition by the Official per Section 8.12.485 of the Ordinance.

**PART 2 PRODUCTS (Not Used)**

**PART 3 EXECUTION**

**3.1 SUBMITTAL OF WASTE MANAGEMENT PLAN FORM**

- A. Contractor shall complete and submit CWMP per instructions in Part 1 - General and per the County's Recycling Ordinance for County Sponsored Projects. County Recycling Ordinance, instructions and forms are available at:

[http://www.slocounty.ca.gov/PW/DevServ/Construction\\_and\\_Demolition\\_Debris\\_Recycling.htm](http://www.slocounty.ca.gov/PW/DevServ/Construction_and_Demolition_Debris_Recycling.htm)

**3.2 RECYCLING/DIVERSION EFFORTS DURING DEMOLITION/CONSTRUCTION ACTIVITIES**

- A. Contractor shall make a good faith effort to achieve to comply with County's Recycling Ordinance and shall accurately weigh materials and provide proper documentation per

the Ordinance as outlined above in Part 1 – General.

- B. Communication: Distribute copies of the CWMP to jobsite foremen, each subcontractor, the County, and the Architect.
- C. Instruction: Provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse, and return methods to be used by all parties at the appropriate stages of the project and in compliance with the CWMP.
- D. Waste management and diversion goals may be achieved by the following methods:
  - 1. Roll off waste containers: Contractor may hire a company which provides a roll off waste containers which is then sorted off site.
  - 2. On site sorting: Contractor may sort waste on site prior to off-haul.

### **3.3 SUBMITTAL OF CONSTRUCTION WASTE MANAGEMENT PLAN DISPOSAL REPORT**

- A. Contractor shall complete and Submit Construction Waste Management Plan Disposal Report per instructions in Part 1 -General and per the County's Recycling Ordinance for County Sponsored Projects prior to receiving a Notice of Completion.

### **3.4 PAYMENT OF PENALTIES, IF REQUIRED**

- A. If the project is found to be non-compliant with the County's Recycling Ordinance for County Sponsored Projects, Contractor shall promptly pay penalties as described in Part 1 – General per the Ordinance.

**END OF SECTION**

### Requirements for Managing Project Waste

Under WASTE MANAGEMENT in your Construction Permit Application you must select either:

- A) use an Integrated Waste Management Authority (IWMA)-certified construction and demolition waste recycling facility? or
- B) use other recycling and disposal facilities?

**Please select A or B on back of this form.**

Your choice means:

**A) use an IWMA-certified construction and demolition waste recycling facility.** Check this if your construction and demolition waste is going to the following facilities.

C&D Recycling Facility at Cold Canyon Landfill	805-549-8332
C&D Recycling Facility at Chicago Grade Landfill	805-466-2985
North SLO County Recycling	805-434-0043
API (roll-off/debris box company)	805-928-8689
R&R (a roll-off/debris box company)	805-929-8000
Recycling Facility at the Paso Robles Landfill	805-238-2028
Santa Maria Transfer Station	805-922-9255
Bedford Enterprises/SMART	805-922-4977
Health Sanitation Service	805-922-2121

By using the above IWMA-certified recycling facilities for your construction and demolition (C&D) waste, you have met the requirement to recycle 70% of your waste. You can either hire a hauling company or haul your C&D waste yourself to these facilities. Call for rates and hours of operation.

**B) use other recycling and disposal facilities.** Check this if your C&D waste is NOT going to the C&D recycling facilities listed above. If you choose this option, before you FINAL THE WORK fill out an extra form (a [Detailed Recycling Plan](#)) that shows how you will recycle 70% of your C&D waste. The form is available from Architectural Services, Design Division (781- \_\_\_\_\_)

**Receipts.** With both Option A or Option B, at the end of your project you must submit all the original receipts from any recycling and/or disposal facility that received waste from your project. (Be sure that the receipts from Cold Canyon Landfill, Chicago Grade Landfill, Paso Robles Landfill and the Santa Maria Transfer Station indicate that you used the C&D recycling area.) Your receipts must be submitted and approved **before you can receive the Final Building Inspector Approval.** If you select Option B, before you receive the Final Inspector Approval you also need to fill out another part of the Detailed Recycling Plan that shows you recycled the required amount of project waste. Do **NOT** use a regularly scheduled garbage/recycling collection service because you will not have proper documentation for the amount of waste generated and where it went.

**SLO Green Building Ordinance** requires that you recycle **70%** (by weight) of the waste your construction or demolition project generates. Waste includes anything you discard from the site, such as wood scraps, cardboard, drywall, flashing, paint or other finishing products, tools, concrete, asphalt, plastic bags, remnants of insulation, etc. In addition, seventy percent of the total discards must be recycled if your project is a demolition project of 1,000 sq. ft or more.

Before you receive a construction permit you must tell the County how you will handle the project's waste stream. As noted above, there is a place to do this on the Construction Permit Application, or on the other side of this paper, or on the form on the web. Failure to achieve the recycling goal could result in delays in receiving Final Inspection Approval and result in a Code Enforcement Case against your property. Code Enforcement Fees must be paid before receiving Final Approval.

Project #/ Permit Number: \_\_\_\_\_ - \_\_\_\_\_

### Simplified Recycling Plan

Excerpt from the Construction Permit Application

#### WASTE MANAGEMENT

You need to review the Requirements for Managing Project Waste information on the back of this form and then check the box that fits your project. You must check one of the boxes prior to permit issuance. Note: IWMA means Integrated Waste Management Authority

Are you planning to

- A) use an IWMA-certified construction and demolition waste recycling facility? or
- B) use other recycling and disposal facilities?

If B is checked, you must fill out Sections 1 & 2 of a [Detailed Recycling Plan](#) form and have it approved prior to the permit being issued. For a copy of the Detailed Recycling Plan form, use the web: <http://www.slocounty.ca.gov/planning/formslibrary.htm>. or contact Building Div. (781-5628). For more information and a list of certified facilities read the **Requirements for Managing Project Waste** on the back of this form.

#### LEGAL DECLARATION

I, the owner of record of this property, or authorized agent, have accurately completed this form and declare that all statements herein are true. I acknowledge the responsibility for recycling my project's waste and the penalty for non-compliance. I agree to comply with the requirements of the State Green Code and SLO County's Green Ordinance

Property owner/Agent signature \_\_\_\_\_ Date: \_\_\_\_\_

Name of IWMA certified construction and demolition waste recycling facility to be

Used for this project: \_\_\_\_\_

Prior to a construction and demolition, this form must be signed and emailed or faxed to: \_\_\_\_\_,

**Architectural Services, Design Division**

Department of Public Works  
1050 Palm Street, Room 206  
San Luis Obispo CA 93408

TO EXPEDITE THE PROCESSING OF YOUR RECYCLING PLAN, PLEASE EMAIL OR FAX IT TO ARCHITECTURAL SERVICES, DESIGN DIVISION.

**Seven days prior to Final Inspection you must submit receipts from all of the recycling and landfill facilities that received waste from your project. Final Inspection approval will be delayed until the receipts are submitted and approved. Anticipate when you will need Final Inspection approval.**

**DETAILED RECYCLING PLAN & DISPOSAL REPORT**



PLANNING & BUILDING DEPARTMENT • COUNTY OF SAN LUIS OBISPO  
976 OSOS STREET • ROOM 200 • SAN LUIS OBISPO • CALIFORNIA 93408 • (805) 781-5600

<b>SECTION 1. To be completed for all projects that do NOT use a certified recycling facility. Call 781-5628 for a list of certified facilities.</b>									
Application Number: PMT _____					Owner Name: _____				
Site Address: _____					Owner Address: _____				
APN: _____					Contractor Name: _____				
Project Cost Estimate: _____					Contractor Address: _____				
Square Footage: _____					Contractor Phone: _____				
Garbage/Recycling Company: _____					Applicant Name: _____				
Recycling Facility: _____					Applicant Signature: _____				
<b>SECTION 2. Recycling Plan – to be completed by all unincorporated county Project Applicants prior to the permit being issued unless an IWMA-Certified facility is used for recycling and disposal.</b>					<b>SECTION 3. Disposal Report – To be completed before Final Approval/Sign Off. The Disposal Report must be done for all finished projects not using an IWMA-Certified recycling facility. Fill in quantities below and attach all original disposal &amp; recycling receipts.</b>				
Materials	Before Construction (Estimated Tons)			After Construction (Actual Tons)			All disposal & recycling receipts must be submitted to Barry Tolle		
	To Landfill	To Recycling	Tons Disposed in Landfill	Recycling On-Site Reuse	Off-Site Recycling	Total Recycled			
Land Clearing (brush, trees, etc.)									Tons Generated
Inerts (Concrete, soil, etc.)									
Drywall									
Metals									
Lumber									
Cardboard									Sum of Diverted Materials
Mixed Recyclables									
Trash									Percent of Materials Diverted, Actual Diversion
<b>Totals</b>									
<b>Estimated % Diversion</b>									
<b>Official Use Only.</b>					<b>Official Use Only</b>				
Plan Approved					Balance				
Project Exempt					Disposal Report Approved				
Plan Denied					Disposal Report Denied				
Information Required					Information Required				
Date					Date				
Reviewed/Approved By					Reviewed/Approved By				
Final Project Approval will be delayed if Section 3 is not completed and if receipts are not submitted					Questions? Call 781-5628 for questions about certified recycling facilities.				



**SECTION 01 13 00**  
**ITEMS DESIGNATED BY BRAND OR NAME**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Pursuant to Public Contract Code Section 3400(c), the County may make a finding that is described in the invitation for bids that designates certain products, things, or services by specific brand or trade name for the statutorily enumerated purposes. As required by Section 3400(c)(2), the County Board of Supervisors has made such findings. These findings, as well as the particular materials, products and control systems and their specific brand or trade names that must be used for the Project may be found below. Unless specifically designated herein, whenever in the specifications any material, process or article is indicated or specified by grade, patent, or proprietary name or by name of manufacturer, such specifications shall be deemed to be used for the purpose of facilitating the description of the material, process or article desired and shall be deemed to be followed by words "or equal."

1. Door Hardware - General Application County-wide
  - a. Locksets, Access Control Systems, and Keying:  
Schlage Commercial (Ingersoll Rand Security Technologies)
  - b. Door Closers: LCN Closers
  - c. Panic Hardware and Mullions: Von Duprin

**1.2 SUBSTITUTIONS**

- A. Contractor may offer any material, process or article, other than those listed above in Section 1.01. A which shall be substantially equal or better in every respect to that so indicated or specified, provided, however, that if the material, process or article offered by Contractor is not, in the opinion of the County substantially equal or better in every respect to that specified, then Contractor must furnish the material, process or article specified or one that in the opinion of the County is the substantial equal or better thereof in every respect.
- B. In those cases involving a unique or novel product application required to be used in the public interest, or where there is only one brand or trade name known to the specifying agency, it may list only one. Specifications shall provide a period of time prior to the award of the Contract for submission of data substantiating a request for a substitution of "an equal" item.
- C. The period of time for requesting a substitution where one product, and only one product, is known and identified as the **sole suitable product**, is hereby deemed to be no later than ten (10) days prior to the opening of bids. That period of time will allow the County and the Architect and/or Engineer to review the specifications, blueprints and/or other data required to be submitted by the Contractor so that the County may make a fair evaluation of the request. The burden of proof as to the equality of any material, process or article shall rest solely with the Contractor. The County's decision shall be final. The purpose of that period of time will allow the County to notify listed plan holders of permitted substitutions, by Addenda, prior to the opening of bids to enable fair and competitive bidding.
- D. Blueprints and/or Other Data: All proposals for substitution shall be accompanied by complete manufacturer specifications, blueprints and/or other data with all information presented for both the originally specified material and that proposed for substitution so the County may make a fair evaluation of the Contractor's request; and to be considered by the County, all requests for substitution shall be made within 35 calendar days from date

of award of Contract. The County's decision shall be final.

- E. If the Substitution is Permitted: The Contractor shall be solely and directly responsible for fitting approved substituted material and equipment into the available space in a manner acceptable to the County and for the proper operation of the substituted equipment as intended by the original design with all other equipment with which it may be associated. The Contractor shall bear all costs of meeting the above requirements for presenting a proposed substitution, and if the substitution is accepted, he/she must bear all costs involved including costs of Architect's and Engineer's services required in adapting the substituted material or equipment to the installation to the complete satisfaction of the County.
- F. Approval of Submitted Drawings: When drawings are submitted by the Contractor for the purpose of showing the installation in greater detail, their approval shall not excuse the Contractor from any and all requirements shown on the drawings and specifications or as may be required to properly install the Work.

**PART 2        PRODUCTS (Not Used)**

**PART 3        EXECUTION (Not Used)**

**END OF SECTION**

**SECTION 01 14 00  
SPECIAL PROJECT PROCEDURES**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Green Building Ordinance: Compliance with the County of San Luis Obispo Green Building Ordinance, incorporating the "Non-Residential Tier 1 Voluntary Measures" of the California Green Building Standards Code (Cal-Green). Requirements under this Section are in addition to Cal-Green mandatory measures.
  - 1. Requirements for Cal-Green Tier 1 as applicable to this project are described in the Drawings.
  - 2. Requirements for compliance documentation, verification and certification for Tier 1 measures are described in the Drawings and below in this Section.
- B. Contractor's Use of Existing Facility: Cal-Fire will vacate the building during construction to afford the Contractor maximum schedule and operational flexibility. Constraints on facility access and use shall be as established at the Pre-Bid Conference and published prior to the bid date.

**1.2 RELATED SECTIONS**

- A. Section 01 01 00 – Summary of Work
- B. Section 01 50 00 – Temporary Facilities and Controls

**1.3 SUBMITTALS AND PROCEDURES**

- A. Recycled Content Value: Cal-Green Tier 1 compliance includes achieving a minimum Recycled Content Value (RCV) of 10% of the total cost of materials installed in the Work.
- B. RCV Documentation: Refer to Attachment A to this Section. Prepare and submit completed forms to demonstrate the RCV of component materials and the cumulative project materials RCV.

**PART 2 PRODUCTS (Not Used)**

**PART 3 EXECUTION (Not Used)**

**END OF SECTION**

**ATTACHMENT A FOLLOWS**



**Step 1** - Insert information for materials and/or assemblies used for calculation of the Recycled Content Value into Columns A, B, and C.

**NOTE:** It is not necessary to list each material or assembly product used in the project. List a sufficient number of materials and/or assembly products to meet the required percentage of Recycled Content Value. Products with a higher combination of cost and recycled content may show compliance with the RCV requirements more efficiently.

**Step 2** - Insert the cost of each material and/or assembly product into Column D.

**Step 3** - Insert the Post-Consumer and Pre-Consumer Recycled Content percentages (provided by the manufacturer or other source) of each material and/or assembly into Columns E and F.

**NOTE 1:** If the Post-Consumer and Pre-Consumer Recycled Contents of any material are provided in pounds, Table 3 (Conversion Table) may be used for calculating the percentages of the recycled contents in each material.

**NOTE 2:** Recycled Content Value of assemblies (products consisting of multiple materials) shall be calculated by considering each material separately. The Recycled Content of an assembly may be calculated by using Table 2 (Assembly Product Recycled Content Calculations).

**NOTE 3:** If the manufacturer reports total recycled content as one percentage in lieu of separately reported pre-consumer and post-consumer, one half of the reported total recycled content shall be inserted into Column E, and the other half into Column F.

**Step 4** - The Recycled Content of each material and/or assembly is calculated by the following equation:

$$\text{Recycled Content (\%)} = \text{Post-Consumer Recycled Content (\%)} + 1/2 \text{ Pre-Consumer Recycled Content (\%)}$$

Using Table 1, add the values in Column E to 1/2 of the values in Column F; insert the Recycled Content (%) of each material into Column G.

**Step 5** - The Recycled Content Value of each material and/or assembly is calculated by the following equation:

$$\text{Recycled Content Value (\$)} = \text{Material Cost (\$)} \times \text{Recycled Content (\%)}$$

Using Table 1, multiply the values in Column D by values in Column G, and insert the Recycled Content Value of each material into Column H.

**Step 6** - Total Column H and enter the Total Recycled Content Value (\$) in the provided box.

**Step 7** - The total estimated material cost for the project is calculated by ONE of the following methods:

- 1) Insert the project square footage and square foot valuation (cost per sq. foot, established by the local enforcing agency or Table A4.405.3) in the provided boxes. Multiply the project square footage by the square foot valuation; multiply that cost by 45 %. Insert the total material cost in the provided box; OR
- 2) Insert the estimated project construction cost (valuation) in the provided box; multiply the valuation by 45% and insert the total material cost in the provided box; OR
- 3) Summarize the cost of each piece of material and/or assembly used in the project, and insert the total material cost in the provided box.

**Step 8** - Recycled Content Value of the project as a percentage from the Total Material Cost is calculated by the following equation:

$$\text{Recycled Content Value (\%)} = \frac{\text{Recycled Content Value (\$)}}{\text{Total Material Cost (\$)}} \times 100$$

Using Table 1, divide the Total Recycled Content Value (\$) by the Total Material Cost (\$); multiply the value by 100, and insert the percentage in the bottom right box. This value needs to be 10 percent or greater to meet Tier 1, or 15 percent or greater to meet Tier 2.

Table 2 - Assembly Product Recycled Content Calculations \*

ASSEMBLY PRODUCT:									
A	B	C	D	E	F	G	H	I	
Assembly Product**	Material Weight (lb)	Material Weight (%)	Post-Consumer Recycled Content(lb)	Post-Consumer Recycled Content (%)	Pre-Consumer Recycled Content(lb)	Pre-Consumer Recycled Content (%)	Proportional Post-Consumer Content (%)	Proportional Pre-Consumer Content (%)	
<b>Total Weight:</b>									
<b>Assembly Post-Consumer Recycled Content:</b>									
<b>Assembly Pre-Consumer Recycled Content:</b>									

\* Use one sheet per assembly product.  
 \*\* Materials used as components of the structural frame shall not be used to calculate recycled content. The structural frame includes the load bearing structural elements, such as wall studs, plates, sills, columns, beams, girders, joists, rafters, and trusses.  
 The sum of post-consumer and pre-consumer recycled contents of each material in the assembly product cannot exceed 100%.

**Step 1** - Insert the type of each material in the assembly into Column A

**Step 2** - Insert the total weight of the assembly and the weight of each material in the assembly into Column B.

**Step 3** - Divide the weight of each material in Column B by the total weight of the assembly; insert material weight percentages in Column C.

If the weight of materials in the assembly is provided by the manufacturer or other source in percentages, directly insert the percentage of each material into Column C, and the total weight of the assembly into Column B "Total Weight".

**Step 4** - Insert the Post-Consumer Recycled Content of materials (pounds, provided by the manufacturer or other source) into Column D.

If the Post-Consumer Recycled Content is provided in percentages, insert the values in Column E.

**Step 5** - Insert the Pre-Consumer Recycled Content of materials (pounds, provided by the manufacturer or other source) into Column F.

If the Pre-Consumer Recycled Content is provided in percentages, insert the values in Column G.

The Assembly Post-Consumer and Pre-Consumer Recycled Content percentages shall be calculated based on the provided information and the weight of each material in the assembly.

**Step 6** - Divide the values in Column D by the total weight of the assembly, and insert the Proportional Post-Consumer Recycled Content of each material in percentages into Column H.

If the Post-Consumer Recycled Content of materials is provided as percentage, multiply the values in Column C by the values in Column E, and insert the Proportional Post-Consumer Recycled Content (%) of each material in Column H.

**Step 7** - Divide the values in Column F by the total weight of the assembly, and insert the Proportional Pre-Consumer Recycled Content of each material in percentages into Column I.

If the Pre-Consumer Recycled Content of materials is provided as percentage, multiply the values in Column C by the values in Column G, and insert the Proportional Pre-Consumer Recycled Content (%) of each material in Column I.

**Step 8** - Total Column H and insert the Assembly Post-Consumer Recycled Content in the box provided.

**Step 9** - Total Column I and insert the Assembly Pre-Consumer Recycled Content in the box provided.

**Step 10** - Transfer the Assembly Post-Consumer and Pre-Consumer Recycled Contents to Table 1, Columns E and F; insert the required information for the assembly into Table 1, Columns A, B, C and D.

**Table 3 - Recycled Content Conversion Table (Pounds to %) \***

A	B	C	D	E	F
Type of Material	Material Weight (lb)	Post-Consumer Recycled Content(lb)	Post-Consumer Recycled Content (%)	Pre-Consumer Recycled Content(lb)	Pre-Consumer Recycled Content (%)

\* When the Post-Consumer and Pre-Consumer Recycled Content of any material are provided in pounds, Table 3 may be used for calculating the percentages of the recycled contents in each material. Table 3 shall not be used for assembly calculations.

Step 1 - Insert the type of material into Column A.

Step 2 - Insert the weight of material (provided by the manufacturer or other source) into Column B.

Step 3 - Insert the weight of Post-Consumer Recycled Content (provided by the manufacturer or other source) into Column C.

Step 4 - Insert the weight of Pre-Consumer Recycled Content (provided by the manufacturer or other source) into Column E.

Step 5 - Divide the values in Column C by the values in Column B; insert the Post-Consumer Recycled Content of each material in percentages into Column D.

Step 6 - Divide the values in Column E by the values in Column B; insert the Pre-Consumer Recycled Content of each material in percentages into Column F.

Step 7 - Transfer the percentages of Post-Consumer and Pre-Consumer Recycled Content from Column D and Column F to Table 1, Columns E and F.



**SECTION 01 25 00  
CONTRACT MODIFICATION PROCEDURES**

**PART 1 GENERAL**

**1.1 SUMMARY**

- A. This Section specifies administrative and procedural requirements for handling and processing Contract modifications.
- B. Related Sections include the following:
  - 1. Division 1 Section 01 60 00 "Product Requirements" for administrative procedures for handling requests for substitutions made after Contract award.

**1.2 RELATED DOCUMENTS**

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

**1.3 MINOR CHANGES IN THE WORK**

- A. Architect will issue, through County Representative, supplemental instructions authorizing Minor Changes in the Work not involving adjustment to the Contract Sum or the Contract Time as Field Orders. Reference 00 70 00 5.3.C.

**1.4 PROPOSAL REQUESTS**

- A. County-Initiated Cost Request Bulletins (CRB): County 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. Cost Request Bulletins issued by County Representative are for information only. Do not consider them instructions either to stop work in progress or to execute the proposed change.
  - 2. Within fifteen (15) calendar days after receipt of Proposal Request, submit a quotation specifying 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 (San Luis Obispo County tax to be used), delivery charges, equipment rental (Cal Trans rates to be used), and amounts of trade discounts.
    - c. Include costs of labor and supervision directly attributable to the change.
    - d. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
- B. Contractor-Initiated Proposals: If latent or unforeseen conditions require modifications to the Contract, Contractor may propose changes by submitting a notice of change to County Representative within 5 calendar days of discovery, with price and schedule impacts due 10 days thereafter.

1. Include a statement outlining reasons for the change and the effect of the change on the Work, including the proposed change in Contract Sum and Contract Time. Provide a complete description of the proposed change.
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 costs of labor and supervision directly attributable to the change.
5. 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.
6. Comply with requirements in Division 1 Section 01 60 00 "Product Requirements" if the proposed change requires substitution of one product or system for product or system specified.

### **1.5 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.

### **1.6 CHANGE ORDER PROCEDURES**

- A. On County's approval of a Cost Request Bulletin or Contractor Initiated Proposal, County Representative will issue a Change Order for signatures of County and Contractor.
- B. Work approved and performed via Cost Request Bulletin or Contractor Initiated Proposal cannot be billed until this work is incorporated into an executed Change Order.

### **1.7 CONSTRUCTION CHANGE DIRECTIVE**

- A. Construction Change Directive: County Representative may issue a Construction Change Directive as referenced in General Conditions 00 70 00 5.3.E.
  1. Construction Change Directive 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.
- B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive. All time and material records are to be verified by the County's Inspector of Record in writing on a daily basis. If not verified in writing, the County will not acknowledge costs.
  1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract. Work performed through a construction change directive cannot be billed until this work is incorporated into an executed Change Order.

**PART 2        PRODUCTS (Not Used)**

**PART 3        EXECUTION (Not Used)**

**END OF SECTION**

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**SECTION 01 26 00**  
**REQUEST FOR INTERPRETATION (RFI)**

**PART 1 GENERAL**

**1.1 SUMMARY**

- A. Requests for Interpretation.
- B. Related Sections include the following:
  - 1. Section 01 25 00 "Contract Modification Procedures" for procedural requirements governing handling and processing of Contract modifications.
  - 2. Section 01 31 00 "Project Management and Coordination."
  - 3. Section 01 30 00 "Submittal Procedures" for submittal requirements for RFI drawings.
  - 4. Section 01 60 00 "Product Requirements" for product and substitution requirements.

**1.2 DEFINITIONS**

- A. Request for Interpretation (RFI): Request from Contractor seeking interpretation or clarification of some requirement of Contract Documents and not involving change in Contract Sum or Contract Time.
  - 1. Improper RFI: An RFI meeting any of the following conditions:
    - a. RFI not prepared in accordance with requirements of this Section
    - b. RFI missing graphic solution proposal from contractor where appropriate
    - c. RFI with subject listed as improper subject matter in "GENERAL" article of this section.
  - 2. Frivolous RFI: RFI that requests information that is clearly indicated on or reasonably inferable from the Contract Documents.
- B. Proposal Request: document issued by the County after Contract award which may include drawings and other information used to solicit proposal for change in Work. See Division 01 Section 01 25 00 "Contract Modification Procedures."

**1.3 GENERAL**

- A. Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.
- B. Submit RFI from subcontractor or material supplier through Contractor to County Representative who shall review and sign each RFI prior to submittal.
  - 1. County Representative will return RFIs submitted by other entities controlled by Contractor with no response.
  - 2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.
- C. Improper subjects for RFIs: Do not submit RFI for following:
  - 1. Requests for approval of submittals. Comply with Division 01 Section 01 30 00 "Submittal Procedures."
  - 2. Requests for approval of substitutions. Comply with Division 01 Section 01 60 00 "Product Requirements."

3. Requests for approval of Contractor's means and methods.
4. Requests for coordination information already indicated in the Contract Documents.
5. Requests for coordination of various materials and systems indicated on Contract Documents with field conditions and with each other. Comply with Division 01 Section 01 31 00 "Project Management and Coordination."
6. To provide as-built information required by Record documents specified in Division 01 Section 01 70 00 "Closeout Procedures"
7. To request changes which are known to entail additional cost or credit, or alter Contract Time. Comply with Division 01 Section 01 25 00 "Contract Modification Procedures."
8. Requests for interpretation of Architect's actions on submittals.
9. Incomplete RFIs or inaccurately prepared RFIs.

#### **1.4 REQUEST FOR INTERPRETATION (RFI)**

##### **A. General:**

1. RFI is a request for interpretation only. If Contractor believes response to RFI results in change in Contract Sum, Contract Time, or both, comply with Division 01 Section "Contract Modification Procedures."
2. Submit RFI on a form, subject to County Representative's prior review and approval. Form shall be completely filled in and if prepared and submitted electronically, and shall be fully legible.
3. RFI must be submitted via web-based system. Address for web address and login information will be distributed at Pre-Construction Conference. Electronic form of attached Request for Interpretation will be provided upon request.

##### **B. Number RFIs sequentially using only next sequential number. Do not include subcontractors RFI number on form; include date submitted.**

1. Each page of attachments to RFI shall bear RFI number and shall be consecutively numbered.

##### **C. Content of RFIs:**

1. Specifically identify if time response interpretation is required to avoid impact on Construction Schedule and Cost.
2. Include a detailed, legible description of item needing information or interpretation and the following:
  - Project name.
  - Project number.
  - Date.
  - Name of Contractor.
  - Name of County Representative
  - Name of Architect.
  - RFI number, numbered sequentially.
  - RFI subject.
  - Specification Section number and title and related paragraphs, as appropriate.
  - Drawing number and detail references, as appropriate.
  - Field dimensions and conditions, as appropriate.
  - Contractor's suggested resolution.
  - Contractor's signature.
3. If Contractor's solution(s) impacts the Contract Time or the Contract Sum, Contractor shall notify the County of impact in the RFI.

4. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.
- D. RFI shall include written and graphic solutions proposed by Contractor. County, County Representative and Architect will determine if proposal is in accord with Contract Documents and design intent of Project.
1. Contractor's failure to make reasonable effort to propose realistic solution may result in Request for Interpretation returned with no action.
  2. Submit separate RFI for each item or, subject to Architect's approval, group of closely related items requiring interpretation or clarification.
- E. Improper or Frivolous RFI:
1. Will be returned unanswered and shall be labeled as frivolous in the official RFI log.
  2. At Contractor's request, after notification by the County that RFI is improper or frivolous, RFI will be processed with processing costs charged to Contractor as follows:  
  
Contractor shall reimburse County for Architect's account for time spent in processing improper or frivolous RFI at the following standard hourly rates. Hourly rates include mandatory and customary contributions and benefits including employment taxes and other statutory employee benefits, insurance, sick leave, holidays, vacations, pensions, and similar contributions and benefits.
    - a. Project Manager: \$189/hour.
    - b. Project Architect: \$130/hour.
    - c. Project Engineer: \$177/hour.
- F. For RFIs submitted in the form of drawings, follow submittal procedures specified for Shop Drawings in Division 01 Section 01 30 00 "Submittal Requirements."

## 1.5 REVIEW AND SUBMITTAL

- A. Submit Electronic copy of completed RFI form to County Representative who will promptly forward to the Architect for action, including required attachments.
1. RFI received after 3pm will have the following business day recorded as receipt of RFI date.
  2. RFI received after 12pm on Fridays will not be processed until the following Monday, which will be the recorded receipt of RFI date.
- B. Allow minimum of 14 calendar days review and response time for each RFI.
1. Requested response time indicated on RFI shall be consistent with minimum review period specified.
  2. Requested response time will be extended where required by concurrent review of excessive number of RFIs, including improper and frivolous RFIs.
- C. Architect's Action: Architect will review each RFI, determine action required, and respond.
1. The following RFIs will be returned without action:
    - a. RFIs that meet improper or frivolous definitions as listed in this section.
  2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt of additional information.

3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Division 01 Section 01 25 00 "Contract Modification Procedures."
  4. If Contractor believes the RFI response warrants a change in the Contract Time or the Contract Sum, notify County Representative in writing within Five (5) calendar days of receipt of the RFI response.
- D. On receipt of Architect's action, the County Representative will update the RFI log and immediately distribute the RFI response to the affected parties. Review response and notify County Representative and Architect within Five (5) calendar days if Contractor disagrees with response.
- E. RFI Log: The County Representative will prepare, maintain, and submit a tabular log of RFIs organized by the RFI number.

**PART 2        PRODUCTS (Not Used)**

**PART 3        EXECUTION (Not Used)**

**END OF SECTION**



**SECTION 01 30 00  
SUBMITTAL PROCEDURES**

**PART 1 GENERAL**

**1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and other Division 1 Specification Sections, apply to this Section.

**1.2 SUMMARY**

- A. This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.

**1.3 DEFINITIONS**

- A. Action Submittals: Written and graphic information and physical samples that require Architect's and County Representative's responsive action. Action submittals are those submittals indicated in individual Specification Sections as action submittals.
- B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's and County Representative's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as informational submittals.
- C. Perform no portion of Work requiring submittal and review of Shop Drawings, Product Data, Samples, or similar submittals until respective submittal has been returned stamped with action by Architect and County Representative allowing Work to proceed.
- D. Contractor shall not be relieved of responsibility for deviations from requirements of Contract Documents by Architect's and County Representative's review of Shop Drawings, Product Data, Samples, or similar submittals unless Contractor has specifically informed Architect and County Representative in writing of such deviation at time of submittal and Architect and County Representative have given written acceptance to specific deviation. Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals by Architect's and County Representative's review thereof.
- E. Direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples, or similar submittals, to revisions other than those requested by Architect or County Representative on previous submittals.

**1.4 SUBMITTAL PROCEDURES**

- A. General: Electronic copies of CAD Drawings of the Contract Drawings will be provided by Architect for Contractor's use in preparing submittals, subject to completion and return of Architect's release form.
- B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
  - 1. As required for each submittal, submit product data, Shop Drawings, material samples, color chips or charts, test data, certificates, and warranties at the same time for each Section of the Specifications.
  - 2. Coordinate each submittal with fabrication, purchasing, testing, delivery, other

- submittals, and related activities that require sequential activity.
  - 3. 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.
  - 4. Architect and County Representative reserve the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- C. Submittals Schedule: Comply with requirements in Division 1 Section "Progress Schedules and Reports" for list of submittals and time requirements for scheduled performance of related construction activities.
- D. Processing Time: Allow enough time for submittal review, including time for resubmittals, as follows. Time for review shall commence based on County Representative's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals far enough in advance of the Work to permit processing, including resubmittals.
- 1. Initial Review: Allow 15 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. County Representative will advise Contractor when a submittal being processed must be delayed for coordination.
  - 2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
  - 3. Resubmittal Review: Allow 15 days for review of each resubmittal.
  - 4. Sequential Review: Where sequential review of submittals by Architect's consultants, County, or other parties is indicated, allow 21 days for initial review of each submittal.
  - 5. Concurrent Consultant Review: Where the Contract Documents indicate that submittals may be transmitted simultaneously to Architect and to Architect's consultants, allow 15 days for review of each submittal. Submittal will be returned to County Representative, through Architect, before being returned to Contractor.
  - 6. Submittal received on Friday afternoon will not be processed until the following Monday, which will be the recorded receipt of submittal date.
  - 7. Deferred Submittals. Allow 45 days .
- E. 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 approximately 6 by 8 inches on label or beside title block to record Contractor's review and approval markings and action taken by Architect and County Representative.
  - 3. Include the following information on label for processing and recording action taken:
    - a. Project name.
    - b. Date.
    - c. Name and address of Architect and County Representative.
    - d. Name and address of Contractor.
    - e. Name and address of subcontractor.
    - f. Name and address of supplier.
    - g. Name of manufacturer.
    - h. Submittal number or other unique identifier, including revision identifier.
- 1) Submittal number shall use Package Number followed by Specification Section number followed by the revision number (e.g., 0001-061000-0). Resubmittals shall modify the revision number sequentially as required (e.g., 0001-061000-1).
    - a. Number and title of appropriate Specification Section.
    - b. Drawing number and detail references, as appropriate.
    - c. Location(s) where product is to be installed, as appropriate.
    - d. Other necessary identification.

- F. Deviations: Highlight or otherwise specifically identify deviations from the Contract Documents on submittals.
- G. Copies: Unless additional copies are required for final submittal, and unless Architect or County Representative observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.
  - 1. Submit one (1) electronic copy. Submit paper copies of submittals to County Representative only if requested.
- H. Transmittal: Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Architect and County Representative will discard submittals received from sources other than Contractor.
  - 1. Transmittal Form: Use a transmittal form acceptable to the County Representative.
  - 2. On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Architect and County Representative on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same label information as related submittal.
- I. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
  - 1. Note date and content of previous submittal.
  - 2. Note date and content of revision in label or title block and clearly indicate extent of revision.
  - 3. Resubmit submittals until they are marked:
    - a. Reviewed. No exceptions taken.
- J. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms. Upload to the PMCS in PDF format.
- K. Use for Construction: Use only final submittals marked with approval notation by Architect and County Representative.

## **PART 2 PRODUCTS**

### **2.1 ACTION SUBMITTALS**

- A. General: Prepare and submit Action Submittals required by individual Specification Sections.
  - 1. Submit electronic submittals directly to extranet specifically established for Project.
- 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. Standard color charts.
  - e. Manufacturer's catalog cuts.
  - f. Wiring diagrams showing factory-installed wiring.
  - g. Printed performance curves.
  - h. Operational range diagrams.
  - i. Mill reports.
  - j. Standard product operation and maintenance manuals.
  - k. Compliance with specified referenced standards.
  - l. Testing by recognized testing agency.
  - m. Application of testing agency labels and seals.
  - n. Notation of coordination requirements.
4. Submit Product Data before or concurrent with Samples.
  5. Electronic Submittal: Submit initial Product Data electronically to the County Representative as pdfs through email communications or through web based collaboration tool. The County Representative will forward to the Architect. Marked up Product Data will be returned in a similar manner.
  6. Number of Copies for Record: Submit two copies of each fully executed Product Data submittal, unless otherwise indicated.
- C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data, unless submittal of Architect's CAD Drawings are otherwise permitted.
1. Preparation: Fully illustrate requirements in the Contract Documents. 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. Shop work manufacturing instructions.
    - g. Templates and patterns.
    - h. Schedules.
    - i. Design calculations.
    - j. Compliance with specified standards.
    - k. Notation of coordination requirements.
    - l. Notation of dimensions established by field measurement.
    - m. Relationship to adjoining construction clearly indicated.
    - n. Seal and signature of professional engineer if specified.
    - o. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring.
  2. 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
  3. Electronic Submittal: Submit approved Shop Drawings electronically to the County Representative as pdfs through web based collaboration tool.
- D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.

2. Identification: Attach label on unexposed side of Samples that includes the following:
  - a. Generic description of Sample.
  - b. Product name and name of manufacturer.
  - c. Sample source.
  - d. Number and title of appropriate Specification Section.
3. 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.
  - a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
  - b. Samples not incorporated into the Work, or otherwise designated as County's property, are the property of Contractor.
4. 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. Number of Samples: Submit a minimum of four (4) full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect, through County Representative, will return one (1) copy of submittal with options selected.
5. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: 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. Number of Samples: Submit three sets of Samples. Architect and County Representative will retain two Sample sets; remainder will be returned. Mark up and retain one returned Sample set as a Project Record Sample.
    - 1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
    - 2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.
- E. Product Schedule or List: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
  1. Type of product. Include unique identifier for each product.
  2. Number and name of room or space.
  3. Location within room or space.
  4. Number of Copies: Submit three copies of product schedule or list, unless otherwise indicated. Architect, through County Representative, will return two copies.
    - a. Mark up and retain one returned copy as a Project Record document.
- F. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each

portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:

1. Name, address, and telephone number of entity performing subcontract or supplying products.
2. Number and title of related Specification Section(s) covered by subcontract.
3. Drawing number and detail references, as appropriate, covered by subcontract.
4. Number of Copies: Submit three copies of subcontractor list, unless otherwise indicated. Architect, through County Representative, will return two copies.
  - a. Mark up and retain one returned copy as a Project Record document.

## 2.2 INFORMATION SUBMITTALS

- A. General: Prepare and submit Informational Submittals required by other Specification Sections.
  1. Number of Copies: Submit two copies of each submittal, unless otherwise indicated. Architect and County Representative will not return copies. These may be submitted in electronic form or hard copy.
  2. Certificates and Certifications: Provide a notarized document 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.
  3. Test and Inspection Reports: Comply with requirements specified in Division 1 Section "Quality Requirements."
- B. Coordination Drawings: Comply with requirements specified in Division 1 Section "Project Management and Coordination."
- C. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of architects and County's, and other information specified.
- D. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification (WPS) and Procedure Qualification Record (PQR) on AWS forms. Include names of firms and personnel certified.
- E. Installer Certificates: Prepare written documents on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
- F. Manufacturer Certificates: Prepare written documents on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
- G. Product Certificates: Prepare written documents on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- H. Material Certificates: Prepare written documents on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
- I. Material Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
- J. Product Test Reports: Prepare written reports indicating current product produced by

manufacturer complies with requirements in the Contract Documents. 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: Prepare written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:
1. Name of evaluation organization.
  2. Date of evaluation.
  3. Time period when report is in effect.
  4. Product and manufacturers' names.
  5. Description of product.
  6. Test procedures and results.
  7. Limitations of use.
- L. Schedule of Tests and Inspections: Comply with requirements specified in Division 1 Section "Quality Requirements."
- M. Preconstruction Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
- N. Compatibility Test Reports: Prepare 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.
- O. Field Test Reports: Prepare 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 in the Contract Documents.
- P. Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment. Comply with requirements specified in Division 1 Section "Operation and Maintenance Data."
- Q. Design Data: Prepare 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.
- R. Manufacturer's Instructions: Prepare 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. Include the following, as applicable:
1. Preparation of substrates.
  2. Required substrate tolerances.
  3. Sequence of installation or erection.
  4. Required installation tolerances.
  5. Required adjustments.
  6. Recommendations for cleaning and protection.

- S. Manufacturer's Field Reports: Prepare written information documenting factory-authorized service representative's tests and inspections. Include the following, as applicable:
  - 1. Name, address, and telephone number of factory-authorized service representative making report.
  - 2. Document on condition of substrates and their acceptability for installation of product.
  - 3. Document that products at Project site comply with requirements.
  - 4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
  - 5. Results of operational and other tests and a document of whether observed performance complies with requirements.
  - 6. Document weather conditions, products, and installation will affect warranty.
  - 7. Other required items indicated in individual Specification Sections.
- T. Insurance Certificates and Bonds: Prepare written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of the coverage.
- U. Construction Photographs and Videotapes: Comply with requirements specified in Division 1 Section 01 32 00 "Photographic Documentation."
- V. Material Safety Data Sheets (MSDSs): Submit information to County Representative for county review and information.

## **2.3 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.
  - 1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.
- B. Delegated-Design Submittal: In addition to Shop Drawings, Product Data, and other required submittals, submit three copies of a document, 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.
  - 1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

## **PART 3 EXECUTION**

### **3.1 CONTRACTOR'S REVIEW**

- A. Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect and County Representative.
- 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 document certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

### **3.2 ARCHITECT'S AND COUNTY REPRESENTATIVE'S ACTION**



A. General:

1. Architect and County Representative will not review submittals that do not bear Contractor's approval stamp and will return them without action.
2. Purpose of submittal is to demonstrate for those portions of Work for which submittals are required, manner in which Contractor proposes to conform to information given and design concept expressed on Contract Documents.
3. Review is not conducted for purpose of determining accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain responsibility of Contractor.
4. Compliance with specified characteristics is Contractor's responsibility and not considered part of Architect's or County Representative's review and indication of action taken.
5. Acceptance of submittals with deviations shall not relieve Contractor from responsibility for additional costs of changes required to accommodate such deviations. Deviations included in submittals without prior acceptance are excepted from review of submittals whether noted or not on returned copy.
6. Review of separate item shall not indicate acceptance of assembly of which item is part.
7. Make only those revisions required or accepted by Architect or County Representative.
8. Notations by Architect or County Representative which increase Contract Cost or Contract Time shall be brought to Architect's and County Representative's attention, in writing, before proceeding with Work.
9. When professional certification of performance criteria of materials, systems, or equipment is required by Contract Documents, Architect and County Representative shall be entitled to rely upon accuracy and completeness of such calculations and certifications.

B. Action Submittals: Architect and County Representative will review each submittal, make marks to indicate corrections or modifications required, and return it. Architect and County Representative will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken, as follows:

1. Reviewed. No exceptions taken.
2. Reviewed. Exceptions noted. Resubmission not required.
3. Reviewed. Exceptions noted. Resubmission required.
4. Rejected. Resubmission required.
5. Information received. No review required.

C. Informational Submittals: Architect and County Representative will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect and County Representative will forward each submittal to appropriate party.

D. Partial submittals are not acceptable, will be considered nonresponsive, and will be returned without review.

E. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

**END OF SECTION**

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**SECTION 01 31 00**  
**PROJECT MANAGEMENT AND COORDINATION**

**PART 1 GENERAL**

**1.1 PROJECT CONTROL**

- A. The County Representative will outline and detail communication, correspondence and coordination procedures at the Project pre-construction meeting.
- B. Condition of Work in Place: Contractors and subcontractors shall inspect and take responsibility for previously prepared or installed work of other contractors before applying subsequent materials or finishes. If work is in unsatisfactory condition, notify the County. Do not proceed until defective work has been corrected.
- C. Overall Coordination:
  - 1. Subletting and Subcontracting Responsibilities: Refer to General Conditions of the Contract for Construction, Section 00 70 00.
  - 2. Contractor shall coordinate the Work with related work being done by the County and other contractors operating in the area. This coordination shall include reasonable adjustments of schedule in order to allow other contractors and the County to do their work.
  - 3. Contractor shall coordinate electrical/mechanical work, particularly between general trades and mechanical/electrical trades so that sleeves, hangers, chases, openings, etc., required for pipe, conduit, and other installations of like character are duly and properly provided for and installed as work progresses.
  - 4. Contractor shall carefully examine Drawings relating to entire work with actual conditions so that Work will be accommodated in spaces provided. General arrangement and location of elements of various systems is shown on the Drawings or specified. Final locations, levels, etc., shall be governed by actual material size used, by building conditions encountered, and by work of all trades. Space conflicts and interferences shall be resolved before work is installed.
  - 5. Contractor shall utilize the Contract Documents, submittals, and layout drawings of the various trades to check and coordinate the Work so that no interferences or conflicts between trades will occur. This checking and coordination shall be performed and completed before construction is commenced in each affected area.
  - 6. Contractor shall coordinate the work to assure efficient and orderly sequence of installation of construction elements. Make provisions for accommodating items installed by the County or under separate contracts.
  - 7. The Contractor shall verify that the characteristics of interrelated operating equipment are compatible; and shall coordinate all work required for installing, connecting and placing such equipment into service.
  - 8. The Contractor and each subcontractor whose work is affected by the placement of any concrete, at least 24 hours prior to the placement of such concrete, shall provide written certification to the County that the area has been inspected, all work required to be completed before the placement of concrete has been completed and the area is ready for placement of concrete.
- D. Mechanical, Plumbing, Fire Suppression and Electrical Coordination:
  - 1. The Contractor shall use 1/8" scale (24"x36" sheets) layout drawings of the mechanical, plumbing, fire suppression and electrical Work, together with Shop Drawings of the affected Work, to check, coordinate and integrate the Work to prevent interference.

2. The Contractor shall perform and complete checking and coordination before commencing construction in the affected areas.
3. The Contractor shall place lines for utility service in walls above door heights indicated.

## **1.2 LOCATIONS, ELEVATIONS, AND LAYOUT OF WORK**

- A. Property lines, location ties, and elevations of components of the Project to be built under this Contract are shown on the Drawings. Grade elevations shown for various parts of the Work are taken from a bench mark shown on the Drawings, or if not shown, will be designated by the County. In case of conflict therein, notify the County in writing before starting work.
- B. Contractor shall lay out the Work and furnish surveys required for alignment and elevations of the Work, and shall pay all costs therefor. Contractor shall furnish necessary lines, levels, locations, measurements and markers for all on the Work and be responsible for their accuracy.
- C. For building structures, Contractor shall lay out on forms, walls, floors, and columns, the exact location of partitions as guide to all trades.

## **1.3 SCHEDULES AND MEETINGS**

- A. The Contractor shall provide input to develop and update project schedule including realistic activity sequences and durations, allocation of labor and materials, processing of shop drawings, and samples and purchase and delivery of products requiring long lead-time procurement. This schedule will be broken down into activities of 3 weeks maximum duration, with the exception of procurement. Each activity shall be explicit in definition and location of work. The schedule shall be updated 1) once per month, 2) whenever work is behind schedule to an extent greater than 14 days, and 3) to add change order work which impacts schedule.
- B. Project and Pre-installation Meetings: Contractor or his duly appointed representative shall attend project meetings at regular intervals as set by the County and shall attend pre-installation meetings as required by pertinent Specification Sections. Attendance shall be limited to the Contractor and his immediate subordinates, subcontractors where so specified, the County, County Representative and representatives of the Architect and Consultants, as requested. The County Representative will keep minutes of meetings; with copies sent to all who attend. Meetings shall be held at the job site.
- C. Project Construction: Work of this Contract shall be executed in accordance with Section 01 01 00, Summary of Work.

## **1.4 ALLOWABLE ENTRANCE**

- A. Contractor, subcontractors, their employees, suppliers and delivery persons shall enter and exit property via designated entrance.

**PART 2 PRODUCTS (Not Used)**

**PART 3 EXECUTION (Not Used)**

**END OF SECTION**

**SECTION 01 32 10  
PROGRESS SCHEDULES AND REPORTS**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Work under this Section shall consist of furnishing computerized Critical Path Method (CPM) Progress Schedule showing in detail how Contractor plans to execute and coordinate the Work.

**1.2 SUBMITTALS**

- A. CPM Contract Schedule
  1. Within seven (7) calendar days after receiving Notice to Proceed, Contractor shall furnish the County's Representative, Architect each, one PDF file and one hard copy of a CPM contract schedule.
  2. County's Representative will review the CPM contract schedule for conformance with the requirements of the contract. Within seven (7) calendar days after receipt, County's Representative will accept the CPM contract schedule or will return it with comments. If the proposed CPM contract schedule is not accepted, Contractor shall revise the schedule to incorporate comments and resubmit the schedule for acceptance within seven (7) calendar days after receiving it.
- B. Construction Progress Schedule
  1. Contractor shall submit to the Architect and County's Representative each month an up-to-date status report of the work.

**1.3 GENERAL REQUIREMENTS**

- A. The Contract schedule shall be the basis for evaluating job progress, payment requests, and time extension requests. The responsibility for developing the contract schedule and monitoring actual progress as compared to the schedule rests with the Contractor.
- B. Failure of the contract schedule to include any element of the work, or any inaccuracy in the Contract schedule, will not relieve the Contractor from responsibility for accomplishing all the work in accordance with the contract.
- C. No constraint on any activity is allowed in the schedule unless it is required by the Contract. The schedule should reflect a logical flow of the project activities.
- D. Acceptance of the official contract schedule will not relieve the Contractor of the responsibility for accomplishing the work in accordance with the contract.

**1.4 PROGRESS SCHEDULE**

- A. The Contractor's monthly Construction Progress Schedule report shall include:
  1. Contractor's estimated percentage complete for each activity not yet completed.
  2. Actual start/finish dates for activities as appropriate.
  3. Identification of processing errors, if any, on the previous update reports.
  4. Revisions, if any, to the assumed activity durations, including revisions for weather impact, for any activities due to the effect of the previous update on the schedule.
  5. Identification of activities which are affected by Cost Request Bulletin issued during the update period.
  6. Resolution of conflict between actual work progress and schedule logic. When out-of-sequence activities develop in the contract schedule because of actual construction

progress, the Contractor shall submit a revision to schedule logic to conform to current status and direction.

- B. Progress payments pursuant to the Contract will require an update of the construction progress schedule.

### **1.5 SHORT INTERVAL SCHEDULE**

- A. Short Interval Scheduling (SIS) shall be used throughout onsite construction activity.
- B. The interval shall be a three (3) week projection and shall include the week submitted and two (2) weeks thereafter.
- C. It shall contain sufficient detail to evaluate daily milestones and manpower/equipment loading and shall identify/tie into monthly updated Schedule.
- D. Short Interval Schedule shall be submitted weekly, twenty-four (24) hours prior to construction progress meetings, to the County Representative.

### **1.6 SCHEDULE REVISIONS**

- A. Should the Contractor, after acceptance of the contract schedule, intend to change his plan of construction, the Contractor shall submit his requested revisions to the County's Representative along with a written statement of the revision; including a description of the logic for rescheduling the work, methods of maintaining adherence to intermediate milestones, and other specific dates and the reasons for the revisions. If the requested changes are acceptable to the County's Representative, they will be incorporated into the contract schedule in the next reporting period.
- B. Schedule revisions shall be submitted at least seven (7) calendar days prior to the date of submission of update information. The County will have seven (7) calendar days to review the revisions.
- C. If the sequence of construction differs significantly from the contract schedule, as determined by the County's Representative, the Contractor shall submit within fifteen (15) calendar days a revised schedule to the County's Representative for acceptance.

### **1.7 SCHEDULE CHANGES**

- A. When a Cost Request Bulletin is issued which has the potential to impact specified completion dates, a network window shall be prepared by the Contractor to reflect the impact of such changes, said network window shall be submitted to the County's Representative. After the network window has been accepted, by the County's Representative, and the Contractor ordered to proceed with the Cost Request Bulletin, it shall be incorporated into the contract schedule. Time extensions will be considered only to the extent there is insufficient remaining float to accommodate these changes, and pursuant to Part 1 of these specifications. No additional cost beyond that provided in the General Conditions will be allowed for the incorporation of approved Cost Request Bulletin into the contract schedule.
- B. The Contractor shall submit to the Architect and County's Representative, a network window for all claimed time extension requests showing the impact of claimed delay on the contract schedule. Time extensions shall be negotiated per the requirements of the General Conditions.
- C. Float or Slack Time is the amount of time between the earliest start date and the late start date or between the earliest finish date and the latest finish date of activities of the contract schedule. No time extensions or delay costs will be allowed for delays caused by the Owner, on paths or activities containing float time, providing such delay does not exceed the float time per the latest updated version of the contract schedule.
- D. The County's Representative shall have no obligation to consider any time extension request unless the requirements of the contract documents are complied with; the Owner shall not be responsible or liable to the Contractor for any construction acceleration due to failure of the County to grant time extensions under the contract documents should the Contractor fail to

substantially comply with the submission requirements and the justification requirements of this contract for time extension requests. The Contractor's failure to perform in accordance with the contract schedule shall not be excused because the Contractor has submitted time extension requests; until, and unless, such requests are approved by the County.

**1.8 RECOVERY SCHEDULE**

- A. If the contract schedule falls fourteen (14) calendar days behind schedule on milestone dates or completion dates, the Contractor shall be required to prepare and submit a Recovery Schedule to the County's Representative, with form and detail appropriate to the need to explain, and display, how they intend to reschedule activities to regain compliance with the contract schedule during the immediate subsequent pay period.
- B. Upon acceptance by the County's Representative, the recovery schedule shall be incorporated into the contract schedule by the Contractor.

**1.9 PAYMENTS WITHHELD**

- A. Progress Payments may be withheld in whole or in part should Contractor fail to comply with requirements of this Section.
- B. Refer to Specifications Section 00 70 00, General Conditions.

**PART 2 PRODUCTS (Not Used)**

**PART 3 EXECUTION (Not Used)**

**END OF SECTION**

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**SECTION 01 40 00  
QUALITY CONTROL**

**PART 1 GENERAL**

**1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 1 Specification Sections, apply to this Section.

**1.2 SUMMARY**

- A. This Section includes administrative and procedural requirements for quality assurance and quality control.

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. Specific quality-assurance and quality-control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
3. Requirements for Contractor to provide quality-assurance and -control services required by Architect, County, County Representative, or authorities having jurisdiction are not limited by provisions of this Section.
4. Costs for re-testing and re-inspection, including special inspections and testing, regardless of the party responsible for the original testing and inspection, shall be the responsibility of the Contractor.

**1.3 DEFINITIONS**

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect, County Representative, or County Inspector.
- C. Preconstruction Testing: Tests and inspections that are performed specifically for the Project before products and materials are incorporated into the Work to verify performance or compliance with specified criteria.
- D. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with industry standards.
- E. Source Quality-Control Testing: Tests and inspections that are performed at the source, i.e., plant, mill, factory, or shop.
- F. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

- G. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.
- H. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
  - 1. Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to tradespeople of the corresponding generic name.
- I. 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.

#### 1.4 CONFLICTING REQUIREMENTS

- A. General: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to County Representative or County Inspector for a decision before proceeding.
- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to County Representative or County Inspector for a decision before proceeding.

#### 1.5 SUBMITTALS

- A. Qualification Data: For testing agencies specified under "Quality Assurance" in individual Sections of the Specifications 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. Reports: Prepare and submit certified written reports that include the following:
  - 1. Date of issue.
  - 1. Project title and number.
  - 2. Name, address, and telephone number of testing agency.
  - 3. Dates and locations of samples and tests or inspections.
  - 4. Names of individuals making tests and inspections.
  - 5. Description of the Work and test and inspection method.
  - 6. Identification of product and Specification Section.
  - 7. Complete test or inspection data.
  - 8. Test and inspection results and an interpretation of test results.
  - 9. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
  - 10. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
  - 11. Name and signature of laboratory inspector.

12. Recommendations on retesting and re-inspecting.

Permits, Licenses, and Certificates: For County'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.

**1.6 QUALITY ASSURANCE**

- A. General: Qualifications paragraphs in this Article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- C. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production to produce required units.
- D. 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 to produce required units.
- E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced 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 require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
  - 1. Requirement for specialists shall not supersede building codes and regulations governing the Work.
- G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 548; and with additional qualifications specified in individual Sections; and where required by authorities having jurisdiction, that is acceptable to authorities.
  - 1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
  - 2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.
- H. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- I. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:

1. Build mockups in location and of size indicated or, if not indicated, as directed by County Representative or County Inspector.
2. Notify County Representative and County Inspector seven days in advance of dates and times when mockups will be constructed.
3. Demonstrate the proposed range of aesthetic effects and workmanship.
4. Obtain County Representative and County Inspector's approval of mockups before starting work, fabrication, or construction.
  - a. Allow seven days for initial review and each re-review of each mockup.
5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
6. Demolish and remove mockups when directed, unless otherwise indicated.

## 1.7 QUALITY CONTROL

- A. County Responsibilities: Where quality-control services are indicated as County's responsibility, County will engage a qualified testing agency to perform these services.
  1. County will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
  2. Costs for retesting and re-inspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.
- B. Tests and inspections not explicitly assigned to County are Contractor's responsibility. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
  1. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
    - a. Contractor shall not employ same entity engaged by County, unless agreed to in writing by County.
  2. Notify testing agencies at least 48 hours in advance of time when Work that requires testing or inspecting will be performed.
  3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
  4. Testing and 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.
    - a. Contractor shall be responsible for the cost of testing and inspections scheduled outside of normal business hours.
- 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 as specified in Division 1 Section "Submittal Procedures."
- D. Retesting/Re-inspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and re-inspecting, for construction that replaced Work that failed to comply with the Contract Documents. Costs for

retesting and re- inspection shall be the responsibility of the Contractor.

- E. Testing Agency Responsibilities: Cooperate with County Representative, County Inspector, and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
  - 1. Notify County Representative, County Inspector, and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
  - 2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
  - 3. Conduct and interpret tests and inspections and County in each report whether tested and inspected work complies with or deviates from requirements.
  - 4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
  - 5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
  - 6. Do not perform 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 - 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.
  
- H. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality- control services required by the Contract Documents. Submit schedule within 30 days of date established for the Notice to Proceed.
  
- I. Distribution: Distribute schedule to County, County Representative, County Inspector, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

## **1.8 SPECIAL TESTS AND INSPECTIONS**

- A. Special Tests and Inspections: Conducted by a qualified testing agency as required by authorities having jurisdiction, as indicated in individual Specification Sections, and as follows:
  - 1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviewing the completeness and adequacy of those procedures to perform the Work.

2. Notifying County Representative, County Inspector, and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
3. Submitting a certified written report of each test, inspection, and similar quality-control service to County Inspector, through County Representative, with copy to Contractor and to authorities having jurisdiction.
4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
6. Retesting and re-inspecting corrected work.

**PART 2 PRODUCTS (Not Used)**

**PART 3 EXECUTION**

**3.1 TEST AND INSPECTION LOG**

A. Prepare a record of tests and inspections. Include the following:

1. Date test or inspection was conducted.
2. Description of the Work tested or inspected.
3. Date test or inspection results were transmitted to County Representative.
4. Identification of testing agency or special inspector conducting test or inspection.

B. Maintain log at Project site. Post changes and modifications as they occur. Provide access to test and inspection log for County Representative and County Inspector's reference during normal working hours.

**3.2 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 Specification Sections. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible.
2. Comply with the Contract Document requirements for Division 1 Section "Cutting and Patching."

B. Protect construction exposed by or for quality-control service activities.

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

**END OF SECTION**

**SECTION 01 42 00  
REFERENCES**

**PART 1 GENERAL**

**1.1 DESCRIPTION**

- A. This section includes abbreviations and acronyms, additional definitions, and reference standards used in the Contract Documents.
  
- B. Refer to GENERAL CONDITIONS and other Contract Documents for further information.

**1.2 ABBREVIATIONS AND ACRONYMS**

- A. The following abbreviations and acronyms may be used in the Contract Documents. Refer uncertainties to the County for a decision before proceeding.

AA	Aluminum Association
AAADM	American Association of Automatic Door Manufacturers
AAMA	Architectural Aluminum Manufacturers' Association
AASHTO	American Association of State Highway and Transportation Officials
AATCC	American Association of Textile Chemists and Colorists
ACI	American Concrete Institute
ADA	Americans with Disabilities Act
AFPA	American Forest and Paper Association
AIA	American Institute of Architects
AIMA	Acoustical and Insulation Materials Association
AISC	American Institute of Steel Construction
AMCA	American Movement and Control Association
ANSI	American National Standards Institute
APA	The Engineered Wood Association {formerly the American Plywood Association)
ARI	Air Conditioning and Refrigeration Institute
ASA	American Standards Association
ASHRAE	American Society of Heating, Refrigerating, and Air-Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWPA	American Wood Preservers' Association
AWWA	American Water Works Association
AWS	American Welding Society
BHMA	Builders Hardware Manufacturers' Association
BIA	Brick Institute of America
CAUOSHA	State of California Construction Safety Orders
CALTRANS	State of California, Business and Transportation Agency,
CCR	Department of Transportation, standard Specifications" California Code of Regulations
CDA	Copper Development Association
CISCA	Ceilings and Interior Systems Construction Association

CFFA	Chemical Fabrics and Film Association, Inc.
CFMG	Cabinet and Fixture Manufacturers Guild
CLFMJ	Chain Link Fence Manufacturers' Institute
CPA	Composite Panel Association (formerly the National Particleboard Association)
CRI	Carpet and Rug Institute
CRSI	Concrete Reinforcing Steel Institute
CPSC	United States Consumer Products Safety Commission
CS	Commercial Standard, United States Department of Commerce
GS	Canadian Standards Association
DASMA	Door and Access Systems Manufacturers Association International
EPA	Environmental Protection Agency
ESO	Electrical Safety Orders
FAA	Federal Aviation Administration, United States Department of Transportation
FCC	Federal Communications Commission
FGMA	Flat Glass Marketing Association (now the GANA)
FM	Factory Mutual System, Factory Mutual Engineering Corporation FS Federal Specification Unit
GA	Gypsum Association
GANA	Glass Association of North America (formerly the Flat Glass Marketing Association and Glass Tempering Association)
GRI	Geosynthetic Research Institute
GTA	Glass Tempering Association (now the GANA)
HMA	Hardwood Manufacturers Association
HPMA	Hardwood Plywood Manufacturers Association
HPVA	Hardwood Plywood and Veneer Association
HUD	United States Department of Housing and Urban Development IEEE Institute of Electrical and Electronic Engineers
IGCC	Insulating Glass Certification Council
ITS-WH	Intertek Testing Service -Warnock Hersey
LSGA	Laminator's Safety Glass Association
MIA	Marble Institute of America or the Masonry Institute of America
MIL	Military Standardization Document, United States Department of Defense
MIW	Masonry Institute of Washington
MUSFA	Metal Lath/Steel Framing Association
MM	"Materials Manual", State of California, Business and Transportation Agency, Department of Transportation
NAAMM	National Association of Architectural Metal Manufacturers
NBGQA	National Building Granite Quarries Association, Inc.
NBS	National Bureau of Standards (now the NIST)
NCMA	National Concrete Masonry Association
NEC	National Electrical Code
NEMA	National Electric Manufacturers' Association
NFPA	National Fire Protection Association
NFPA	National Forest Products Association (now the AFPA)
NFRC	National Fenestration Rating Council
NHLA	National Hardwood Lumber Association
NIST	National Institute of Standards and Technology, United States Department of Commerce (formerly the National Bureau of Standards)



NOFMA	National Oak Flooring Manufacturers Association
NPDES	National Pollutant Discharge Elimination System
NRCA	National Roofing Contractors Association
NSF	NSF International (formerly National Sanitary Foundation)
NWWDA	National Wood Window and Door Association (now WDMA)
OSA	Office of the State Architect, State of California
PCA	Precast-Prestressed Concrete Institute
PS	Product Standard, United States Department of Commerce
RIS	Redwood Inspection Service
SFM	Office of the State Fire Marshall, State of California
SIGMA	Sealed Insulated Glass Manufacturer's Association
SMACNA	Sheet Metal and Air Conditioning Contractors National Association
TCA	Tile Council of America
UL	Underwrite's Laboratories, Inc.
USS	United States Standard
WCLIB	West Coast Lumber Inspection Bureau
WDMA	Window and Door Manufacturer's Association
WI	Woodwork Institute
WWCCA	Western Wall and Ceiling Contractors Association

- B. Additional abbreviations, used on the Drawings, are listed and defined thereon.

### 1.3 REFERENCE STANDARDS

- A. Specified standards of the construction industry shall have the same force and effect on the performance of the Work as if bound or copied directly into the Contract Documents. Such standards are made a part of the Contract Documents by reference.
- B. Each entity or person engaged in the Work shall be familiar with the industry standards applicable to its construction activity.
- C. Where compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum qualities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to the Architect for a decision before proceeding.
- D. Copies of applicable standards are not bound with the Contract Documents. Where copies are required for proper performance of the Work, obtain and pay for authorized copies directly from publication source and maintain at the Site during submittals, planning, and performance of Work until final acceptance by the County. Make such copies of standards available to the County and Architect for review upon request.
- E. For Products or quality of installation specified by association, trade, military, federal, or other reference standards, comply with requirements of the standard, except when more rigid requirements are specified in Contract Documents or are required by applicable codes and/or public authorities having jurisdiction.
1. Except as otherwise indicated or specified, where compliance with a reference standard is required, comply with the standard in effect as of the date established for the receipt of Bids. Where a reference standard has been revised and reissued after the date established for the receipt of Bids and before performance of the Work affected, notify the

Architect in writing and request a decision on how to proceed. Architect may issue a Contract Modification or an Architect's Supplemental Instruction for proceeding in accordance with the updated standard.

2. The contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention or inference otherwise in a reference standard. The provisions of the Bidding Requirements, General Conditions, Contract, and Division 1 General Requirements shall void the general, but not technical, provisions of a reference standard in conflict therewith.

**PART 2      PRODUCTS (Not Used)**

**PART 3      EXECUTION (Not Used)**

**END OF SECTION**

**SECTION 01 45 00  
TESTING LABORATORY SERVICES**

**PART 1 GENERAL**

**1.1 REQUIREMENTS INCLUDED**

- A. The County will employ and pay for services of an independent testing laboratory to perform specified testing for CCR Title 24.
  - 1. Contractor shall cooperate with laboratory to facilitate execution of its required services.
  - 2. Employment of laboratory shall in no way relieve Contractor's obligations to perform work of the Contract.
- B. Contractor shall employ and pay for services as listed under commissioning services for testing, adjusting, and balancing of systems specified under Section 01 75 00.

**1.2 RELATED REQUIREMENTS**

- A. Section 00 70 00: General Conditions
- B. Section 01 75 00: Starting and Adjusting.
- C. Division 02 Individual Sections: Certification of products, qualifications of testing, organizations and specific services required.

**1.3 REQUIRED TESTS AND INSPECTIONS**

- A. General: Should any item listed below in this Section conflict with a Special Inspection requirement that appears in the Drawings, the requirement in the Drawings governs.
- B. CCR Title 24 Tests and Inspections: Except as noted otherwise, these tests and inspections shall be performed by County's consulting testing laboratory in conformance with County of California Code of Regulations (CCR), Title 24 as noted herein. Testing is paid for by County.
  - 1. Earthwork (Chapter 18, Title 24)
    - a. Earth Fill compaction.
    - b. Inspection of footing and trenching excavations.
    - c. Placing of backfill and compaction.
  - 2. Concrete (Chapter 19, Title 24)
    - a. Materials:
      - 1) Portland Cement Tests.
      - 2) Concrete Aggregates.
      - 3) Reinforcing Bars.
      - 4) Batch Plant Inspection.
      - 5) Core tests, if necessary.
      - 6) Admixtures.
    - b. Concrete Quality:
      - 1) Proportions of Concrete.
      - 2) Strength Tests of Concrete.
    - c. Concrete Inspection:

- 1) Job Site Inspection.
- 2) Batch Plant or Weighmaster Inspection.
- 3) Curing.
- 4) Construction Joints.

3. Masonry (Chapter 21, Title 24)

a. Materials:

- 1) Masonry Units.
- 2) Portland Cement.
- 3) Mortar and Grout Aggregates.

b. Masonry Quality:

- 1) Portland Cement.
- 2) Mortar and Grout.
- 3) Masonry Cores.

c. Masonry Inspection:

- 1) Reinforced Masonry.

4. Structural Steel (Chapter 22, Title 24)

a. Materials:

- 1) Material Identification.
- 2) Structural Steel.

b. Tests and Inspection of Structural Steel:

- 1) Tests of Structural and Cold Formed Steel.
- 2) Shop Fabrication Inspection.
- 3) Welding Inspection.
- 4) Welding of Reinforcing Bars.

C. Special Inspections

1. Special Inspection in conformance with Section 1701 of the 2013 CBC is required and shall be provided for the following work, under supervision of an outside special inspection testing agency employed by the owner. See project specifications for individual requirements in addition to those listed below:
  - a. Structural concrete with an  $f'c$  greater than 2500 psi
  - b. Structural steel welding: Shop inspection in compliance with Section 6 of AWS D1.1 and field inspection per ASTM E164
  - c. Reinforcing steel (where  $f'c$  greater than 2500 psi or reinforcement is welded)
  - d. Welded reinforcing bars: CBC Section 1903.5.2
  - e. Use of structural epoxies
  - f. Use of A325, A325-SC., or A490-S.C. bolts
  - g. Bolts embedded in concrete or masonry

- h. Testing, preparation and placement of all concrete masonry units
  - i. Soil compaction requirements
  - j. Adhesive anchors per CBC Section 1923.3.5
  - k. Drilled in expansion anchors per CBC Section 1925.3.5
  - l. Drilling and installation of CIP piles and piers
- D. Testing, Adjusting, and Balancing of Systems: These services shall be provided by approved testing organization in conformance with requirements for services specified in individual sections pertaining to each system.

#### **1.4 CONTRACTOR'S RESPONSIBILITIES**

- A. Cooperate with laboratory personnel; provide access to work and to manufacturer's operations.
- B. Provide to laboratory adequate quantities of representational samples of materials proposed to be used and which require testing.
- C. Provide to laboratory preliminary design mix proposed to be used for concrete, and other material mixes which require control by testing laboratory.
- D. Furnish copies of products test reports as required.
- E. Furnish incidental labor and facilities:
  - 1. To provide access to work to be tested.
  - 2. To obtain and handle samples at Project site or at source of product to be tested.
  - 3. To facilitate inspections and tests.
  - 4. For storage and curing of test samples.
- F. Notify County's Inspector 48 hours in advance of operations to allow for laboratory assignment of personnel and scheduling of tests. When tests or inspections cannot be performed after such notice, reimburse the County for laboratory personnel and travel expenses incurred due to Contractor's negligence.
- G. When additional testing services are needed for Contractor's convenience, employ and pay for services of separate, equally qualified independent testing laboratory; or make arrangements with County's laboratory and pay for additional samples and tests required for Contractor's convenience.
- H. The County or its representative shall have the right to reject materials and workmanship which are defective or to require their correction. Rejected workmanship shall be satisfactorily corrected and rejected materials shall be removed from the premises without charge to the County. If Contractor does not correct such rejected work within a reasonable time, fixed by written notice, the County may correct same and charge the expense to Contractor.
- I. Should it be considered necessary or advisable by the County at any time before final acceptance of the entire Work to make examination of work already completed by removing or tearing out same, Contractor shall, on request, promptly furnish necessary facilities, labor and materials. If such work is found to be defective in any respect due to fault of Contractor or subcontractor, shall defray all expenses of such examinations and of satisfactory reconstruction. If, however, such work is found to meet requirements of the Contract, additional cost of labor and material necessarily involved in the examination and replacement will be allowed the Contractor.

**PART 2      PRODUCTS (Not Used)**

**PART 3      EXECUTION (Not Used)**

**END OF SECTION**

**SECTION 01 50 00  
TEMPORARY FACILITIES AND CONTROLS**

**PART 1 GENERAL**

**1.1 SUMMARY**

A. Section Includes

1. Dust Control.
2. Site Drainage.
3. Temporary Construction Fences.
4. Security.
5. Field Office
6. Temporary Utilities
7. Progress/Work Area Cleaning.
8. Project Signage.
9. Water Control/Dewatering.
10. Removal.

B. Related Sections

1. Refer to requirements of Division 00 and 01.
2. Section 01 11 50 - Environmental Procedures.
3. Section 01 14 00 - Special Project Procedures.

**1.2 DUST CONTROL**

- A. Control dust migration from the work and staging areas. The County reserves the right at its sole discretion to direct the Contractor to perform specific maintenance and/or dust control of its work and laydown areas at no additional cost to the County. See Section 01 11 50– Environmental Procedures for more information.

**1.3 SITE DRAINAGE**

- A. Maintain the work and staging areas in constant repair to maintain the grades and contours to provide free flow drainage. All watersheds and avenues of the work and staging area drainage shall be maintained, clean of debris, hazardous material, and dammed to prevent erosion of soil and silt. The County reserves the right at its sole discretion to direct the Contractor to perform specific maintenance to control site drainage of its work and laydown areas at no additional cost to the County.

**1.4 TEMPORARY CONSTRUCTION FENCES**

- A. Contractor shall, upon approval, install temporary fences, barricades, or other suitable means to protect property and prevent damage and injury. Such fences shall not interfere with the work of other contractors working on this project or San Luis Obispo Meridian Fire Station operations.

**1.5 SECURITY**

- A. If Contractor deems it necessary, Contractor may provide watchmen and security equipment to protect Contractor's site office, equipment, material, construction equipment, or other portions of the Work.

- B. On-site security firms and their personnel shall be subject to approval by the County.
- C. Contractors are responsible for ensuring that all site property gates are locked and secured when opened by their personnel.

**1.6 FIELD OFFICE**

- A. Provide a field office for Contractor's use as desired. Provide desk space for Owner's CM, meeting table to accommodate six people, and a plan table for document review.

**1.7 TELEPHONE AND INTERNET SERVICE**

- A. Schedule with the local phone company to extend telephone service onto the laydown area site. This telephone service will be available for the County Representative and the Contractor's use.
- B. Coordinate with the local phone company; pay all costs associated with providing telephone service to Contractor's site office and the County Representative's offices. Cost of telephone service for Contractor's site office shall be paid for by the Contractor.
- C. Cost of internet service for Contractor's site office shall be paid for by the Contractor.
- D. Provide directory of site and emergency contact numbers of the Contractor and all subcontractors.

**1.8 TEMPORARY POWER**

- A. General Contractor may use existing facility power for construction work.
- B. Power Service Characteristics (Existing): 120/240 single phase. Provide portable generator for field welding or when utility power is unavailable.
- C. Contractors shall provide power outlets for construction operations, with branch wiring and distribution boxes. Provide flexible power cords as required.
- D. If needed for construction operations, the General Contractor shall provide a temporary meter, main service disconnect and overcurrent protection for construction power.
- E. Existing site power or new, permanent convenience receptacles may be utilized during construction as authorized by Owner's Representative.

**1.9 TEMPORARY WATER SERVICE**

- A. General Contractor may use County water for on-site potable water requirements as authorized by Owner's Representative. General Contractor shall provide, maintain and pay for suitable quality water service required for non-potable construction operations, such as dust control.

**1.10 PROGRESS/WORK AREA CLEANING**

- A. Maintain staging and work areas in a clean and orderly condition free from trash. "Trash" shall include all: food scraps, office garbage, construction rubbish/debris, waste/excess materials, shipping/packing materials, and windblown trash. Trash shall be collected and placed into containers daily at designated waste storage areas in locations approved by the County



Representative, and removed periodically for offsite disposal at Contractor's expense.

- B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed spaces and remote spaces, prior to enclosing the space.
- C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.
- D. Jobsite shall be maintained broom clean on a daily basis.

#### **1.11 PROJECT SIGNAGE**

- A. Provide two 4 x 8-foot project signs of exterior grade plywood and wood frame construction, painted, with lettering. Maintain signs in good repair for the duration of the Work. County Representative will provide information to be included on sign as well as locations. Submit layout design for review and approval by the County prior to fabrication. Mount signs on 4x4 posts at locations approved by the County.
- B. Allow no other signs, except those required by law, without approval of the County.

#### **1.12 WATER CONTROL/DEWATERING**

- A. Contractor shall refer to the Geotechnical Investigation Report prepared for this Project for information regarding groundwater conditions throughout the Project Site. Due to the variations in groundwater depth encountered during the geotechnical investigation, Contractor should verify groundwater depths at the time of construction. Contractor shall be responsible for all tests, engineering, design, and performance of water control and/or dewatering means and measures necessary for performance of the Work.
- B. Contractor shall perform water control and/or dewatering in coordination with the Work of other contractors so as not to impede or hinder their work.
- C. Maintain excavations free of groundwater and surface water. Do not allow surface water to drain into excavations.
- D. Protect Site from ponding or running water.
- E. Protect vaults and hand holes from surface water.
- F. Properly dispose of subsurface water from dewatering operations. Convey subsurface water from dewatering operations to surface and subsurface drainage systems for disposal. Protect drainage inlets and underground storm drainage system from sediment using sediment basins, straw bales or other suitable means.

#### **1.13 REMOVAL**

- A. Remove temporary equipment, facilities, and materials prior to request for final inspection.
- B. Clean and repair damage caused by installation and use of temporary work.

- C. Remove all temporary site improvements. Except as noted below, all materials removed shall be disposed of off-site and the area shall be returned to the design as set forth in Contract Documents.

**PART 2        PRODUCTS (Not Used)**

**PART 3        EXECUTION (Not Used)**

**END OF SECTION**

**SECTION 01 60 00  
PRODUCT REQUIREMENTS**

**PART 1 GENERAL**

**1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 1 Specification Sections, apply to this Section.

**1.2 SUMMARY**

- A. General product requirements.
- B. Re-use of existing products.
- C. Transportation, handling, storage and protection.
- D. Product option requirements.
- E. Substitution limitations and procedures.
- F. Maintenance materials, including extra materials, spare parts, tools, and software.

**PART 2 PRODUCTS**

**2.1 PRODUCT SUBSTITUTIONS**

- A. Timing: County will consider requests for substitution at its sole discretion. Substitution request shall be submitted prior to the bid date in accordance with the Instructions to Bidders. Requests received after that time will be considered late and may be rejected at the discretion of the County.
- B. Conditions: County will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
  - 1. Substitution request is fully documented and properly submitted, accompanied by the form appended at the end of this Section.
  - 2. Requested substitution offers County a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities County must assume. County's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by County, and similar considerations.
  - 3. Requested substitution does not require extensive revisions to the Contract Documents.
  - 4. Requested substitution is consistent with the Contract Documents and will produce indicated results.
  - 5. Requested substitution will not adversely affect Contractor's Construction Schedule.
  - 6. Requested substitution has received necessary approvals of authorities having jurisdiction.
  - 7. Requested substitution is compatible with other portions of the Work.
  - 8. Requested substitution has been coordinated with other portions of the Work.
  - 9. Requested substitution provides specified warranty.

**2.2 EXISTING PRODUCTS**

- A. Do not use materials and equipment removed from existing premises unless specifically required or permitted by the Contract Documents.

- B. Unforeseen historic items encountered remain the property of the County; notify County promptly upon discovery; protect, remove, handle, and store as directed by County.
- C. Existing materials and equipment indicated to be removed, but not to be re-used, relocated, reinstalled, delivered to the County, or otherwise indicated as to remain the property of the County, become the property of the Contractor; remove from site.

### **2.3 NEW PRODUCTS**

- A. Provide new products unless specifically required or permitted by the Contract Documents.
- B. Do not use products made using or containing asbestos.

### **2.4 PRODUCT OPTIONS**

- A. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.
- B. Products Specified by Naming One or More Manufacturers: Use a product of one of the manufacturers named and meeting specifications, no options or substitutions allowed.
- C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.

### **2.5 MAINTENANCE MATERIALS**

- A. Furnish extra materials, spare parts, tools, and software of types and in quantities specified in individual specification sections.
- B. Deliver to Project site; obtain receipt prior to final payment.

## **PART 3 EXECUTION**

### **3.1 TRANSPORTATION AND HANDLING**

- A. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.
- B. Transport and handle products in accordance with manufacturer's instructions.
- C. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.
- D. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
- E. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.
- F. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

### **3.2 STORAGE AND PROTECTION**

- A. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication.
- B. Store and protect products in accordance with manufacturers' instructions.
- C. Store with seals and labels intact and legible.

- D. Store sensitive products in weather tight, climate controlled, enclosures in an environment favorable to product.
- E. For exterior storage of fabricated products, place on sloped supports above ground.
- F. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- G. Prevent contact with material that may cause corrosion, discoloration, or staining.
- H. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- I. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

**(See forms below)**

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**SUBSTITUTION REQUEST FORM**

WE HEREBY SUBMIT FOR YOUR CONSIDERATION THE FOLLOWING PRODUCT OR METHOD AS  
SUBSTITUTION FOR THE SPECIFIED ITEM FOR THIS PROJECT:

PROJECT: \_\_\_\_\_

SPECIFIED ITEM: \_\_\_\_\_

Section	Page	Paragraph	Description
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PROPOSED CREDIT IF ANY: \_\_\_\_\_

The Undersigned requests consideration of the following: PROPOSED SUBSTITUTION;

Attached data Includes product description, specifications, drawings, photographs, performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents, which the proposed substitution will require for its proper Installation.

The undersigned certifies:

1. The proposed substitution does not affect dimensions shown on drawings or code requirements indicated.
2. The proposed substitution will have no adverse effect on other trades or the construction warranty requirements.
3. Maintenance and service parts will be locally available for the proposed substitution.
4. Attach information for a minimum of three projects where the substitution has been used locally within a 100-mile distance of this project, including names, addresses and telephone numbers of County's who have accepted this product into their projects.
5. Attach all cost data with explanations if different from Specified or Drawing Item. Include in that explanation a discussion on quality of proposed substitution and cost differential.
6. The undersigned will pay for any subsequent Changes in incorporating the proposed substitution that were not apparent at the lime of approval into the Work, including compensation to the Architect as described in Item 2 above and for changes required to the building design, including engineering design, detailing, and construction costs caused by the requested substitution.
7. **FOR SUBSTITUTIONS SUBMITTED AFTER CONTRACT AWARD:** The undersigned will compensate the County at a rate of \$130.00 an hour for Architect's review, investigation and comments whether or not the request is approved. The Architect is herein defined as any of those firms or individuals listed by reference on the Drawings, including all Consultants identified herein.

The undersigned certifies to the County that the function, appearance and quality are equivalent or superior to the specified or drawing Item. Submitted by:

\_\_\_\_\_

Below Is Signature for Use by Design Consultant Firm only:

- Accepted as Noted
- Accepted
- Not Accepted
- Received Too Late

Date: \_\_\_\_\_ By \_\_\_\_\_

Telephone: \_\_\_\_\_ Date: \_\_\_\_\_

Remarks:

**END OF SECTION**



**SECTION 01 70 00  
CLOSEOUT REQUIREMENTS**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Closeout Procedures.
- B. Project Record Documents.
- C. Operation and Maintenance Data.
- D. Guaranties, Warranties and Bonds.
- E. Spare Parts and Maintenance Materials.
- F. Certification of Recycled Content.
- G. Waste Management Report.

**1.2 RELATED REQUIREMENTS**

- A. Section 00 70 00: General Conditions.
- B. Section 01 01 00: Summary of Work.
- C. Section 01 12 00: Recycling
- D. Section 01 30 00: Submittal Procedures.
- E. Section 01 50 00: Temporary Facilities and Controls.
- F. Section 01 74 00: Cleaning.
- G. Section 01 82 00: Demonstration and Training

**1.3 CLOSEOUT PROCEDURES**

- A. Comply with procedures in General Conditions Section 00 70 00 of the Contract for Construction, Items 8 and 9, for inspection and acceptance of the Work, payment and retention procedures.
- B. When Contractor considers Work has reached substantial completion, submit written certification that Work is ready for inspection.

**1.4 INSPECTION PROCEDURES**

- A. When each building/phase is in the opinion of the contractor, substantially complete, the Contractor shall call for a punch list inspection.
- B. Inspection Procedures: In accordance with General Conditions Article 8.2 A, on receipt of a written request for inspection, the County Representative will schedule the inspection if in the judgment of the County the project is not substantially complete, the County Representative will so advise the Contractor and discontinue the inspection.
  - 1. The County Representative will repeat inspection when requested and assured that the work has been completed.
  - 2. Results of the completed inspection will form the basis of requirements for final acceptance of the Work.

- C. Final cleaning shall be completed prior to County's inspection and acceptance. Refer to Section 01 74 00, Cleaning.

### 1.5 PROJECT RECORD DOCUMENTS ("AS-BUILTS")

- A. Maintain, on current basis, record drawings showing "as-built" conditions of project; subject to monthly review by County Representative and/or Inspector of Record. Identify each of the documents with a title "RECORD DOCUMENTS-JOB SET". Accuracy of records shall be such that future searches for items shown in the Contract Documents may reasonably rely on information obtained from the accepted record documents. Monthly pay estimates will not be processed without review and approval of record drawings by the County. Written confirmation that the as-builts have been properly updated shall be submitted with each pay application request. Final Acceptance of Work will not take place until record drawings are turned over to the County Representative.
- B. Store Project record documents separate from those used for construction. Protect from deterioration and loss in a secure, fire-resistive location; provide access to the County Representatives during normal working hours. In the event of loss of recorded data, use means necessary to again secure the data to the County's acceptance; such means shall include, if necessary in the opinion of the County, removal and replacement of concealing materials and in such case, replacements shall be to the standards originally specified.
- C. Construction Photos: Provide color digital photography of site and construction throughout the progress of the Work, image size 1696 x 2112 pixels minimum.
1. Take photographs not more than 3 days prior to each scheduled estimate for payment, and as required to record the following events.
    - a. Excavations
    - b. Foundations
    - c. Structural framing
    - d. Enclosure of building
    - e. Interior of building
    - f. Final completion.
  2. Underground utilities: Before commencing backfilling of utilities or any other underground pipes, ducts, conduits, or structures, take photographs showing relationship of below ground utilities to structure(s) or other physical reference point. Photos are to be categorized by locations and indicating utilities shown. Provide photo(s) of all connections, crossings, stubs, or other critical points. If the Contractor neglects to take such photographs, Contractor shall uncover, at the Contractor's expense, the area(s) so neglected in order to provide the requisite photos. Provide a paper original and digital (PDF) composite Utility Site Plan with the number of each photograph placed on the plan at the location the photo was taken from, and a mark indicating which way the camera was pointed. All numbers and marks shall be clear, legible, and neatly printed or digitally created. Photo binder and photo plan shall be considered part of the record documents.
- E. Record Drawings: Maintain a clean, undamaged paper set of Contract Drawings and Shop Drawings. Mark the set to show the actual installation where the installation varies from the Work as originally shown. Mark whichever drawing is most capable of showing conditions fully and accurately. At time of installation, installed locations of work relating to aboveground and underground utilities, architectural, structural, heating, ventilation, air conditioning, plumbing, electrical, and other scopes of work as may be required, shall be recorded on the paper drawing set by Contractor, and reviewed with County Inspector. Timing of entries shall be within 24 hours after receipt of information. Do not conceal work until required information is

recorded.

1. Information entered on print drawings shall be neat, legible, and emphasized by drawing "clouds" around changed items. Mark record sets with red erasable pencil; use other colors to distinguish between variations in separate categories of the work. Date entries.
  2. Mark new information that is important to the County, but was not shown on Contract Drawings or Shop Drawings.
  3. At a minimum, the following information shall be inserted and dimensioned on record documents where applicable:
    - a. The exact horizontal and vertical location of all installations in their finished condition, including all electrical, plumbing and mechanical installations;
    - b. All changes in construction, materials and installed equipment;
    - c. Adequate dimensional data, both horizontal and vertical, to allow location of covered installations;
    - d. The identification of changes authorized by Change Order and the number of that Change Order;
    - e. All Requests for information and the number of that Request for Information;
    - f. All Field Orders and the number of that Field Order;
  4. Design of future modifications of the facility may require accurate information as to the final physical arrangement of items and location of utilities which are shown only schematically on the Drawings. Convert schematic layouts as follows:
    - a. Show on the job set of record Drawings, by dimension accurate to within one inch, the centerline of each run of items such as are described in the description above. Clearly identify the item by accurate note such as "cast-iron drain", "galvanized water pipe", etc. Show, by symbol or note, the vertical location of the item ("under slab", "in ceiling plenum", "exposed", etc.). Make identification sufficiently descriptive that it may be related reliably to the Specifications.
    - b. The County may waive the requirements for conversion of schematic layouts here, if in the County's judgment as advised by the County Representatives, such conversion serves no beneficial purpose. However, do not rely upon waivers being issued except as specifically issued in writing by the County.
  5. Symbols and designations used in preparing record drawings shall match those used in Contract Drawings.
  6. Locate and dimension work, including stubs for future connections, with reference to permanent landmarks or buildings and indicate approximate depth below finish grade.
  7. Organize record drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates and other identification on the cover of each set.
- E. Record Specifications: Maintain one complete copy of the Project Specifications, including addenda, and one copy of other written construction documents such as Change Orders and modifications issued in printed form during construction. Mark these documents to show variations in actual work performed in comparison with the text of the Specifications and modifications. Give particular attention to substitutions, selection of options and similar information on elements that are concealed or cannot otherwise be readily discerned later by direct observation. Note related record drawing information and Product Data.
1. Upon completion of the work, submit record Specifications to the County Representative for the County's records.
- F. Prior to final Acceptance of Work, submit Project record documents with transmittal letter containing date, Project title, Contractor's name and address, list of documents and signature

of Contractor.

- G. The contractor shall have no responsibility for recording changes in the work subsequent to acceptance of the Work by the County, except for changes resulting from replacements, repairs, and alterations made by the Contractor as a part of his guarantee. No changes will be allowed without approval of the County.

## 1.6 OPERATION AND MAINTENANCE DATA

- A. Provide data for Sections as required by the Contract Documents.
- B. Preparation of data shall be done by personnel:
1. Trained and experienced in maintenance and operation of described products.
  2. Familiar with requirements of this Section.
  3. Skilled as technical writer to the extent required to communicate essential data.
  4. Skilled as draftsman competent to prepare required drawings.
- C. Submit three (3) sets of operating/maintenance manuals prior to Final Acceptance of Work, bound in 8-1/2 x 11 inch three ringside binders with durable plastic covers; with identification on, or readable through, front cover stating general nature of manual.
- D. Provide separate volume for each system, with table of contents and index tabs for each volume; all material neatly typewritten; each volume containing:
1. Part 1: Directory listing names, addresses and telephone numbers of Architect, County Inspector, Contractor, and all subcontractors; and index furnishing complete information as to location in manual of emergency data regarding installation.
  2. Part 2: Operation and maintenance instructions, arranged by system. For each system, give names, addresses and telephone numbers of subcontractors and suppliers; and include the following:
    - a. Appropriate design criteria.
    - b. List of equipment.
    - c. Parts list; including complete nomenclature, current costs, and names and address of nearest vendor of parts.
    - d. Detailed operating instructions in a logical sequence for each procedure. Include proper procedures in event of failure.
    - e. Maintenance instructions, equipment, including routine maintenance cards with time frequency of routine maintenance noted.
    - f. Maintenance instructions, finishes. Provide manufacturer's recommendation for types of cleaning agents and methods, cautions against agents and methods which are detrimental to the product and a recommended schedule for cleaning and maintenance.
    - g. Copy of each Material Safety Data Sheet (MSDS) received with products or materials delivered to the site for incorporation into the Project, for County future reference.
    - h. Shop drawings and product data, including changes made during construction. Illustrate relations of component parts of equipment and systems and control and flow diagrams.
    - i. Copies of Guaranties/Warranties. Note instances which might affect validity of warranties or bonds.
- E. Extraneous Data: Where contents of manuals include manufacturers' catalog pages, clearly

indicate precise items included in this installation and delete, or otherwise clearly indicate, manufacturer's data with which this installation is not concerned. Include catalog number, size and composition, color and texture designations and information required for re-ordering special manufactured products.

- F. Review contents of manual with County representative in full detail to explain all aspects of operations and maintenance in addition to requirements per Section 01 82 00  
DEMONSTRATION AND TRAINING.
- G. Final Acceptance of the Work will not take place until operation/maintenance manuals are delivered to the County Representative as required by Section 00 70 00 Item 8.2

### **1.7 GUARANTIES, WARRANTIES AND BONDS**

- A. Standard Warranty: Guarantee Work executed under this Contract to be free of defects of workmanship and materials for a period of one year after completion and acceptance by the County. Refer to General Conditions Section 00 70 00 of the Contract for Construction.
- B. Additional Guaranties/Warranties: Provide additional guaranties/warranties (in excess of one year) where specifically required by pertinent Specification Sections.
  - 1. Provide duplicate, notarized copies. Execute Contractor's submittals and assemble documents executed by subcontractors, suppliers and manufacturers. Provide table of contents and assemble in binder with durable plastic cover.
- C. Submit guaranties/warranties for review and approval prior to final payment.
  - 1. For equipment put into use with County's permission during construction, submit guarantees/warranties within 10 days after first operation.
  - 2. For items of work delayed beyond date of substantial completion, provide updated guaranty/warranty submittal within 10 days after acceptance, listing date of acceptance as start of guaranty/warranty period.

### **1.8 SPARE PARTS AND MAINTENANCE MATERIALS**

- A. Provide products, spare parts, and maintenance materials in quantities specified in each Section, in addition to that used for construction of work. Coordinate with County Representative and deliver to Project site. Provide with a detailed transmittal and obtain receipt prior to Final Acceptance of Work.

### **1.9 RECYCLING PLAN**

- A. Upon completion of Work, and prior to final payment, submit the completed Recycling Report summarizing the waste generated, sent to landfill, reused, and recycled which is attributed to Work of this Project.
- B. Refer to Section 01 12 00, Recycling
- C. Final payment will not be made until completed Recycling Report is submitted by Contractor and received by the County.

### **1.10 FINAL ACCEPTANCE**

- A. Preliminary Procedures: Before requesting certification of final Acceptance of the Work

complete the following:

1. Submit a certified copy of the County Representative's list of items to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance for final inspection.
- B. Final Inspection: The County Representative, AOR and/or IOR will re-inspect the work upon receipt of notice that the work, including inspection list items from earlier inspections, "(punch-list)", has been completed, except items whose completion has been delayed because of circumstances acceptable to the County.
1. Upon completion of final inspection, the County Representative will prepare and submit to the County, a certificate of final acceptance, or advise the Contractor of work that is incomplete or of obligations that have not been fulfilled but are required for final acceptance.
  2. If after the inspection, the County determines that the Work is complete, the County will accept the Work per Section 00 70 00 General Conditions of the Contract for Construction, Item No.8.

**PART 2        PRODUCTS (Not Used)**

**PART 3        EXECUTION (Not Used)**

**END OF SECTION**

**SECTION 01 73 00  
CUTTING AND PATCHING**

PART I – GENERAL

1.01 SECTION INCLUDES

- A. Procedures for cutting and patching as may be required to complete the work of this project.

1.02 RELATED SECTIONS

- A. Section 01 50 00 - Construction Facilities and Temporary Controls
- B. Section 01 12 00 - Recycling
- C. Section 01 74 00 - Cleaning

1.03 DEFINITIONS

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

1.04 QUALITY ASSURANCE

- A. Structural Elements: Do not cut and patch structural elements without approval of Structural Engineer.
- 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.
- C. Miscellaneous Elements: Do not cut or patch miscellaneous elements or related components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety.
- D. Visual Requirements: Do not cut or patch 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 Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

PART 2 - PRODUCTS

2.01 MATERIALS

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

## PART 3 – EXECUTION

### 3.01 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 in-place finishes or primers.
  - 2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

### 3.02 PREPARATION

- A. Temporary Support: Provide temporary support of Work to be cut.
- B. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
- D. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to prevent interruption to occupied areas.

### 3.03 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 in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original installer, comply with original installer's written recommendations.
  - 1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
  - 2. 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.
  - 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.
  - a. Clean, piping, conduit, and similar features before applying paint or other finishing materials.
  - b. Restore damaged pipe covering to its original condition.
- D. Cleaning: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.

**END OF SECTION**

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**SECTION 01 74 00  
CLEANING**

**PART 1 GENERAL**

**1.1 RELATED DOCUMENTS**

- A. Perform cleaning and disposal work as specified. This Section forms a part of all other Sections of the specifications and shall be coordinated with such additional cleaning and disposal requirements as may be specified in other Sections.

**1.2 RELATED REQUIREMENTS**

- A. Section 00 70 00: General Conditions
- B. Section 01 11 50: Environmental Procedures
- C. Section 01 12 00: Recycling.
- D. Section 01 50 00: Temporary Facilities
- E. Pertinent Specification Sections: Specific requirements for cleaning.

**1.3 CLEANING IN GENERAL**

- A. Contractor shall at all times keep premises free from accumulations of waste material or rubbish caused by Contractor's employees or work, or employees or work of subcontractors, and shall remove rubbish from and about areas of Work and Contractor's and subcontractors' tools, scaffolding and surplus materials and shall leave the Work "broom clean", or its equivalent, except as hereinafter specified. In case of dispute between Contractor and other contractors employed on or about the work areas, as to responsibility for removal of rubbish, etc., or in case debris is not promptly removed as herein required, the County may remove rubbish, etc., and back charge the Contractor.
- A. At all times, Project working area and site shall be kept clean and orderly. Dirt, debris, waste, rubbish and disused implements and equipment shall be removed frequently and not allowed to accumulate more than 24 hours. Flammable and toxic materials shall not be stored in structures.

**1.4 FINAL CLEANING**

- A. Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to the condition expected in a normal, commercial building cleaning and maintenance program. Comply with manufacturer's instructions.
- B. Complete the following cleaning operations before requesting inspection for Substantial Completion.
  - 1. Within Contract limits, clean interior and exterior surfaces exposed to view to a dust-free condition, free of stains, films and similar foreign substances; remove temporary labels, polish transparent and glossy surfaces, leave concrete floors broom clean and vacuum carpeted and soft surfaces.
  - 1. Clean equipment and fixtures to sanitary condition, clean or replace filters of mechanical equipment. Remove excess lubrication and other substances. Clean light fixtures and lamps.
  - 2. Clean roofs, gutters, downspouts and drainage systems.
  - 3. Glass: Clean all transparent materials, including mirrors and glass in doors and windows, interior and exterior, affected by Work of this Project; including removal of

foreign material from glass. Remove glazing compound and other substances that are noticeable vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials.

- C. Clean the site, including landscape development areas, of rubbish, litter and foreign substances. Sweep paved areas broom clean; remove stain, spills and other foreign surfaces; rake clean other surfaces.
- D. Remove waste and surplus materials, rubbish and construction facilities from Project and from site.
- E. Dust, dirt, stains, hand marks, paint spots, and like defects shall be completely removed from surfaces. Metal surfaces shall be cleaned, using only non-corrosive and non-abrasive materials.
- F. Pest Control: Engage an experienced licensed exterminator to make a final inspection, and rid the project of rodents, insects and other pests.
- G. Final Inspection: Deficient cleaning operations, as determined by the County, shall be immediately corrected as directed.

#### **1.5 DISPOSAL**

- A. Under no circumstances shall rubbish or waste material be disposed of in site fills or backfills. Comply with all provisions of the Recycling Plan and do not bury debris or excess materials on the project property. Remove all metal, construction debris, etc. from the top four (4) inches of soil at all areas to receive topsoil and/or planting within the secured perimeter, including but not limited to "no man's land". Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not discharge volatile, harmful or dangerous materials into drainage system. Debris, rubbish, and waste or surplus material shall be removed from the project property daily and legally disposed of.

**PART 2 PRODUCTS (Not Used)**

**PART 3 EXECUTION (Not Used)**

**END OF SECTION**

**SECTION 01 75 00  
STARTING AND ADJUSTING**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Procedures for starting of systems, including the following:
  - 1. Heating, Ventilating, and Air Conditioning
  - 2. Electrical Systems
  - 3. Security Systems

**1.2 RELATED SECTIONS**

- A. Section 01 00 00: Summary of Work
- B. Section 01 30 00: Submittal Procedures.
- C. Section 01 82 00: Demonstration and Training.

**1.3 QUALITY CONTROL**

- A. When so specified in individual Sections, require manufacturer to provide authorized representative to be present at Project site to inspect, check, and approve equipment installation prior to start-up; to supervise placing of equipment in operation; and to provide written report that equipment has been properly installed and lubricated, is in accurate alignment, is free from any undue stress imposed by connecting lines or anchor bolts, and has been satisfactorily operated under full load conditions.

**1.4 SUBMITTALS**

- A. Sequencing Schedule: Submit preliminary schedule listing times and dates for start-up of each item of equipment, in sequence, two weeks prior to proposed dates. Approved Schedule shall be the sequencing schedule.
- B. Documentation Required Before Start-Up: Two copies of the (proposed) installation drawings shall be provided for the Fire Alarm system immediately before the system is accepted for connection. These drawings are to show the location and address for each alarm device on a floor plan, including but not limited to initiation, notification and control devices. The contractor shall provide a copy of the addressable Fire Alarm system programming for review, showing all system configuration, alarm logic, and custom programming.
- C. Reports: Submit manufacturer representative's reports within one week after start-up, listing dates when start-up occurred.

**1.5 PROJECT CONDITIONS**

- A. Ensure building is enclosed and weather tight.
- B. Ensure excess packing and shipping bolts are removed.
- C. Ensure interdependent systems have been checked and are operational.

**1.6 INSPECTION**

- A. Verify that Project conditions comply with specified and manufacturer's requirements.

- B. Verify that status of work meets requirements for start-up of equipment and systems.

### **1.7 PREPARATION**

- A. Coordinate sequence of start-up for various items of equipment.
- B. Notify the County 7 days prior to start-up of each item of equipment.
- C. Have Contract Documents, shop drawings, product data, and operation and maintenance data at hand during entire start-up process.
- D. Verify that each piece of equipment has been checked for proper lubrication, drive rotation, belt tension, control sequence and other conditions which may cause damage.
- E. Verify control systems are fully operational in automatic mode.
- F. Verify that tests, meter readings, and specific electrical characteristics agree with those specified by electrical equipment manufacturer.
- G. Verify wiring to motors and controls, required by mechanical work for operational smoke and fire protection demonstrations, is complete.
- H. Bearings: Inspect for cleanliness; clean and remove foreign matter. Verify alignment and take corrective measures, if required.
- I. Drives: Inspect for tension on belt drives, adjustment of varipitch sheaves and drives, alignment, proper equipment speed and cleanliness. Take corrective measures, if required.
- J. Motors: Verify that motor amperage agrees with nameplate value. Inspect for conditions which produce excessive current flow and which exist due to equipment malfunction. Take corrective measures, if required.

### **1.8 STARTING SYSTEMS**

- A. Execute start-up under supervision of Contractor's personnel and/or manufacturer's representative when so specified and in the presence of the County Representative.
- B. Place equipment for operation in proper sequence, in accordance with approved sequencing schedule.

### **1.9 DEMONSTRATION**

- A. Fire Alarm: Immediately following start-up but prior to acceptance, the contractor shall perform a complete demonstration of the fire alarm system. The demonstration shall be in the presence of the County Representative and the County Fire Marshal. Prior to that demonstration, the contractor shall pre-test all equipment to ensure a successful demonstration. The demonstration shall include the following:
  - 1. Activation of every initiating device.
  - 2. Activation of every sprinkler control and monitoring device.
  - 3. Activation and check of every indicating appliance, audible I visual device.
  - 4. Activation of the fire alarm system components, these shall include but not limited to all fire dampers, all door closures, all automatic fire door functions, all air pressurization features, and all auxiliary signaling devices.
  - 5. Activation of all fan and air handler controls, with air handlers and fans in full operation.
  - 6. Activation of all fire alarm control features (i.e., by-pass software functions in addressable

alarm systems).

7. Testing of all appropriate circuits for open-circuit supervision, short-circuit supervision, and ground fault supervision.
8. Testing of the system on standby power generation under full load. Actual devices to be tested on emergency power shall be at the discretion of the County Inspector.

**PART 2        PRODUCTS (Not Used)**

**PART 3        EXECUTION (Not Used)**

**END OF SECTION**

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**SECTION 01 82 00  
DEMONSTRATION AND TRAINING**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Administration and Procedural requirements for instructing Owner's personnel, including the following:
  - 1. Demonstration of operation of systems, subsystems, and equipment.
  - 2. Training in operation and maintenance of systems, subsystems, and equipment.
  - 3. Demonstration and training video recordings.

**1.2 RELATED SECTIONS**

- A. Section 01 00 00: Summary of Work: Work sequencing.
- B. Section 01 32 10: Progress Schedule and Reports.
- C. Section 01 75 00: Starting and Adjusting.
- D. Section 01 70 00: Closeout Requirements: Operation and maintenance data.
- E. Individual Sections: Specific requirements for demonstrating equipment and systems.

**1.3 QUALITY ASSURANCE**

- A. Facilitator Qualifications: A firm or individual experienced in training or educating maintenance personnel in a training program similar in content and extent to that indicated for this Project, and whose work has resulted in training or education with a record of successful learning performance.
- B. Demonstration and instruction shall be specific to each type of equipment or system supplied by the manufacturer. At a minimum, demonstration and instruction shall include: operational theory; maintenance; trouble shooting/repair; and calibration.
- C. County will provide list of personnel to receive instructions and will coordinate their attendance at agreed upon times.

**1.4 SUBMITTALS**

- A. Submit preliminary schedule for County's approval, listing times and dates for demonstration and instruction of each item of equipment and each system, 3 weeks prior to proposed dates.
- B. Submit proposed training materials and a detailed outline of each demonstration and instruction at least 30 days in advance of training.
- C. Demonstration and Training Video Recordings: Submit two copies within seven days of end of each training module.

Identification: On each copy, provide an applied label with the following information:

- 1. Name of Project.
- 2. Subject of Video Training/Demonstration.
- 3. Name of Subcontractor responsible for scope of work
- 4. Name of Training/Demonstration Facilitator
- 5. Name of Title & Company of Facilitator
- 6. Date of video recording.

- D. Submit final report upon completion of all required demonstration & trainings indicating dates each training and demonstration was performed, hours devoted to each demonstration & training, and provide copies of sign-in sheets for each event.

### **1.5 PREPARATION**

- A. Verify equipment and systems have been inspected and put into operation in accordance with Section 01 75 00, and equipment and systems are fully operational.
- B. Furnish training materials, books, etc. to each student attending the training classes and have copies of completed operation and maintenance manuals at hand for use in demonstrations and instructions.
- C. Prepare an attendance record/sign in sheet for each demonstration and training module capturing the name of all attendees, including the facilitator, entity represented, and contact information.

### **1.6 DEMONSTRATION AND INSTRUCTIONS**

- A. Prior to acceptance of equipment or systems, demonstrate operation and maintenance of equipment and systems to County and Superior Court personnel as scheduled.
- B. Use operation and maintenance manuals as basis of instruction. Provide a training outline 1 week prior to the scheduled training. Review contents of manual with personnel in detail to explain all aspects of operation and maintenance. Dedicate the final 10-15 minutes of the training module for Q&A.
- C. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance and shutdown of each item of equipment or system at agreed upon times, at equipment or system location.
- D. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instructions.
- E. Provide professionally prepared audio/visual record of all demonstrations and instructions in DVD format. Clearly show equipment or systems as they are being described. Audio portion of tape shall include entire session narrative, including questions and answers.

### **1.7 TIME ALLOCATED FOR INSTRUCTIONS**

- A. Amount of time required for instruction on each item of equipment and system shall be as specified in individual Sections.
- B. Contractor shall include in the bid an additional 40 hours of training for miscellaneous systems and/or equipment to be determined by and used at the request of the County.

### **1.8 COORDINATION**

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

data has been reviewed and approved by Architect.

**PART 2        PRODUCTS (Not Used)**

**PART 3        EXECUTION (Not Used)**

**END OF SECTION**

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**02 40 00  
DEMOLITION**

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Removal and storage of items to be reused.
- B. Removal of paving and concrete flatwork.
- C. Removal of shrubs, grasses and related vegetation.
- D. Removal of abandoned utilities, signage, fencing and miscellaneous improvements.

1.02 RELATED WORK

- A. Section 01 01 00 - Summary of the Work
- B. Section 01 10 00 - Special Project Procedures
- C. Section 01 50 00 - Temporary Facilities and Controls
- D. Section 31 00 00 - Earthwork

1.03 COORDINATION

- A. Contractors performing demolition procedures shall be responsible for contacting Underground Service Alert to confirm location of any underground utilities which may be damaged during demolition.

PART 2 - PRODUCTS  
(Not Used)

PART 3 - EXECUTION

3.01 PREPARATION

- A. Erect and maintain temporary barricades under provisions of Section 01 50 00 and as required to keep members of the public at a safe distance from demolition operations.
- B. Protect existing items which are not indicated to be demolished
- C. Disconnect, remove, and cap terminated utility services within demolition areas in compliance with utility company standards and City requirements

3.02 EXECUTION

- A. Demolish in an orderly and careful manner. Identify and protect existing improvements to remain.
- B. Immediately notify Architect or Owner's Representative of contaminated, hazardous, or potentially dangerous materials encountered; proceed with removal and disposal as directed.

- C. Where designated on the drawings, carefully disassemble and/or remove items to be delivered to the Owner or stored for re-installation. Protect such items from damage.
- D. Except for where noted otherwise, immediately remove demolished materials from site. Do not burn or bury materials on site.
- E. Upon completion of demolition work, leave areas surrounding work area, including public streets, in a clean condition.
- F. Control the spread of dust during site demolition operations by moistening affected surfaces; refer to additional dust control provisions in Section 01 10 00.
- G. Comply with all requirements of the local authority with jurisdiction, as identified in the drawings.
- H. Plant and tree removal shall include removal of all roots.
- I. Refer to Section 31 00 00 Earthwork, for treatment of voids created by removal of subsurface structures.

END OF SECTION

**SECTION 03 30 00  
CAST-IN-PLACE CONCRETE**

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Cast-in-place concrete foundations, building slabs, walls, stairs and appurtenant Work.

1.02 RELATED WORK DESCRIBED ELSEWHERE

- A. Section 05 50 00 - Metal Fabrications: Items embedded in C.I.P. concrete
- B. Section 07 19 20 - Underslab Vapor Barrier
- C. Section 31 00 00 - Earthwork
- D. Section 31 22 80 - Soil Treatment
- E. Section 32 13 00 - Concrete Paving and Flatwork

1.03 REFERENCES

- A. ACI 318-05 – Concrete Construction Code Guide
- B. ASTM A615 - Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
- C. ASTM C94 – Ready Mixed Concrete.
- D. General Structural Notes, Sheet S-1.

1.04 QUALITY ASSURANCE

- A. Footing Inspection: Footing excavations shall be inspected and approved by the Soils Engineer.
- B. Testing: Concrete slump and strength testing shall be performed in accordance with the provisions of Section 01 40 00.

1.05 SUBMITTALS

- A. Submit mix designs, product data and manufacturer's instructions under provisions of Section 01 30 00.
- B. Submit certified copies of mix designs for each class of concrete. Include results of testing or test data used to establish mix proportions. Include data on joint filler and any proposed admixtures or curing compounds.
- C. Submit proposed location of all control and construction joint locations for the Architect's review and approval.
- D. Submit all concrete delivery tickets to jobsite superintendent for filing until all strength testing has been satisfactorily completed.

PART 2 - PRODUCTS

2.01 CEMENT

- A. Portland Cement Type II, low alkali, conforming to ASTM C150, a single brand of cement throughout structural concrete work.

2.02 AGGREGATE

- A. Fine aggregate: ASTM C33
- B. Coarse aggregate: Clean, hard, fine grained crushed rock or washed gravel with a minimum of 25% crushed faces; ASTM C33, maximum 1-1/2" size; maximum loss in Los Angeles Rattler Test shall not exceed 50% in 500 revolutions, per ASTM C535-65.

2.03 SAND

- A. Sand for slab cushion: Clean, homogenous inland sand of which less than 3 percent passes the #200 sieve; free of deleterious, organic or expansive materials.

2.04 WATER

- A. Mixing water: Clean, fresh water, free from acid, alkali, organic matter or other impurities which may be detrimental to concrete.
- B. Washing and curing water: Same as above.

2.05 READY-MIXED CONCRETE

- A. Reference Standards: Comply with ASTM C94.
- B. Strength: 3,000 psi minimum compressive strength after 28 days (unless noted otherwise).
  - 1. Slump: 5 inches maximum.
  - 2. Mix: Minimum cement content of 5.0 sacks per cubic yard; maximum water-cement ratio of 7.2 gallons per sack of cement.

2.06 DEFORMED BAR REINFORCING

- A. Reference Standards: Comply with ASTM A615, grade 60
- B. Provide reinforcing steel in sizes described on drawings, clean of rust, grease, or contaminants that may impair concrete bonding.

2.07 WELDED WIRE FABRIC

- A. Reference Standards: Comply with ASTM A185.
- B. Provide wire fabric in size and gage indicated on drawings, clean of rust, grease, or contaminants that may impair concrete bonding

2.08 VAPOR BARRIER

- A. Underslab vapor barrier: In accordance with Section 07 19 20.

2.09 PREFORMED JOINTS



- A. Construction joints: Burke Keyed Kold Joint or approved equivalent.
- B. Control joints: Burke Zip Strip or approved equivalent.

#### 2.10 FORM MATERIALS

- A. Reference Standards: Comply with ACI 301.
- B. Plywood Forms: Douglas fir or spruce species; solid one side grade; sound undamaged sheets.
- C. Form Liner: Textured surface on Stair Tower below rappel gate, metal panel as manufactured by AEP Span, NuWave corrugated panel, 7/8-inch rib height, 2-2/3" center to center rib pitch.

#### 2.11. CURING MATERIALS

- A. Water: Clean and potable.
- B. Membrane Curing Compound: Comply with ASTM C309.

#### 2.10 SEALER

- A. VOCOMP®-25 water base, acrylic concrete curing and sealing compound as manufactured by W.R. Meadows Sealtight

### PART 3 - EXECUTION

#### 3.01 INSPECTION

- A. Inspect completed earthwork in area of concrete work and verify that it is ready to receive the work of this Section.
- B. Beginning of trenching means acceptance of existing surfaces.

#### 3.02 COORDINATION

- A. Obtain information and instructions from other trades and suppliers in ample time to schedule and coordinate the installation of items furnished by them to be embedded in concrete under this Section so that provisions for their work can be made without delaying the project.
- B. Cutting and/or patching made necessary by failure or delay in complying with these requirements shall be done at no cost to the Owner, and under the direction of the Architect.

#### 3.03 SPREAD AND CONTINUOUS FOOTING TRENCHING

- A. Excavate at locations and to dimensions and depths shown on the drawings, making allowance for footing forms.
- B. Drain all surface and ground water from excavations, using pumps, dams, or drainage ditches as required to remove water from trenches.
- C. Fill over-excavated portions with structural concrete.
- D. Maintain all excavations true to line and dimensions shown and free of loose earth and debris of any kind. Trenching is subject to Architect's approval.

- E. Prior to placement of concrete, obtain approval of Soils Engineer for footing excavations.

#### 3.04 FORMWORK

- A. Coordinate carefully with other trades for the provision of sleeves, chases, knock-outs, and ties for other work.
- B. Build and brace forms sufficiently to prevent leaking of concrete and any bulging or deflection of forms; double form footings.
- C. Construct forms true to line and dimensions shown on drawings, with exterior surfaces flat and plumb. Formwork is subject to Architect's approval.

#### 3.05 VAPOR BARRIER AND REINFORCING STEEL PLACEMENT

- A. Comply with Section 07192.
- B. Place moisture barrier at midsection of sand free of sharp objects, organic material or rubble.
- C. Install vapor barrier in strict compliance with barrier manufacturer's printed installation instructions.
- D. Place a minimum of 2 inches of clean sand over the moisture barrier.
- E. Place reinforcing steel with accurate spacing and clearances as shown on drawings; support securely to prevent movement during pour.
- F. Use only clean concrete or metal items to support reinforcing steel.

#### 3.06 CONCRETE PLACEMENT

- A. Lightly wet forms, trenches, and sand just prior to concrete placement.
- B. Mechanically vibrate concrete footings to prevent honeycombing; honeycombing in excess of 1 inch in depth or 4 inches in width will be unacceptable.
- C. Provide construction joints as called out on drawings or as required by good trade practice to control cracking. To the maximum extent feasible, lay out construction joints under walls or at changes in flooring material.
- D. Finish slabs with power-driven disc floats; do not use cement dust to dry excess water.
- E. After initial set, hand trowel concrete surface to a slick burnished finish, free of tool marks, exposed aggregate, or other defects; finish exterior flatwork with a medium broom texture.
- F. Cure slabs only with water or a curing compound approved in advance through the submittal process.
- G. Leave forms in place a minimum of one day after pour is completed.
- H. Clean, patch and sack all horizontal surfaces and any exposed-to-view concrete work to a uniform finish, free of high spots, slumps, fins, bleeds, and other defects.
- I. Finished concrete shall meet the following tolerances:
  - 1. Horizontal lines: 1/4 inch in 20 feet.

2. Plumb: 1/4 inch in 10 feet.
  3. Slab deviation from a true plane (multi-directional): 1/8 inch in 10 feet
  4. Drying shrinkage shall not exceed 0.04% after 28 days, in accordance with ASTM C157.
- K. Apply approved concrete sealer to garage slab, exposed curbs and other surfaces identified in Finish Schedule in Drawings, in accordance with manufacturer's recommendations.

3.07 CLEAN-UP

- A. All truck discharge and cleaning shall be in areas that will not receive landscaping. At completion of concrete work, remove all concrete debris, slurry, hardened concrete and other waste products.
- B. Do not wash out tools, pumps, trucks, or other concrete related items in a fashion that will damage or stain road surfaces or property.

END OF SECTION

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**SECTION 03 60 00  
GROUT**

PART 1 - GENERAL

1.01 WORK INCLUDES

- A. High strength grouting, anchoring and patching at concrete surfaces.

1.02 RELATED WORK

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

1.03 SUBMITTALS

- A. Submit product data under provisions of Section 01 30 00.

PART 2 - PRODUCTS

2.01 GROUT

- A. Acceptable manufacturer: Quickcrete
- B. Alternate products may be used if approved on the basis of submittals made under provisions of Section 01 30 00.
- C. Product description: FastSet Non-Shrink Grout, Product 1585.
- D. Design Strength: 6,500 psi minimum at 28 days, per ASTM C109.
- E. Mixed only with clean, potable water.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Inspect surfaces to receive cementitious grout to verify they are clean and prepared for grouting according to the manufacturer's requirements.
- B. Beginning grouting means acceptance of existing surfaces.

3.02 APPLICATION

- A. Pour or trowel cementitious grout into place according to manufacturer's recommendations.
- B. Finish surface of patches smooth and even with adjacent concrete or masonry surfaces.

END OF SECTION

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**SECTION 05 43 00**  
**SLOTTED CHANNEL FRAMING SYSTEM**

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Continuous slot, bolted metal framing channels and all associated fittings and hardware.
- B. Trapeze type supports for cable tray, conduit, pipe and other similar systems.
- C. Use of bolted metal framing as a surface metal raceway.
- D. Provision of assemblies pre-approved for seismic anchorage of non-structural components as evidence by OSHPD Pre-Approval listing (OPA).

1.02 REFERENCES

- A. ASTM A123 - Specification for Zinc (Hot-Galvanized) Coatings on Products Fabricated from Rolled, Pressed, and Forged Steel Shapes, Plates, Bars, and Strip
- B. ASTM A653 - General Requirements for Steel Sheet, Zinc-Coated Galvanized by the Hot-Dip Process
- C. ASTM A1011 - Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability (*Formerly ASTM A570*)
- D. ASTM F1136 – Standard Specification for Chromium/Zinc Corrosion Protective Coatings for Fasteners
- E. ASTM A907 - Standard Specification for Steel, Sheet and Strip, Heavy-Thickness Coils, Carbon, Hot-Rolled, Structural Quality
- F. ASTM B633 - Specification for Electrodeposited Coatings of Zinc on Iron and Steel
- G. MFMA - Metal Framing Manufacturer's Association
- H. ANSI/NFPA 70– National Fire Protection Association (National Electrical Code)
- I. AISI - American Iron and Steel Institute

1.03 QUALITY ASSURANCE

- A. Manufacturers: Firms regularly engaged in the manufacture of bolted metal framing of the types required, whose products have been in satisfactory use in similar service for not less than 5 years.
- B. MFMA Compliance: Comply with the latest revision of MFMA Standards Publication Number MFMA-3, "Metal Framing Standards Publication".
- C. NEC Compliance: Comply with the latest revision NFPA 70 - Article 352 "Surface Metal Raceways and Surface Nonmetallic Raceways".
- D. UL Compliance: Comply with UL "Standard for Surface Metal Raceway and Fittings", UL 5.
- E. Bolted framing channels and fittings shall have the manufacturers name, part number, and material heat code identification number stamped in the part itself for identification. Material certification sheets and test reports must be made available by the manufacturer upon request.

- F. Stainless steel bolted framing parts shall be stamped to identify the material. Material certification sheets and test reports must be made available by the manufacturer upon request.

#### 1.04 SUBMITTALS

- A. Submit in accordance with Section 01 30 00.
- B. Submit drawings of strut and accessories including clamps, brackets, hanger rods, and fittings.
- C. Submit manufacturer's product data on strut channels including, but not limited to, types, materials, finishes, gauge thickness, and hole patterns. For each different strut cross-section, submit cross sectional properties including Section Modulus ( $S_x$ ) and Moment of Inertia ( $I_x$ ).
- D. Submit details of OSHPD pre-approved seismic anchoring systems indicating the specific channel system components proposed for use and the applicable loading imposed by the supported and/or anchored element, sufficient for inspectors to determine compliance.

#### 1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver strut systems and components carefully to avoid breakage, denting, and scoring finishes. Do not install damaged equipment.
- B. Store strut systems and components in original cartons and in clean dry space; protect from weather and construction traffic.

### PART 2 PRODUCTS

#### 2.01 ACCEPTABLE MANUFACTURERS

- A. Subject to compliance with these specifications, strut systems of the following manufacturers will be acceptable:
  - 1. Cooper B-Line, Inc,
  - 2. Atkore International (Unistrut)
  - 3. Power Engineering Co., Inc. (Power-Strut)
- B. Equivalent products of other manufacturers will be acceptable on the basis of submittals per Section 01 30 00 and the General Conditions of the Contract.

#### 2.02 STRUT CHANNELS AND COMPONENTS

- A. General: Strut shall be 1-5/8 inches wide in varying heights and welded combinations as required to meet load capacities and designs indicated on the drawings.
- B. Materials and Finish: Material and finish specifications for each strut type are as follows:
  - 1. Hot-dip Galvanized Steel (Interior conditions spaces only): Strut shall be made from steel meeting the minimum mechanical properties of ASTM A1011 SS, Grade 33 and shall be hot-dip galvanized after fabrication in accordance with ASTM A123. Fittings shall be manufactured from steel meeting the minimum requirements of ASTM A907 SS, Grade 33, and hot-dip galvanized after fabrication in accordance with ASTM A123. All hardware shall be stainless steel Type 304 [Type 316] or chromium zinc ASTM F1136 Gr. 3. All hot-dip galvanized after fabrication products must be returned to point of manufacture after coating for inspection and removal of all sharp burrs.



2. Stainless Steel (All exterior and exposed to ambient outdoor conditions): All strut, fittings and hardware shall be made of AISI Type 304 [Type 316] stainless steel as indicated.

### PART 3 EXECUTION

#### 3.01 INSTALLATION

- A. Install strut in accordance with MFMA-102 'Guidelines for the Use of Metal Framing'; in accordance with equipment manufacturer's recommendations, and with recognized industry practices.
- B. All nuts and bolts shall be tightened to the following values:

<u>Bolt Size</u>	<u>Torque (ft-lbs)</u>
1/4 - 20	6
5/16 - 18	11
3/8 - 16	19
1/2 - 13	50

END OF SECTION

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**SECTION 05 55 00  
METAL FABRICATIONS**

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Fabricated steel framing connectors, embeds, angle clips and other devices for seismic support and anchorage of non-structural components.
- B. Miscellaneous custom fabrications detailed in the Drawings.

1.02 RELATED WORK

- A. Structural Work described in the Drawings
- B. Section 05 43 00 - Slotted Channel Framing
- C.. Section 06 10 00 - Rough Carpentry
- D. Section 07 60 00 - Flashing and Sheet Metal
- E. Section 09 90 00 - Painting
- F. Divisions 21, 22 and 23 -- Mechanical and Plumbing -- Equipment supports

1.03 REFERENCES

- A. ASTM A36 - Structural Steel.
- B. ASTM A500 - Cold-formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
- C. ASTM A501 - Hot-formed Welded and Seamless Carbon Steel Structural Tubing.
- D. ASTM A238 - Steel Plates.
- E. ASTM A53 - Steel Pipe.
- F. ASTM A47 - Malleable Iron Castings.
- G. ASTM A307 - Bolts and Nuts.
- H. ASTM A123, A153, A386 - Zinc Galvanized Coating.
- I. AWS D1.1 - Structural Welding Code.
- J. FS TT-P-31 - Paint, Oil: Iron Oxide, Ready Mix, Red and Brown.
- K. FS TT-P-645 - Primer, Paint, Zinc Chromate, Alkyd Type.
- L. ASTM A666-0 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
- M. ASTM A269 - 10 Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.

- N. ASTM F593 - 02(2008) Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs

#### 1.04 SHOP DRAWINGS

- A. Submit shop drawings for shop or site fabricated items under provisions of Section 01300.
  - 1. Indicate profiles, sizes, connections, reinforcing, anchorage, size and type of fasteners, and accessories.
  - 2. Indicate welded connections using standard AWS welding symbols; indicate net weld lengths.
- B. Submit product data for all materials proposed for use to demonstrate compliance with referenced material specifications and listed standards.
- C. Provide structural engineering as required by City Building Department or other regulatory agency to justify fabrication configurations other than those shown on the Drawings.

### PART 2 - PRODUCTS

#### 2.01 MATERIALS

- A. Steel Sections: ASTM A36.
- B. Steel Plates to be bent or cold formed: ASTM A283, Grade C.
- C. Steel Tubing: ASTM A500, Grade B.
- D. Steel Pipe: ASTM A53, Grade B.
- E. Welding Materials: AWS D1.1; type required for materials being welded.
- F. Primer: FS TT-P-31, red; for shop application and field touch-up.
- G. Galvanized Coating, all non-structural steel materials unless otherwise noted:
  - 1. Rolled, pressed, or forged steel shapes: ASTM A123
  - 2. Iron and steel hardware: ASTM A153
  - 3. Assembled steel products: ASTM A386.
- H. Stainless steel
  - 1. Austenitic Type 316L, unless noted otherwise
  - 2. Sheet, strip, plate and flat bar: ASTM A666
  - 3. Bolts, hex cap screws and studs: ASTM F593
  - 4. Tubing, seamless and welded: ASTM A269

## 2.02 FABRICATION

- A. Verify dimensions on site prior to shop or site fabrication.
- B. Fabricate items with joints tightly fitted and secured.
- C. Fit and shop assemble in largest practical sections, for delivery to site.
- B. Grind exposed welds flush and smooth with adjacent finished surface. Ease exposed edges to small uniform radius.
- E. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; locate unobtrusively, consistent with design of structure, except where specifically noted otherwise.
- F. Make exposed joints butt tight, flush, and hairline.
- G. Supply components required for anchorage of metal fabrications. Fabricate anchorage and related components of same material and finish as metal fabrication, except where specifically noted otherwise.

## 2.03 FINISH

- A. Clean metal fabrication surfaces of rust, scale, grease, and foreign matter prior to galvanizing, priming, or painting.
- B. Do not prime surfaces in direct contact bond with concrete or where field welding is required.
- C. Prime paint items scheduled below with two coats.
- D. Touch up holidays or damage at galvanized coatings with galvanized touch-up paint.

## PART 3 - EXECUTION

### 3.01 PREPARATION

- A. Clean and strip site primed steel items to bare metal where site welding is scheduled.
- B. Make provision for erection loads with temporary bracing. Keep work in alignment.
- C. Supply items required to be anchored into concrete with setting templates.

### 3.02 INSTALLATION

- A. Install items plumb and level, accurately fitted, free from distortion or defects, and anchored firmly in place for long life under hard use.
- B. Perform field welding in accordance with AWS D1.1, taking special care to protect adjacent wood surfaces from open flame or damage.
- C. After installation of galvanized fabrications, touch-up field welds, scratched or damaged surfaces with primer.

### 3.03 SCHEDULE OF FINISHES

- A. Galvanized Framing Connectors:

1. Exterior Exposed Connectors: Galvanized, field painted per 09900.
  2. Interior Concealed Connectors: Shop primed or galvanized.
- B. Exterior galvanized surfaces: Shop primed and powder coated, field touch-up per 09900
- C. Interior galvanized surfaces: Shop primed, shop or field painted per 09900.
- 3.04 CLEANUP
- A. After installation of metal fabrications is complete, remove any burrs or welding slag from finished surfaces and touch up with primer prior to painting.
- B. On stainless steel remove heat tint produced by welding by clean glass bead blasting, flapper wheels, aluminum oxide discs or wire brushing with austenitic stainless steel wire brushes. Sand and grit blasting are prohibited. Remove any residue left by these mechanical cleaning operations by pickling to restore corrosion resistance lost during mechanical cleaning operations. As an alternative to pickling, use electrocleaning with a hand held electrocleaning tool.
- C. Remove any debris related to the work of this section from the job site.

END OF SECTION

**SECTION 06 10 00  
ROUGH CARPENTRY**

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Lumber and framing hardware.
- B. Framing practices and procedures.

1.02 RELATED WORK DESCRIBED ELSEWHERE

- A. Section 01600 - Material and Equipment
- B. Section 06170 - Prefabricated Wood Structural Members
- C. Section 06200 - Finish Carpentry
- D. Section 06400 - Casework

1.03 REFERENCES

- A. American Plywood Association.
- B. Western Wood Products Association.
- C. American Wood Preservers Institute.
- D. California Redwood Association.
- E. American Institute of Timber Construction.
- F. General Structural Notes, Sheet S-1.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site under provisions of Section 01 60 00.
- B. Store and protect products under provisions of Section 01 60 00.

PART 2 – PRODUCTS

2.01 GENERAL

- A. Where these specifications conflict with the Structural Engineer's structural general notes the structural general notes shall take precedence.
- B. All dimensional wood for rough carpentry shall be FSC (Forest Stewardship Council) certified. All pressure -treated wood shall be non-CCA treated (containing no chromium or arsenic).

2.02 GRADE CERTIFICATION

- A. Each piece of lumber shall be grade marked by an agency acceptable to the local building official, in accordance with WWPA grading for solid lumber, AITC for glue laminated products, and APA grading for plywood products.

## 2.03 LUMBER MATERIALS

- A. Foundation sills, nailers, or ledgers in direct contact with concrete or masonry, or within 6 inches of the ground: pressure treated DF-L No. 2, per AWPA Standard C1 and C2
- B. Beams, girders and posts: DF-L No. 1 or better, maximum moisture content 19%, except as noted otherwise on drawings.
- C. Joists, rafters, headers, plates, blocking, 2 X 6 thru 4 X 16, and miscellaneous wood not specifically described: DF-L No. 2 or better, moisture content 19%, except as noted otherwise on drawings.
- D. Wall framing, 2 X 2 thru 4 X 6 (except headers): DF-L Stud grade or Standard and better, maximum moisture content 19%.
- E. Subflooring and sheathing: Plywood conforming to U.S. Product Standard PS-1-83, Group 1 or 2, or APA Performance Rated Panels (plywood, composite board, oriented strand board). Roof or wall sheathing plywood shall bear the designation CDX Structural II or better.

## 2.04 ROUGH HARDWARE

- A. Bolts and rods: ASTM A307, Grade A, square or hexagonal head.
- B. Lag screws: Federal Specification FF-B-561C.
- C. Nails: galvanized at exterior applications per Federal Specification FF-N-105A; sinkers allowed at interior; box nails prohibited.
- D. Wood screws: Federal Specification FF-B-111D.
- E. Framing clips, hangers, hold-downs, and connectors: standard "Strong-Tie" products of the Simpson Company, Silver Metal Products, or equal.
- F. Clamps, expansion bolts, washers, and anchors: steel or iron, subject to the approval of the Architect.

## 2.05 MISCELLANEOUS MATERIALS

- A. Wood preservative for in-plant treatment: a solution of pentachlorophenol using either oil or LPG as the primary solvent in accordance with AWPA Standard LP-3 or LP-4.
- B. Wood preservative for field treatment and field touch-up of plant treated wood: Copper naphthanate.
- C. Elastomeric adhesive: per APA Performance Specification AFG-01, as manufactured by DAP, Franklin, Georgia Pacific, or equal.

## PART 3 - EXECUTION

### 3.01 WOOD PRESERVATION TREATMENT

- A. Treat all wood in direct contact with, or embedded in, concrete or within 6 inches of the ground, including sills, nailers, ledgers, wood grounds, and blocking. Treatment is not required if approved redwood products have been used in place of the specified lumber.



- B. Treat all end cuts of above-grade lumber exposed to the exterior.
- C. Treatment Method
  - 1. In-plant treatment: Treat wood in strict accordance with product manufacturer's published recommendations and with AWPI Standards C1 and C2.
  - 2. Field treatment: For field touch-up of plant treated wood, including at notches, holes, and cuts in treated lumber, and for field treatment of above grade lumber exposed to the exterior, treat wood in strict accordance with product manufacturer's published recommendations, using either a 15-minute dipping method or a 2 coat brushing method.

### 3.02 INSTALLATION AND WORKMANSHIP

- A. The work of rough carpentry shall only be performed by skilled carpenters, in accordance with good standards of trade practice. All framing lumber shall be accurately cut and properly fit, true to dimension, line, rake or level and permanently secured in place.
- B. Layout: establish the following items of layout work as shown on the drawings and as required for a complete and accurate installation:
  - 1. Lines, levels, and locations for this work and other related work specified under other Sections of these Specifications.
  - 2. Cutting, fitting, and patching to accommodate work specified under other Sections of these Specifications.
  - 3. Backing, blocking, anchors, grounds, plates, and furring as required.
- C. Lumber Selection: Select individual pieces of lumber so that knots and obvious minor defects will not interfere with connections, and so that the crown of the piece and tight knots are in the uppermost position. Lumber with splits longer than half the wide face of 2X lumber, or longer than the thickness of 3X and larger lumber shall not be used in the work. Select lumber for exposed exterior millwork with no visible recessed knots, splits, checking, waness, or similar defects.

### 3.03 FASTENINGS

- A. Provide fastenings as required to produce framing without warping, sagging, buckling or similar defects. The number and size of nails, bolts, and other fasteners shall be as required by connector manufacturers, good trade practice, or as shown on the Drawings for specific structural conditions.
- B. Nailing: provide nail size and spacing as called out on the Drawings, specified in UBC Chapter 25, or as indicated in connector manufacturers' published recommendations.
- C. Wood Screws shall be driven, not nailed into place. Provide embedment for anchorage of not less than six tenths (0.6) of the screw length. Bore starter holes for wood screws with a bit of not more than the diameter of the base of the threads.
- D. Bolts:
  - 1. Drill bolt holes 1/32" to 1/16" larger than bolt diameter, accurately located.
  - 2. Use washers at each bolt head and nut.
  - 3. Tighten nut at initial installation; retighten once more before the work is closed in.

4. Provide expansion shields as required or as directed by the Architect.

E. Lag Bolts:

1. Bore lead holes for lag bolts of the same diameter and depth as the unthreaded shank of the bolts.
2. Bore starter holes for threaded portion of lag bolts 60% to 75% of the threaded shank diameter and a length at least equal to the length of the threaded shank.
3. Insert lag bolts by turning with a wrench rather than driving with a hammer.
4. Use soap or another lubricant to facilitate insertion and avoid damage to the lag bolt.

F. Adhesives:

1. Apply an approved panel adhesive to supporting framing at all subfloor, subfloor/underlayment, and stair tread installations throughout the Work.

3.04 FRAMING

- A. Provide framing that is closely fitted, accurately set in plumb planes, straight, true and level, and firmly secured in place.
- B. Walls and Partitions: Anchor sills in place as shown on the Drawings; unless otherwise noted, non-structural walls may be secured with minimum 3/16" power driven fasteners at 32" o.c. maximum, penetrating at least 1-1/2", and not over 9" from ends.
- C. Coordinate with painting under Section 09 90 00 so that backprimed materials may be painted prior to installation without delay to the framing process.
- D. Framed Platforms
  1. Install joists and blocks with the crown edge up.
  2. Blocking shall be a minimum 2X nominal thickness, installed the full depth of joists or beams; block all panel edges at floor plywood and apply panel adhesive prior to plywood installation.
  3. Set all flooring nails or connectors at or slightly below the panel surface.

3.05 SHEATHING

- A. Roof Sheathing and Shearwall Sheathing: Install and fasten in strict compliance with General Structural Notes, Framing Notes and schedules on Drawings.
- B. Continuity of Planes: Where sheathing is required by structural Drawings on only a portion of a wall, soffit, roof, or other plane, extend the plane with additional sheathing material or furring strips as required to achieve flatness and continuity of the finished surface.

3.06 CLEAN-UP

- A. Periodically remove all scrap products, debris, and trash from the work site.
- B. After framing is completed, thoroughly sweep or vacuum floor surfaces.

END OF SECTION

**SECTION 06 17 00**  
**PREFABRICATED WOOD STRUCTURAL MEMBERS**

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Prefabricated wood trusses for roof framing.
- B. Glue-laminated structural units.
- C. Bridging, bracing, and anchorage.

1.02 RELATED WORK

- A. Section 05 50 00 - Miscellaneous Metals: fabricated framing connectors.
- B. Section 06 10 00 - Rough Carpentry

1.03 REFERENCES

- A. ALSC - American Lumber Standards Committee: Softwood Lumber Standards.
- B. ASTM A167 - Stainless and Heat Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
- C. ANSI/ASTM A446 - Sheet Steel, Zinc Coated (Galvanized) by the Hot-Dip Process, Physical (Structural) Quality.
- D. AWPAs - American Wood Preservers' Association.
- E. FS TT-W-571 - Wood Preservation: Treating Practices.
- F. NFPA - National Forest Products Association.
- G. TPI - Truss Plate Institute.
- H. UL - Underwriters' Laboratories, Inc.
- I. WCLIB - West Coast Lumber Inspection Bureau: Standard Grading Rules for West Coast Lumber.
- J. WWPA - Western Wood Products Association.
- K. AITC – American Institute of Timber Construction; requirements for glue-laminated beams.
- L. ASTM D-5055 - structural performance of wood I beams.
- M. General Structural Notes, Sheet S-1.

1.04 SYSTEM DESCRIPTION

- A. Design roof live and dead load: 30 lbs/sq. ft. minimum with deflection limited to 1/360 (unless otherwise noted).
- B. Conform to wind loading and uplift requirements of the City of Morro Bay.

1.05 QUALITY ASSURANCE

- A. Manufacturers: Companies specializing in manufacture of prefabricated wood structural members with three (3) years minimum experience.
- B. Design prefabricated structural wood members under direct supervision of Professional Engineer experienced in structural framing design currently registered in good standing in the State of California.
- C. Lumber Grading Agency: Certified by ALSC.
- D. Truss Plates: In accordance with Truss Plate Institute.

1.06 SUBMITTALS

- A. Submit shop drawings, product data, and manufacturer's instructions under provisions of Section 01300.
- B. Manufacturer's instructions shall include direction regarding off-loading, storing, stacking, and temporary bracing of trusses.

PART 2 - PRODUCTS

2.01 ROOF TRUSSES

- A. Acceptable Manufacturers:
  - 1. Gang Nails Truss Company
  - 2. TrusPro
  - 3. Alternate products may be used if approved on the basis of submittals made under provisions of Section 01 30 00.
- B. Materials
  - 1. Lumber Grading: WWPA:
    - a. Top Chord: No. 1 DF-L.
    - b. Bottom Chord: No. 1 DF-L.
    - c. Webs: Stud SPF.
  - 2. Plywood Gussets: Graded by APA; western softwood species, ply core, exterior grade, waterproof glue; 19 percent maximum moisture content.
  - 3. Steel Connectors: ANSI/ASTM A446 steel, Grade A, galvanized, die stamped with integral teeth.
  - 4. Fasteners: Galvanized for exterior or high humidity; plain finish elsewhere; size and type to suit condition.
  - 5. Truss Clips (non-bearing conditions): Simpson STC or STCT or equivalent.

6. Truss Attachments (bearing conditions): Simpson H1 or equivalent.
7. Miscellaneous Blocking and Bracing: WWPA graded lumber, DF-L Standard or Better.

C. Fabrication

1. Verify dimensions and site conditions prior to fabrication.
2. Cut members accurately to length to achieve tight joint.
3. Jig trusses during fabrication to assure accurate configuration. Press connectors into lumber, both sides of joint simultaneously.
4. Build camber into truss to avoid solid bearing at interior non-bearing partitions.

2.02 GLUE-LAMINATED STRUCTURAL UNITS

A. Acceptable Manufacturers

:

1. Standard Structures, Inc., Santa Rosa, CA.
2. Anthony Power Products, El Dorado, AZ.
3. Alternate products may be used if approved in advance on the basis of submittals made under provisions of Section 01300.

B. Materials:

1. Douglas Fir conforming to grading rules specified in UBC Standard 25-10, 24F DF/DF; typical beams shall be graded 24F-V4.

C. Fabrication:

1. Fabricate per AITC "Industrial" grade.
2. Fabricate members with camber built in.
3. Fabricate members slightly longer than design length for field cutting.

PART 3.00 - EXECUTION

3.01 INSPECTION

- A. Verify that supports and openings are ready to receive prefabricated structural wood members.
- B. Verify that end bearing area complies with prefabricated member manufacturer's requirements.
- C. Beginning of installation means acceptance of existing conditions.

3.02 INSTALLATION

- A. Stack, spread, and install trusses, wood I beams and laminated veneer lumber beams in accordance with manufacturer's instructions, at spacing indicated on drawings.

- B. Place prefabricated members level and plumb, in correct positions.
- C. Provide temporary bracing and bridging to hold prefabricated members in position until permanently secured.
- D. Place permanent bracing, bridging and anchors to maintain prefabricated members straight and in correct position before inducing loads.
- E. Fit prefabricated members together accurately without unauthorized trimming, cutting, or modifying. Do not field cut trusses.
- F. Coordinate the placement of sheathing with the work of this Section; place bracing and bridging in a fashion which will allow the installation of panel edge backing as necessary.
- G. Do not install any prefabricated members which are damaged or have poorly secured components, laminations, or connectors until the manufacturer has made or directed appropriate repairs or their Structural Engineers have confirmed the member will not be compromised.

### 3.03 TOLERANCES

- A. Framing Members: 1/2 inch maximum from true position.

END OF SECTION

**SECTION 07 19 00  
WEATHER RESISTANT BARRIER**

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Weather barrier membrane, also referred to as "building wrap".
- B. Seam Tape
- C. Flashing
- D. Fasteners

1.02 REFERENCES

- A. ASTM International
  - 1. ASTM C920; Standard Specification for Elastomeric Joint Sealants
  - 2. ASTM C1193; Standard Guide for Use of Joint Sealants
  - 3. ASTM D882; Test Method for Tensile Properties of Thin Plastic Sheeting
  - 4. ASTM D1117; Standard Guide for Evaluating Non-woven Fabrics
  - 5. ASTM E84; Test Method for Surface Burning Characteristics of Building Materials
  - 6. ASTM E96; Test Method for Water Vapor Transmission of Materials
  - 7. ASTM E1677; Specification for Air Retarder Material or System for Framed Building Walls
  - 8. ASTM E2178; Test Method for Air Permeance of Building Materials
  - 9. ASTM E2357; Standard Test Method for Determining Air Leakage of Air Barrier Assemblies
- B. AATCC – American Association of Textile Chemists and Colorists
  - 1. Test Method 127 Water Resistance: Hydrostatic Pressure Test
- C. TAPPI
  - 1. Test Method T-410; Grams of Paper and Paperboard (Weight per Unit Area)
  - 2. Test Method T-460; Air Resistance (Gurley Hill Method)

1.03 SUBMITTALS

- A. Refer to Section 01 30 00 Submittals.
- B. Product Data: Submit manufacturer current technical literature for each component.
- C. Samples: Weather Barrier Membrane, minimum 8-1/2 inches by 11 inch.
- D. Quality Assurance Submittals
  - 1. Design Data, Test Reports: Provide manufacturer test reports indicating product compliance with indicated requirements.

2. Manufacturer Instructions: Provide manufacturer's written installation instructions.
3. Manufacturer's Field Service Reports: Provide site reports from authorized field service representative, indicating observation of weather barrier assembly installation.

E. Closeout Submittals

1. Refer to Section 01 70 00 Closeout Requirement.
2. Weather Barrier Warranty: Manufacturer's executed warranty form with authorized signatures and endorsements indicating date of Substantial Completion.

1.04 QUALITY ASSURANCE

A. Qualifications

1. Installer shall have experience with installation of weather barrier assemblies under similar conditions.
2. Installation shall be in accordance with weather barrier manufacturer's installation guidelines and recommendations.
3. Source Limitations: Provide weather barrier and accessory materials produced by single manufacturer.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Refer to Section 01 60 00 Product Requirements.
- B. Deliver weather barrier materials and components in manufacturer's original, unopened, undamaged containers with identification labels intact.
- C. Store weather barrier materials as recommended by weather barrier manufacturer.

1.06 SCHEDULING

- A. Review requirements for sequencing of installation of weather barrier assembly with installation of windows, doors, louvers and flashings to provide a weather-tight barrier assembly.
- B. Schedule installation of weather barrier materials and exterior cladding within nine months of weather barrier assembly installation.

1.07 WARRANTY

A. Special Warranty

1. Special weather-barrier manufacturer's warranty for weather barrier for a period of ten (10) years from date of final weather barrier installation.
2. Pre-installation meetings and jobsite observations by weather barrier manufacturer for warranty is required prior to assembly installation.
3. Warranty Areas: Entire installation.

PART 2 – PRODUCTS

2.01 ACCEPTABLE MANUFACTURER



- A. DuPont; 4417 Lancaster Pike, Chestnut Run Plaza 728, Wilmington, DE 19805; 1-800-44-TYVEK (8-9835); <http://www.construction.tyvek.com>
- B. Equivalent products of other manufacturers will be acceptable based on Submittals made under provisions of Section 01 63 00 and the General Conditions of the Contract

## 2.02 MATERIALS

- A. Basis of Design: spunbonded polyolefin, non-woven, non-perforated, weather barrier is based upon DuPont™ Tyvek® CommercialWrap® and related assembly components.
- B. Performance Characteristics:
  - 1. Air Penetration: 0.001 cfm/ft<sup>2</sup> at 75 Pa, when tested in accordance with ASTM E2178. Type I per ASTM E1677. ≤0.04 cfm/ft<sup>2</sup> at 75 Pa, when tested in accordance with ASTM E2357.
  - 2. Water Vapor Transmission: 28 perms, when tested in accordance with ASTM E96, Method B.
  - 3. Water Penetration Resistance: Minimum 280 cm when tested in accordance with AATCC Test Method 127.
  - 4. Basis Weight: Minimum 2.7 oz/yd<sup>2</sup>, when tested in accordance with TAPPI Test Method T-410.
  - 5. Air Resistance: Air infiltration at >1500 seconds, when tested in accordance with TAPPI Test Method T-460.
  - 6. Tensile Strength: Minimum 38/35 lbs/in., when tested in accordance with ASTM D882, Method A.
  - 7. Tear Resistance: 12/10 lbs., when tested in accordance with ASTM D1117.
  - 8. Surface Burning Characteristics: Class A, when tested in accordance with ASTM E84. Flame Spread: 10, Smoke Developed: 10.

## 2.03 ACCESSORIES

- A. Seam Tape: As recommended by the weather barrier manufacturer.
- B. Fasteners: Nail Caps: #4 nails with large 1-inch plastic cap fasteners, or 1-inch plastic cap staples with leg length sufficient to achieve a minimum penetration of 5/8-inch into the wood stud.
- C. Sealants
  - 1. Provide sealants that comply with ASTM C920, elastomeric polymer sealant to maintain watertight conditions.
  - 2. Products: Sealants recommended by the weather barrier manufacturer.
- D. Adhesives:
  - 1. Provide adhesive recommended by weather barrier manufacturer.
  - 2. Products: Adhesives recommend by the weather barrier manufacturer.
- E. Primers:

1. Provide flashing manufacturer recommended primer to assist in adhesion between substrate and flashing.
2. Products: Primers recommended by the flashing manufacturer.

F. Flashing

1. Flexible membrane flashing materials for window openings and penetrations recommended by manufacturer.
2. Straight flashing membrane materials for flashing windows and doors and sealing penetrations such as masonry ties, etc. recommended by manufacturer.
3. Thru-Wall flashing membrane materials for flashing at changes in direction or elevation (shelf angles, foundations, etc.) and at transitions between different assembly materials.
4. Preformed Inside and Outside Corners and End Dams: Preformed three-dimensional shapes to complete the flashing system used in conjunction with Thru-Wall Flashing.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Verify substrate and surface conditions are in accordance with weather barrier manufacturer recommended tolerances prior to installation of weather barrier and accessories.

3.02 INSTALLATION – WEATHER BARRIER

- A. Install weather barrier over exterior face of exterior wall substrate in accordance with manufacturer recommendations.
- B. Install weather barrier prior to installation of windows and doors.
- C. Start weather barrier installation at a building corner, leaving 6-12 inches of weather barrier extended beyond corner to overlap.
- D. Install weather barrier in a horizontal manner starting at the lower portion of the wall surface with subsequent layers installed in a shingling manner to overlap lower layers. Maintain weather barrier plumb and level.
- E. Sill Plate Interface: Extend lower edge of weather barrier over sill plate interface 3-6 inches. Secure to foundation with elastomeric sealant as recommended by weather barrier manufacturer.
- F. Window and Door Openings: Extend weather barrier completely over openings.
- G. Overlap weather barrier
  1. Exterior corners: minimum 12 inches.
  2. Seams: minimum 6 inches.
- H. Weather Barrier Attachment:
  1. Attach weather barrier to studs through exterior sheathing. Secure using weather barrier manufacturer recommend fasteners, space 12-18 inches vertically on center along stud line, and 24 inch on center, maximum horizontally.

2. Attach weather barrier to masonry. Secure using weather barrier manufacturer recommended fasteners, space 12 -18 inches vertically on center and 24 inches maximum horizontally. Weather barrier may be temporarily attached to masonry using recommended adhesive, placed in vertical strips spaced 24 inches on center, when coordinated on the project site.

### 3.03 SEAMING

- A. Seal seams of weather barrier with seam tape at all vertical and horizontal overlapping seams.
- B. Seal any tears or cuts as recommended by weather barrier manufacturer.

### 3.04 OPENING PREPARATION (for use with non-flanged windows - all cladding types)

- A. Flush cut weather barrier at edge of sheathing around full perimeter of opening.
- B. Cut a head flap at 45-degree angle in the weather barrier at window head to expose 8 inches of sheathing. Temporarily secure weather barrier flap away from sheathing with tape.

### 3.05 FLASHING (for use with flanged windows)

- A. Cut [7-inch] [9-inch] wide DuPont™ FlexWrap™ or DuPont™ FlexWrap™ NF a minimum of 12 inches longer than width of sill rough opening.
- B. Cover horizontal sill by aligning DuPont™ FlexWrap™ or DuPont™ FlexWrap™ NF edge with inside edge of sill. Adhere to rough opening across sill and up jambs a minimum of 6 inches. Secure flashing tightly into corners by working in along the sill before adhering up the jambs.
- C. Fan DuPont™ FlexWrap™ at bottom corners onto face of wall. Firmly press in place. Mechanically fasten fanned edges. . Mechanical fastening is not required for DuPont™ FlexWrap™ NF.
- D. On exterior, apply continuous bead of sealant to wall or backside of window mounting flange across jambs and head. Do not apply sealant across sill.
- E. Install window according to manufacturer's instructions.
- F. Apply 4-inch wide strips of DuPont™ StraightFlash™ at jambs overlapping entire mounting flange. Extend jamb flashing 1-inch above top of rough opening and below bottom edge of sill flashing.
- G. Apply 4-inch wide strip of DuPont™ StraightFlash™ as head flashing overlapping the mounting flange. Head flashing should extend beyond outside edges of both jamb flashings.
- H. Position weather barrier head flap across head flashing. Adhere using 4-inch wide DuPont™ StraightFlash™ over the 45-degree seams.
- I. Tape head flap in accordance with manufacturer recommendations.
- J. On interior, install backer rod in joint between frame of window and flashed rough framing. Apply sealant around entire window to create air seal. Apply sealant in accordance with sealant manufacturer's instructions and ASTM C1193

### 3.06 THRU-WALL FLASHING INSTALLATION

- A. Apply primer per manufacturer's written instructions.
- B. Install preformed corners and end dams bedded in sealant in appropriate locations along wall.

- C. Starting at a corner, remove release sheet and apply membrane to primed surfaces in lengths of 8 to 10 feet.
  - D. Extend membrane through wall and leave ¼ inch minimum exposed to form drip edge.
  - E. Roll flashing into place. Ensure continuous and direct contact with substrate.
  - F. Lap ends and overlap preformed corners 4 inches minimum. Seal all laps with sealant.
  - G. Trim exterior edge of membrane 1-inch and secure metal drip edge per manufacturer's written instructions.
  - H. Terminate membrane on vertical wall. Terminate into reglet, counterflashing or with termination bar.
  - I. Apply sealant bead at each termination.
- 3.07 THRU-WALL FLASHING / WEATHER BARRIER INTERFACE AT BASE OF WALL
- A. Overlap thru-wall flashing with weather barrier by 6-inches.
  - B. Mechanically fasten bottom of weather barrier through top of thru-wall flashing.
  - C. Seal vertical and horizontal seams with tape or sealing membrane.
- 3.08 THRU-WALL FLASHING / WEATHER BARRIER INTERFACE AT SHELF ANGLE
- A. Seal weather barrier to bottom of shelf angle with sealing membrane.
  - B. Apply thru-wall flashing to top of shelf angle. Overlap thru-wall flashing with weather barrier by 6-inches.
  - C. Seal bottom of weather barrier to thru-wall flashing with tape or sealing membrane.
- 3.09 THRU-WALL FLASHING / WEATHER BARRIER INTERFACE AT WINDOW HEAD
- A. Cut flap in weather barrier at window head.
  - B. Prime exposed sheathing.
  - C. Install lintel as required. Verify end dams extend 4 inches minimum beyond opening.
  - D. Install end dams bedded in sealant.
  - E. Adhere 2 inches minimum thru-wall flashing to wall sheathing. Overlap lintel with thru-wall flashing and extend ¼ inch minimum beyond outside edge of lintel to form drip edge.
  - F. Apply sealant along thru-wall flashing edges.
  - G. Fold weather barrier flap back into place and tape bottom edge to thru-wall flashing.
  - H. Tape diagonal cuts of weather barrier.
  - I. Secure weather barrier flap with fasteners.
- 3.10 FIELD QUALITY CONTROL

- A. Notify manufacturer's designated representative to obtain required observations of weather barrier assembly installation.

3.11 PROTECTION

- A. Protect installed weather barrier from damage.

END OF SECTION

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**SECTION 07 19 00  
UNDERSLAB VAPOR BARRIER**

**PART 1 – GENERAL**

**1.01 SUMMARY**

- A. Vapor Barrier, seam tape, mastic, pipe boots and related accessories for installation under concrete slabs.

**1.02 RELATED SECTIONS**

- A. Section 03 30 00 Cast-in-place Structural Concrete

**1.03 REFERENCES**

- A. American Society for Testing and Materials (ASTM)
- B. ASTM E 1745-97 (2004) Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill Under Concrete Slabs
- C. ASTM E 154-88 Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs
- D. ASTM E 96-95 Standard Test Methods for Water Vapor Transmission of Materials
- E. ASTM E 1643-98 Standard Practice for Installation of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs
- F. American Concrete Institute (ACI) - ACI 302.1R-04 Vapor Barrier Component (plastic membrane) is not less than 10 mils thick.

**1.04 SUBMITTALS**

- A. Submit in accordance with provisions of Section 01 30 00.
- B. Independent laboratory test results showing compliance with ASTM & ACI Standards.
- C. Manufacturer's samples, literature
- D. Manufacturer's installation instructions for placement, seaming and pipe boot installation
- E. Certificate of acceptance by a corporate representative of the vapor barrier system accepting the installation as complete and acceptable in accordance with the manufacturer's instructions.

**PART 2 – PRODUCTS**

**2.01 ACCEPTABLE MANUFACTURER**

- A. Stego Industries 15-mil STEGO WRAP system; W.R. Meadows PERMINATOR system; Raven Industries VAPORBLOCK 15 System.
- B. Equivalent products of other manufacturers will be acceptable on the basis submittals made in accordance with Section 01 63 00 and the General Conditions of the Contract.

**2.02 MATERIALS**

- A. Underslab Vapor Barrier System shall be comprised of products of a single manufacturer, or shall be endorsed by the manufacturer of the vapor barrier membrane.
- B. Vapor Barrier must have the following qualities:
  - 1. Water Vapor Transmission Rate: ASTM E 96, 0.006 WVTR or lower
  - 2. Water Vapor Barrier: ASTM E 1745, Meets Class A (Plastics)

#### 2.03 ACCESSORIES

- A. Seam Tape must have a Water Vapor Transmission Rate: ASTM E 96, 0.3 perms or lower
- B. Vapor Proofing Mastic must have a Water Vapor Transmission Rate: ASTM E 96, 0.3 perms or lower.
- C. Pipe Boots: Construct pipe boots from vapor barrier material, pressure sensitive tape and/or mastic per manufacturer's instructions.

### PART 3 – EXECUTION

#### 3.01 PREPARATION

- A. Ensure that subsoil is approved by architect or geotechnical firm
- B. Level and tamp or roll aggregate, sand or tamped earth base.

#### 3.02 INSTALLATION

- A. Install vapor barrier in accordance with manufacturer's instructions and ASTM E 1643-98.
- B. Unroll Vapor Barrier/Retarder with the longest dimension parallel with the direction of the pour.
- C. Lap Vapor Barrier/Retarder over footings and seal to foundation walls.
- D. Overlap joints 6 inches and seal with manufacturer's tape.
- E. Seal all penetrations (including pipes) per manufacturer's instructions.
- F. No penetration of the Vapor Barrier/Retarder is allowed except for reinforcing steel and permanent utilities.
- G. Repair damaged areas by cutting patches of Vapor Barrier/Retarder, overlapping damaged area 6 inches and taping all four sides with tape

#### 3.03 INSPECTION

- A. Obtain inspection report from manufacturer's representative and comply with corrective actions indicated therein.

END OF SECTION



**SECTION 07 20 00  
BUILDING INSULATION**

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Building Insulation for Thermal and Acoustical Applications.

1.2 RELATED SECTIONS

- A. Section 09 20 00 - Plaster and Gypsum Board: Insulation installed in conjunction with interior wall and ceiling finish systems.

1.3 REFERENCES

- A. ASTM C 177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus.
- B. ASTM C 518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
- C. ASTM C 553 - Standard Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications.
- D. ASTM C 665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
- E. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- F. ASTM E 96 - Standard Test Methods for Water Vapor Transmission of Materials.
- G. ASTM E 119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
- H. ASTM E 136 - Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750 Degrees C.
- I. Federal Specification HH-I-521F: Insulation Blankets, Thermal (Mineral Fiber, For Ambient Temperatures).
- J. Federal Specification HH-I-558B: Insulation, Blocks, Blankets, Felts, Sleeving (Pipe and Tube Covering), and Pipe fitting Covering, Thermal (Mineral Fiber, Industrial Type)
- K. National Fire Protection Association (NFPA) Life Safety Code

1.4 DESIGN / PERFORMANCE REQUIREMENTS

- A. Fire- Test-Response Characteristics: Provide insulation and related materials with the fire-test-response characteristics indicated, as determined by testing identical products per test method indicated below by Underwriters Laboratories (UL), Intertek (OPL) or another testing and inspecting agency acceptable to authorities having jurisdiction.
  - 1. Verify materials provide with appropriate markings of applicable testing and inspecting agency.

2. Surface-Burning Characteristics: Conforming to ASTM E 84; unfaced material will have a maximum flame spread and smoke-developed of 0; faced material will have maximum flame spread and smoke-developed of 25 and 0 respectively.
3. Fire-Resistance Ratings: ASTM E 119.
4. Combustion Characteristics: Rated as non combustible as defined by NFPA standard 220 when tested in accordance with ASTM E 136

#### 1.5 SUBMITTALS

- A. Submit under provisions of Section 01 30 00.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
  1. Preparation instructions and recommendations.
  2. Storage and handling requirements and recommendations.
  3. Installation methods.
- C. Shop Drawings: Submit manufacturers shop drawings describing the type and location of each product specified.
- D. Sustainable Design Submittals:
  1. Submit certification / Letter from material supplier(s) indicating percentages by weight of post-consumer and pre-consumer recycled content for products having recycled content per Section 01 14 00.
- E. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns.
- F. Manufacturer's Certificates: Certify products meet or exceed specified requirements. Submit appropriate research reports or evaluation data for products listed in this section.
- G. Certify that all products installed pursuant to this section do not contain Asbestos or Polychlorinated Biphenyls (PCB).

#### 1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Single manufacturer with a minimum of ten years experience manufacturing or marketing products in this section.
- B. Installer Qualifications:  
Single organization with at least five years experience successfully installing insulation on Projects of similar type and scope as specified in this section.
- C. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
  1. Finish areas designated by Architect.
  2. Do not proceed with remaining work until workmanship is approved by Architect.

3. Refinish mock-up area as required to produce acceptable work.
  - D. Manufacturer's identification tags or marks are not acceptable on surfaces where products are considered to be finish material.
  - E. Evidence of patching after removal of tags or marks is not acceptable.
  - F. Field Inspection: Follow criteria outlined in ASTM E 2393 Standard Practice for On-Site Inspection of Installed Fire Resistive Joint Systems and Perimeter Fire Barriers.
- 1.7 DELIVERY, STORAGE, AND HANDLING
- A. Deliver materials to the job site in original packages, containers, or bundles bearing the brand name and manufacturer's identification.
  - B. Store products in dry locations with adequate ventilation, free from water, and in such a manner to permit easy access for inspection and handling.
  - C. Handle materials to avoid damage. When installing and handling insulation products, wear a NIOSH approved dust mask or respirator, gloves and long sleeved, loose fitting clothing closed at the neck and wrists and safety glasses.
- 1.8 SEQUENCING
- A. Ensure that locating templates and other information required for installation of products of this section are furnished to affected trades in time to prevent interruption of construction progress.
  - B. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.
- 1.9 PROJECT CONDITIONS
- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.
  - B. During installation of smoke seal compound, temperatures shall be maintained above 50 degrees F. Provide adequate ventilation to carry-off excess moisture.
- PART 2 PRODUCTS
- 2.1 MANUFACTURERS
- A. Acceptable Manufacturer: Thermafiber, Inc.; 3711 Mill St., Wabash, IN 46992; 888-834-2371; 260-563-2111; [www.thermafiber.com](http://www.thermafiber.com)
  - B. Equivalent products of other manufacturers will be acceptable on the basis submittals in accordance with Section 01300 and the General Conditions of the Contract.
- 2.2 RECYCLED CONTENT
- A. Recycled content of all building insulation shall be 75% minimum.
- 2.3 THERMAL INSULATION

- A. Exterior Thermal Insulation: Thickness as required to provide minimum R-19 insulation in the exterior building perimeter wall system, and R-38 in the attic, unless otherwise indicated in the Drawings
  - 1. Type: Foil-faced Insulation.
    - a. R-Value: 4.0 per inch.
    - b. Density: 3 pcf. (nominal).
  
- B. Fire Performance Requirements:
  - 1. Insulation materials fire performance characteristics shall be determined in compliance with the following ASTM test methods by testing organizations acceptable to the regulatory agencies having jurisdiction over the Project.
    - a. Surface Burning Characteristics; Class A: ASTM E 84.
    - b. Fire Resistance Ratings: ASTM E 119.
    - c. Combustion Characteristics: ASTM E 136.

### PART 3 EXECUTION

#### 3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

#### 3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Clean substrates of substances harmful to insulation or vapor retarders, including removal of projections that might puncture vapor retarders.

#### 3.3 INSTALLATION - GENERAL

- A. Install in accordance with manufacturer's instructions. Comply with Manufacturer's directions for particular conditions of installation. If printed conditions of installations are not available or do not apply to Project conditions, consult manufacturer's technical representative for specific recommendations before proceeding with work.
- B. Extend insulation full thickness over entire surface to be installed. Cut and fill tightly around penetrating elements and abutting construction. Fill gaps and voids with insulation and mastic.
- C. Apply a single layer of insulation thickness needed, unless otherwise shown on the Drawings or where needed to make up total thickness.
- D. Tape joints and ruptures in facing using sealing tape. Seal each continuous area of insulation to surrounding construction so as to ensure vapor-tight insulation.

- E. Do not install insulation over or within 3 inches (76 mm) of recessed lighting fixtures, ballasts, wire compartments, fans or other heat-generating devices unless fixtures are protected.
- F. Coordinate Work with installation of other materials.

#### 3.4 VAPOR RETARDER INSTALLATION

- A. Seal all joints in curtain wall insulation or exterior wall insulation with vapor retarder tape. Apply vapor retarder tape at intersection of insulation with framing, adjacent pieces and similar intersections to insure a vapor tight seal. Repair all tears in insulation foil facing with vapor retarder tape.

#### 3.5 WASTE MANAGEMENT

- A. Separate and recycle waste materials to maximize extent economically feasible in compliance with waste management plan for LEED credit MR 2.1 and MR 2.2. Refer to Section 01740.
- B. Plan and coordinate insulation work to minimize generation of off-cuts and waste. Sequence work to maximize use of insulation cut-offs.
- C. Preference shall be given to suppliers who take back waste for reuse or recycling where choices exist in provisions of mineral wool insulation.

#### 3.6 PROTECTION

- A. Protect installed products until completion of project.
- B. Protect adjacent work of other trades from damage.
- C. Touch-up, repair or replace damaged products before Substantial Completion.

#### 3.7 CLEAN-UP

- A. Remove all related rubbish, excess material, scaffolding, tools and equipment from the site.
- B. Dispose of waste material in a manner approved by applicable jurisdictions.

END OF SECTION

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**SECTION 07 30 00  
SHINGLE ROOFING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Asphalt roofing shingles.
- B. Leak barrier and roof deck protection.
- C. Metal flashing associated with shingle roofing.

1.02 RELATED SECTIONS

- A. Section 06100 - Rough Carpentry: Framing, wood decking, and roof sheathing.
- B. Section 07620 - Flashing and Sheet Metal: Sheet metal flashing not associated with shingle roofing; gutters and downspouts.
- C. Section 08630 - Unit Skylights: Skylights

1.03 REFERENCES

- A. American Society for Testing and Materials (ASTM) - Annual Book of ASTM Standards
  - 1. ASTM A 653/A 653M - Standard Specification for Steel Sheet, Zinc Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
  - 2. ASTM B 209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
  - 3. ASTM D 3018 - Standard Specification for Class A Asphalt Shingles Surfaced with Mineral Granules.
  - 4. ASTM D 3161 - Standard Test Method for Wind-Resistance of Asphalt Shingles (Fan-Induced Method).
  - 5. ASTM D 3462 - Standard Specification for Asphalt Shingles Made From Glass Felt and Surfaced with Mineral Granules.
  - 6. ASTM D 4586 - Standard Specification for Asphalt Roof Cement, Asbestos-Free.
  - 7. ASTM D 7158 - Standard Test Method for Wind-Resistance of Sealed Asphalt Shingles (Uplift Force/Uplift Resistance Method).
  - 8. ASTM C 1549 - Standard Test Method for Determination of Solar Reflectance Near Ambient Temperature Using a Portable Solar Reflectometer. ASTM E 903 - Standard Test Method for Solar Absorptance, Reflectance, and Transmission of Materials Using Integrating Spheres.
- B. Underwriters Laboratories (UL) - Roofing Systems and Materials Guide (TGFU R1306)
  - 1. UL 790 - Tests for Fire Resistance of Roof Covering Materials.
  - 2. UL 997 - Wind Resistance of Prepared Roof Covering Materials.
- C. Asphalt Roofing Manufacturers Association (ARMA)
- D. Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA) - Architectural Sheet Metal Manual.
- E. National Roofing Contractors Association (NRCA)
- F. American Society of Civil Engineers (ASCE).
  - 1. ASCE 7 - Minimum Design Loads for Buildings and Other Structures.
- G. ENERGY STAR
- H. Cool Roof Rating Council (CRRRC)

1.04 DEFINITIONS

- A. Roofing Terminology: Refer to ASTM D1079 and the glossary of the National Roofing Contractors Association (NRCA) Roofing and Waterproofing Manual for definitions of roofing terms related to this section.

1.05 SUBMITTALS

- A. Submit copies of roofing manufacturer product data sheets, detail drawings and samples for each type of roofing product.

1.06 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Provide all primary roofing products, including shingles, underlayment, leak barrier, and ventilation, by a single manufacturer.
- B. Installer Qualifications: Installer must be approved for installation of all roofing products to be installed under this section.

1.07 REGULATORY REQUIREMENTS

- A. Provide a roofing system achieving an Underwriters Laboratories (UL) Class A fire classification.
- B. Provide a roofing system achieving an ENERGYSTAR rating
- C. Install all roofing products in accordance with all federal, state and local building codes.
- D. All work shall be performed in a manner consistent with current OSHA guidelines.

1.08 PREINSTALLATION MEETING

- A. General: For all projects in excess of 250 squares of roofing, a pre-installation meeting is required. **(BID ALTERNATE 4).**
- B. Timing: The meeting shall take place at the start of the roofing installation..
- C. Attendees: Meeting to be called for by manufacturer's certified contractor. Meeting's mandatory attendees shall include the certified contractor and the manufacturer's representative. Non-mandatory attendees shall include the owner's representative, architect or engineer's representative, and the general contractor's representative.
- D. Topics: Certified contractor and manufacturer's representative shall review all pertinent requirements for the project, including but not limited to, scheduling, weather considerations, project duration, and requirements for the specified warranty.

1.09 DELIVERY, STORAGE, AND HANDLING

- A. Store all products in manufacturer's unopened, labeled packaging until they are ready for installation.
- B. Store products in a covered, ventilated area, at temperature not more than 110 degrees F (43 degrees C); do not store near steam pipes, radiators, or in direct sunlight.
- C. Store bundles on a flat surface. Maximum stacking height shall not exceed roofing manufacturer's recommendations. Store all rolls on end.
- D. Store and dispose of solvent-based materials in accordance with all federal, state and local regulations.

1.10 WEATHER CONDITIONS

- A. Proceed with work only when existing and forecasted weather conditions will permit work to be performed in accordance with roofing manufacturer's recommendations

1.11 WARRANTY

- A. Provide to the owner a guarantee equivalent to GAF® All American Pledge™ Guarantee



1. Provide to the owner a warranty for the Steep Slope System covering equivalent to a GAF® WeatherStopper® Golden Pledge® Ltd Warranty
  - a. Roofs installed by a manufacturer-certified contractor only.
  - b. Manufacturing defects: 100% coverage for materials and labor for: 40 years with the first 20 years non-prorated.
  - c. Workmanship errors: 100% coverage for workmanship errors for: 20 years.
2. Roof system NOT installed over an existing roof, all existing roof materials must be removed to the deck.
3. Warranted against algae discoloration for 10 years

## PART 2 PRODUCTS

### 2.01 MANUFACTURERS

- A. Acceptable Manufacturer: GAF®, 1361 Alps Rd. Wayne NJ 07470. Tel: 1-973-628-3000.
- B. Requests for substitutions will be considered in accordance with provisions of Section 01 63 00.

### 2.02 SHINGLES

- A. Heavyweight, granule surfaced, self sealing asphalt shingle with a strong fiberglass reinforced Micro Weave® core and a mineral granule surfacing. Architectural laminate styling provides a wood shake appearance with a 5 5/8 inch exposure. Features highly reflective roofing granules that bounce back the sun's rays and more effectively release absorbed heat. Rated by the Cool Roof Rating Council (CRRC) and meet initial EnergyStar® performance levels. UL 790 Class A rated with UL 997 Wind Resistance Label; ASTM D 7158, Class H; ASTM D 3161, Type 1; ASTM D 3018, Type 1; ASTM D 3462; AC438; CSA A123.5-98; Dade County Approved, Florida Building Code Approved, Texas Dept of Insurance Approved, ICC Report Approval, Title 24 compliant and Energy Star compliant. Timberline® Cool Series Energy-Saving Architectural Shingles, by GAF®.

1. Color: Cool Barkwood.
2. SRI: 29

### 2.03 HIP AND RIDGE SHINGLES

- A. Ridglass™ 10" Ridge Cap Shingles by GAF®.

### 2.04 STARTER STRIP

- A. Self sealing starter shingle: WeatherBlocker™ Eave/Rake Starter Strip by GAF®. designed for premium roof shingles. Each bundle covers approx. 100 lineal feet (30.48m) for English and metric shingles or 50 lineal feet (15.24m) for oversized shingles.

### 2.05 LEAK BARRIER

- A. Self-adhering, self sealing, bituminous leak barrier surfaced with a coated surface and added tack for extra traction. Approved by UL and ICC. Each roll contains approx. 200 sq ft (18.6 sq.m.), 36in. X 66.7ft. (0.9m x 20.3m) WeatherWatch® XT Leak Barrier, by GAF®.

### 2.06 SHINGLE UNDERLAYMENT

- A. Water repellent, breather type cellulose/glass fiber composite roofing underlayment. Meets or exceed ASTM D226 and D4869 and approved by UL and the Florida Building Code. Each roll contains approximately 4 squares (432 sq. ft.) of material and is 36" x 144" Shingle-Mate® Roof Deck Protection, by GAF®.

### 2.07 ROOFING CEMENT

- A. Asphalt Plastic Roofing Cement meeting the requirements of ASTM D 4586, Type I or II.

2.08 ROOF ACCESSORIES

- A. Exterior acrylic rust resistant aerosol roof accessory paint. Each 6 oz can is available in boxes of 6 and in a wide variety of colors to compliment the roof. Shingle-Match™ Roof Accessory Paint by GAF®.

2.09 ATTIC VENTILATION

A. Passive Exhaust Ventilators

1. Manufacturer: Active Ventilation Products, Inc., P.O. Box 1521, Newburgh, New York 12551-1521. T: 800-247-3463 or 845-565-7770; F: 845-562-8963; Website: www.roofvents.com; Email: roofvents@aol.com
2. Model: AV-16: Net Free Ventilation Area (NFVA) = 245 sq. in. minimum.

2.10 NAILS

- A. Standard round wire, zinc-coated steel or aluminum; 10 to 12 gauge, smooth, barbed or deformed shank, with heads 3/8 inch (9mm) to 7/16 inch (11mm) in diameter. Length must be sufficient to penetrate into solid wood at least 3/4 inch (19mm) or through plywood or oriented strand board by at least 1/8 inch (3.18mm).

2.11 METAL FLASHING                      24 gauge hot-dip galvanized steel sheet, complying with ASTM A 653/A 653M, G90/Z275.

- B. 0.032-inch (0.8mm) aluminum sheet, complying with ASTM B 209.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Do not begin installation until the roof deck has been properly prepared.
- B. If roof deck preparation is the responsibility of another installer, notify the architect or building owner of unsatisfactory preparation before proceeding.

3.02 PREPARATION: Tear-Off Only (**BID ALTERNATE 4**)

- A. Remove all existing roofing down to the roof deck.
- B. Verify that the deck is dry, sound, clean and smooth. It shall be free of any depressions, waves, and projections. Cover with sheet metal, all holes over 1 inch (25mm) in diameter, cracks over 1/2 inch (12mm) in width, loose knots and excessively resinous areas.
- C. Replace damaged deck with new materials.
- D. Underlayment.

3.03 PREPARATION: New Construction

- A. Clean deck surfaces thoroughly prior to installation of eaves protection membrane and underlayment.
- B. At areas that receive eaves protection membrane, fill knotholes and cracks with latex filler.
- C. Install crickets on the upslope side of all chimneys in the north, any chimney wider than 24" (610mm), and on all roofs steeper than 6/12.

3.04 INSTALLATION OF UNDERLAYMENTS

- A. General:

1. Install using methods recommended by the manufacturer, in accordance with local building codes. When local codes and application instructions are in conflict, the more stringent requirements shall take precedence.
- B. Eaves:
1. Install eaves edge metal flashing tight with fascia boards; lap joints 2 inches (51mm) and seal with plastic cement or high quality urethane sealant; nail at the top of the flange.
  2. In the north, and on all roofs between 2/12 and 4/12 (low slopes) install GAF® leak barrier up the slope from eaves edge a full 36 inches (914mm) or to at least 24 inches (610 mm) beyond the interior "warm wall". Lap ends 6 inches (152mm) and bond.
- C. Valleys:
1. Install eaves protection membrane at least 36 (914mm) inches wide and centered on the valley. Lap ends 6 inches (152mm) and seal.
  2. Where valleys are indicated to be "open valleys", install metal flashing over GAF® leak barrier before ROOFING MANUFACTURER roof deck protection is installed; DO NOT nail through the flashing. Secure the flashing by nailing at 18 inches (457 mm) on center just beyond edge of flashing so that nail heads hold down the edge.
- D. Hips and Ridges:
1. Install roofing manufacturer leak barrier along entire lengths. If ridge vents are to be installed, position the ROOFING MANUFACTURER leak barrier so that the ridge slots will not be covered.
- E. Roof Deck
1. Install one layer of roofing manufacturer roof deck protection over the entire area not protected by roofing manufacturer leak barrier at the eaves or valley. Install sheets horizontally so water sheds and nail in place.
  2. On roofs sloped at more than 4:12, lap horizontal edges at least 2 inches (51mm) and at least 2 inches (51mm) over eaves protection membrane.
  3. On roofs sloped between 2 :12 and 4:12, lap horizontal edges at least 19 inches (482 mm) and at least 19 inches (482mm) over eaves protection membrane.
  4. Lap ends at least 4 inches (102 mm). Stagger end laps of each layer at least 36 inches (914 mm).
  5. Lap roofing manufacturer roof deck protection over roofing manufacturer leak barrier in valley at least 6 inches (152mm).
- F. Underlayment Application: Install in accordance with roofing manufacturer's recommendations.
- G. Penetrations:
1. Vent pipes: Install a 24 inch (610 mm) square piece of eaves protection membrane lapping over roof deck underlayment; seal tightly to pipe.
  2. Vertical walls: Install eaves protection membrane extending at least 6 inches (152mm) up the wall and 12 inches (305mm) on to the roof surface. Lap the membrane over the roof deck underlayment.

3. Skylights and roof hatches: Install eaves protection membrane from under the built-in counterflashing and 12 inches (305mm) on to the roof surface lapping over roof deck underlayment.
4. Chimneys: Install eaves protection membrane around entire chimney extending at least 6 inches (152mm) up the wall and 12 inches (305mm) on to the roof surface. Lap the membrane over the roof deck underlayment.
5. Rake Edges: Install metal edge flashing over eaves protection membrane and roof deck underlayment; set tight to rake boards; lap joints at least 2 inches (51mm) and seal with plastic cement; secure with nails.

### 3.05 INSTALLATION OF STARTER SHINGLES

#### A. General:

1. Install in accordance with manufacturer's instructions and local building codes. When local codes and application instructions are in conflict, the more stringent requirements shall take precedence.
2. Refer to application instructions for the selected starter strip shingles.

#### B. Placement and Nailing:

1. For maximum wind resistance along rakes & eaves, install any roofing manufacturer starter strip containing sealant or cement shingles to underlayment and each other in a 4" (102mm) width of asphalt plastic roof cement.
2. Place starter strip shingles 1/4" – 3/4" (6 – 19mm) over eave and rake edges to provide drip edge.
3. Nail approximately 1-1/2" – 3" (38 – 76mm) above the butt edge of the shingle.
4. Rake starter course should overlap eave edge starter strip at least 3" (76mm).

### 3.06 INSTALLATION OF SHINGLES

#### A. General:

1. Install in accordance with manufacturer's instructions and local building codes. When local codes and application instructions are in conflict, the more stringent requirements shall take precedence.
2. Minimize breakage of shingles by avoiding dropping bundles on edge, by separating shingles carefully (not by "breaking" over ridge or bundles), and by taking extra precautions in temperatures below 40 degrees F (4 degrees C).
3. Handle carefully in hot weather to avoid scuffing the surfacing, or damaging the shingle edges.

#### B. Placement and Nailing:

1. Secure with 4, 5, or 6 nails per shingle per manufacturer's application instructions or local codes.
2. Placement of nails varies based on the type of shingle specified. Consult the application instructions for the specified shingle for details.
3. Nails must be driven flush with the shingle surface. Do not overdrive or under drive the nails.
4. Shingle offset varies based on the type of shingle specified. Consult the application instructions for the specified shingle for details.

#### C. Valleys

1. Install valleys using the "open valley" method:
  - a. Snap diverging chalk lines on the metal flashing, starting at 3 inches (76mm) each side of top of valley, spreading at 1/8 inch per foot (9mm per meter) to the eaves.
  - b. Run shingles to chalk line.
  - c. Trim last shingle in each course to match the chalk line; do not trim shingles to less than 12 inches (305mm) wide.
  - d. Apply a 2 inch (51mm) wide strip of plastic cement under ends of shingles, sealing them to the metal flashing.

D. Penetrations

1. All Penetrations are to be flashed according to roofing manufacturer, ARMA and NRCA application instructions and construction details.

E. Skylights and Roof Hatches

1. Consult the manufacturer of the skylight or roof hatch for specific installation recommendations.
2. Skylights and roof hatches shall be installed with pre-fabricated metal flashings specifically designed for the application of the unit.

3.07 INSTALLATION OF ATTIC VENTILATION

A. General

1. Ventilation must meet or exceed current F.H.A., H.U.D. and local code requirements.

B. Roof and Gable Louvers:

1. Cut vent hole through sheathing as specified by the manufacturer for the type of vent to be installed.
2. Install a 24 inches (610mm) square of leak barrier, centered around the hole for roof louvers
3. Install according to manufacturers instructions for flashing vent penetrations
4. Install eave vents in sufficient quantity to equal or exceed the exhaust vent area, calculated as specified by manufacturer.

C. Powered (& Solar Powered) Ventilators & Roof turbines:

1. Cut vent hole through sheathing as specified by the manufacturer for the type of vent to be installed.
2. On rooftop applications, install a 36 inches (914mm) square of leak barrier, centered around the hole
3. Install according to manufacturers instructions for flashing vent penetrations
4. Install eave vents in sufficient quantity to equal or exceed the exhaust vent area, calculated as specified by manufacturer

3.08 PROTECTION

- A. Protect installed products from foot traffic until completion of the project.
- B. Any roof areas that are not completed by the end of the workday are to be protected from moisture and contaminants.

END OF SECTION

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**SECTION 07 60 00  
FLASHING AND SHEET METAL**

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Provision of metal gutters, downspouts, scuppers, and other roof drainage components not provided under Section 07 30 00 Roofing
- B. Copings, flashings, counterflashings and miscellaneous sheet metal assemblies as required to protect building from water penetration.

1.02 RELATED WORK

- A. Section 06 10 00 - Rough Carpentry
- B. Section 07 30 00 - Roofing
- D. Section 07 90 00 - Joint Protection
- E. Section 09 10 00 - Lath and Plaster
- F. Section 09 90 00 - Painting
- G. Division 22 - Plumbing
- H. Division 23 - Heating, Ventilating, and Air Conditioning

1.03 REFERENCES

- A. AA (Aluminum Association) - Aluminum Construction Manual: Aluminum Sheet Metal Work and Building Construction.
- B. ANSI (American Iron and Steel Institute) - Stainless Steel - Uses in Architecture.
- C. ANSI/ASTM B32 - Solder Metal.
- D. ASTM A167 - Stainless and Heat-Resisting Chromium-Nickel Steel Plate.
- E. ASTM A525 - Steel Sheet, Zinc Coated, (Galvanized) by the Hot-Dip Process.
- F. ASTM B209 - Aluminum and Aluminum Alloy Sheet and Plate.
- G. FS O-F-506 - Flux, Soldering, Paste and Liquid.
- H. FS QQ-S-571 - Solder, Tin Alloy.
- I. FS SS-C-153 - Cement, Bituminous, Plastic.
- J. NAAMM - Metal Finishes Handbook.
- K. NRCA (National Roofing Contractors Association) - Roofing Manual.
- L. SMACNA - Architectural Sheet Metal Manual.

1.04 SYSTEM DESCRIPTION

- A. Work of this Section is to physically protect roofing, exterior walls, openings in exterior surfaces, and exterior joints between materials from damage and water penetration that would permit water leakage to building interior.

1.05 QUALITY ASSURANCE

- A. Design and Fabrication: In accordance with the standards and practices described in the SMACNA Architectural Sheet Metal Manual, latest edition.
- B. Applicator: Company specializing in sheet metal flashing work with three years minimum experience.

1.06 SUBMITTALS

- A. Submit under provisions of Section 01 30 00.
- B. Shop drawings: Scaled drawings showing profiles and fabrication details of all flashing and sheet metal components.
- B. Submit product data under provisions of Section 01 30 00 for manufactured products and raw materials proposed for use in the Work
- C. Samples:
  - 1. Submit minimum 6" x 6" material samples for evaluation of finish and material gauge.
  - 2. Submit sample of metal pan or coping end cap with soldered seam(s).

1.07 STORAGE AND HANDLING

- A. Store products under provisions of Section 01 60 00.
- B. Stack preformed and prefinished material to prevent twisting, bending, or abrasion, and to provide ventilation.
- C. Prevent contact with materials during storage which may cause discoloration, staining, or damage.

PART 2 - PRODUCTS

2.01 SHEET MATERIALS AND FLASHING PRODUCTS

- A. Design of flashings for the work is based on the use of galvanized sheet metal.
- B. Gauge: 24 gauge galvanized sheet metal.
- C. Flexible Flashing (Self-Adhered Flashing Membrane): Per Section 07 65 00.

2.02 GUTTERS AND DOWNSPOUTS

- A. GUTTERS: 4"x3" SMACNA STYLE B (match existing profile).
- B. Downspouts: 2"x3" plain rectangular SMACNA 32-B.



- C. Hangers: Minimum 2 per downspout, max. 10' O.C. Same stock as downspouts.

#### 2.03 GUTTERS AND DOWNSPOUTS

- A. Fasteners: Stainless steel with soft neoprene washers at exposed fasteners, unless otherwise noted.
- B. Underlayment: ASTM D266; No. 15 asphalt saturated roofing felt.
- C. Slip Sheet: Rosin sized building paper.
- D. Sealant: Per Section 07 90 00.
- E. Sealant tape: Closed-cell polyvinyl chloride foam with pressure-sensitive adhesive on one side; Norton Performance Plastics "Norseal V740", or equal; thickness as required for effective seal.
- F. Plastic Cement: FS SS-C-153, Type I-asphaltic base cement
- G. Solder: ANSI/ASTM B32.
- H. Flux: FS O-F-506.
- J. Bituminous Paint. Acid and alkali resistant type; Black color.

#### 2.04 FABRICATION

- A. General:
  - 1. Fabricate all flashings and sheet metal pieces shown or implied on the Drawings and which are not provided by the roofing contractor under Section 07 30 00, the plaster contractor under Section 09100, or the mechanical contractor under Divisions 22 and 23.
  - 2. Fabricate Work in accordance with the reviewed Shop Drawings, manufacturer's printed instructions, recommendations of the latest editions of the SMACNA Architectural Sheet Metal Manual, Standard Practices for Stainless Steel Roofing, Flashing and Copings (Specialty Steel Industry of North America) and NCRA Roofing and Waterproofing Manual (for sheet metal associated with roofing), and as specified.
- B. Form sections true to shape, accurate in size, square, and free from distortion or defects.
- C. Fabricate any cleats or starter strips of same material as sheet, minimum 1 inch wide, interlockable with sheet.
- D. Form pieces in longest practical lengths.
- E. Hem exposed edges on underside 1/2 inch; miter and seam corners.
- F. Where not specified otherwise, seam exposed-to-view material with flat lock cover plate seam.
- G. Joints and seams:
  - 1. Corners of inverted pans, copings end caps, and other exposed to view corners: Solder all metal joints. After soldering, remove flux, wipe and wash solder joints clean.
  - 2. Formed Metal Copings: Butt seam with back-up plate, fastened one side.

- H. Fabricate vertical faces with bottom edge formed outward 1/4 inch and hemmed to form drip.
- I. Fabricate flashings to allow toe to extend 2 inches minimum over roofing. Return and brake edges.
- J. Fabricate gutter and downspout sections in simple shapes. Design is based on "fascia" gutter and non-corrugated rectangular downspouts. Seamless prefinished aluminum products are acceptable if approved on the basis of submittals made under provisions of Section 01 30 00.

### PART 3 - EXECUTION

#### 3.01 INSPECTION

- A. Verify roof openings, curbs, pipes, sleeves, ducts, or vents through roof are solidly set, cant strips in place, and nailing strips located.
- B. Verify membrane termination and base flashings are in place, sealed, and secure.
- C. Beginning of installation means acceptance of existing conditions.

#### 3.02 PREPARATION

- A. Field measure site conditions prior to fabricating work.
- B. Install starter and edge strips, and cleats before starting installation.
- C. Secure flashings in place using concealed fasteners recommended in SMACNA manual. Use exposed fasteners only in locations approved in advance by Architect.
- D. Lap, cleat, or seam and seal all joints.
- E. Apply plastic cement compound between metal flashings and felt flashings.
- F. Fit flashings tightly in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.
- G. Seal metal joints watertight.

#### 3.03 INSTALLATION

- A. Conform to details and profiles as indicated on approved shop drawings and comply with SMACNA standard practices.
- B. Replace any exposed-to-view installations which become dented, warped, or "oil canned" by actions of flashing and sheet metal fabricators or installers, at no additional cost to Owner.
- C. In place repairs of damaged flashing or sheet metal shall only be as authorized and approved by the Architect.
- D. Install gutters to slope 1/16" per foot minimum toward downspouts. Where shown on the Drawings, and in other conditions where necessary for drainage, provide sloped gutter bottom inserts, fully sealed watertight, to provide positive drainage.
- E. Field fabricate only those items that cannot be fabricated in the shop.

- F. Form flashing and sheet metal to fit snugly, with exposed edges folded under a minimum of 1/2-inch, and without sharp edges. Solder seams as specified in 2.03 above.
  - G. Provide expansion joints as required to permit normal expansion and contraction without straining of metal, joints, or fasteners. Provide at material junctions, and a maximum of 30 feet in straight runs. Unless otherwise indicated, select joint type best suited and least obtrusive for conditions of installation.
  - H. Clean and abrade contact surfaces before soldering. Perform soldering so as to thoroughly heat sheet metal and completely sweat solder through full seam width to produce joint of flowed solder 1-inch wide. Sweat lock seams full of solder flat and straight; clean with acid flux after soldering, and wash thoroughly.
  - I. Join parts with concealed rivets or sheet metal screws where necessary for strength or stiffness. Place sheets together before drilling.
  - J. Seal seams in flexible flashing using manufacturer's approved methods. Install flashing in accordance with the manufacturer's printed instructions and as indicated.
  - K. Where lap joints are used, lap sheets at least 4-inches. Provide bead of sealant across lapped joints, placed 1-inch from exposed edge of joint.
  - L. In fascias and other areas where butt joints are used, provide concealed backing alignment plates or sleeves fitted to one side of joint and bedded in sealant.
  - M. Prepare surfaces and apply sealant as specified in Section 07 90 00.
  - N. Prepare surfaces and apply sealant tape where indicated in accordance with manufacturer's printed instructions.
  - O. Perform cutting, fitting, drilling, and similar Work as required to accommodate the Work of other Sections.
  - P. Completed installation shall be weathertight and waterproof.
- 3.04 CLEAN UP
- A. After completion of flashing and sheet metal installation, remove any excess sealant, cement, or solder from exposed-to-view surfaces.
  - B. Remove metal scraps, excess fasteners, and related debris from job site.

END OF SECTION

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**SECTION 07 65 00  
SHEET MEMBRANE UNDERLAYMENT**

**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. The work of this section includes rubberized asphalt sheet membrane underlayment material noted in the drawings as flexible flashing, elastomeric flashing, or self-adhering flashing.

**1.02 RELATED SECTIONS**

- A. Section 07 30 00 – Shingle Roofing: Leak barrier sheet in roofing system
- B. Section 07 60 00 – Flashing and Sheet Metal.

**1.03 SUBMITTALS**

- A. Samples.
- B. Manufacturer's Product Data.
- C. HUD Materials Release 1056C.
- D. International Conference of Building Officials (ICBO) Report No. 3997.

**1.04 REFERENCE STANDARDS**

- A. American Society for Testing and Materials (ASTM).
  - 1. D 412 Test Methods for Rubber Properties in Tension.
  - 2. D 1970 Specification for Self-Adhering, Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection.
  - 3. E 96 Test Methods for Water Vapor Transmission of Materials.
  - 4. D 903 Test Method for Peel or Stripping Strength of Adhesive Bonds.

**DELIVERY, STORAGE, AND HANDLING**

- A. Deliver all materials in Manufacturer's unopened packages.
- B. Store all materials with cover on top and sides. Do not double stack palletized materials

**1.06 PROJECT CONDITIONS**

- A. Environmental Requirements: Apply underlayment in fair weather at temperatures of 40 degrees F and above.
- B. Covering: Apply surfacing material promptly at temperatures of 40 degrees F and above.

**PART 2 - PRODUCTS**

**2.01 MATERIALS**

- A. Membrane is composite of polyethylene film and self-adhesive rubberized asphalt. Edges of the membrane shall contain exposed beads of rubberized asphalt beyond the film and an embossed slip-resistant surface shall be provided on the polyethylene. It shall conform to the following physical properties:

B. MEMBRANE PROPERTIES

PROPERTY	VALUE	TEST METHOD
Color	Grey-Black	---
Thickness (mils)	40 (1.13mm)	---
Tensile Strength (psi)	250 (1720 Kn/M2)	ASTM D 412
Elongation – Ultimate failure of Rubberized asphalt (%)	250	ASTM D 412 Die C, modified
Low temperature flexibility	Unaffected @ 25 degrees F (-32 degrees C)	ASTM D 1970
Adhesion to plywood (lb./in. width)	3.0 (528 N/M)	ASTM D 903
Permeance (Perms)	0.05 (max.) (2.9 ng/M2 sPa)	ASTM E 96

- C. Membrane accessories, as recommended by the manufacturer including primers and other products required for a competent installation.

2.02 ACCEPTABLE MANUFACTURER:

- A. Concealed Flashing Conditions: W.R. Grace and Co., Grace Ice and Water Shield

PART 3 - EXECUTION

3.01 PREPARATION OF SUBSTRATES

- A. Remove dust, dirt, loose nails or other protrusions.
- B. Masonry or concrete surfaces must be primed with Bituthene Primer P-3000 at a rate of 250 to 350 sq. ft. per gallon or Bituthene Water Based Primer at 500 to 600 sq. ft. per gallon.
- C. Metal drip edges or flashing shall be placed over the membrane.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's recommended practices.

END OF SECTION

**SECTION 07 70 00  
ROOFING ACCESSORIES**

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Roof-mounted attic vents.

1.02 RELATED WORK

- A. Section 07 30 00 - Roofing

1.03 SUBMITTALS

- A. Submit shop drawings and product data under provisions of Section 01 30 00.
- B. Include general construction, configurations, jointing methods and locations when applicable, and fastening methods.

PART 2 - PRODUCTS

2.01 ROOF MOUNTED ATTIC VENTS

- A. Acceptable Manufacturer:
  - 1. Active Ventilation Products, Inc. ([www.roofvents.com](http://www.roofvents.com)) 800-247-3463.
  - 2. Equivalent products of other manufacturers will be acceptable on the basis of submittals per Section 01300 and the General Conditions of the Contract.
- B. Basis of Design Model: Aura Ventilator AV-12.
  - 1. Vent design shall provide 120 CFM ventilation at 4 mph wind speed and 310 CFM ventilation at 11 mph wind speed.
  - 2. Size: Inside diameter 12-inch, outside diameter 16-inch, 113 sq. in. net free area.
  - 3. Material: Aluminum
  - 4. Finish: Shop painted, powder coating to match metal roof finish hue and sheen, in accordance with Section 05030.

2.06 ROOF ACCESSORY FABRICATION

- A. Fabricate free of visual distortions and defects. Weld corners and joints.
- B. Completed roof accessories shall provide a weathertight system with finishes equivalent to that of the roofing material.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Surfaces and support to receive products of this Section shall be complete, straight, secure, and properly dimensioned.
- B. Bring uneven, incomplete, or inadequate framing to the attention of the Contractor for correction before beginning installation.
- C. Beginning of installation means acceptance of existing conditions.

3.02 INSTALLATION

- A. Install roof accessories in accordance with manufacturer's instructions. Coordinate with installation of roofing system and related flashings. Provide weathertight installation.
- B. Apply bituminous paint on metal surfaces of units in contact with cementitious materials and dissimilar metals.

END OF SECTION



**SECTION 07 90 00  
JOINT PROTECTION**

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Preparation of sealant substrate surfaces.
- B. Sealant and backing at construction joints.

1.02 RELATED WORK

- A. Section 06 40 00 – Casework
- E. Section 08 80 00 - Glazing

1.03 REFERENCES

- A. ASTM C790 - Use of Latex Sealing Compounds.
- B. ASTM C804 - Use of Solvent-Release Type Sealants.
- C. ASTM C834 - Latex Sealing Compounds.
- E. FS TT-C-00598 - Caulking Compound, Oil and Resin Base Type.
- F. FS TT-S-001657 - Sealing Compound, Single Component, Butyl Rubber Based, solvent Release Type.
- G. FS TT-S-00227 - Sealing Compound: Elastomeric Type, Multi- Component.
- H. FS TT-S-00230 - Sealing Compound: Elastomeric Type, Single Component.
- I. FS TT-S-001543 - Sealing Compound, Silicone Rubber Base.
- J. SWI (Sealing and Waterproofers Institute) - Sealant and Caulking Guide Specification.

1.04 SUBMITTALS

- A. Submit product data under provisions of Section 01 30 00.
- B. Product data shall indicate sealant chemical characteristics, performance criteria, limitations, color availability and applications.
- C. Submit manufacturer's installation instructions under provisions of Section 01 30 00.

1.05 QUALITY ASSURANCE

- A. Manufacturer: Company specializing in manufacturing the products specified in this Section with minimum three years experience.
- B. Applicator: Company specializing in applying the work of this Section with minimum three years experience.

1.06 ENVIRONMENTAL REQUIREMENTS

- A. Do not install solvent curing sealants in enclosed building spaces.
- B. Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.

#### 1.07 SEQUENCING AND SCHEDULING

- A. Coordinate the work of this Section with all Sections referencing this Section.

### PART 2 - PRODUCTS

#### 2.01 SEALANTS

- A. Polysulphide Sealant: one-component or multi-component, non-sagging, non-shrinking, self-leveling liquid polysulphide polymer; Polysulphide LP as manufactured by Morton-Thiokol or equivalent.
- B. Acrylic Emulsion Latex: Single component, non-staining, non-bleeding, non-sagging; Acrylic Latex 15-Year Calk, as manufactured by Red Devil or equivalent.
- C. Butyl Sealant: Single component, solvent release, non-skinning, non-sagging; Architectural Butyl Sealant, as manufactured by Red Devil or equivalent.
- D. Silicone Sealant: Single component, solvent curing, non-sagging, non-staining, non-bleeding; Silpruf, Contractor's 1000, or Sanitary 1700 (depending on use), as manufactured by General Electric or equivalent.
- E. Polyurethane Sealant: Two component, moisture curing, non-sagging, 50% extension/50% compression; Sonolastic NP 2 as manufactured by Sonneborn or equivalent.
- F. Flexible Acoustic Sealant: Single component, non-staining, non-sagging, non-shrinking, non-hardening formulation; Quiet Zone as manufactured by Owens Corning or equivalent.

#### 2.02 ACCESSORIES

- A. Primer: Non-staining type, recommended by sealant manufacturer to suit application.
- B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.
- C. Joint Backing: round, closed cell polyethylene foam rod; oversized 30 to 50 percent larger than joint width.
- D. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

### PART 3 - EXECUTION

#### 3.01 EXAMINATION

- A. Verify that surfaces, or joint openings are ready to receive work.

- B. Beginning of installation means installer accepts existing surfaces.

### 3.02 SELECTION OF JOINT SEALANT

- A. From the approved joint sealant materials, select only that joint sealant or calking which is best suited to a given application, and is so recommended by the product's manufacturer.
- B. Select a joint sealant which is available in a color compatible with the substrate or adjacent surface color. Sealant color is subject to the Architect's approval.
- C. Select a joint sealant for conditions of high moisture which has anti-fungal characteristics.
- D. Select a joint sealant for joints involving painted surfaces which is painter grade, represented by the sealant manufacturer as a compatible substrate for paint.

### 3.03 PREPARATION

- A. Clean and prime joints in accordance with manufacturer's instructions.
- B. Remove loose materials and foreign matter which might impair adhesion of sealant or firestopping.
- C. Verify that joint backing and release tapes are compatible with sealant.
- D. Protect elements surrounding the work of this Section from damage or disfiguration.

### 3.04 INSTALLATION - SEALANTS

- A. Install sealant in accordance with manufacturer's instructions.
- B. Measure joint dimensions and size materials to achieve required width/depth ratios.
- C. Install joint backing to achieve a neck dimension no greater than 1/3 the joint width.
- D. Install bond breaker where joint backing is not used.
- E. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.
- F. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.
- G. Tool joints slightly concave.

### 3.05 CLEANING AND REPAIRING

- A. Clean work under provisions of Section 01 70 00.
- B. Clean adjacent soiled surfaces.
- C. Repair or replace defaced or disfigured finishes caused by work of this Section.

### 3.06 PROTECTION OF FINISHED WORK

- A. Protect finished installation under provisions of Section 01 60 00.

B. Protect sealants until cured.

END OF SECTION

**SECTION 08 10 00  
METAL DOORS AND FRAMES**

1.1 SECTION INCLUDES

- A. Steel doors.
- B. Steel frames.

1.2 RELATED SECTIONS

- A. Section 03 30 00 - Cast-In-Place Concrete; Placement of anchors in concrete construction.
- B. Section 08 70 00 - Door Hardware.
- C. Section 09 20 00 - Lath and Plaster
- D. Section 09 90 00 - Painting

1.3 REFERENCES

- A. ASTM A568 - Standard Specification for Steel Sheet, Carbon, and High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, General Requirements for.
- B. ASTM A591 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hop-Dip Process
- C. ASTM A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- D. ASTM A924 - Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
- E. ASTM A1008 - Standard Specification for Steel Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.
- F. ASTM A1011 - Standard Specification for Steel Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.
- G. ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames, Frame Anchors and Hardware Reinforcings.
- H. ANSI/SDI A250.6 Recommended Practice for Hardware Reinforcing on Standard Steel Doors and Frames.
- I. ANSI/SDI A250.8 - SDI-100 Recommended Specifications for Standard Steel Doors and Frames; 1998.
- J. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames.
- K. ANSI/SDI A250.11 - Recommended Erection Instructions for Steel Frames (Formerly SDI-105).
- L. DHI A115.1G - Installation Guide for Doors and Hardware.
- M. SDI 111 - Recommended Standard Details for Steel Doors & Frames.

- N. ANSI/NFPA 252 - Fire Tests of Door Assemblies.
- O. ANSI/UL 10B - Fire Tests of Door Assemblies.
- P. ANSI/UL 10C - Positive Pressure Fire Tests of Door Assemblies.
- Q. ANSI/UL 1784 - Air Leakage Tests of Door Assemblies
- R. UL - Building Materials Directory; Underwriters Laboratories Inc.
- S. WH - Certification Listings; Warnock Hersey International Inc.
- T. NFPA 80 - Fire Doors and Fire Windows.

#### 1.4 SUBMITTALS

- A. Submit under provisions of Section 01 30 00.
- B. Product Data: Submit manufacturer's data sheets on each product to be used, including:
  - 1. Preparation instructions and recommendations.
  - 2. Storage and handling requirements and recommendations.
  - 3. Installation methods.
- C. Certificates:
  - 1. Provide manufacturer's certification that products comply with referenced standards as applicable.
  - 2. Provide evidence of manufacturer's membership in the Steel Door Institute.
- D. Shop Drawings:
  - 1. Show all openings in the door schedule and/or the Drawings.
  - 2. Provide details of door design, door construction details and methods of assembling sections, hardware locations, anchorage and fastening methods, door frame types and details, anchor types and spacing, and finish requirements.
  - 3. Provide door, frame, and hardware schedule in accordance with SDI 111.

#### 1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Provide all products from a single manufacturer who is a member of the Steel Door Institute.
- B. Doors and frames shall conform to the requirements of ANSI A250.8-1998 (SDI-100) and other specifications herein named.

#### 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Upon delivery, inspect all materials for damage; notify shipper and supplier if damage is found.
- B. Protect products from moisture, construction traffic, and damage.
  - 1. Store vertically under cover.
  - 2. Place units on 4 inch (102 mm) high wood sills or in a manner that will prevent rust or damage.
  - 3. Do not use non-vented plastic or canvas shelters.
  - 4. Should wrappers become wet, remove immediately.
  - 5. Provide 1/4 inch (6 mm) space between doors to promote air circulation.

#### 1.7 COORDINATION

- A. Coordinate with door opening construction and door frame and door hardware installation.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- A. Acceptable Manufacturers: Products shall be manufactured by a member of the Steel Door Institute, 30200 Detroit Road, Cleveland, Ohio 44145. ASD. Tel: (440) 899-0010, Fax: (440) 892-1404. Steel Door Institute Members are as follows:
1. Amweld Building Products, LLC.
  2. Ceco Door Products.
  3. Curries Company.
  4. Deansteel Manufacturing Co.
  5. Door Components Inc.
  6. Mesker Door, Inc.
  7. MPI Manufacturing
  8. Pioneer Industries, Inc.
  9. Republic.
  10. Security Metal Products Corp.
  11. Steelcraft.
- B. Equivalent products of other manufacturers will be acceptable on the basis of submittals under Section 01 30 00.

### 2.2 MATERIALS

- A. Doors, frames, frame anchors, and hardware reinforcing for each of the levels and models specified shall be provided to meet the requirements of the performance levels specified. The material used in manufacturing these products and components shall comply with ANSI/SDI A250.8. Hardware reinforcing on doors and frames shall comply with ANSI/SDI A250.6. The physical performance levels shall be in accordance with ANSI/SDI A250.4.
- B. All steels used to manufacture doors, frames, anchors, and accessories shall meet at least one or more of the following requirements:
1. Cold rolled steel shall conform to ASTM A1008 and A568.
  2. Hot rolled, pickled and oiled steel shall comply with ASTM A1011 and A568.
  3. Hot dipped zinc coated steel shall be of the alloyed type and comply with ASTM A924 and A653.
  4. Steel Sheet, Electrolytic Zinc-Coated shall conform to ASTM A591.
- C. Vision Lite: For installation in fire rated assembly
1. Galvanized steel
  2. 16 gauge.
  3. Finish: Powder coated, color as selected by the Architect.
  4. Mitered and welded construction
  5. Fire rated glazing, 1/4" thick minimum

### 2.3 FRAMES

- A. Provide Levels and Models in accordance with ANSI/SDI A250.8 as indicated below:
- B. Exterior frames: Provide in accordance with ANSI/SDI A250.8 in the frame configuration and depth as indicated on the Drawings. Minimum thickness as follows:
1. Level 2 Heavy duty: For use with:
    - a. Door Model 1 (full flush design): 0.053 inch (1.3 mm) minimum steel frame thickness.
- C. Provide units of galvanized steel where indicated on the Opening Schedule.
- D. Provide face welded type frames unless otherwise indicated.

- E. Provide frames, other than slip-on drywall type with a minimum of three anchors per jamb suitable for the adjoining wall construction. Provide anchors of not less than 0.042 inch (1.0 mm) in thickness or 0.167 inch (4.2 mm) diameter wire. Frames over
- F. Slip-on drywall frame anchors shall be as provided by the manufacturer to assure performance specified.
- G. Base anchors shall be provided, other than slip-on drywall type, with minimum thickness of 0.042 inch (1.0mm). For existing masonry wall conditions that do not allow for the use of a floor anchor, an additional jamb anchor shall be provided.
- H. Prepare all frames for all mortise template hardware and reinforced only for surface mounted hardware. Drilling and/or tapping shall be completed by others.
- I. Minimum hardware reinforcing gages shall comply with Table 4 of ANSI/SDI A250.8.

#### 2.4 DOORS

- A. Exterior doors: Provide exterior doors in accordance with ANSI/SDI A250.8 and in the configuration and size as indicated on the Opening Schedule:
  - 1. Level 2 - Heavy duty 1-3/4 inches (44.5 mm):
    - a. Model 2 - Seamless
- B. Provide galvanized steel doors as indicated in the Opening Schedule.
- C. Face steel sheet shall meet at least one or more of the following requirements:
  - 1. Level 3
    - a. Model 1 - 0.053 inch (1.3 mm) minimum thickness
    - b. Model 2 - 0.053 inch (1.3 mm) minimum thickness
- D. End closure: The top and bottom of the doors shall be closed with channels or closures. The channels or closures shall have a minimum material thickness of 0.042 inch (1.0 mm).
  - 1. Inverted closure channels (interior doors): Set flange edges flush with door top/bottom.
  - 2. Flush closure channels (exterior doors): Set back face of channel web flush with door top/bottom.
- E. Core: Provide in accordance with ANSI/SDI A250.8.
- F. Door edge design: Provide in accordance with ANSI/SDI A250.8.
- G. Minimum hardware reinforcing gages shall comply with Table 4 of ANSI/SDI A250.8.
- H. Provide louvers and where indicated on the Drawings in accordance with ANSI/SDI A250.8.
- I. Provide steel astragals where indicated on the Drawings or where required by the manufacturer or NFPA 80.

#### 2.5 FABRICATION

- A. Fabricate doors and frames in accordance with ANSI/SDI A250.8.
- B. Prime finish: Doors and frames shall be thoroughly cleaned, and chemically treated to insure maximum paint adhesion. All surfaces of the door and frame exposed to view shall receive a factory applied coat of rust inhibiting primer, either air-dried or baked-on. The finish shall meet the requirements for acceptance stated in ANSI/SDI A250.10 "Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames."
- C. Design clearances: Fabricate doors and frames to maintain the following clearances:



1. The clearance between the door and frame shall be 1/8 inch (3.2 mm) in the case of both single swing and pairs of doors.
2. The clearance between the meeting edges of pairs of doors shall be 3/16 inch (4.8 mm) plus or minus 1/16 inch (1.6 mm). For fire rated applications, the clearances between the meeting edges of pairs of doors shall be 1/8 inch (3.2 mm) plus or minus 1/16 inch (1.6 mm).
3. The clearance measured from the bottom of the door to the bottom of the frame (undercut) shall be a maximum of 3/4 inch (19.1 mm) unless otherwise specified. Fire door undercuts shall comply with ANSI/NFPA 80, "Fire Doors and Fire Windows."
4. The clearance between the face of the door and the stop shall be 1/16 inch (1.6 mm) to 3/32 inch (2.4 mm).
5. All clearances shall be, unless otherwise specified in this document, subject to a tolerance of plus or minus 1/32 inch (0.8 mm).
6. The clearance at the bottom shall be 5/8 inch (15.8 mm).
7. The clearance between the face of the door and doorstop shall be 1/16 inch (1.6 mm) to 1/8 inch (3.2 mm).
8. All clearances shall be, unless otherwise specified, subject to a tolerance of plus or minus 1/32 inch (0.8 mm).

### PART 3 EXECUTION

#### 3.1 EXAMINATION

- A. Verify that project conditions are suitable before beginning installation of frames. Do not begin installation until conditions have been properly prepared.
  1. Verify that completed openings to receive knock-down wrap-around frames are of correct size and thickness.
  2. Verify that completed concrete or masonry openings to receive butt type frames are of correct size.
  3. Verify that drywall construction walls are the correct thickness.
- B. If opening preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

#### 3.2 INSTALLATION

- A. Install frames plumb, level, rigid, and in true alignment in accordance with ANSI A250.11 and DHI A115.1G.
- B. All frames other than slip-on types shall be fastened to the adjacent structure so as to retain their position and stability. Drywall slip-on frames shall be installed in prepared wall openings in accordance with manufacturer's instructions.
- C. Install frames in stucco construction as work progresses. Fill welded wrap-around frames solid with grout where indicated. Brace or fasten frame in such a way to prevent pressure of the grout from deforming frame. Coordinate with work specified in Section 09220.
- D. Doors shall be installed and fastened to maintain alignment with frames to achieve maximum operational effectiveness and appearance. Doors shall be adjusted to maintain perimeter clearances specified. Shimming shall be performed by the installer as needed to assure the proper clearances are achieved.

#### 3.3 ADJUST AND CLEAN

- A. Adjust doors for proper operation, free from binding or other defects.
- B. Clean and restore soiled surfaces. Remove scraps and debris and leave site in a clean condition.

3.4 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

3.5 SCHEDULE

- A. Refer to Opening Schedule in the Drawings.

END OF SECTION

**SECTION 08 31 00  
ACCESS DOORS**

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This SECTION describes the requirements for furnishing and installing access doors for walls and ceilings.

1.02 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store access doors in manufacturer's standard protective packaging.
- B. Do not remove protective packaging until ready for installation.
- C. Follow manufacturer's instructions for storage and handling.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Frame: Minimum 16-gauge steel.
- B. Door Panel: Minimum 14-gauge steel..
- C. Drywall Bead: Galvanized steel.
- D. Hardware: Manufacturer's standard.
- E. Finish: Factory-applied baked-enamel prime coat.

2.02 FABRICATION

- A. General:
  - 1. Hinges: concealed, spring type, opening to 175 degrees.
  - 2. Locks: Flush, key operated type, with metal cams.
  - 3. Fire Rating: Access doors in fire-rated walls and ceilings shall be fire rated accordingly.
- B. Wall Access Doors – Interior:
  - 1. Size: Nominal 12-inches square.
  - 2. Concealed Flange, Flush Panel Type for Installation in Gypsum Wallboard: Milcor "Style DW", or accepted equal.
  - 3. Exposed Flange, Flush Panel Type for Installation n Ceramic Tile: Milcor "Style M" or accepted equal
- C. Wall Access Doors – Exterior
  - 1. Size: As shown on the drawings.
  - 2. Manufacturer: Karp Associates, Inc.
  - 3. Exposed Flange for Installation in Stucco.
  - 4. Door Insulation: 1" thick polystyrene.

5. Hinge: Continuous stainless steel piano hinge.
  6. Latch: Compression latch with key operation.
- D. Ceiling Access Doors, Downward Opening:
1. Nominal 12-inches square for access to valves, and 24-inches square for access to ducts.
  2. Concealed Flange, Recessed Panel Type for Installation of Acoustical Material and Gypsum Wallboard: Milcor "Style AT", or accepted equal.

### PART 3 – EXECUTION

#### 3.01 INSPECTION

- A. Verify that conditions are satisfactory for the installation for access doors. If unsatisfactory conditions exist, do not commence the installation until such conditions have been corrected.

#### 3.02 INSTALLATION

- A. Install access doors in accordance with the manufacturer's printed instructions.
- B. Provide where indicated or directed, for access to valves, ductwork, and other Work in DIVISION 15 – MECHANICAL and DIVISION 16 - ELECTRICAL

END OF SECTION

**SECTION 08 36 13  
OVERHEAD SECTIONAL DOORS**

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Exterior motor operated sectional overhead doors.

1.02 RELATED WORK

- A. Section 06 10 00 – Rough Carpentry.
- B. Section 06 17 00 – Prefomed Wood Structural Members
- C. Section 07 90 00 – Joint Protection
- D. Section 09 25 00 – Gypsum Board
- E. Dvision 26 – Electrical Work

1.03 REFERENCES

- A. ANSI A216.1 - Sectional Overhead Type Doors.
- B. AAMA 2605 - high performance specification for organic coatings on aluminum extrusions.

1.04 QUALITY ASSURANCE

- A. Manufacturer: Company specializing in the construction of overhead doors, with a minimum of three years experience.
- B. Installer: Company skilled in the installation of overhead doors and approved by the manufacturer for the installation.

1.05 SUBMITTALS

- A. Submit shop drawings, product data and manufacturer's installation instructions under provisions of Section 01 30 00.
- B. Indicate opening dimensions and tolerances, component construction, connections and details, anchorage methods and spacing, hardware and locations, installation details, and available options.
- C. Samples: Color samples for approval of hue and sheen.

1.06 OPERATION AND MAINTENANCE DATA

- A. Submit operation and maintenance data under provisions of Section 01 70 00.
- B. Include data for lubrication frequency, control adjustments, and spare part sources.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products in labeled protective packages. Protect products during delivery, storage, and handling to prevent damage to mechanism or slats.

## PART 2 - PRODUCTS

### 2.01 ACCEPTABLE MANUFACTURERS

- A. Door: Raynor Garage Doors
- B. Operator: Chamberlain LiftMaster
- C. Alternate products may be used if approved on the basis of submittals made under provisions of Section 01 30 00.

### 2.02 EXTERIOR OVERHEAD SECTIONAL DOORS

- A. Model: Raynor Thermaseal Standard TM 175 commercial insulated sectional door.
- B. Construction: steel; exterior panels: 26 ga.; interior panels: 25 ga.; stiles 16 ga.
- C. Tracks: galvanized, 3-inch, wind load clips.
- D. Counterbalance: Enclosed, helical torsion springs, high cycle (50,000)
- E. Insulation: Polyurethane foam, R-16.
- F. Windows: 1/2" clear tempered insulating glass, or as required for windload rating.
- G. Windload Rating: 120 mph.
- H. Lock: slide bolt with padlock hasp.
- I. Mounting: inside face of wall.
- J. Finish: Powder coating complying with AAMA 2605, 10-year coating. Color: Manufacturer's standard "Dark Brown".
- K. Seals: Thermal break, top, bottom and sides.
- L. Operation: Chamberlain LiftMaster T50 trolley continuous duty industrial grade motor; 1-phase, 230V.
  - 1. Controls: two (2) 2-channel transmitters, CPS safety photo beam reversing system, one (1) wall control panel and photo beam safety system. wall mounted push button in one locations, vehicle mounted actuators, exterior mounted keypad.

## PART 3 - EXECUTION

### 3.01 INSPECTION

- A. Verify that wall openings are ready to receive the products of this Section and that opening dimensions and tolerances are within manufacturer's allowable limits.
- B. Beginning of installation means acceptance of existing surfaces.

### 3.02 PREPARATION

- A. Prepare opening to permit correct installation of door units and attachments.

3.03 INSTALLATION

- A. Install door assembly in strict accordance with manufacturer's instructions.
- B. Use anchorage devices to securely fasten door assembly to structural frame without distortion or stress.
- C. Fit and align door assembly level and plumb to provide smooth operation.
- D. Coordinate installation of sealants and backing materials at frame perimeter in accordance with Section 07 90 00.

3.04 INSTALLATION TOLERANCES

- A. Maximum allowable variation from plumb: 1/8" overall.
- B. Maximum allowable variation from level: 1/8" overall.
- C. Maximum allowable longitudinal or diagonal warp: 1/8" maximum in 10 feet.

3.05 ADJUSTING AND CLEANING

- A. Adjust for smooth and balanced door movement.
- B. Remove labels and markings from exposed-to-view surfaces.
- C. Clean slats and housings thoroughly with manufacturer's recommended products.
- D. Touch up damaged coatings and finishes and repair minor damage to satisfaction of Owner's Representative.

END OF SECTION

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**SECTION 08 51 00  
ALUMINUM WINDOWS**

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Solid and tubular aluminum extruded windows of the following type(s):

1. Picture Window Series 710 / 710S

B. Related Sections:

1. 06 10 00 – Rough Carpentry
2. 07 19 00 – Weather Resistant Barrier
3. 07 90 00 – Joint Protection
4. 09 20 00 – Lath and Plaster
5. 09 25 00 – Gypsum Board

1.02 SUBMITTALS

A. Reference Section 01 33 00 – Submittal Procedures; submit following items:

1. Product Data.
2. Shop Drawings: Include window schedule, window elevations, sections and details, and multiple window assembly details.
3. Samples:
  - a. Color samples: Minimum 1x4 inch (25x100 mm) samples of Aluminum with painted or anodized color.
  - b. Glass, showing specified tint color.
4. Quality Assurance/Control Submittals:
  - a. Qualifications: Proof of manufacturer's qualifications.
  - b. U-Factor and structural rating charts required for AAMA and NFRC labeling requirements.
  - c. Installation Instructions – AAMA 2400 (“Mounting Flange Installation”) or AAMA 2410 (“Flush Fin Installation”).

B. Closeout Submittals: Reference Section 01 78 00 – Closeout Submittals; submit following items:

1. Temporary window labels marked to identify windows that labels were applied to.
2. Maintenance instructions.
3. Special Warranties.



- B. Extruded frame members are to be .060" in thickness for structural walls.

2.03 GENERAL PERFORMANCE REQUIREMENTS:

- A. Thermal Performance: Comply with NFRC 100.
- B. Air Leakage, Water Resistance, Structural Test: Comply with ANSI/AAMA 101/I.S.2.
- C. Forced-Entry Resistance: Comply with ASTM E 588.

2.04 WINDOW TYPES:

- A. Picture Window 710S Series, 1 3/8 inch (35mm) nail fin setback with stucco key:
  - 1. Frame:
    - a. 710 / 710S Series, 2 1/16" (52mm) & 2 3/8" (60mm)
  - 2. Performance Class:
    - a. 710 / 710S Series, 95-1/2" x 71-1/2" and smaller: FW-HC40.

2.05 GLAZING

- A. Insulated Glass Units: ASTM E 774, Class A, 1 inch (25mm) thick.
  - 1. Glazing Type: Clear/SunCoat® Low-E.
  - 2. Spacer Bar: Warm edge foam spacer.

2.06 DIVIDED LITE GRIDS

- A. 5/8 inch (16 mm) wide flat, grids between the glass that are color matched to frame and sash.

2.07 FABRICATION

- A. Fabricate frames and sash with mechanically joined corners. Corners are fastened with corrosion resistant screws and sealed with an acrylic sealant.
- B. All fixed glass is exterior glazed and all sashes are marine glazed with flexible PVC glazing. The fixed glazing shall be removed without disassembly of a sash. The vents will need to be disassembled to replace the glazing.

2.08 FINISHES

- A. Frame and Sash Color: Dark Bronze Anodized Exterior Finish: Provide AA-C22-A32 Class II Dark Bronze, minimum 0.4 mils thick, electrolytically deposited color anodized finish.

2.09 SOURCE QUALITY CONTROL

- A. Windows inspected in accordance with manufacturer's Quality Control Program as required by AAMA Gold Label certification.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine openings in which windows will be installed.
  - 1. Verify that framing complies with AAMA 2400 ("Mounting Flange Installation").
  - 2. Verify that fasteners in framed walls are fully driven and will not interfere with window installation.
- B. Coordinate with responsible entity to correct unsatisfactory conditions.
- C. Commencement of work by installer is acceptance of substrate conditions.

3.02 INSTALLATION

- A. Install windows in framed walls in accordance with AAMA 2400 ("Mounting Flange Installation").
- B. Do not remove temporary labels.

3.03 CLEANING

- A. Reference Section 01 74 00 – Cleaning.
- B. Remove temporary labels and retain for Closeout Submittals.
- C. Clean soiled surfaces and glass using a mild detergent and warm water solution with soft, clean cloths.

END OF SECTION

**SECTION 08 62 50  
TUBULAR SKYLIGHTS**

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Tubular daylighting device, consisting of roof dome, reflective tube, and diffuser assembly; configuration as indicated on the drawings.
- B. Accessories.

1.2 RELATED SECTIONS

- A. Section 07 60 00 – Flashing and Sheet Metal.
- B. Section 07 30 00 -- Roofing.

1.3 REFERENCES

- A. ASTM B 209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
- B. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2008a.
- C. ASTM A 463/A 463M - Standard Specification for Steel Sheet, Aluminum Coated, by the Hot Dip Process; 2006.
- D. ASTM A 653/A 653M - Standard Specification for Steel Sheet, Zinc Coated (Galvanized), by the Hot Dip Process; 2007.
- E. ASTM E 283 - Test Method for Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2004.
- F. ASTM E 308 - Standard Practice for Computing the Colors of Objects by Using the CIE System; 2006.
- G. ASTM E 330 - Structural Performance of Exterior Windows, Curtain Walls and Doors; 2002.
- H. ASTM E 547 - Test Method for Water Penetration of Exterior Windows, Skylights, Doors and Curtain walls by Cyclic Air Pressure Difference; 2000.
- I. ASTM E 1886 - Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials.
- J. ASTM E 1996 - Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Windborne Debris in Hurricane

- K. ASTM D 635 - Test Method for Rate of Burning and/or Extent of Time of Burning of Self-Supporting Plastics in a Horizontal Position; 2006.
- L. ASTM D-1929 - Test Method for Ignition Properties of Plastics; 1996 (2001).
- M. UL 181 - Factory Made Air Ducts and Air Connectors
- N. ICC AC-16 - Acceptance Criteria for Plastic Skylights; 2008.

#### 1.4 PERFORMANCE REQUIREMENTS

- A. Completed tubular daylighting device assemblies shall be capable of meeting the following performance requirements:
  - 1. Air Infiltration Test: Air infiltration will not exceed 0.30 cfm/sf aperture with a pressure delta of 1.57 psf across the tube when tested in accordance with ASTM E 283.
  - 2. Water Resistance Test: No uncontrolled water leakage at 10.5 psf pressure differential with water rate of 5 gallons/hour/sf when tested in accordance with ASTM E 547.
  - 3. Uniform Load Test:
    - a. No breakage, permanent damage to fasteners, hardware parts, or damage to make system inoperable or cause excessive permanent deflection of any section when tested at a Positive Load of 150 psf (7.18 kPa) or Negative Load of 60 psf (2.87 kPa) in accordance with ICC AC-16 Section A, or Negative Load of 70 psf (3.35 kPa) if tested per ICC AC-16 Section B.
    - b. All units shall be tested with a safety factor of (3) for positive pressure and (2) for negative pressure, acting normal to plane of roof in accordance with ASTM E 330.

#### 1.5 SUBMITTALS

- A. Submit under provisions of Section 01 30 00.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
  - 1. Preparation instructions and recommendations.
  - 2. Storage and handling requirements and recommendations.
  - 3. Installation methods.
- C. Shop Drawings. Submit shop drawings showing layout, profiles and product components, including anchorage, flashings and accessories.
- D. Verification Samples: As requested by Architect.
- E. Test Reports: Independent testing agency or evaluation service reports verifying compliance with specified performance requirements.

## 1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Engaged in manufacture of tubular daylighting devices for minimum 15 years.

## 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

## 1.8 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

## 1.9 WARRANTY

- A. Daylighting Device: Manufacturer's standard warranty for 10 years.
- B. Electrical Parts: Manufacturer's standard warranty for 5 years, unless otherwise indicated.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Solatube International, Inc.; 2210 Oak Ridge Way, Vista, CA 92081. ASD. Tel. Toll Free: 888-765-2882. Tel: (760) 477-1120. Fax: (760) 597-4488. Email: commsales@solatube.com. Web: www.solatube.com.
- B. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00, provided a lighting layout with photometric data is supplied to demonstrate light levels will meet original design intent

### 2.2 TUBULAR DAYLIGHTING DEVICES

- A. Tubular Daylighting Devices General : Transparent roof-mounted skylight dome and self-flashing curb, reflective tube, and ceiling level diffuser assembly, transferring sunlight to interior spaces; complying with ICC AC-16.
- B. SolaMaster Series: Solatube Model 750 DS-C Penetrating Ceiling, 21 inch (530 mm) Daylighting System:
  - 1. Roof Dome Assembly: Transparent, UV and impact resistant dome with flashing base supporting dome and top of tube.
    - a. Outer Dome Glazing: Type DA, 0.125 inch (3.2 mm) minimum thickness injection molded acrylic classified as CC2 material; UV inhibiting (100 percent UV C, 100 percent UV B and 98.5 percent UV A), impact modified acrylic blend.

- b. Raybender 3000: Variable prism optic molded into outer dome to capture low angle sunlight and limit high angle sunlight.
- c. Inner Dome Glazing: Type DPI, 0.115 inch (3 mm) minimum thickness polycarbonate classified as CC1 material.
2. Roof Flashing Base:
  - a. One Piece: One piece, seamless, leak-proof flashing functioning as base support for dome and top of tube. Sheet steel, corrosion resistant conforming to ASTM A 653/A 653M or ASTM A 463/A 463M or ASTM A 792/A 792M, 0.028 inch (0.7 mm) plus or minus .006 inch (.15 mm) thick.
    - 1) Base Style: Type F11, Self mounted, 11 inches (279 mm) high.
3. Roof Flashing Turret Extensions: Provide manufacturer's standard extensions for applications as requiring..
4. Tube Ring: Attached to top of base section; 0.090 inch (2.3 mm) nominal thickness injection molded high impact PVC; to prevent thermal bridging between base flashing and tubing and channel condensed moisture out of tubing.
5. Dome Seal: Adhesive backed weatherstrip 0.63 inch (16 mm) tall by 0.28 inch (7 mm).
6. Reflective Tubes: Aluminum sheet, thickness 0.018 inch (0.5 mm).
  - a. General:
    - 1) Interior Finish: Spectralight Infinity high reflectance specular finish on exposed reflective surface. Specular reflectance for visible spectrum (400 nm to 760 nm) greater than 99 percent. Total solar spectrum reflectance (400 nm to 2500 nm) less than 80.2 percent.
    - 2) Color: a\* and b\* (defined by CIE L\*a\*b\* color model) shall not exceed plus 2 or be less than minus 2 as determined in accordance to ASTM E 308.
    - 3) Adapter, 16 inches (406 mm) long, required for transition box.
  - b. Top Tube Angle Adapter and Bottom Tube Angle Adapter Kit, Type AK:
    - 1) Reflective 45 degree adjustable top and bottom angle adapters (one each), 16 inches (406 mm) long
  - c. Extension Tube:
    - 1) Reflective extension tube, Type EXX, Notched for Open Ceiling diffuser attachment, 24 inches (610 mm) or 48 inches (1220 mm) long.
7. Diffuser Assemblies for Tubes Penetrating Ceilings: Solatube Model 750 DS-C. Ceiling mounted box transitioning from round tube to square ceiling assembly, supporting light transmitting surface at bottom termination of tube; 23.8 inches by 23.8 inches (605 mm by 605 mm) square frame to fit standard suspended ceiling grids or hard ceilings.
  - a. Round to square transition box made of opaque polymeric material, classified as CC2, Class C, 0.110 inch (2.8 mm) thick.
  - b. Lens: Type L1 OptiView Fresnel lens design to maximize light output and diffusion with extruded aluminum frame and EPDM foam seal to minimize condensation and bug, dirt and air infiltration per ASTM E 283.



Visible Light Transmission shall be greater than 90 percent at 0.022 inch (0.6 mm) thick. Classified as CC2.

### 2.3 ACCESSORIES

- A. Fasteners: Same material as metals being fastened, non-magnetic steel, non-corrosive metal of type recommended by manufacturer, or injection molded nylon.
- B. Suspension Wire: Steel, annealed, galvanized finish, size and type for application and ceiling system requirement.
- C. Sealant: Polyurethane or copolymer based elastomeric sealant as provided or recommended by manufacturer.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

### 3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

### 3.3 INSTALLATION

- A. Install in accordance with manufacturer's printed instructions.
- B. After installation of first unit, field test to determine adequacy of installation. Conduct water test in presence of Owner, Architect, or Contractor, or their designated representative. Correct if needed before proceeding with installation of subsequent units.

### 3.4 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

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**SECTION 08 70 00  
DOOR HARDWARE**

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Door Hardware.
2. Padlocks.
3. Cylinders for doors fabricated with locking hardware.

B. Related Sections:

1. Section 07 90 00 - Joint Protection – Exterior thresholds, acoustic assemblies
- 2.. Section 08 10 00 - Steel Doors and Frames

C. Specific Omissions: Hardware for the following is specified or indicated elsewhere.

1. Windows.
2. Cabinets, including open wall shelving and locks.
3. Signs, except where scheduled.
4. Toilet accessories, including grab bars.
5. Rough hardware.
6. Conduit, junction boxes & wiring.
7. Access doors and panels, except cylinders where detailed.

1.02 REFERENCES:

USE DATE OF STANDARD IN EFFECT AS OF BID DATE.

- A. American National Standards Institute – ANSI 156.18 – Materials and Finishes.
- B. BHMA – Builders Hardware Manufacturers Association
- C. DHI – Door and Hardware Institute
- D. NFPA – National Fire Protection Association
  1. NFPA 80 – Fire Doors and Windows
  2. NFPA 105 – Smoke and Draft Control Door Assemblies
  3. NFPA 252 – Fire Tests of Door Assemblies
- E. UL – Underwriters Laboratories

1. UL10C – Positive Pressure Fire Tests of Door Assemblies.
  2. UL 305 – Panic Hardware
- F. WHI – Warnock Hersey Incorporated
- G. 2007 State of California Building Code
- H. Local applicable codes
- I. SDI – Steel Door Institute
- J. WI – Woodwork Institute
- K. AWI – Architectural Woodwork Institute
- L. NAAMM – National Association of Architectural Metal Manufacturers

### 1.03 SUBMITTALS & SUBSTITUTIONS

- A. SUBMITTALS: Submit per Section 01 30 00. Organize vertically formatted schedule into “Hardware Sets” with index of doors and headings, indicating complete designations of every item required for each door or opening. Include following information:
1. Type, style, function, size, quantity and finish of hardware items.
  2. Use BHMA Finish codes per ANSI A156.18.
  3. Name, part number and manufacturer of each item.
  4. Fastenings and other pertinent information.
  5. Description of door location using space names and numbers as published in the drawings.
  6. Explanation of abbreviations, symbols, and codes contained in schedule.
  7. Mounting locations for hardware.
  8. Door and frame sizes, handing, materials, fire-rating and degrees of swing.
  9. List of manufacturers used and their nearest representative with address and phone number.
  10. Catalog cuts.
- B. Bid and submit manufacturer’s updated/improved item if scheduled item is discontinued.
- C. Deviations: Highlight, encircle or otherwise identify deviations from “Schedule of Finish Hardware” on submittal with notations clearly designating those portions as deviating from this section.
- D. If discrepancy between drawings and scheduled material in this section, bid the more expensive of the two choices, note the discrepancy in the submittal and request direction from Architect for resolution.
- E. Substitutions per the General Conditions of the Contract. Include product data and indicate benefit to the Project. Furnish operating samples on request.

- F. Furnish as-built/as-installed schedule with closeout documents, including keying schedule, wiring diagrams, manufacturers' installation, adjustment and maintenance information, and supplier's final inspection report.

1.04 QUALITY ASSURANCE:

A. Qualifications:

- 1. Hardware supplier: direct factory contract supplier who employs a certified architectural hardware consultant (AHC), available at reasonable times during course of work for project hardware consultation to Owner, Architect and Contractor.
  - a. Responsible for detailing, scheduling and ordering of finish hardware. Detailing implies that the submitted schedule of hardware is correct and complete for the intended function and performance of the openings.

- B. Hardware: Free of defects, blemishes and excessive play. Obtain each kind of hardware (latch and locksets, exit devices, hinges and closers) from one manufacturer.

- C. Exit Doors: Operable from inside with single motion without the use of a key or special knowledge or effort.

- D. Fire-Rated Openings: NFPA 80 compliant. Hardware UL10C / California State Fire Marshal Standard 12-7-4 (positive pressure) compliant for given type/size opening and degree of label. Provide proper latching hardware, non-flaming door closers, approved-bearing hinges, and resilient seals. Coordinate with wood door section for required intumescent seals. Furnish openings complete.

- 1. Note: scheduled resilient seals may exceed selected door manufacturer's requirements.
- 2. See 2.06.E for added information regarding resilient and intumescent seals.

- E. Furnish hardware items required to complete the work in accordance with specified performance level and design intent, complying with manufacturers' instructions.

1.05 DELIVERY, STORAGE AND HANDLING:

- A. Delivery: coordinate delivery to appropriate locations (shop or field).

- 1. Permanent keys and cores: secured delivery direct to Owner's representative.

- B. Acceptance at Site: Items individually packaged in manufacturers' original containers, complete with proper fasteners and related pieces. Clearly mark packages to indicate contents, locations in hardware schedule and door numbers.

- C. Storage: Provide securely locked storage area for hardware, protect from moisture, sunlight, paint, chemicals, dust, and excessive heat and cold.

1.06 PROJECT CONDITIONS AND COORDINATION:

- A. Where exact types of hardware specified are not adaptable to finished shape or size of members requiring hardware, provide suitable types having as nearly as practical the same operation and quality as type specified, subject to Architect's approval.

- B. Coordination: Coordinate hardware with other work. Furnish hardware items of proper design for use on doors and frames of the thickness, profile, swing, security and similar requirements indicated, as necessary for proper installation and function, regardless of omissions or

conflicts in the information on the Contract Documents. Furnish related trades with the following information:

1. Location of embedded and attached items to concrete.
  2. Location of wall-mounted hardware, including wall stops.
  3. Location of finish floor materials and floor-mounted hardware.
  4. Locations for conduit and raceways as needed for electrical, electronic and electro-pneumatic hardware items. Fire/life-safety system interfacing. Point-to-point wiring diagrams plus riser diagrams to related trades.
  5. Manufacturer templates to door and frame fabricators.
- C. Check Shop Drawings for doors and entrances to confirm that adequate provisions will be made for proper hardware installation. Do not order hardware until the submittal has been reviewed by the frame and door suppliers for compatibility with their products.

1.07 WARRANTY:

A. Part of respective manufacturers' regular terms of sale. Provide manufacturers' written warranties:

- |                                       |   |
|---------------------------------------|---|
| 1. Locksets:                          | Three years                                   |
| 2. Extra Heavy Duty Cylindrical Lock: | Seven Years                                   |
| 3. Exit Devices:                      | Three years mechanical<br>One year electrical |
| 4. Closers:                           | Ten years mechanical<br>Two years electrical  |
| 5. Hinges:                            | One year                                      |
| 6. Other Hardware                     | Two years                                     |

1.08 COMMISSIONING:

B. Conduct these tests prior to request for certificate of substantial completion:

1. With installer present, test door hardware operation with climate control system and stairwell pressurization system both at rest and while in full operation.
2. With installer, access control contractor and electrical contractor present, test electrical, electronic and electro-pneumatic hardware systems for satisfactory operation.
3. With installer and electrical contractor present, test hardware interfaced with fire/life-safety system for proper operation and release.

1.09 REGULATORY REQUIREMENTS:

A. Locate latching hardware between 34" to 44" above the finished floor, per California Building Code, Section 1008.1.8.2 and 1133B.2.5.2.

1. Locate panic hardware between 36" to 44" above the finished floor.

- B. Handles, pull, latches, locks, other operating devices: readily openable from egress side without tight grasping, tight pinching, or twisting of the wrist to operate. California Building Code 1008.1.1.
- C. Adjust doors to open with not more than 5.0 lbs pressure to open at exterior doors and 5.0 lbs at interior doors. As allowed per California Building Code, Section 1133B.2.5, local authority may increase the allowable pressure for fire doors to achieve positive latching, but not to exceed 15 lbs.
- D. Adjust door closer sweep periods so that from an open position of 70 degrees, the door will take at least 3 seconds to move to a point 3 inches from the latch, measured to the landing side of the door, per California Building Code Section 1133B.2.5.1.
- E. Smooth surfaces at bottom 10" of push sides of doors, facilitating push-open with wheelchair footrests, per California Building Code Section 1133B.2.6.
- F. Door opening clear width no less than 32", measured from face of frame stop, or edge of inactive leaf of pair of doors, to door face with door opened to 90 degrees. Hardware projection not a factor in clear width if located above 30" and the hardware projects no more than 4". California Building Code Section 1133B.2.2, 1133B.2.3, and 1008.1.1.
  - 1. Exception: doors not requiring full passage through the opening, that is, to spaces less than 24" in depth, may have the clear opening width reduced to 20". Example: shallow closets.
- G. Door opening clear height no less than 80" measured from top of sill to bottom of frame header stop. Projections into clear opening height not to exceed 4". California Building Code Section 1133B.2.2 and 1008.1.1.
- H. Thresholds: floor or landing no more than 1/2" below the top of the threshold of the doorway. Change in level between 1/4" and 1/2": beveled to slope no greater than 1:2 (50 percent slope). California Building Code Section 1133B.2.4.1.
  - 1. Existing conditions, where DSA determines unreasonable hardship, may be mitigated with a maximum 3/4" threshold with slope no greater than 1:2 (50 percent slope). DSA Policy #8.22.a.
- I. Floor stops: Do not locate in path of travel. Locate no more than 4" from walls, per DSA Policy #99-08 (Access).
- J. Pairs of doors: limit swing of one leaf to 90 degrees to protect persons reading wall-mounted tactile signage.

## PART 2 - PRODUCTS

### 2.01 MANUFACTURERS:

- A. Listed acceptable alternate manufacturers: submit for review products with equivalent function and features of scheduled products.

ITEM:	MANUFACTURER:	ACCEPTABLE SUB:
Hinges	(IVE) Ives	Bommer
Continuous Hinges	(IVE) Ives	Zero
Key System	(SCH) Schlage	
Locks	(SCH) Schlage	
Electronic locks	(SCE) Schlage Electronics	
Exit Devices	(VON) Von Duprin	
Closers	(LCN) LCN	
Auto Flush Bolts	(TRI) Trimco	(IVE) Ives
Coordinators	(TRI) Trimco	(IVE) Ives
Silencers	(TRI) Trimco	Hiawatha
Push & Pull Plates	(TRI) Trimco	Hiawatha
Kickplates	(TRI) Trimco	Hiawatha
Stops & Holders	(TRI) Trimco	Hiawatha
Overhead Stops	(GLY) Glynn-Johnson	None available
Thresholds	(PEM) Pemko	NGP
Seals & Bottoms	(PEM) Pemko	NGP
Key Cabinets	(LUN) Lund	TelKee
Aluminum Door Locks	(ADA) Adams Rite	None
Signs	SBH) Specialized Builders Hardware	

2.02 HINGING METHODS:

- A. Drawings typically depict doors at 90 degrees, doors will actually swing to maximum allowable. Use wide-throw conventional or continuous hinges as needed up to 8 inches in width to allow door to stand parallel to wall for true 180-degree opening. Advise architect if 8-inch width is insufficient.
- B. Conform to manufacturer's published hinge selection standard for door dimensions, weight and frequency, and to hinge selection as scheduled. Where manufacturer's standard exceeds the scheduled product, furnish the heavier of the two choices, notify Architect of deviation from scheduled hardware.
- C. Conventional Hinges: Steel or stainless steel pins and concealed bearings. Hinge open widths minimum, but of sufficient throw to permit maximum door swing.



1. Outswinging exterior doors: non-ferrous with non-removable (NRP) pins and security studs.
  2. Non-ferrous material exteriors and at doors subject to corrosive atmospheric conditions.
- D. Continuous Hinges:
1. Geared-type aluminum.
    - a. Use wide-throw units where needed for maximum degree of swing, advise architect if commonly available hinges are insufficient.
  2. Pinned steel/stainless steel type: continuous stainless steel, 0.25-inch diameter stainless-steel hinge pin.
    - a. Use engineered application-specific wide-throw units as needed to provide maximum swing degree of swing, advise architect if required width exceeds 8 inches.
- E. Pivots: high-strength forged bronze or stainless steel, tilt-on precision bearing and bearing pin.
1. Bottom and intermediate pivots: adjustability of minus 1/16 inch, plus 1/8 inch.
- F. Floor Closers: hydraulically controlled, cement case, maximum degree dead stop permitted by trim or adjacent structure. Special pins, floor pans and longer spindles when needed to accommodate floor and jamb conditions.
- 2.03 LOCKSETS, LATCHSETS, DEADBOLTS:
- A. Extra Heavy Duty Cylindrical Locks and Latches: as scheduled.
1. Chassis: cylindrical design, corrosion-resistant plated cold-rolled steel, through-bolted.
  2. Locking Spindle: stainless steel, integrated spring and spindle design.
  3. Latch Retractors: forged steel. Balance of inner parts: corrosion-resistant plated steel, or stainless steel.
  4. Latchbolt: solid steel.
  5. Backset: 2-3/4" typically, more or less as needed to accommodate frame, door or other hardware.
  6. Lever Trim: accessible design, independent operation, spring-cage supported, minimum 2" clearance from lever mid-point to door face.
  7. Electric operation: Manufacturer-installed continuous duty solenoid.
  8. Strikes: 16 gage curved steel, bronze or brass with 1" deep box construction, lips of sufficient length to clear trim and protect clothing.
  9. Lock Series and Design: Schlage ND series, "Rhodes" design.
  10. Certifications:
    - a. ANSI A156.2, 1994, Series 4000, Grade 1.
    - b. UL listed for A label and lesser class single doors up to 4ft x 8ft.
- B. Computer Managed Locks : as scheduled.

1. Schlage Electronics AD-200 series locks as schedule for existing CM lock system.

## 2.04 EXIT DEVICES / PANIC HARDWARE

### A. General features:

1. Independent lab-tested 1,000,000 cycles.
2. Push-through push-pad design. No exposed push-pad fasteners, no exposed cavities when operated. Return stroke fluid dampeners and rubber bottoming dampeners, plus anti-rattle devices.
3. 0.75-inch throw deadlocking latchbolts.
4. End caps: impact-resistant, flush-mounted. No raised edges or lips to catch carts or other equipment.
5. No exposed screws to show through glass doors.
6. Non-handed basic device design with center case interchangeable with all functions, no extra parts required to effect change of function.
7. Releasable in normal operation with 15-lb. maximum operating force per California State Fire Marshal Standard 12-10-3, and with 32 lb. maximum pressure under 250-lb. load to the door.
8. Exterior doors scheduled with XP-series devices: Static load force resistance of at least 2000 pounds.
9. Where devices span over door lite frame and the face of the selected lite manufacturer's frame is raised from the face of the door, furnish panic hardware manufacturer's fitted shims or glass-bead kits at no additional cost to the project.
10. Comply with CBC Section 1003.3.1.9.

### B. Specific features:

1. Lever Trim: breakaway type, forged brass or bronze escutcheon min .130" thickness, compression spring drive, match lockset lever design.
2. Rod and latch guards with sloped full-width kickplates for doors fitted with surface vertical rod devices with bottom latches.
3. Fire-Labeled Devices: UL label indicating "Fire Exit Hardware". Vertical rod devices less bottom rod (LBR) unless otherwise scheduled.
4. Electrically Operated Devices: Single manufacturer source for electric latch retraction devices, electrically controlled trim, power transfers, power supplies, monitoring switches and controls.

## 2.05 CLOSERS

### A. Surface Closers:

1. Full rack-and-pinion type cylinder with removable non-ferrous cover and cast iron body. Double heat-treated pinion shaft, single piece forged piston, chrome-silicon steel spring.
2. ISO 2000 certified. Units stamped with date-of-manufacture code.

3. Independent lab-tested 10,000,000 cycles.
  4. Non-sized and adjustable. Place closers inside building, stairs and rooms.
  5. Plates, brackets and special templating when needed for interface with particular header, door and wall conditions and neighboring hardware.
  6. Advanced Variable Backcheck (AVB): where scheduled, these units commence backcheck at approximately 45 degrees.
  7. Adjustable to open with not more than 5.0lbs pressure to open at exterior doors and 5.0lbs at interior doors. As allowed per California Building Code, Section 1133B.2.5, local authority may increase the allowable pressure for fire doors to achieve positive latching, but not to exceed 15lbs.
  8. Separate adjusting valves for closing speed, latching speed and backcheck, fourth valve for delayed action where scheduled.
  9. Extra-duty arms (EDA) at exterior doors scheduled with parallel arm units. EDA arms: rigid main and forearm, reinforced elbow.
  10. Exterior door closers: tested to 100 hours of ASTM B117 salt spray test, furnish data on request.
  11. Exterior doors: seasonal adjustments not required for temperatures from 120 degrees F to -30 degrees F, furnish checking fluid data on request.
  12. Non-flaming fluid, will not fuel door or floor covering fires.
  13. Pressure Relief Valves (PRV) not permitted.
- B. Surface Closers:
1. Full rack-and-pinion type cylinder with removable non-ferrous cover and cast iron body. Double heat-treated pinion shaft, single piece forged piston, chrome-silicon steel spring.
  2. ISO 2000 certified. Units stamped with date-of-manufacture code.
  3. Independent lab-tested 5,000,000 cycles.
  4. Non-sized, non-handed and adjustable. Place closers inside building, stairs and rooms.
  5. Plates, brackets and special templating when needed for interface with particular header, door and wall conditions and neighboring hardware.
  6. Adjustable to open with not more than 5.0lbs pressure to open at exterior doors and 5.0lbs at interior doors. As allowed per California Building Code, Section 1133B.2.5, local authority may increase the allowable pressure for fire doors to achieve positive latching, but not to exceed 15lbs.
  7. Separate adjusting valves for closing speed, latching speed and backcheck, fourth valve for delayed action where scheduled.
  8. Extra-duty arms (EDA) at exterior doors scheduled with parallel arm units.
  9. Exterior door closers: tested to 100 hours of ASTM B117 salt spray test, furnish data on request.

10. Exterior doors: seasonal adjustments not required for temperatures from 120 degrees F to 0 degrees F, furnish checking fluid data on request.
11. Non-flaming fluid, will not fuel door or floor covering fires.
12. Pressure Relief Valves (PRV) not permitted.

## 2.07 OTHER HARDWARE

- A. Automatic Flush Bolts: Low operating force design.
- B. Overhead Stops: Non-plastic mechanisms and finished metal end caps. Field-changeable hold-open, friction and stop-only functions.
- C. Kick Plates: Four beveled edges, .050 inches minimum thickness, height and width as scheduled. Sheet-metal screws of bronze or stainless steel to match other hardware.
- D. Door Stops: Provide stops to protect walls, casework or other hardware.
  1. Unless otherwise noted in Hardware Sets, provide floor type with appropriate fasteners. Where floor type cannot be used, provide wall type. If neither can be used, provide overhead type.
  2. Locate overhead stops for maximum possible opening. Consult with Owner for furniture locations. Minimum: 90deg stop / 95deg deadstop. Note degree of opening in submittal.
- E. Seals: Finished to match adjacent frame color. Resilient seal material: polyurethane, polypropylene, nylon brush, silicone rubber or solid high-grade neoprene as scheduled. Do not furnish vinyl seal material. UL label applied to seals on rated doors. Substitute products: certify that the products equal or exceed specified material's thickness and durability.
  1. Proposed substitutions: submit for approval.
  2. Solid neoprene: MIL Spec. R6855-CL III, Grade 40.
  3. Non-corroding fasteners at in-swinging exterior doors.
  4. Sound control openings: Use components tested as a system using nationally accepted standards by independent laboratories. Ensure that the door leafs have the necessary sealed-in-place STC ratings. Fasten applied seals over bead of sealant.
  5. Fire-rated Doors, Resilient Seals: UL10C / UBC Standard 7-2 compliant. Coordinate with selected door manufacturers' and selected frame manufacturers' requirements. Where rigid housed resilient seals are scheduled in this section and the selected door manufacturer only requires an adhesive-mounted resilient seal, furnish rigid housed seal at minimum, or both the rigid housed seal plus the adhesive applied seal. Adhesive applied seals alone are deemed insufficient for this project where rigid housed seals are scheduled.
  6. Fire-rated Doors, Intumescent Seals: Furnished by selected door manufacturer. Furnish fire-labeled opening assembly complete and in full compliance with UL10C / UBC Standard 7-2. Where required, intumescent seals vary in requirement by door type and door manufacture -- careful coordination required
- F. Automatic door bottoms: low operating force units. Doors with automatic door bottoms plus head and jamb seals cannot require more than two pounds operating force to open when closer is disconnected.

- G. Thresholds: As scheduled and per details. Comply with CBC Section 1133B.2.4.1. Substitute products: certify that the products equal or exceed specified material's thickness. Proposed substitutions: submit for approval.
1. Exteriors: Seal perimeter to exclude water and vermin. Use sealant complying with requirements in Division 7 "Thermal and Moisture Protection". Non-ferrous 1/4inch fasteners and lead expansion shield anchors, or Red-Head #SFS-1420 (or approved equivalent) Flat Head Sleeve Anchors (SS/FHSL).
  2. Fire-rated openings, 90min or less duration: use thresholds to interrupt floor covering material under the door where that material has a critical radiant flux value less than 0.22 watts per square centimeter, per NFPA 253. Use threshold unit as scheduled. If none scheduled, request direction from Architect.
  3. Fire-rated openings, 3hour duration: Thresholds, where scheduled, to extend full jamb depth.
  4. Acoustic openings: Set units in full bed of Division-7-compliant sealant. Leave no air space between threshold and substrate.
  5. Plastic plugs with wood or sheet metal screws are not an acceptable substitute for specified fastening methods.
  6. Fasteners: Generally, exposed screws to be Phillips or Robertson drive. Pinned TORX drive at high security areas. Flat head sleeve anchors (FHSL) may be slotted drive. Sheet metal and wood screws: full-thread. Sleeve nuts: full length to prevent door compression.
- H. Exposed Through-Bolts: Do not use SNB, grommet nuts, sleeve nuts or other such clamping type fasteners, intent is for minimal exposed hardware. Coordinate with wood doors; ensure provision of proper blocking to support wood screws for mounting panic hardware and door closers. Coordinate with metal doors and frames; ensure provision of proper reinforcement to support machine screws for mounting panic hardware and door closers.
- I. Silencers: Interior hollow metal frames, 3 for single doors, 4 for pairs of doors. Omit where adhesive mounted seal occurs. Leave no unfilled/uncovered pre-punched silencer holes.

2.08 FINISH:

- A. Generally BHMA 626 Satin Chromium.
1. Areas using BHMA 626 to have push-plates, pulls and protection plates of BHMA 630, Satin Stainless Steel, unless otherwise noted.
- B. Door closers: factory powder coated to match other hardware, unless otherwise noted.
- C. Aluminum items: match predominant adjacent material. Seals to coordinate with frame color.

2.09 KEYING REQUIREMENTS:

- A. Key System: Schlage Classic keyway, conventional cylinders. For estimate use factory GMK charge. Initiate and conduct meeting(s) with Owner to determine keying. This will be an extension of the existing Schlage key system set up for phase I. Furnish Owner's written approval of the system.
- B. Keys
1. Existing master key system

2. Non-I.C. construction keying: furnish inserted type partial key. At substantial completion, remove inserts in Owner's presence; demonstrate consequent non-operability of construction key. Give all removed inserts and all construction keys to Owner, provide accounting for all the pieces.
  3. Temporary cylinders/cores remain supplier's property.
  4. Furnish 5 construction keys.
  5. Furnish 2 construction insert extractor tool 35-057.
  6. For estimate: VKC stamping plus "Do Not Duplicate".
- C. Key Cylinders: furnish utility patented, 6-pin solid brass construction.
- D. Cylinders/Cylinder cores: furnish keyed at factory of lock manufacturer where permanent records are maintained. Locks and cylinders same manufacturer.
- E. Permanent keys: furnish secured shipment direct from point of origination to Owner.
- F. For estimate: 3 keys per change combination, 5 master keys per group, 5 grand-master keys, 3 control keys.
- G. Bitting List: furnish secured shipment direct from point of origination to Owner upon completion.
- H. Provide keying for fifteen Schlage "C" keyway locks furnished and installed by others in dorm room locker doors, all such locks to be keyed different.

### PART 3 - EXECUTION

#### 3.01 ACCEPTABLE INSTALLERS:

- A. Can read and understand manufacturers' templates, suppliers' hardware schedules and printed installation instructions. Can readily distinguish drywall screws from manufacturers' furnished fasteners. Available to meet with manufacturers' representatives and related trades to discuss installation of hardware.

#### 3.02 PREPARATION:

- A. Ensure that walls and frames are square and plumb before hardware installation. Make corrections before commencing hardware installation.
- B. Locate hardware per SDI-100 and applicable building, fire, life-safety, accessibility, and security codes.
1. Notify Architect of code conflicts before ordering material.
  2. Locate levers, key cylinders, t-turn pieces, touchbars and other operable portions of latching hardware between 30 inches to 44 inches above the finished floor, per CBC Section 1133B.2.5.1.
  3. Where new hardware is to be installed near existing doors/hardware scheduled to remain, match locations of existing hardware.
- C. Overhead stops: before installing, determine proposed locations of furniture items, fixtures, and other items to be protected by the overhead stop's action.

### 3.03 INSTALLATION

- A. Install hardware per manufacturer's instructions and recommendations. Do not install surface-mounted items until finishes have been completed on substrate. Set units level, plumb and true to line and location. Adjust and reinforce attachment substrate for proper installation and operation. Remove and reinstall or replace work deemed defective by Architect.
  - 1. Gaskets: install jamb-applied gaskets before closers, overhead stops, rim strikes, etc; fasten hardware over and through these seals. Install sweeps across bottoms of doors before astragals, cope sweeps around bottom pivots, trim astragals to tops of sweeps.
  - 2. When hardware is to be attached to existing metal surface and insufficient reinforcement exists, use RivNuts, NutSerts or similar anchoring device for screws.
  - 3. Use manufacturers' fasteners furnished with hardware items, or submit Request for Substitution with Architect.
  - 4. Replace fasteners damaged by power-driven tools.
- B. Locate floor stops no more than 4 inches from walls and not within paths of travel. See paragraph 2.2 regarding hinge widths, door should be well clear of point of wall reveal. Point of door contact no closer to the hinge edge than half the door width. Where situation is questionable or difficult, contact Architect for direction.
- C. Core concrete for exterior door stop anchors. Set anchors in approved non-shrink grout.
- D. Locate overhead stops for minimum 90 degrees and maximum allowable degree of swing.
- E. Drill pilot holes for fasteners in wood doors and/or frames. Centerpunch hole locations before using self-drilling type screws to prevent skating. Replace screws that are not centered in their holes.
- F. Lubricate and adjust existing hardware scheduled to remain. Carefully remove and give to Owner items not scheduled for reuse.

### 3.04. ADJUSTING

- A. Adjust and check for proper operation and function. Replace units, which cannot be adjusted to operate freely and smoothly.
  - 1. Hardware damaged by improper installation or adjustment methods: repair or replace to Owner's satisfaction.
  - 2. Adjust doors to fully latch with no more than 1 pound of pressure.
  - 3. Adjust delayed-action closers on fire-rated doors to fully close from fully-opened position in no more than 10 seconds.
  - 4. Adjust door closers per 1.09 this section.
- B. Inspection: Use hardware supplier's consultant or consultant's agent. Include supplier's report with closeout documents.
- C. Final inspection: Installer to provide letter to Owner that upon completion installer has visited the Project and has accomplished the following:
  - 1. Re-adjust hardware.

2. Evaluate maintenance procedures and recommend changes or additions, and instruct Owner's personnel.
  3. Identify items that have deteriorated or failed.
  4. Submit written report identifying problems
- 3.05 DEMONSTRATION:
- A. Demonstrate mechanical hardware and electrical, electronic and pneumatic hardware systems, including adjustment and maintenance procedures.
- 3.06 PROTECTION/CLEANING:
- A. Cover installed hardware, protect from paint, cleaning agents, weathering, carts/barrows, etc. Remove covering materials and clean hardware just prior to substantial completion.
  - B. Clean adjacent wall, frame and door surfaces soiled from installation/reinstallation process.
- 3.07 SCHEDULE OF FINISH HARDWARE
- A. See door schedule in drawings for hardware set assignments.
  - B. Provide items in HW SET 28 to the owner with close out documents.
  - C. This is a Buy American project. All Materials must be ordered as (BA) Buy American.

(SCHEDULE FOLLOWS ON NEXT PAGE)



**HARDWARE SCHEDULE**

HW SET: 01: DOOR 1

3	EA	HINGE	5BB1SH 4.5 X 4.5 NRP (BA)	630	IVE
1	EA	ENTRY LOCK	ND80PD RHO (BA)	626	SCH
1	EA	SURFACE CLOSER	4111 AVB SHCUSH	689	LCN
1	SET	SEALS	S88D	DKB	PEM
1	EA	DOOR SHOE	217CV	CL	PEM
1	EA	THRESHOLD	158A	CL	PEM

HW SET: 02: DOOR 2

6	EA	HINGE	5BB1 4.5 X 4.5 (BA)	630	IVE
1	EA	CONST LATCHING BOLT	FB61T (BA)	630	IVE
1	EA	STOREROOM LOCK	ND80PD RHO (BA)	626	SCH
1	EA	ASTRAGAL	375CR	AL	PEM
1	SET	SEALS	379CR	CL	PEM
1	SET	SEALS	S88D	DKB	PEM
2	EA	DOOR BOTTOM	411ASL	AL	PEM
1	EA	THRESHOLD	151C FHSL OPENING WIDTH	CL	PEM

HW SET: 03: DOOR 3

3	EA	HINGE	5BB1SH 4.5 X 4.5 NRP (BA)	630	IVE
1	EA	STOREROOM LOCK	ND80PD RHO (BA)	626	SCH
1	SET	SEALS	S88D	DKB	PEM
1	EA	DOOR SHOE	217CV	CL	PEM
1	EA	THRESHOLD	158A	CL	PEM

END OF SECTION

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**SECTION 09 20 00  
LATH AND PLASTER**

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Building paper and metal lath.
- B. Plaster inserts and accessories.
- C. Three coat Portland cement plaster at exterior walls.

1.02 RELATED WORK

- A. Section 06 10 00 - Rough Carpentry
- B. Section 07 60 00 - Flashing and Sheet Metal
- C. Section 08 10 00 – Metal Doors and Frames
- D. Section 09 90 00 - Painting

1.03 REFERENCES

- A. Federal Specification UU-B-70 - building paper, stucco lath.
- B. ASTM C150 - portland cement.
- C. ASTM C-206 - lime.
- D. ASTM C-144-62T - graded sand.
- E. "Lathing and Plastering Data Guide and Reference Specifications," by the Southern California Plastering Institute.

1.04 QUALITY ASSURANCE

- A. Applicator: Company specializing in the application of exterior portland cement plaster finishes, with at least three (3) years' experience.

1.05 SUBMITTALS

- A. Submit product data and samples under provisions of Section 01 30 00.
- B. Submit product data, with manufacturer's installation instructions, for all proposed plaster additives.
- C. Submit two (2) copies of color charts for integrally-colored finish plaster coat.
- D. Submit two (2) samples, 12 inches long, of each proposed plaster insert or accessory.
- E. Prepare one mock-up, at least 48 inches by 48 inches, of proposed plaster texture and color, for Architect's and regulatory agency's approval prior to application of plaster brown coat. Mockup may be used as a portion of the actual building Work.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store, and protect lath and plaster materials under provisions of Section 01 60 00.

#### 1.07 ENVIRONMENTAL REQUIREMENTS

- A. Do not apply plaster when the outside air temperature is below 40 degrees F, or above 90 degrees F.

### PART 2 - PRODUCTS

#### 2.01 ACCEPTABLE MANUFACTURERS

- A. Paper-backed Stucco Lath, Vertical Surfaces: K-Lath, Western Metal Lath Company.
- B. Screeds, Moldings, and Accessories: Western Metal Lath Company, Delta Star (Superior), California Expanded Metal Products Corporation.
- C. Integral Color Additive: La Habra, Expo Stucco Products, Omega Products.
- D. Alternate products may be used if approved on the basis of submittals made under provisions of Section 01 30 00.

#### 2.02 LATHING MATERIALS

- A. Lath at Walls and Other Vertical Surfaces: 1-1/2 inch mesh, hexagonally woven, galvanized wire mesh, attached to Class B, waterproofed building paper in a self-furring fashion; Paperbacked Stucco Netting SFB by K-Lath.
- B. Line wire backing: 18 gage galvanized, Class I annealed steel wire.

#### 2.03 SCREEDS, MOLDINGS, AND ACCESSORIES

- A. Prefabricated standard shapes, manufactured for the designated use of hot-dip zinc galvanized steel.
  1. Foundation Weep Screed: Superior Type 5.
  2. Control Joint: Milcor No. 15.
  3. Corner Reinforcement (at outside corners): Amico X-1.
  4. Casing Bead / Ground: Amico X-66.
  5. Window or Door Head Drip Screed: Superior Type SWD, where not shown otherwise in the Drawings.

#### 2.04 WOOD GROUNDS

- A. Temporary wood grounds: seasoned wood of uniform thickness and free from pitch or defects.
- B. Permanent wood grounds shall be redwood and may be used only as detailed on the Drawings.

#### 2.05 CEMENT

- A. Portland cement: Conform to ASTM designation C-150, Type I.

- B. Plastic additives are limited to 12 percent by volume.

#### 2.06 LIME

- A. Dry Hydrated Lime: Conform to ASTM designation C-206, Type S.
- B. Lime putty, if used, shall weigh no less than 83 pounds per cubic foot.

#### 2.07 SAND

- A. Sand Aggregate: Clean, well graded from coarse to fine, conforming to ASTM C-144-62T.

#### 2.08 INTEGRALLY COLORED FINISH COAT

- A. Texture: Portland cement-lime sand float finish, per reference specifications, light dash finish to match existing.
- B. Color: One integral color additive selected by the Architect from the La Habra standard color selector, either Base 100 or Base 200.

#### 2.09 OTHER MATERIALS

- A. All other materials, not specifically described but required for a complete and proper installation of lath and plaster, shall meet or exceed the requirements of the referenced standards and shall be subject to the approval of the Architect.

### PART 3 - EXECUTION

#### 3.01 INSPECTION

- A. Verify that substrates are ready to receive lath and plaster.
- B. Verify that lath and plaster may be installed in accordance with all pertinent codes and regulations, the original design, and the referenced standards.
- C. Beginning of installation means acceptance of existing conditions.

#### 3.02 WEATHER CONDITIONS

- A. Do not apply plaster when prevailing outdoor temperature is below 40 degrees Fahrenheit; if freezing is expected, do not apply plaster beyond the period required for proper hydration.
- B. Do not apply plaster when prevailing outdoor temperature is above 90 degrees Fahrenheit.

#### 3.03 LATHING - VERTICAL APPLICATIONS

- A. Install line wire backing at open wall framing, where exterior sheathing does not occur. Install line wire at 6" o.c. vertically; run horizontally, stretched taut but not tight, fastened at 32" o.c.
- B. Install paper-backed stucco lath with the long dimension horizontal, lapping the paper of upper courses over the paper of lower courses at least two (2) inches, and lapping vertical paper joints at least six (6) inches. Tie lath laps together above paper laps. Provide two layers of Grade D paper over wood base sheathing (UBC 2506.4).
- C. At exterior corners, wrap paper and lath around corner and reinforce with external corner reinforcement.

- D. At interior corners, fold the lath and paper through the corner and reinforce with interior corner reinforcement.
- E. Take care in attachment of paper-backed lath to building surfaces to allow lath to remain furred approximately 1/4 inch above the surface of building paper.
- F. Attach all screeds, moldings, or accessories firmly to supporting structure per the recommendations of the reference standards. Where screeds, moldings, and accessories meet or intersect, cut non-continuous member to fit snug and square against through member.

### 3.04 PLASTERING

- A. Perform all mixing, plastering, and plaster curing in strict accordance with the provisions of the referenced standards.
- B. Scratch Coat: Apply the scratch coat with sufficient material and force to form good keys, embedding and filling all spaces of the lath, and scoring the plaster horizontally.
- B. Brown Coat: Do not apply the brown coat sooner than forty eight (48) hours after application of the scratch coat. Apply brown coat to scratch coat, bring out to grounds, straighten to a true surface, float, compact, and leave sufficiently rough to ensure adequate bond for finish coat.
- D. Finish Coat
  - 1. Do not apply finish coat sooner than seven (7) days after application of brown coat. Apply smooth, dense, flat and true float finish coat, textured as approved by the Architect on the basis of field mock-ups, beginning and ending application at naturally occurring joints, edges, and boundaries on finish surfaces. Unsightly laps and joints will not be acceptable.
  - 2. Finish coat shall be continuous across brown coat.
  - 3. Finish coat shall be finished in two integrally pigmented colors, as approved by Architect on the basis of field mock-ups.
- E. Finish all plaster surfaces true and even within 1/8 inch tolerance in ten (10) feet. Leave the finished surfaces free from tool marks, scaffold ties, and other blemishes.

### 3.05 CLEANING AND PROTECTION

- A. Protect all window and door frames, thresholds, and other products from plaster debris or splatter with tape, building paper, plastic sheet, or similar methods. Immediately clean splatter from unprotected products or surfaces.
- B. After application of finish coat, remove all tape, inserts and protective covers from screeds, moldings and accessories, and clean metal surfaces as described in Section 09900 to receive paint finish.
- C. After completion of plastering work, remove all plaster related debris from work areas and clean any spilled plaster products from building and site areas.
- D. Do not wash out plastering tools and equipment in a fashion that will stain finish surfaces or run off into public drainage courses.

END OF SECTION

**SECTION 09 25 00  
GYPSUM BOARD**

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Gypsum drywall at walls and ceilings.
- B. Gypsum drywall trims and finishing.

1.02 RELATED WORK

- A. Section 06 10 00 - Rough Carpentry
- B. Section 09 20 00 - Lath and Plaster
- C. Section 09 90 00 - Painting

1.03 REFERENCES

- A. Gypsum Association publication GA 216-78r.
- B. ASTM C-36-78.
- C. ASTM C475-64 (R1975).

1.04 SUBMITTALS

- A. Submit product data under provisions of Section 01 30 00.
  - 1. Listed Assemblies: Provide listing number for each rated assembly (fire and acoustic) where products of this Section are to be installed.

1.05 DELIVERY, HANDLING, AND STORAGE

- A. Deliver, handle, and store materials under provisions of Section 01600.
- B. Replace damaged materials at no cost to the Owner.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. United States Gypsum Company.
- B. Gold Bond Products.
- C. Alternate products will be acceptable on the basis of submittals made under provisions of Section 01 30 00.

2.02 STANDARD GYPSUM DRYWALL PANELS

- A. Product Description: USG "Sheetrock" brand.

- B. Abuse resistant gypsum panels at new walls.
- C. Thickness: 5/8 inch at walls and ceilings unless noted otherwise in the Drawings.
- C. Moisture Resistance: use "W/R" panels where panels will experience regular exposure to moisture
- E. Panels rated for use in tested and listed fire-resistive assemblies, USG Firecode C core, or equal.

#### 2.03 FASTENERS

- A. All fasteners shall be of the length and pattern recommended by the manufacturer of the gypsum panels used, required by the rated system, and as indicated on Drawings.

#### 2.04 METAL CORNERBEAD AND TRIM

- A. All metal corner bead, casing bead, and trim, and all accessory items, shall be a system recommended by the manufacturer as compatible with the gypsum panels. Outside corners shall be square.

#### 2.05 JOINT SYSTEM

- A. The joint system, including tape and compounds, shall be a system recommended by the manufacturer as compatible with the gypsum panels.
- B. Only non-shrinking joint compounds are allowed.

#### 2.06 OTHER MATERIALS

- A. All other materials, not specifically described but required for a complete and proper installation of gypsum drywall and compliance with rated assembly criteria, shall be as selected by the Contractor subject to approval by the Architect.

### PART 3.00 - EXECUTION

#### 3.01 INSPECTION

- A. Verify that wall and ceiling surfaces are ready to accept the work of this section in compliance with the reference standards.
- B. Beginning of installation means acceptance of existing conditions.

#### 3.02 INSTALLATION

- A. General installation standards.
  - 1. Install per GA 216 and USG 923 and 927.
  - 2. Place metal corner bead at all exterior corners.
  - 3. Use "L" casing bead where indicated on drawings and wherever gypsum panels abut rather than overlap dissimilar materials; hold molding back 1/8 inch from adjacent surface for sealant.



4. Tape, fill and texture panels to receive the specified finish.

### 3.03 FINISH AND TEXTURES

- A. Unless otherwise required, finish and texture gypsum drywall walls and ceilings as follows:

1. Walls and ceilings: Smooth finish Level 4.

### 3.04 CLEAN UP

- A. Maintain the premises in a neat and orderly condition at all times. Periodically remove all trash, debris, and waste from the work in order to maintain clear and unobstructed access.
- B. In the event of spilling or splashing compound onto other surfaces, immediately remove the spilled or splashed material and all trace of the residue to the approval of the Architect.

END OF SECTION

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**SECTION 09 68 00  
CARPET**

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Preparation of substrate to receive carpeting.
- B. Carpeting, wall base and carpet accessories.

1.02 RELATED WORK

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

1.03 REFERENCES

- A. FS DDD-C-0095 - Carpet and Rugs, Wool, Nylon, Acrylic, Modacrylic, Polyester, Polypropylene.
- B. NBS - Byproducts of combustion.
- C. UM44c – GSA/FHA/HUD Use of Materials Bulletin for characteristics, installation of carpet.

1.04 SUBMITTALS

- A. Submit product data under provisions of Section 01 30 00.
- B. Submit samples under provisions of Section 01 30 00; provide two (2) samples of specified carpet in all specified colors and weaves.
- C. Submit two (2) copies of flame spread certificate for all carpet and related materials to Owner's representative under provisions of Section 01 30 00.
- D. Recycled content: complete listing, type and quantity by weight.

1.05 ENVIRONMENTAL REQUIREMENTS

- A. Do not commence with carpet installation until painting and finishing work is complete and ceilings and overhead work, tested, approved, and completed.
- B. Maintain room temperature at minimum 60 degrees F for at least 24 hours prior to installation, and relative humidity at approximately that at which the area is to be maintained.
- C. Provide lighting adequate for good visibility during installation.

1.06 EXTRA STOCK

- A. Deliver to the Owner extra carpet stock equal to 5% of the total installed carpet area.

PART 2 - PRODUCTS

2.01 CARPET

- A. Acceptable Manufacturers
  - 1. Patcraft.

2. Alternate products may be used if approved on the basis of submittals made under provisions of Section 01 30 00.

B. Carpet Characteristics, CAR-1:

1. Manufacturer/Model: Patcraft Formula EcoWorx 10278.
2. Type: Broadloom
3. Construction: Pattern Loop.
4. Fiber Type: Eco Solution Q® Nylon.
5. Dye Method: 100% Solution Dyed
6. Gauge: 1/10 inch.
7. Stitches per Inch: 11.5.
7. Tufted Pile Height: 3/32-inch low – 7/32-inch high.
9. Tufted Yarn Weight: 24 oz. per square yard.
10. Finished Pile Thickness: 0.124
11. Size: 12-foot
12. Density: 6968
13. Primary Backing: Woven synthetic.
- 14.. Secondary Backing: EcoWorx® Performance Broadloom
15. Total Recycled Content: 29.8%.
16. Radiant Panel Flammability Rating: Class I.
17. NBS Smoke Chamber Test: Maximum Specific Optical Density of 450 or less.
18. Static Propensity: Less than 3.5 KV per AATCC-0134.
19. Indoor Air Quality: Green Label Plus Certified.
20. ADA Compliance: Min. static coefficient of friction of 0.6 for accessible routes.

2.02 ADHESIVE

- A. Carpet Adhesive: Where carpet is direct applied, use only adhesives specifically recommended by the manufacturer for the carpet and substrate and California VOC compliant.

2.03 BASE

- A. Material:
  1. FS SS-W-40 rubber topset coved, 4-inch high, 1/8" thick, 4-foot sections.
  2. Pre-molded external corners of same material, size and color as base.
- B. Manufactures:
  1. Burke
  2. Mannington
  3. Alternate products may be used if approved on the basis of submittals made under provisions of Section 01 30 00.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Clean floors of dust, dirt, solvents, oil, grease, paint, plaster, and other substances detrimental to proper performance of adhesive and carpet. Allow floors to thoroughly dry.
- B. Ensure floors are level, with maximum surface variation of 1/4 inch in 10 feet.
- C. Ensure concrete floors are free from scaling and irregularities and exhibit neutrality relative to acidity and alkalinity.

- D. Beginning of installation means acceptance of substrate.

### 3.02 CARPET INSTALLATION

- A. Check matching of carpet from different containers before beginning layout.
- B. Layout carpet so that any single space will not contain visibly different dye lots.
- C. Install carpet per manufacturer's recommendations, keeping joints between tiles straight and snug.
- D. Vacuum clean substrate just ahead of carpet being laid.
- E. Where applicable, lay carpet on floors with the primary run of the pile in same direction as anticipated traffic.
- F. Use manufacturer's recommended layout option for orientation of individual carpet tiles, unless otherwise directed by the Architect.
- G. Cut and fit carpet neatly around projections through floor and to walls and other vertical surfaces. Maximum allowable separation of carpet edge from vertical surfaces is 1/16 inch.

### 3.03 CLEANUP

- A. Remove excess adhesive from carpet, base, or wall surfaces with manufacturer's recommended remover.
- B. Clean any spots or stains and vacuum all carpet surfaces. Remove scrap carpet and related debris from the job site except for scrap carpet pieces requested by the General Contractor.

END OF SECTION

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**SECTION 09 90 00  
PAINTING**

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Surface preparation.
- B. Exterior and interior surface finishes.
- C. Surface finish schedule.
- D. Finish for stain grade wood veneer doors.
- D. All labor and material necessary for a complete installation of the work of this section whether or not specifically described.

1.02 RELATED WORK

- A. Section 32 17 00 - Pavement Marking
- B. Section 05 50 00 - Metal Fabrications: Shop primed items.
- C. Section 06 10 00 - Rough Carpentry: Field application of preservative treatment.
- D. Section 08 10 00 - Metal Doors and Frames.
- E. Section 09 25 00 - Gypsum Board.

1.03 REFERENCES

- A. ANSI/ASTM D16 - Definitions of Terms Relating to Paint, Varnish, Lacquer, and Related Products.
- B. ASTM D2016 - Test Method for Moisture Content of Wood.
- C. California Green Building Standards Code: VOC requirements for Architectural Coatings

1.04 DEFINITIONS

- A. Conform to ANSI/ASTM D16 for interpretation of terms used in this Section.

1.05 QUALITY ASSURANCE

- A. Product Manufacturer: Company specializing in manufacturing quality paint and finish products with ten years experience.
- B. Applicator: Company specializing in commercial painting and finishing with five years documented experience, approved by product manufacturer.

1.06 SUBMITTALS

- A. Submit product data under provisions of Section 01 30 00.
- B. Provide product data on all finishing products, including full current color selector fans if requested by Architect.

- C. Submit under provisions of Section 01 30 00 two samples brushouts 8 x10 inch in size illustrating range of colors and textures specified for each surface finishing product scheduled.
- D. Submit manufacturer's application instructions under provisions of Section 01 30 00.

1.07 FIELD SAMPLES

- A. Provide samples under provisions of Section 01 30 00.
- B. Provide field sample panel, a minimum of 10 square feet of painted surface, illustrating coating color, texture, and finish, for each coating color when requested by the Architect or Owner's representative.
- C. Locate where directed.
- D. Accepted sample may remain as part of the Work.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site under provisions of Section 01 60 00.
- B. Store and protect products under provisions of Section 01 60 00.
- C. Deliver products to site in sealed and labeled containers; inspect to verify acceptance.
- D. Container labeling to include manufacturer's name, type of paint, brand name, brand code, coverage, surface preparation, drying time, cleanup, color designation, and instructions for mixing and reducing.
- E. Store paint materials at minimum ambient temperature of 45 degrees F (7 degrees C) and a maximum of 90 degrees F (32 degrees C), in well ventilated area, unless required otherwise by manufacturer's instructions.
- F. Take precautionary measures to prevent fire hazards and spontaneous combustion.

1.09 ENVIRONMENTAL REQUIREMENTS

- A. Provide continuous ventilation and heating facilities to maintain surface and ambient temperatures above 45 degrees F (7 degrees C) for 24 hours before, during, and 48 hours after application of finishes, unless required otherwise by manufacturer's instructions.
- B. Do not apply exterior coatings during rain or when relative humidity is above 50 percent, unless required otherwise by manufacturer's instructions.
- C. Minimum Application Temperatures for Latex Paints: 45 degrees F (7 degrees C) for interiors; 50 degrees F (10 degrees C) for exterior; unless required otherwise by manufacturer's instructions.
- D. Minimum Application Temperature for Varnish Finishes: 65 degrees F (18 degrees C) for interior or exterior, unless required otherwise by manufacturer's instructions.
- E. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

1.10 EXTRA STOCK

- A. Provide a one gallon container or 5% of total job amount of each color (whichever is more) to Owner.



- B. Label each container with color, texture, and room locations, in addition to the manufacturer's label.

## PART 2 - PRODUCTS

### 2.01 ACCEPTABLE MANUFACTURERS - PAINT, STAIN, PRIMERS AND SEALERS

- A. Sherwin Williams
- B. Dunn Edwards
- C. Benjamin Moore
- D. Alternate products may be used if approved on the basis of submittals made under the provisions of Section 01 30 00.

### 2.02 MATERIALS

- A. Coatings: Ready mixed, except field catalyzed coatings. Process pigments to a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating.
- B. Coating Application Characteristics: Good flow and brushing properties; capable of drying or curing free of streaks or sags.
- C. Accessory Materials: Linseed oil, shellac, turpentine, paint thinners and other materials not specifically indicated but required to achieve the finishes specified, of commercial quality.

### 2.03 FINISHES

- A. Refer to Materials Schedules for surface finish texture locations; refer to Drawings for color locations.

## PART 3 - EXECUTION

### 3.01 INSPECTION

- A. Verify that substrate conditions are ready to receive work as instructed by the product manufacturer.
- B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.
- C. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
  - 1. Plaster and Gypsum Wallboard: 12 percent.
  - 2. Masonry, Concrete, and Concrete Unit Masonry: 12 percent.
  - 3. Interior Located Wood: 15 percent, measured in accordance with ASTM D2016.
  - 4. Exterior Located Wood: 19 percent, measured in accordance with ASTM D2016.
- D. Beginning of installation means acceptance of existing substrate.

### 3.02 PREPARATION

- A. Remove electrical plates, hardware, light fixture trim, and fittings prior to preparing surfaces or finishing.
- B. Correct minor defects and clean surfaces which affect work of this Section.
- C. Shellac and seal marks which may bleed through surface finishes.
- D. Impervious Surfaces: Remove mildew by scrubbing with solution of tri-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.
- E. Aluminum Surfaces Scheduled for Field Paint Finish: Remove surface contamination by steam or high pressure water. Remove oxidation with acid etch and solvent washing. Apply etching primer immediately following cleaning.
- F. Asphalt, Creosote, or Bituminous Surfaces Scheduled for Paint Finish: Remove foreign particles to permit adhesion of finishing materials. Apply compatible sealer or primer.
- G. Insulated Coverings: Remove dirt, grease, and oil from canvas and cotton.
- H. Concrete Floors: Remove contamination, acid etch, and rinse floors with clear water. Verify required acid-alkali balance is achieved. Allow to dry.
- I. Copper Surfaces Scheduled for a Paint Finish: Remove contamination by steam, high pressure water, or solvent washing. Apply vinyl etch primer immediately following cleaning.
- J. Copper Surfaces Scheduled for a Natural Oxidized Finish: Remove contamination by applying oxidizing solution of copper acetate and ammonium chloride in acetic acid. Rub on repeatedly for required effect. Once attained, rinse surfaces with clear water and allow to dry.
- K. Gypsum Board Surfaces: Latex fill minor defects. Spot prime defects after repair.
- L. Galvanized Surfaces: Remove surface contamination and oils and wash with solvent. Apply coat of etching primer.
- M. Concrete and Unit Masonry Surfaces Scheduled to Receive Paint Finish: Remove dirt, loose mortar, scale, salt or alkali powder, and other foreign matter. Remove oil and grease with a solution of tri-sodium phosphate; rinse well and allow to dry. Remove stains caused by weathering of corroding metals with a solution of sodium metasilicate after thoroughly wetting with water. Allow to dry.
- N. Plaster Surfaces: Fill hairline cracks, small holes, and imperfections with latex patching plaster. Make smooth and flush with adjacent surfaces. Wash and neutralize high alkali surfaces.
- O. Uncoated Steel and Iron Surfaces: Remove grease, scale, dirt, and rust. Where heavy coatings of scale are evident, remove by wire brushing or sandblasting; clean by washing with solvent. Apply a treatment of phosphoric acid solution, ensuring weld joints, bolts, and nuts are similarly cleaned. Spot prime paint after repairs.
- P. Shop Primed Steel Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces.
- Q. Interior Wood Items Scheduled to Receive Paint Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats.

- R. Interior Millwork and Wood Casework Scheduled to Receive Transparent Finish: Remove handling marks or effects of exposure to moisture with a thorough final sanding over all surfaces of the exposed portions, using at least 150 grit or finer sandpaper, and thoroughly clean all surfaces before applying sealer and finish.
- S. Wood Doors:
  - 1. Top and bottom edges of doors and around cutouts shall be sealed with two coats of varnish or sealer before hardware is set into place.
  - 2. Before finishing, remove handling marks and effects of exposure to moisture with a complete and thorough final block sanding over all surfaces of the door using at least 150-grit sandpaper, and cleaned before applying sealer or finish. Steam out deep scratches before sanding, Ease sharp edges by sanding.
- S. Exterior Wood Scheduled to Receive Paint Finish: Remove dust, grit, and foreign matter. Seal knots, pitch streaks, and sappy sections. Fill nail holes with tinted exterior caulking compound after prime coat has been applied.
- T. Wood and Metal Doors Scheduled for Painting: Seal top and bottom edges with primer.

### 3.03 PROTECTION

- A. Protect elements surrounding the work of this Section from damage or disfiguration.
- B. Repair damage to other surfaces caused by work of this Section.
- C. Furnish drop cloths, shields, and protective methods to prevent spray or droppings from disfiguring other surfaces.
- D. Remove empty paint containers from site.

### 3.04 APPLICATION

- A. Apply products in accordance with manufacturer's instructions.
- B. Do not apply finishes to surfaces that are not dry.
- C. Apply each coat to uniform finish.
- D. Apply each coat of paint slightly darker than preceding coat unless otherwise approved.
- E. Sand lightly between coats to achieve required finish.
- F. Allow applied coat to dry before next coat is applied.
- G. Where clear finishes are required, tint fillers to match wood. Work fillers into the grain before set. Wipe excess from surface.
- H. Prime back surfaces of interior and exterior woodwork with primer paint.
- I. Prime back surfaces of interior woodwork scheduled to receive stain or varnish finish with gloss varnish reduced 25 percent with mineral spirits.

### 3.05 FINISHING MECHANICAL AND ELECTRICAL EQUIPMENT

- A. Paint shop primed equipment. Paint shop pre-finished items exposed to view in inhabited areas.

- B. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.
- C. Prime and paint insulated and exposed-to-view pipes, conduit, boxes, insulated and exposed ducts, hangers, brackets, collars and supports.
- D. Replace identification markings on mechanical or electrical equipment when painted accidentally.
- E. Paint exposed conduit and electrical equipment occurring in finished areas.
- F. Paint both sides and edges of plywood backboards for electrical and telephone equipment before installing equipment with fire retardant coating as required by utility companies.
- G. Replace electrical plates, hardware, light fixture trim, and fittings removed prior to finishing.

### 3.06 CLEANING

- A. As Work proceeds, promptly remove paint where spilled, splashed, or spattered.
- B. During progress of Work maintain premises free of unnecessary accumulation of tools, equipment, surplus materials, and debris.
- C. Collect cotton waste, cloths, and material which may constitute a fire hazard, place in closed metal containers and remove daily from site.

### 3.07 MATERIALS SCHEDULE - EXTERIOR SURFACES

- A. Primed or Galvanized Metal Louvers, Fire Alarm Bells and Miscellaneous Metal:
  - 1. Two coats direct to metal acrylic semi-gloss trim paint.
- B. Exposed To View Metal Vacuum Breakers, Check Valves, Post Indicator Valve, Fire Department Connection, Site Plumbing Installations:
  - 1. Two coats industrial enamel paint.
- C. Pre-primed Metal Exterior Doors and Frames:
  - 1. Two coats satin alkyd acrylic latex paint.
- D. Exterior Plaster Surfaces
  - 1. One coat elastomeric primer.
  - 2. One coat high-build, non-textured acrylic elastomeric coating.

### 3.08 MATERIALS SCHEDULE - INTERIOR SURFACES

- A. Painted Interior Doors, Frames, and Unfinished Casework Surfaces:
  - 1. One coat acrylic primer.
  - 2. Two coats semi-gloss alkyd acrylic paint.
- B. Gypsum Board Walls and Ceilings:

1. One coat high solids drywall primer (Sherwin Williams PrepRite ProBlock, or equal). Use vapor retardant primer on exterior walls and ceilings.
  2. Two coats semi-gloss acrylic paint.
- C. Interior Exposed-to-View Concrete Unit Masonry
1. One coat latex block filler/surfacer.
  2. Two coats semi-gloss acrylic paint.
- D. Miscellaneous Metals:
1. One coat acrylic primer.
  2. Two coats semi-gloss alkyd acrylic paint.
- E. Stain Grade Doors, Casework and Trim
1. One coat oil stain.
  2. Two coats clear polyurethane varnish.
- 3.09 COLOR SCHEDULE
- A. Specific color selection information will be provided during construction, after all color related submittals have been made and reviewed by the Architect and the Owner's Representative.

END OF SECTION

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**SECTION 10 20 00  
LOUVERS AND VENTS**

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes fixed, extruded-aluminum louvers.

1.02 RELATED WORK

- A. Division 08 - Louvers in hollow-metal doors and flush wood doors
- B. Division 23 - Louvers that are a part of mechanical equipment

1.03 PERFORMANCE REQUIREMENTS

- A. Design: Design louvers, including comprehensive engineering analysis by a qualified engineer, using structural performance requirements and design criteria indicated.
- B. Structural Performance: Louvers shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated without permanent deformation of louver components, noise or metal fatigue caused by louver blade rattle or flutter, or permanent damage to fasteners and anchors.
- C. Wind Loads: Determine loads based on a uniform pressure of 30 lb./sq. ft. (1435 Pa), acting inward or outward.
- D. Louver Performance Ratings: Provide louvers complying with requirements specified, as demonstrated by testing manufacturer's stock units identical to those provided, except for length and width according to AMCA 500-L.

1.04 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. For louvers specified to bear AMCA seal, include printed catalog pages showing specified models with appropriate AMCA Certified Ratings Seals.
- C. Shop Drawings: For louvers and accessories. Include plans, elevations, sections, details, and attachments to other work. Show frame profiles and blade profiles, angles, and spacing.
- D. Samples: For each type of metal finish required.
- E. Submittal: For louvers indicated to comply with structural performance requirements and design criteria indicated.
- F. Product Test Reports: Based on tests performed according to AMCA 500-L.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Aluminum Extrusions: ASTM B 221M, Alloy 6063-T5.
- B. Aluminum Sheet: ASTM B 209M, Alloy 3003 with temper as required for forming.

- C. Fasteners: Use types and sizes to suit unit installation conditions.
- D. For fastening aluminum, use 300 series stainless-steel fasteners.

## 2.02 FABRICATION, GENERAL

- A. Fabricate frames, including integral sills, to fit in openings of sizes indicated, with allowances made for fabrication and installation tolerances, adjoining material tolerances, and perimeter sealant joints.
- B. Join frame members to each other and to fixed louver blades with fillet welds concealed from view welds, threaded fasteners, or both, as standard with louver manufacturer unless otherwise indicated or size of louver assembly makes bolted connections between frame members necessary.

## 2.03 FIXED EXTRUDED ALUMINUM LOUVERS

- A. Horizontal High Performance Non-drainable Blade Louver:
- B. Basis-of-Design Product: Architectural Louvers; Architectural Louvers - <http://www.archlouvers.com> - phone: 888-568-8371
- C. Model E4KP. Subject to compliance with requirements, provide the specified product or comparable product by one of the following:
- D. Manufacturers of equivalent products submitted and approved in accordance with Section 01 63 00 - Product Options and Substitutions.
- E. Louver Depth: 4 inches (100 mm)
- F. Blade Profile: Plain blade with center baffle.
- G. Frame and Blade Nominal Thickness: Not less than 0.080 inch (2.03 mm).
- H. Louver Performance Ratings:
- I. Free Area: Not less than 9.0 sq. ft. (0.84 sq. m) for 48-inch- (1220-mm-) wide by 48-inch- (1220-mm-) high louver.
- J. Point of Beginning Water Penetration: Not less than 950 fpm (4.8 m/s).
- K. Air Performance: Not more than 0.10-inch wg (25-Pa) static pressure drop at 800 fpm (4.1-m/s) free-area velocity.
- L. AMCA Seal: Mark units with AMCA Certified Ratings Seal.

## 2.04 LOUVER SCREENS

- A. General: Provide screen at each exterior louver.
- B. Louver Screen Frames: Same kind and form of metal as indicated for louver to which screens are attached.
- C. Louver Screening: Same kind of metal as indicated for louver.
- D. Insect Screening: Aluminum, 16 x 18 square mesh, 0.011-inch wire.
- E. Bird Screening: Flattened, expanded aluminum, 3/4 by 0.050 inch (19 by 1.27 mm) thick.

## 2.05 ALUMINUM FINISHES



- . High-Performance Organic Finish: 3-coat fluoropolymer finish complying with AAMA 2605 and containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pre-treat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
- B. Color and Gloss: As selected by Architect from manufacturer's full range.

### PART 3 - EXECUTION

#### 3.01 INSTALLATION

- A. Locate and place louvers and vents level, plumb, and at indicated alignment with adjacent work.
- B. Use concealed anchorages where possible. Provide brass or lead washers fitted to screws where required to protect metal surfaces and to make a weather-tight connection.
- C. Provide perimeter reveals and openings of uniform width for sealants and joint fillers, as indicated.
- D. Repair damaged finishes so no evidence remains of corrective work. Return items that cannot be refinished in the field to the factory and refinish entire unit or provide new units.
- E. Protect galvanized and nonferrous-metal surfaces that will be in contact with concrete, masonry, or dissimilar metals from corrosion and galvanic action by applying a heavy coating of bituminous paint.

END OF SECTION

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**SECTION 10 26 00  
WALL PROTECTION**

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Wall corner protection products.

1.02 REFERENCES

- A. ASTM E84 – Fire Rating.
- B. ASTM F476 – Impact Rating, Corner Guards.

1.03 SUBMITTALS

- A. Submit product data under provisions of Section 01 30 00.
- B. Submit finish/color samples for all specified products.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Arden Architectural Specialties, Inc.
- B. Alternate products may be used if approved on the basis of submittals made under provisions of Section 01300.

2.02 CORNER PROTECTION

- A. Corner Guards: Arden CG-SS Series, with the following characteristics:
  1. Dimensions: 2" x 2" x 72" (unless otherwise indicated on Drawings).
  2. Mounting: Manufacturer's recommended mastic adhesive.
  3. Fire Rating: UL Class 1.
  4. Material: Stainless Steel.
  5. Finish: #4 satin.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Verify backing and finishes are ready to receive the work of this Section.
- B. Beginning of installation means acceptance of existing conditions.

3.02 INSTALLATION

- A. Install wall and corner protection level and plumb.
- B. Secure rigidly in place in accordance with manufacturer's instructions, bracing or taping as necessary to assure items do not move during set-up.

END OF SECTION

**SECTION 10 40 00  
SIGNAGE**

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Site and parking lot signage.
- B. Dimensional letters and numbers.
- C. Exterior and interior door and wall mounted signage.
- D. All labor and materials necessary for a complete installation of the work of this section, whether or not specifically described.

1.02 RELATED WORK

- A. Section 03 30 00 -- Cast-in-Place Concrete
- B. Section 08 10 00 – Metal Doors and Frames
- C. Section 09 10 00 – Lath and Plaster

1.03 SUBMITTALS

- A. Submit shop drawings, product data and materials list under provisions of Section 01 30 00. Include manufacturer's installation instructions.
- B. Indicate on shop drawings all dimensions, thicknesses and mounting details, as well as copies of composited artwork for all painted, screened, or fabricated images.
- C. Accompanying product data and materials list submit one letter and one numeral of each size, and a sample of each type of sign and plaque. Following approval, samples may be installed in the Work.

1.04 DELIVERY, STORAGE AND PROTECTION

- A. Protect products under provisions of Section 01 60 00.
- B. Protect signs and letters prior to and after installation. Repair damage at no additional cost to Owner.

PART 2 - PRODUCTS

2.01 PARKING LOT SIGNS (Fire Lane, Accessible Parking)

- A. Manufacturer: Any
- B. Characteristics:
  - 1. Type: Painted metal; white-on-blue, blue-on-white, black-on-white image per Drawings.
  - 2. Material: Galvanized sheet steel, minimum 18 gage.
  - 3. Depth: 3/4 inch to 1-1/2 inch, based on manufacturer's standard for character size.
  - 4. Mounting: Bolted to galvanized steel pipe.

5. Copy: Refer to Drawings and Morro Bay City requirements.

## 2.02 DIMENSIONAL NUMBERS (Project Address)

- A. Acceptable Manufacturer: Gemini Letters and Signs  
128 South Bolton Street  
Marlborough, MA 01752  
1-800-270-3343
- B. Alternate products may be used if approved on the basis of submittals made under provisions of Section 01 30 00.
- C. Building Face Dimensional Letters, Numbers, and Symbols:
  1. Type: Hollow back cast metal.
  2. Material: Aluminum.
  3. Finish/Color: metallic baked enamel color, as selected by Architect from standard range.
  4. Typeface: Goudy Old Style Bold or approved equivalent as selected by Architect.
  5. Mounting: Flush stud mounted.
  6. Copy / Size:
    - a. "52": 24" tall.

## 2.02 DOOR PLAQUE SIGNS

- A. Acceptable Manufacturer: Best Sign Systems (sales@bestsigns.com).
- B. Alternate products may be used if approved on the basis of submittals made under provisions of Section 01 63 00
- C. Characteristics:
  1. Product: Best HC300 ADA System
  2. Construction: Multi-layer melamine, one-piece construction.
  3. Graphics: Graphic Blast etching, image raised 1/32".
  4. Typeface: Optima Semi Bold, Optima Medium, or approved equivalent, as selected by Architect.
  5. Mounting: Vinyl adhesive tape on door or wall surface
  6. Colors: White on standard color selected by Architect.
  7. Shape: Square corners, 9" x 9" unless otherwise noted.
  8. Copy Size/Position: Per approved shop drawings.
  9. Braille: Grade 2 (contracted) Braille block per CBC.
  10. Location / Copy: Per Drawings and Door Schedule.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces are suitable and installed work of other trades is complete to the point where work of this section may properly proceed.
- B. Beginning of installation means acceptance of existing conditions.

3.02 INSTALLATION

- A. Install all material in accordance with approved shop drawings.
- B. Install all exterior signage attachments in a manner resistant to weather, tampering and vandalism.
- C. Install all signage level, plumb and true to sign edges. Limit deviation from level to 1/8 inch over the length of complete image.
- D. Install cast metal plaque in solid formed podium as detailed, with plaque flat and plumb. Brace or restrain as necessary to prevent movement while adhesive / mounting material cures.

END OF SECTION

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**SECTION 10503  
TURNOUT GEAR LOCKERS**

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Design, fabrication and installation of wall mounted turnout gear lockers as specified herein.

1.02 SUBMITTALS

- A. Product Data: Submit manufacturer's product data and installation instructions.
- B. Shop Drawings: Submit manufacturer's shop drawings for each individual run of lockers.
- C. Samples: Submit manufacturer's standard color samples.
- D. Owner's Manual: Provide maintenance manual at closeout.
- E. Warranty: Submit manufacturer's standard warranty.

1.03 QUALITY ASSURANCE

- A. Manufacturer shall have a minimum of five years experience in the direct manufacture of lockers.
- B. Installer shall have experience in locker installation.

1.04 DELIVERY, STORAGE AND HANDLING

- A. Delivery: Deliver materials to site in manufacturer's original, unopened containers with labels identifying product and manufacturer's name.
- B. Storage: Store materials in a clean dry area.
- C. Handling: Protect materials and finish during installation and handling to prevent damage.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURER

- A. GearGrid Corporation, 670 SW 15<sup>th</sup> Street, Forest Lake, MN 55025. Toll-free 888-643-6694. Phone 651-464-4468. Fax 651-464-4780. Web site [www.geargrid.com](http://www.geargrid.com). Email [sales@geargrid.com](mailto:sales@geargrid.com).
- B. Ready Rack, 818 Trakk Lane, Woodstock, IL, 60098. Toll-free 800-991-2120. Fax: 815-338-8640. Web site: [www.readyrack.com](http://www.readyrack.com).
- C. Gear Grid products are referenced in the drawings and in these specifications to illustrate acceptable configurations, features and accessories of turn out gear lockers. Equivalent products of other manufacturers will be considered in accordance with Sections 01 30 00 and 01 63 00

2.02 TURNOUT GEAR LOCKERS

- A. Model: GEARGRID Wall Mounted Storage System.

- B. Locker Sizes: Jumbo 24": Overall dimension- 74.5" high x 25.25" wide x 20" deep; Clear Opening Width: 22.75"
- C. Construction: Units shall be welded at all applicable joints. Forming of metal shall be completed by standard cold-forming operations. Use of fasteners will only be required to allow for knock-down shipping, securing units to mounting surface and on applicable accessories.
- D. Vertical Dividers:
  - 1. Outer Frames: 1.25" O.D. x 16 gauge wall thickness ASTM A513 steel tubing.
  - 2. Inner Grid: .25" diameter ASTM 510 cold drawn steel wire resistance welded to a 3" square pattern.
- E. Back Panel:
  - 1. Grid: .25" diameter ASTM 510 cold drawn steel wire resistance welded to a 3" square pattern.
- F. Shelves: (1) Upper, (1) Lower. .25" diameter ASTM 510 cold drawn steel wire resistance welded and cold formed. Upper shelf shall include an integrated 20 gauge steel bracket to accept a 2" x 16" name placard, unless doors are selected as an option, in which case the name placard will be integrated into the door.
- G. Apparel Hooks: (3) per locker opening. .192" diameter ASTM 510 cold drawn steel wire resistance welded, cold formed and powder coated. Designed to securely engage onto side or back grid, to prevent unintentional disengagement of hook.

### 2.03 ACCESSORIES

- A. Hang Bar:
  - 1. Tube: 1.25" O.D. x 16 gauge 304 stainless steel tubing.
  - 2. Brackets: Secure attachment device to each vertical divider, powder coated.
- B. Heavy Hanger:
  - 1. 0.25" diameter 304 stainless steel wire cold formed and resistance welded.
  - 2. Black vinyl coating on hook end.
- C. Gear Dryer Hanger:
  - 1. 0.25" diameter 304 stainless steel wire cold formed and resistance welded. Includes formed loops to prop open sleeves on jackets to promote better circulation throughout the garment.
  - 2. Black vinyl coating on hook end.
- D. Glove Drying Hanger:
  - 1. 0.25" diameter 304 stainless steel wire cold formed and resistance welded.
  - 2. Black vinyl coating on hook end.

- E.. Helmet Holder (optional, not recommended when Door with Top Cover option or Top Side Storage option is also selected):
  - 1. 0.25" diameter ASTM 510 cold drawn steel wire resistance welded. Powder coated finish in specified color.
- F. Secure Box:
  - 6" wide x 6" high x 12" deep 6061 Aluminum enclosure with hinged, lockable door at outer end. Design shall include an integrated mail slot. Powder coated finish in specified color.
- G. Top Side Storage:
  - 1. Shelf spanning across the top of the lockers for additional gear storage above lockers. .25" diameter ASTM 510 cold drawn steel wire resistance welded to a 3" square pattern. Powder coated finish in specified color.

#### 2.04 FINISH

- A. General: All system components excluding assembly and mounting hardware and stainless steel components are to receive the standard finish.
- B. Standard Finish: Components to be cleaned using a phosphatized bath, clear water rinse and electro-statically coated with a durable and UV-stable TGIC powder coating process.
- C. Color: Red

#### PART 3 - EXECUTION

##### 3.01 EXAMINATION

- A. Examine area to receive lockers. Notify architect if area are not acceptable. Do not begin installation until unacceptable conditions have been corrected.

##### 3.2 INSTALLATION

- A. Install lockers in accordance with manufacturer's instructions.
- B. Use manufacturer's hardware for assembly.
- C. Anchor to mounting surface with proper hardware.

END OF SECTION

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**21 05 00**  
**COMMON WORK RESULTS FOR FIRE SUPPRESSION**

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Submittals:

1. Product Data: For each type of product indicated.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Seismic-Restraint Loading:

1. Site Class as Defined in the CBC..

2.2 SLEEVES

- A. Mechanical Sleeve Seals: Modular rubber sealing element unit, designed for field assembly, to fill annular space between pipe and sleeve.
- B. Galvanized-Steel Sheet: 0.0239-inch (0.6-mm) minimum thickness; round tube closed with welded longitudinal joint.
- C. Galvanized-Steel Pipe Sleeves: ASTM A 53, Type E, Grade B, Schedule 40, galvanized, plain ends.

2.3 ESCUTCHEONS & FLOOR PLATES

- 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, Stamped-Steel Type: With set screw or spring clips and chrome-plated finish.
- C. Split-Plate, Stamped-Steel Type: With chrome-plated finish, concealed or exposed-rivet hinge, and spring-clip fasteners.
- D. One-Piece Floor Plates: Cast-iron flange with holes for fasteners.
- E. Split-Casting Floor Plates: Cast brass with concealed hinge.

## 2.4 GROUT

- A. Description: ASTM C 1107, Grade B, nonshrink and nonmetallic, dry hydraulic-cement grout.

## 2.5 SEISMIC-RESTRAINT DEVICES

- A. Channel Support System: MFMA-4, shop- or field-fabricated support assembly made of slotted steel channels with accessories for attachment to braced component at one end and to building structure at the other end and other matching components and with corrosion-resistant coating; and rated in tension, compression, and torsion forces.
- B. Resilient Isolation Washers and Bushings: One-piece, molded, oil- and water-resistant neoprene, with a flat washer face and matched to type and size of attachment devices used.
- C. Mechanical Anchor Bolts: Drilled-in and stud-wedge or female-wedge type in zinc-coated steel for interior applications and stainless steel for exterior applications. Select anchor bolts with strength required for anchor and as tested according to ASTM E 488. Minimum length of eight times diameter.
  - 1. Adhesive Anchor Bolts: Drilled-in and capsule anchor system containing polyvinyl or urethane methacrylate-based resin and accelerator, or injected polymer or hybrid mortar adhesive. Provide anchor bolts and hardware with zinc-coated steel for interior applications and stainless steel for exterior applications. Select anchor bolts with strength required for anchor and as tested according to ASTM E 488.

## PART 3 - EXECUTION

### 3.1 GENERAL PIPING INSTALLATIONS

- A. Install piping free of sags and bends.
- B. Install fittings for changes in direction and branch connections.
- C. Sleeves:
  - 1. Install sleeves for piping passing through penetrations in floors, partitions, roofs, and walls.
  - 2. For sleeves that will have sleeve-seal system installed, select sleeves of size large enough to provide 1-inch annular clear space between piping and concrete slabs and walls.
  - 3. Install sleeves in concrete floors, concrete roof slabs, and concrete walls as new slabs and walls are constructed.
- D. Escutcheons & Floor Plates:
  - 1. Install escutcheons for piping penetrations of walls, ceilings, and finished floors.
  - 2. Install escutcheons with ID to closely fit around pipe, tube, and insulation of piping and with OD that completely covers opening.
  - 3. Install floor plates for piping penetrations of equipment-room floors.
  - 4. Install floor plates with ID to closely fit around pipe, tube, and insulation of piping and with OD that completely covers opening.

- E. Install unions at final connection to each piece of equipment.

### 3.2 SEISMIC-RESTRAINT DEVICE INSTALLATION

- A. Piping Restraints:

- 1. Comply with requirements in MSS SP-127 and NFPA 13D.

- B. Install seismic-restraint devices using methods approved by an agency acceptable to authorities having jurisdiction providing required submittals for component.

- C. Install bushing assemblies for anchor bolts, arranged to provide resilient media between anchor bolt and mounting hole in concrete base.

- D. Install bushing assemblies for mounting bolts, arranged to provide resilient media where equipment or equipment-mounting channels are attached to wall.

- E. Attachment to Structure: If specific attachment is not indicated, anchor bracing to structure at flanges of beams, at upper truss chords of bar joists, or at concrete members.

- F. Drilled-in Anchors:

- 1. Do not damage existing reinforcing or embedded items during coring or drilling.
  - 2. Do not drill holes in concrete or masonry until concrete, mortar, or grout has achieved full design strength.
  - 3. Wedge Anchors: Protect threads from damage during anchor installation. Heavy-duty sleeve anchors shall be installed with sleeve fully engaged in the structural element to which anchor is to be fastened.
  - 4. Adhesive Anchors: Clean holes to remove loose material and drilling dust prior to installation of adhesive. Place adhesive in holes proceeding from the bottom of the hole and progressing toward the surface in such a manner as to avoid introduction of air pockets in the adhesive.
  - 5. Set anchors to manufacturer's recommended torque, using a torque wrench.
  - 6. Install zinc-coated steel anchors for interior and stainless-steel anchors for exterior applications

END OF SECTION

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**21 10 00**  
**WATER-BASED FIRE-SUPPRESSION SYSTEMS**

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. Work of this Section modifies and extends the facility's existing NFPA 13D fire sprinkler system to provide coverage for apparatus bay addition. The Owner will make available to bidders the fire sprinkler shop drawings, calculations and sprinkler system component submittals prepared for the existing installation at the time of original construction.

1.2 SECTION REQUIREMENTS

- A. Submittals:
  - 1. Product Data for valves, sprinklers, specialties, and alarms.
  - 2. Submit sprinkler system drawings identified as "working plans" and calculations according to NFPA 13D. Submit required number of sets to authorities having jurisdiction for review, comment, and approval. Include system hydraulic calculations.
  - 3. Submit test reports and certificates as described in NFPA 13D.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Design and Installation Approval: Acceptable to authorities having jurisdiction.
- B. Hydraulically design sprinkler systems according to NFPA 13D.
- C. Comply with NFPA 13D and NFPA 70.
- D. UL-listed and -labeled and FM-approved pipe and fittings.

2.2 PIPE AND FITTINGS

- A. Steel Pipe: ASTM A 53/A 53M, ASTM A 135, or ASTM A 795.
- B. Copper Tube: ASTM B 88, Type L drawn temper.
- C. Cast-Iron Threaded Flanges: ASME B16.1, Class 250, raised ground face, bolt holes spot faced.
- D. Cast-Iron Threaded Fittings: ASME B16.4, Class 250, standard pattern.

- E. Grooved-End Fittings: UL-listed and FM-approved, ASTM A 536, Grade 65-45-12 ductile iron or ASTM A 47 Grade 32510 malleable iron, with grooves or shoulders designed to accept grooved couplings.
- F. Grooved-End Couplings: UL 213, ASTM A 536 ductile-iron or ASTM A 47 malleable-iron housing, with enamel finish. Include gaskets, bolts, and accessories.
- G. Wrought-Copper Fittings: ASME B16.22, streamlined pattern.
- H. Steel Press-Seal Fittings: UL 213, FM approved, 175-psig pressure rating, for use with Schedule 5, plain-end, steel pipe and fittings; with butylene O-rings, and pipe stop.
- I. Provide hangers, supports, and seismic restraints with UL listing and FM approval for fire-protection systems.

### 2.3 VALVES

- A. Fire-Protection Service Valves: UL listed and FM approved, with 175-psig nonshock minimum working-pressure rating. Indicating valves shall be butterfly or ball type, bronze body, and integral indicating device with visual OR 115-V ac, electric, single-circuit supervisory switch or 115-V ac, electric, two-circuit supervisory switch indicator.
- B. Gate Valves: UL 262, cast bronze, solid wedge, outside screw and yoke, rising stem.
- C. Swing Check Valves, NPS 2 and Smaller: UL 312 or MSS SP-80, Class 150; bronze body with bronze disc.
- D. Swing Check Valves, NPS 2-1/2 and Larger: UL 312, cast-iron body and bolted cap, with bronze disc or cast-iron disc with bronze-disc ring.
- E. Alarm Check Valves: UL 193, 175-psig working pressure, designed for horizontal or vertical installation, with cast-iron, bronze grooved seat with O-ring seals, and single-hinge pin and latch design. Include trim sets for bypass, drain, electric sprinkler alarm switch, pressure gages, retarding chamber, fill-line attachment with strainer, and drip cup assembly.
- F. Ball Drip Valves: UL 1726, automatic drain valve, NPS 3/4, ball check device.

### 2.4 SPRINKLERS

- A. Automatic Sprinklers: With heat-responsive element complying with the following:
  - 1. UL 199.
  - 2. UL 1767, for early-suppression, fast-response applications.
- B. Sprinkler Types and Categories: Nominal 1/2-inch orifice for "Ordinary" temperature classification rating unless otherwise indicated or required by application.
- C. Sprinkler types include the following:
  - 1. Upright, pendent, and sidewall sprinklers.
  - 2. Extended coverage sprinklers.
  - 3. Quick-response sprinklers.

4. Pendent and sidewall, dry-type sprinklers.
5. Tamper resistant institutional pendent sprinklers.

- D. Sprinkler Finishes: Chrome-plated.
- E. Sprinkler Escutcheons: Chrome-plated steel, one piece, with finish to match sprinklers.
- F. Sprinkler Cabinets: Finished steel cabinet and hinged cover, with space for minimum of six spare sprinklers plus sprinkler wrench, suitable for wall mounting. Include number of sprinklers required by NFPA 13D and one wrench for sprinklers. Include separate cabinet with sprinklers and wrench for each style sprinkler on Project.

## 2.5 PIPING SPECIALTIES AND ALARM DEVICES

- A. Fire Department Connection: UL 405, flush, wall or yard type, with cast-brass body; NH-standard thread inlets matching local fire department threads.
- B. Water-Motor-Operated Alarms: UL 753, mechanical-operation type with pelton-wheel operator with shaft length, bearings, and sleeve to suit wall construction and 10-inch diameter, cast-aluminum alarm gong with red-enamel factory finish. Include NPS 3/4 inlet and NPS 1 drain connections.
- C. Water-Flow Indicators: UL 346; electrical-supervision, vane-type water-flow detector; with 250-psig pressure rating; and designed for horizontal or vertical installation. Include two single-pole, double-throw, circuit switches for isolated alarm and auxiliary contacts, 7 A, 125-V ac and 0.25 A, 24-V dc; complete with factory-set, field-adjustable retard element to prevent false signals and tamperproof cover that sends signal if removed.
- D. Pressure Switches: UL 753; electrical-supervision-type, water-flow switch with retard feature. Include single-pole, double-throw, normally closed contacts and design that operates on rising pressure and signals water flow.
- E. Valve Supervisory Switches: UL 753; electrical; single-pole, double throw; with normally closed contacts. Include design that signals controlled valve is in other than fully open position.
- F. Pressure Gages: UL 393, 3-1/2- to 4-1/2-inch diameter dial with dial range of 0 to 250 psig.

## PART 3 - EXECUTION

### 3.1 EARTHWORK

- A. Comply with requirements in Section 31 00 00 "Earthwork" for excavating, trenching, and backfilling

### 3.2 SERVICE-ENTRANCE PIPING

- A. Water-Main Connection: Arrange with water utility company for tap of size and in location indicated in water main.

- B. Water-Main Connection: Tap water main according to requirements of water utility company and of size and in location indicated.
- C. Connect sprinkler piping to water-service piping for service entrance to building.
- D. Install shutoff valve, backflow preventer, pressure gage, drain, and other accessories indicated at connection to water-service piping
- E. Install shutoff valve, check valve, pressure gage, and drain at connection to water service.

### 3.3 PIPING INSTALLATION

- A. Install "Inspector's Test Connections" in sprinkler piping, complete with shutoff valve.
- B. Install sprinkler zone control valves, test assemblies, and drain headers adjacent to standpipes.
- C. Install ball drip valves to drain piping between fire department connections and check valves. Drain to floor drain or outside building.
- D. Install alarm devices in piping systems and connect to fire-alarm system. Alarm bell location subject to Architects approval.
- E. Protect piping from earthquake damage as required by NFPA 13D.
- F. Install pressure gages on riser or feed main, at each sprinkler test connection, and at top of each standpipe. Install gages to permit removal, and install where they will not be subject to freezing.
- G. Install fire-protection service valves supervised-open, located to control sources of water supply except from fire department connections. Where there is more than one control valve, provide permanently marked identification signs indicating portion of system controlled by each valve.
- H. Install check valve in each water supply connection. Install backflow preventers in potable-water supply sources.
- I. Install alarm check valves for proper direction of flow, including bypass check valve and retard chamber drain line connection.

### 3.4 ALARM BELL INSTALLATION

- A. Alarm bell shall only be installed in a location approved in advance by the Architect.
- B. Confirm that alarm bell is mounted in a location meeting NFPA 72 sound level requirements at exterior building areas.

### 3.5 SPRINKLER SCHEDULE

- A. Offices and staff spaces: flush pendent like Tyco TY-QRF.
- B. Storage, utility spaces: standard pendent like Tyco TY-B.

- C. Holding cells and detention processing: institutional pendent like Tyco TFP-PH2.

### 3.6 PIPING SCHEDULE

- A. Use steel pipe with threaded, press-seal, roll-grooved, or cut-grooved joints.
  - 1. For steel pipe joined by threaded fittings, use Schedule 40.
  - 2. For steel pipe joined by welding or roll-grooved pipe and fittings, use Schedule 10.
  - 3. For steel pipe NPS 2 and smaller, joined by press-seal fittings, use Schedule 5 pipe, fabricated with manufacturer's press-seal tools.
- B. Use copper tube with wrought-copper fittings and brazed joints.
- C. Pipe between Fire Department Connections and Check Valves: Use galvanized-steel pipe with flanged or threaded joints.
- D. Install shutoff valve, backflow preventer, pressure gage, drain, and other accessories indicated at connection to water service piping.

### 3.7 TESTING

- A. Flush, test, and inspect sprinkler piping systems according to NFPA 13D.

END OF SECTION

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**SECTION 21 40 00  
FIRE PROTECTION WATER STORAGE TANKS**

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This specification covers the furnishing of all labor, material, equipment, tools, services and erection of two 10,000 gallon (nominal), Factory Powder Coated Bolted Steel fire water storage tanks, as manufactured by Darrel Thompson Tank, Bakersfield, CA; Superior Tank Co., Inc., Rancho Cucamonga, CA, United Industries Group, Newport Beach, CA, Central Valley Tank, Fresno CA or an approved equal, and as shown on the plans and specified herein.
- B. The bolted steel tank shall conform to the requirements of AWWA D103-09 and NFPA 22 - Standards for Water Tanks for Private Fire Protection, Current Edition.

1.2 DESIGN CRITERIA

- A. Design loads: The reservoir structure shall be designed in accordance with the following:

1. Minimum capacity	10,000 gallons (nominal)
2. Inside diameter	14-foot +/-
3. Tank height	10-foot +/-
4. Seismic Design Parameters:	
a. Seismic Risk Category	IV
b. $I_E$	1.5
c. Site Class (Soil)	C
d. $S_s$	1.50g
e. $S_1$	0.546g
f. $F_a$	1.00
g. $F_v$	1.30
h. $S_{DS}$	1.00g
i. $S_{DI}$	0.474
5. Specific Gravity of contents	1.0
6. Wind load	115 mph, Exposure Category C
7. Deck load	20 psf
8. Allowable Soil Bearing	1,000 psf
9. Design standard	AWWA D103-09 and NFPA 22

### 1.3 SUBMITTALS

- A. As specified in Section 01 33 00.
- B. Shop Drawings: Submit shop drawings of the bolted steel reservoir and all accessories for review and approval by the Architect prior to beginning any related shop fabrication or erection. Include sufficient data to show that the reservoir and accessories conform to the requirements to these Specifications.
- C. Submittals shall include:
  - 1. Complete structural calculations, including forces that must be resisted by the foundation, maximum tension, compression and shear at each anchor bolt or embedded plate, maximum and allowable stresses for bolted steel shell, floor, and roof. The tank shall be designed using rational methods in accordance with accepted engineering practice. Calculations shall be stamped and signed by a civil or structural engineer currently registered in the State of California.
  - 2. Detailed fabrication and erection drawings and details for the tank and all accessories. Include drawings for all shell, roof and floor penetrations and bolt holes for mounting accessories.
  - 3. Submit tank manufacturer's erection manual.
  - 4. Certified mill tests on steel plate and structural members demonstrating that the physical and chemical requirements of this Specification have been met.
  - 5. Submit manufacturer's certificate of compliance with NSF Standard 61.
  - 6. Submit product data and material safety data for sealant and repair materials to be used.
  - 7. Submit foundation design.
  - 8. Submit Seismic Anchor Design.
  - 9. Quantify the amount of recycle steel in the tank assemblies by weight.

### 1.4 QUALIFICATIONS OF TANK MANUFACTURER AND INSTALLER

- A. The manufacturer and installer shall have five years' experience and be a specialist in the design, fabrication, and erection of factory powder coated bolted steel tanks and appurtenances. Tank erection shall be supervised by tank manufacturer trained personnel.
- B. Provide a list of at least five (5) tanks presently in fire protection water storage service designed to AWWA D103-09 or -97 and NFPA 22 standards, of equal or greater size, operating satisfactory for a minimum of five (5) years, including telephone number of Contracting Officer.

### 1.5 PRODUCT HANDLING

- A. Packaging: All plates, members and miscellaneous parts shall be packaged for shipment in such a fashion as to prevent abrasion, scratching or marring of the finished coating. Upon arrival at the job site, the shipment will be inspected by the County's Representative and any damaged parts will be rejected.
- B. Storage: Adequately support materials to prevent warpage and other damage. Do not store directly on the ground and protect from the weather.



1.6 CLOSEOUT SUBMITTALS

- A. As specified in Sections 01 30 00 and 01 70 00
- B. Submit material list and manufacturer's operation and maintenance data for field inspection and repair of coatings and all accessories.

1.7 WARRANTY

- A. The tank manufacturer shall warrant the tank against any defects in workmanship and materials for a period of one (1) year from the date of project acceptance. In the event any such defect should appear, it should be reported in writing to the manufacturer during the warranty period.

PART 2 - GENERAL

2.1 TANK

- A. The Manufacturer shall furnish, erect and test the tank, as required by AWWA D103-09 and NFPA 22. The Manufacturer shall be completely responsible for the construction and satisfactory performance of the tank during the guarantee period. The tank shall conform to AWWA D103-09 and NFPA 22, to the latest edition California Building Code, and to the requirements of the plans and these Specifications. The supplier shall submit for approval complete and detailed plans for the tank and appurtenances.
- B. The Factory Powder Coated, bolted steel tank shall have a cone roof, sloped to drain toward the shell. Provide the reservoir complete with all pipe connections, access openings, nozzles, taps, drains, ladders, vent, and other accessories as shown on the plans or required herein.
- C. Tank shell sheets shall have mild strength per ASTM A607, Grade 30 and high strength per ASTM A607, Grade 50. Manufacture double bolt line such that holes are vertically staggered and no two holes are in line horizontally. All shell penetrations and bolt holes for mounting of accessories shall be factory fabricated after surface preparation and prior to cleaning. Contractor shall furnish one spare sheet of each size and type. If these sheets are not incorporated, they and any other rejected materials shall remain the property of the Contractor and must be removed from the site and the Park prior to final acceptance of the work. Sheet edges of sidewall and floor plates shall be mechanically rounded.

2.2 ROLLED STEEL STRUCTURAL SHAPES

- A. Material shall conform to AWWA D103-09, Section 2.5 and ASTM A36 or ASTM A992 and NFPA 22.

2.3 BOLT FASTENERS

- A. Bolts used in tank lap joints shall be ½ inch – 13 UNC-2A tolled thread, and meet the minimum requirements of ANSI/AWWA D103-09, Section 2.2. and NFPA 22.
- B. Bolt Material:
- C. Surface Preparation:
  - 1. SAE Grade 2: Tensile strength – 74 ksi minimum; proof load – 55 ksi minimum; allowable shear stress – 18, 164 psi.

2. SAE Grade 5/ASTM A325 (1 ¼" bolt length): Tensile strength – 120,000 psi min; proof load – 85,000 psi min; allowable shear stress with threads excluded from the shear plane – 29,454 psi min.
  3. SAE Grade 8/ASTM A490 (> 1 ¼" bolt length): Tensile strength – 150,000 psi min; proof load – 120,000 psi min; allowable shear stress with threads excluded from the shear plane – 36,818 psi min.
  4. ASTM A490-REV A-92: Tensile strength 150 ksi minimum; proof load 120 ksi minimum; allowable shear stress – 36,818 psi.
  5. Bolt Finish: Zinc Plate: 0.0003-inch minimum under bolt head; 0.0003- inch minimum on shank; 0.0007-inch on last five threads; irridite #3 bronze color coat.
  6. Bolts shall include a minimum of four splines on the underside of the bolt head at the shank to resist rotation during torquing. Bolt lengths shall be sized as to achieve a neat and uniform appearance. Excessive threads extending beyond the nut after torquing will not be permitted.
- D. Bolt Head Encapsulation: High impact co-polymer encapsulation of entire bolt head up to shank; natural resin only, color ingredients to be added such that color shall appear same color as tank.
- E. Exterior exposed nut, washer and bolt thread cover, same color as tank.
- F. All lap joint bolts shall be properly selected such that threaded portions of the bolt will not be exposed to the "shear plane" between tank sheets.

#### 2.4 SEALANTS

- A. Lap Joint Sealant: Shall be a one component polyurethane compound. The sealant shall cure to a rubber-like consistency having excellent adhesion to the glass coating, low shrinkage and a minimum life of 20 years when subject to exterior exposures. Sealant curing rate at 73 degrees F/50% relative humidity: tack free – six to eight hours; final cure: 10-12 days. The sealant shall be a one component, moisture cured, polyurethane compound. Neoprene gaskets and tape sealer shall not be used.
- B. Floor: Polyethylene copolymer caps and sealant shall be used to cover the bolts, nuts and washers exposed on the inside of the floor.

#### 2.5 ROOF

- A. Tank roof shall be radially sectioned roof fabricated from powder-coated, bolted steel panels, as produced by tank manufacturer, and shall be assembled in a similar manner as the sidewall panels utilizing the same sealant and bolting techniques, so as to assure a weather/air tight assembly. The roof shall be clear-span and self-supporting. Both live and dead loads shall be carried by tank walls. The roof shall be of a rolled knuckle design with no rolled angle connection between sidewall and roof panels.
- B. Materials: All alloys shall be high quality marine grade aluminum.
1. Triangulated dome frame struts: AA6005A-T6 aluminum.
  2. Structural frame node plates: 0.375" nominal thickness, AA6061-T6 aluminum.
  3. Triangular dome panels: 0.050" nominal thickness, AA3003-H16 aluminum sheet.

4. Triangular skylight panels (if specified); nominal thickness of ¼" thick clear acrylic or polycarbonate.
  5. Perimeter tension/compression ring: AA6005A-T6 aluminum.
  6. Fasteners: AA2024-T4 aluminum or austenitic series 300 stainless steel as required by the manufacturer's design.
  7. Sealant: Silicone conforming to Federal Specification TT-S-00230.
  8. Gaskets: Silicone conforming to Federal Specification ZZ-R-765, Class 2, Grade 50 or equal or neoprene conforming to ASTM C509-00.
  9. Dormers, doors, and hatches: AA6061-T6, AA6005A-T6, AA5086-H34 or AA5052-H36 aluminum, 0.090" nominal thickness.
- C. Roof Access Hatch: Minimum opening size, 24 inch clear. Hatch shall be hinged and have a hasp for locking. Hasp shall be stainless steel. Frame shall have bolted connection to tank roof structure with water tight seal.

## 2.6 ROOF VENT

- A. A 12 inch minimum screened vent shall be provided on the roof. The vent shall be fabricated to provide removable screened openings between the vertical support members of the vent. The screened openings of the vent shall be sized by the manufacturer to all venting of a 300 gpm pumping rate. An effective area of 75% of screen opening shall be assumed. The screen shall consist of one layer of Type 316 stainless steel: 16 x 16 x 0.018 wire mesh insect screen.
- B. The tank roof shall have a curbed, upward opening 24-inches square, minimum hatch located near the ladder. The curb shall extend at least 4 inches above the tank. The hatch cover shall be hinged and shall have locking provisions. The hatch cover lip shall extend for a distance of 2-inches down on the outside of the curb.

## 2.7 TANK ACCESSORIES

- A. 1 – 24" shell manhole: Provide a 24", minimum, hinged shell manhole located as shown on the drawings. The center of the manhole shall be located 30 inches above the bottom of the tank.
- B. 1 – 4" outlet nozzle.
- C. 1 – 4" inlet nozzle.
- D. 1 – 4" drain nozzle
- E. 1 – 4" overflow with downcomer – steel internal and external overflow pipe and supports. Overflow pipe assembly shall be powder epoxy lined and coated.
- F. Ladder – Provide a galvanized steel welded exterior ladder with backguard as shown on the plans. The ladder shall have a lockable closure at the bottom.
- G. Identification Plate: Manufacturer's nameplate shall list the tank serial number, tank diameter and height, and maximum design capacity.
- H. 1 – liquid level indicator with gauge board. Superior Tank Model #2400, or equal, with Type 316 stainless steel internals and complete with float and target board assembly.

## 2.8 SPARE SHELL SHEETS

- A. Contractor shall furnish one spare shell sheet. Spare sheet shall be sized for the first chime or ring. If it is not incorporated in the construction, it and any rejected sheets shall remain the property of the Contractor and shall be removed from the park prior to final acceptance of the work.

## PART 3 - EXECUTION

### 3.1 TANK SITE EXCAVATION AND GRADING

- A. Per Section 312000.

### 3.2 FOUNDATION

- A. Construct in accordance with manufacturer's recommendations.
- B. Prepare subgrade in accordance with Section 31 00 00 including the portions of the appended geotechnical engineering report(s) incorporated the Contract Documents by reference.

### 3.3 PROTECTIVE COATING

- A. General: All metal plates, supports, members and miscellaneous parts, except bolts, shall be Factory Powder Coated in accordance with AWWA D103, Section 10.6 and this Section. Field coating, other than touch-up, will not be permitted.
- B. Surface Preparation:
  - 1. Prior to application of coating, all metal plate, supports, members and miscellaneous parts, other than fasteners shall be thoroughly cleaned by a hot-rinse wash process followed immediately by hot air drying.
  - 2. All steel surfaces shall be sandblasted to equivalent of a SP 6 commercial blast metal finish. The surface anchor pattern shall be no less than 1.5 mils.
  - 3. All steel surfaces shall receive an iron phosphate coating applied with a power spray washer with not less than 25 psi pressure, followed by a warm water rinse and by an acidulated sealant. Then spray a final deionized water rinse to prevent rusting prior to the powder coating application.
  - 4. All steel surfaces shall drip dry for seven (7) minutes prior to entering the dry off oven for eight (8) minutes at 425 degrees F.
- C. Coating:
  - 1. All interior steel surfaces, support members and miscellaneous parts shall receive 5 mils minimum average dry film thickness using Dupont "Tank Tan" (an NSF 61 approved, Thermal Set Epoxy Powder Coating).
  - 2. All exterior steel surfaces, support members and miscellaneous parts shall receive 3 mils minimum average dry film thickness using Dupont "Superior Sand" (a Thermal Set TGIC-Polyester Powder Coating).
  - 3. All exterior surfaces shall be colored "Butler-Cote Sandalwood" or similar.

### 3.4 CONSTRUCTION

- A. Field erection of Factory Powder Coated bolted steel tanks shall be in strict compliance with manufacturer's recommendations and performed by manufacturer's employees or certified erection crew to alleviate any potential disputes in coating quality or erection thereof. Particular care shall be exercised in handling and bolting of the tank plates, supports, and members to avoid abrasion or scratching the coating. Prior to placing water in the tank, a "holiday" inspection of the entire tank, corners included, will be provided and performed by the manufacturer in the presence of the County's Representative. Touch-up coating shall be done per the manufacturer's recommendations where needed and as directed.

### 3.5 CLEANING

- A. General: Cleaning shall not take place until sealant has fully cured. All inside surfaces below the high water level will be inspected by the County's Representative prior to chlorination and leakage testing; touch-up shall be done as directed.
- B. Cleaning: Remove all tools, rags and any other material not part of the structure or its accessories from the reservoir interior. Thoroughly clean interior surfaces or the shell floor and accessories of the reservoir using a high pressure water jet, sweeping, scrubbing or other equally effective means. Discharge or otherwise remove all water, dirt and foreign material, accumulated in the cleaning operation from the tank. Dispose as directed by County's Representative

### 3.6 LEAKAGE TESTING

- A. Retention of the chlorine solution for a 24-hour period during disinfection will also constitute the tank leakage test. Repair any leaks disclosed in the test, and repeat the required test for leakage. After the holding period, purge all highly chlorinated water from the drain piping. Subject to satisfactory bacteriological sampling and testing, acceptable aesthetic quality, and adjustment of free chlorine residual to a concentration of not more than two parts per million (2 mg/l), the tank may be put into service.

### 3.7 ANNIVERSARY INSPECTION

- A. On or before the one year anniversary date of final acceptance of the tanks, the Contractor shall arrange for the manufacturer's factory trained representative to make a visual inspection of the reservoir interior coatings and accessories, and the immediate area surrounding the reservoirs and shall notify the County's Representative at least ten working days prior to the scheduled date of the inspection. The County's Representative will be present during the inspection. A written summary of this inspection shall be filed with the County's Representative.

END OF SECTION

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**22 05 00  
COMMON WORK RESULTS FOR PLUMBING**

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Submittals:

1. Reference Division 1 "Submittals"
2. Product Data: For each type of product indicated.
3. Hangers and Supports:
  - a. Shop Drawings: Signed and sealed by a qualified professional engineer.
  - b. Welding certificates.
  - c. Structural Steel Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
  - d. Pipe Welding Qualifications: Qualify procedures and operators according to ASME Boiler and Pressure Vessel Code.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Hangers and Supports for Plumbing Piping Equipment:

1. Structural Performance: Hangers and supports shall withstand the effects of gravity loads and stresses within limits and under conditions indicated according to ASCE/SEI 7.
  - a. Design supports for multiple pipes capable of supporting combined weight of supported systems, and system contents.
  - b. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.
  - c. Design seismic-restraint hangers and supports for piping and equipment and obtain approval from authorities having jurisdiction.

2.2 SLEEVES AND SLEEVE SEALS

- A. Galvanized-Steel-Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, zinc coated, with plain ends.
- B. PVC-Pipe Sleeves: ASTM D 1785, Schedule 40.
- C. Galvanized-Steel-Sheet Sleeves: 0.0239-inch (0.6-mm) minimum thickness; round tube closed with welded longitudinal joint.
- D. Modular sealing-element unit, designed for field assembly, for filling annular space between piping and sleeve.

1. Sealing Elements: EPDM-rubber or NBR interlocking links shaped to fit surface of pipe. Include type and number required for pipe material and size of pipe.
2. Pressure Plates: Stainless steel.
3. Connecting Bolts and Nuts: Stainless steel of length required to secure pressure plates to sealing elements.

### 2.3 GROUT

- A. Standard: ASTM C 1107/C 1107M, Grade B, post-hardening and volume-adjusting, dry, hydraulic-cement grout.
1. Characteristics: Nonshrink; recommended for interior and exterior applications.
  2. Design Mix: 5000-psi (34.5-MPa), 28-day compressive strength.
  3. Packaging: Premixed and factory packaged.

### 2.4 ESCUTCHEONS AND FLOOR PLATES

- A. One-Piece, Deep-Pattern Type: Deep-drawn, box-shaped brass with chrome-plated finish and spring-clip fasteners.
- B. One-Piece, Stamped-Steel Type: With chrome-plated finish and spring-clip fasteners.
- C. One-Piece Floor Plates: Cast-iron flange with holes for fasteners.

### 2.5 PRESSURE GAGES AND TEST PLUGS

- A. Direct-Mounted, Metal-Case, Dial-Type Pressure Gages:
1. Standard: ASME B40.100.
  2. Case: Sealed Solid-front, pressure relief, cast aluminum or drawn steel 4-1/2-inch (114-mm) nominal diameter.
  3. Movement: Mechanical, with link to pressure element and connection to pointer.
  4. Dial: Nonreflective aluminum with permanently etched scale markings graduated in psi (kPa).
  5. Pointer: Dark-colored metal.
  6. Window: Plastic.
  7. Ring: Metal.
  8. Accuracy: Grade B, plus or minus 2 percent of middle half of scale range.
- B. Test Plug: Corrosion-resistant brass or stainless-steel body with two self-sealing rubber core inserts and gasketed and threaded cap, with extended stem for units to be installed in insulated piping. Minimum pressure and temperature rating 500 psig at 200 deg F (3450 kPa at 93 deg C).

### 2.6 HANGERS AND SUPPORTS FOR PLUMBING PIPING EQUIPMENT

- A. Carbon-Steel Pipe Hangers and Supports:
1. Description: MSS SP-58, Types 1 through 58, factory-fabricated components.
  2. Galvanized Metallic Coatings: Pregalvanized or hot dipped.



3. Nonmetallic Coatings: Plastic coating, jacket, or liner.
4. Padded Hangers: Hanger with fiberglass or other pipe insulation pad or cushion to support bearing surface of piping.
5. Hanger Rods: Continuous-thread rod, nuts, and washer made of carbon steel.

B. Copper Pipe Hangers:

1. Description: MSS SP-58, Types 1 through 58, copper-coated-steel, factory-fabricated components.
2. Hanger Rods: Continuous-thread rod, nuts, and washer made of copper-coated steel.

C. Fastener Systems:

1. Verify suitability of fasteners in this article for use in lightweight concrete or concrete slabs less than 4 inches (100 mm) thick.
2. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.
3. Mechanical-Expansion Anchors: Insert-wedge-type, stainless steel anchors, for use in hardened portland cement concrete; with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

D. Miscellaneous Materials:

1. Structural Steel: ASTM A 36/A 36M, carbon-steel plates, shapes, and bars; black and galvanized.
2. Grout: ASTM C 1107, factory-mixed and -packaged, dry, hydraulic-cement, nonshrink and nonmetallic grout; suitable for interior and exterior applications.
  - a. Properties: Nonstaining, noncorrosive, and nongaseous.  
Design Mix: 5000-psi (34.5-MPa), 28-day compressive strength.

## PART 3 - EXECUTION

### 3.1 GENERAL PIPING INSTALLATIONS

- A. Install piping free of sags and bends.
- B. Install fittings for changes in direction and branch connections.
- C. Sleeves:
  1. Install sleeves for piping passing through penetrations in floors, partitions, roofs, and walls.
  2. Install sleeves in concrete floors, concrete roof slabs, and concrete walls as new slabs and walls are constructed.
    - a. Using grout, seal the space outside of sleeves in slabs and walls without sleeve-seal system.
  3. Install sleeves for pipes passing through interior partitions.

4. Fire-Barrier Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at pipe penetrations. Seal pipe penetrations with firestop materials. Comply with requirements for firestopping specified in Section 078413 "Penetration Firestopping."

D. Sleeve-Seal-System Installation:

1. Install sleeve-seal systems in sleeves in exterior concrete walls and slabs-on-grade at service piping entries into building.
2. Select type, size, and number of sealing elements required for piping material and size and for sleeve ID or hole size. Position piping in center of sleeve. Center piping in penetration, assemble sleeve-seal system components, and install in annular space between piping and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make a watertight seal.

E. Escutcheons and Floor Plates:

1. Install escutcheons for piping penetrations of walls, ceilings, and finished floors.
2. Install escutcheons with ID to closely fit around pipe, tube, and insulation of piping and with OD that completely covers opening.
3. Install floor plates for piping penetrations of equipment-room floors.
4. Install floor plates with ID to closely fit around pipe, tube, and insulation of piping and with OD that completely covers opening.

F. Meters and Gages:

1. Install direct-mounted pressure gages in piping tees with pressure gage located on pipe at the most readable position.
2. Install meters and gages adjacent to machines and equipment to allow service and maintenance of meters, gages, machines, and equipment.
3. Adjust faces of meters and gages to proper angle for best visibility.

G. Install unions at final connection to each piece of equipment.

H. Install dielectric unions and flanges to connect piping materials of dissimilar metals in gas piping.

I. Install dielectric coupling and nipple fittings to connect piping materials of dissimilar metals in water piping.

### 3.2 HANGERS AND SUPPORTS

A. Comply with MSS SP-69 and MSS SP-89. Install building attachments within concrete or to structural steel.

B. Install hangers and supports to allow controlled thermal and seismic movement of piping systems.

C. Install powder-actuated fasteners and mechanical-expansion anchors in concrete after concrete is cured. Do not use in lightweight concrete or in slabs less than 4 inches thick.

D. Load Distribution: Install hangers and supports so piping live and dead loading and stresses from movement will not be transmitted to connected equipment.

- E. Horizontal-Piping Hangers and Supports: Unless otherwise indicated and except as specified in piping system Specification Sections, install the following types:
1. Adjustable Steel Clevis Hangers (MSS Type 1): For suspension of noninsulated or insulated stationary pipes, NPS 1/2 to NPS 30 (DN 15 to DN 750).
  2. Pipe Hangers (MSS Type 5): For suspension of pipes, NPS 1/2 to NPS 4 (DN 15 to DN 100), to allow off-center closure for hanger installation before pipe erection.
  3. Adjustable Steel Band Hangers (MSS Type 7): For suspension of noninsulated stationary pipes, NPS 1/2 to NPS 8 (DN 15 to DN 200).
  4. Adjustable Band Hangers (MSS Type 9): For suspension of noninsulated stationary pipes, NPS 1/2 to NPS 8 (DN 15 to DN 200).
  5. Adjustable Swivel-Ring Band Hangers (MSS Type 10): For suspension of noninsulated stationary pipes, NPS 1/2 to NPS 2 (DN 15 to DN 50).
- F. Vertical-Piping Clamps: Unless otherwise indicated and except as specified in piping system Specification Sections, install the following types:
1. Extension Pipe or Riser Clamps (MSS Type 8): For support of pipe risers, NPS 3/4 to NPS 20 (DN 20 to DN 500).
  2. Carbon- or Alloy-Steel Riser Clamps (MSS Type 42): For support of pipe risers, NPS 3/4 to NPS 20 (DN 20 to DN 500), if longer ends are required for riser clamps.

### 3.3 GENERAL EQUIPMENT INSTALLATIONS

- A. Install equipment to allow maximum possible headroom unless specific mounting heights are not indicated.
- B. Install equipment level and plumb, parallel and perpendicular to other building systems and components, unless otherwise indicated.
- C. Install mechanical equipment to facilitate service, maintenance, and repair or replacement of components. Connect equipment for ease of disconnecting, with minimum interference to other installations. Extend grease fittings to accessible locations.
- D. Install equipment to allow right of way for piping installed at required slope.

END OF SECTION

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**22 05 23**  
**GENERAL-DUTY VALVES FOR PLUMBING PIPING**

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Submittals:

1. Reference Division 1 "Submittals"
2. Product Data: For each type of product indicated.

PART 2 - PRODUCTS

2.1 SYSTEM DESCRIPTION

- A. ASME Compliance: ASME B16.10 and ASME B16.34 for ferrous valve dimensions and design criteria.
- B. NSF Compliance: NSF 61 for valve materials for potable-water service.

2.2 GENERAL-DUTY LEAD FREE VALVES

- A. Valve Sizes: Same as upstream piping unless otherwise indicated.
- B. Valves in Insulated Piping: With 2-inch (50-mm) stem extensions.
- C. End Connections: Threads shall comply with ANSI B1.20.1. Flanges shall comply with ANSI B16.1 for cast-iron valves and with ANSI B16.24 for bronze valves. Solder-joint connections shall comply with ANSI B16.18.
- D. Two-Piece, Copper-Alloy Ball Valves: Bronze body with full -port, chrome-plated bronze ball; PTFE seats; and 600-psig (4140-kPa)] minimum CWP rating and blowout-proof stem.
- E. Bronze, Swing Check Valves: Class 125, bronze body with bronze disc and seat.
- F. Bronze Gate Valves: Class 125, bronze body with nonrising stem and bronze solid wedge and union-ring bonnet.
- G. Cast-Iron Gate Valves: Class 125, OS&Y cast-iron body and solid-wedge disc.
- H. Bronze Globe Valves: Class 125, bronze body with bronze disc and union-ring bonnet.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Use gate and ball valves for shutoff duty; globe and ball for throttling duty.
- B. Locate valves for easy access and provide separate support where necessary.
- C. Install valves for each fixture and item of equipment.
- D. Install three-valve bypass around each pressure-reducing valve using throttling-type valves.
- E. Install valves in horizontal piping with stem at or above center of pipe.
- F. Install valves in a position to allow full stem movement.
- G. Install check valves for proper direction of flow in horizontal position with hinge pin level.

END OF SECTION

**22 07 00**  
**PLUMBING INSULATION**

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Submittals:

1. Reference Division 1 "Submittals"
2. Product Data: For each type of product indicated.
3. For adhesives and sealants, documentation including printed statement of VOC content and chemical components.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Insulation Installed Indoors: Flame-spread index of 25 or less, and smoke-developed index of 50 or less according to ASTM E 84.
- B. Insulation Installed Outdoors: Flame-spread index of 75 or less, and smoke-developed index of 150 or less according to ASTM E 84.

2.2 INSULATION MATERIALS

- A. Foam insulation materials shall not use CFC or HCFC blowing agents in the manufacturing process.
- B. Flexible Elastomeric: Closed-cell, sponge- or expanded-rubber materials. Comply with ASTM C 534, Type I for tubular materials and Type II for sheet materials.
- C. Mineral-Fiber Blanket Insulation: Comply with ASTM C 553, Type II and ASTM C 1290, Type I.
- D. Mineral-Fiber, Preformed Pipe Insulation: Comply with ASTM C 547, Type I, Grade A, with factory-applied ASJ.
- E. Mineral-Fiber, Pipe and Tank Insulation: Complying with ASTM C 1393, Type II or Type IIIA Category 2, or with properties similar to ASTM C 612, Type IB; and having factory-applied ASJ. Nominal density is 2.5 lb/cu. ft. (40 kg/cu. m) or more. Thermal conductivity (k-value) at 100 deg F (55 deg C) is 0.29 Btu x in./h x sq. ft. x deg F (0.042 W/m x K) or less.
- F. Polyolefin Insulation: Unicellular, polyethylene thermal plastic insulation. Comply with ASTM C 534 or ASTM C 1427, Type I, Grade 1 for tubular materials and Type II, Grade 1 for sheet materials.

## 2.3 ADHESIVES

- A. Flexible Elastomeric and Polyolefin Adhesive: Comply with MIL-A-24179A, Type II, Class I.
  - 1. For indoor applications, adhesive shall have a VOC content of 50 g/L or less.
- B. Mineral-Fiber Adhesive: Comply with MIL-A-3316C, Class 2, Grade A.
  - 1. For indoor applications, adhesive shall have a VOC content of 80 g/L or less.
- C. ASJ Adhesive, and FSK Jacket Adhesive: Comply with MIL-A-3316C, Class 2, Grade A for bonding insulation jacket lap seams and joints.
  - 1. For indoor applications, adhesive shall have a VOC content of 50 g/L or less.

## 2.4 MASTICS

- A. Vapor-Barrier Mastic: Water based; suitable for indoor use on below ambient services.
  - 1. For indoor applications, use mastics that have a VOC content of 50 g/L or less.
  - 2. Water-Vapor Permeance: ASTM E 96/E 96M, Procedure B, 0.013 perm (0.009 metric perm) at 43-mil (1.09-mm) dry film thickness.
  - 3. Service Temperature Range: Minus 20 to plus 180 deg F (Minus 29 to plus 82 deg C).
  - 4. Solids Content: ASTM D 1644, 58 percent by volume and 70 percent by weight.
  - 5. Color: White.
- B. Breather Mastic: Water based; suitable for indoor and outdoor use on above ambient services.
  - 1. Water-Vapor Permeance: ASTM F 1249, 1.8 perms (1.2 metric perms) at 0.0625-inch (1.6-mm) dry film thickness.
  - 2. Service Temperature Range: Minus 20 to plus 180 deg F (Minus 29 to plus 82 deg C).
  - 3. Solids Content: 60 percent by volume and 66 percent by weight.
  - 4. Color: White.

## 2.5 SEALANTS

- A. Joint Sealants:
  - 1. Materials shall be compatible with insulation materials, jackets, and substrates.
  - 2. Permanently flexible, elastomeric sealant.
  - 3. Service Temperature Range: Minus 100 to plus 300 deg F (Minus 73 to plus 149 deg C).
  - 4. Color: White or gray.
  - 5. For indoor applications, sealants shall have a VOC content of 420 g/L or less.
- B. ASJ Flashing Sealants:
  - 1. Materials shall be compatible with insulation materials, jackets, and substrates.
  - 2. Fire- and water-resistant, flexible, elastomeric sealant.
  - 3. Service Temperature Range: Minus 40 to plus 250 deg F (Minus 40 to plus 121 deg C).
  - 4. Color: White.
  - 5. For indoor applications, sealants shall have a VOC content of 420 g/L or less.



## 2.6 FACTORY-APPLIED JACKETS

- A. Insulation system schedules indicate factory-applied jackets on various applications. When factory-applied jackets are indicated, comply with the following:
1. ASJ: White, kraft-paper, fiberglass-reinforced scrim with aluminum-foil backing; complying with ASTM C 1136, Type I.
  2. ASJ-SSL: ASJ with self-sealing, pressure-sensitive, acrylic-based adhesive covered by a removable protective strip; complying with ASTM C 1136, Type I.
  3. FSK Jacket: Aluminum-foil, fiberglass-reinforced scrim with kraft-paper backing; complying with ASTM C 1136, Type II.

## 2.7 TAPES

- A. ASJ Tape: White vapor-retarder tape matching factory-applied jacket with acrylic adhesive, complying with ASTM C 1136.
1. Width: 3 inches (75 mm).
  2. Thickness: 11.5 mils (0.29 mm).
  3. Adhesion: 90 ounces force/inch (1.0 N/mm) in width.
  4. Elongation: 2 percent.
  5. Tensile Strength: 40 lbf/inch (7.2 N/mm) in width.
  6. ASJ Tape Disks and Squares: Precut disks or squares of ASJ tape.
- B. FSK Tape: Foil-face, vapor-retarder tape matching factory-applied jacket with acrylic adhesive; complying with ASTM C 1136.
1. Width: 3 inches (75 mm).
  2. Thickness: 6.5 mils (0.16 mm).
  3. Adhesion: 90 ounces force/inch (1.0 N/mm) in width.
  4. Elongation: 2 percent.
  5. Tensile Strength: 40 lbf/inch (7.2 N/mm) in width.
  6. FSK Tape Disks and Squares: Precut disks or squares of FSK tape.

## PART 3 - EXECUTION

### 3.1 PIPE INSULATION INSTALLATION

- A. Comply with requirements of the Midwest Insulation Contractors Association's "National Commercial & Industrial Insulation Standards" for insulation installation on pipes and equipment.
- B. Insulation Installation at Interior Wall and Partition Penetrations (That Are Not Fire Rated): Install insulation continuously through walls and partitions.
- C. Insulation Installation at Fire-Rated Wall, Partition, and Floor Penetrations: Install insulation continuously through penetrations. Seal penetrations. Comply with requirements in Section 078413 "Penetration Firestopping."
- D. Flexible Elastomeric Insulation Installation:

1. Seal longitudinal seams and end joints with adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.
2. Insulation Installation on Pipe Fittings and Elbows: Install mitered sections of pipe insulation. Secure insulation materials and seal seams with adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

E. Mineral-Fiber Insulation Installation:

1. Insulation Installation on Straight Pipes and Tubes: Where vapor barriers are indicated, seal longitudinal seams, end joints, and protrusions with vapor-barrier mastic and joint sealant.
2. For insulation with factory-applied jackets on above ambient surfaces, secure laps with outward clinched staples at 6 inches (150 mm) o.c.
3. For insulation with factory-applied jackets on below ambient surfaces, do not staple longitudinal tabs but secure tabs with additional adhesive as recommended by insulation material manufacturer and seal with vapor-barrier mastic and flashing sealant.

F. Polyolefin Insulation Installation:

1. Seal split-tube longitudinal seams and end joints with adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.
2. Insulation Installation on Pipe Fittings and Elbows: Install mitered sections of polyolefin pipe insulation. Secure insulation materials and seal seams with adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

G. Interior Piping System Applications: Insulate the following piping systems:

1. Domestic hot water.
2. Recirculated domestic hot water.
3. Solar hot water
4. Recirculated solar hot water.
5. Roof drain bodies and horizontal rainwater leaders of storm water piping.
6. Exposed water supplies and sanitary drains of fixtures for people with disabilities.

H. Do not apply insulation to the following systems, materials, and equipment:

1. Flexible connectors.
2. Sanitary drainage and vent piping.
3. Drainage piping located in crawlspaces unless otherwise indicated.
4. Chrome-plated pipes and fittings, except for plumbing fixtures for people with disabilities.
5. Piping specialties, including air chambers, unions, strainers, check valves, plug valves, and flow regulators.

### 3.2 EQUIPMENT INSULATION SCHEDULE

A. Domestic water and domestic hot-water hydropneumatic tank insulation shall be [ one of ] the following:

1. Flexible Elastomeric: 1 inch (25 mm) thick.
2. Mineral-Fiber Blanket: 1 inch (25 mm) thick and 2-lb/cu. ft. (32-kg/cu. m) nominal density.
3. Mineral-Fiber Pipe and Tank: 1 inch (25 mm) thick.
4. Polyolefin: 1 inch (25 mm) thick.

B. Domestic hot-water storage tank insulation shall be the following:

1. Mineral-Fiber Pipe and Tank: 4 inches (100 mm)] thick.

C. Domestic water storage tank insulation shall be one of the following:

1. Flexible Elastomeric: 1 inch (25 mm) thick.
2. Mineral-Fiber Pipe and Tank: 1 inch (25 mm) thick.
3. Polyolefin: 1 inch (25 mm) thick.

### 3.3 INDOOR PIPING INSULATION SCHEDULE

A. Unless otherwise indicated, do not install insulation on the following:

1. Drainage piping located in crawlspaces.
2. Underground piping.
3. Chrome-plated pipes and fittings unless there is a potential for personnel injury.

B. Domestic Cold Water in unheated areas of the building and where exposed outside of the building:

1. NPS 1 (DN 25) and Smaller: Insulation shall be one of the following:

- a. Flexible Elastomeric: 1 inch (25 mm) thick.
- b. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1 inch (25 mm) thick.
- c. Polyolefin: 1 inch (25 mm) thick.

2. NPS 1-1/4 (DN 32) and Larger: Insulation shall be one of the following:

- a. Flexible Elastomeric: 1 inch (25 mm)] thick.
- b. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1 inch (25 mm)] thick.
- c. Polyolefin: 1 inch (25 mm)] thick.

C. Domestic Hot, Recirculated Hot Water, Solar Hot Water and Recirculated Solar Water:

1. NPS 1-1/4 (DN 32) and Smaller: Insulation shall be one of the following:

- a. Flexible Elastomeric: 1 inch (25 mm)] thick.
- b. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1 inch (25 mm) thick.
- c. Polyolefin: 1 inch (25 mm) thick.

2. NPS 1-1/2 (DN 40) and Larger: Insulation shall be one of the following:

- a. Flexible Elastomeric: 1 inch (25 mm)] thick.
- b. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1 inch (25 mm) thick.
- c. Polyolefin: 1 inch (25 mm)] thick.

D. Roof Drain and Overflow Drain Bodies:

1. All Pipe Sizes: Insulation shall be one of the following:

- a. Flexible Elastomeric: 1 inch (25 mm) thick.
- b. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1 inch (25 mm) thick.
- c. Polyolefin: 1 inch (25 mm) thick.

- E. Exposed Sanitary Drains, Domestic Water, Domestic Hot Water, and Stops for Plumbing Fixtures for People with Disabilities:
  - 1. All Pipe Sizes: Insulation shall be one of the following:
    - a. Truebro "Lav-Guard".
    - b. Plumberex "Pro-Xtreme"

END OF SECTION

**22 11 16**  
**DOMESTIC WATER PIPING**

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Submittals:

1. Reference Division 1 "Submittals"
2. Product Data: For transition fittings and dielectric fittings.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Potable-water piping and components shall comply with NSF 14 and NSF 61.
- B. Potable-water piping and components shall comply with AB1953.

2.2 PIPE AND FITTINGS

- A. Hard Copper Tubing: ASTM B 88, Types K, Types L, water tube, drawn temper with wrought-copper, solder-joint fittings. Furnish wrought-copper fittings if indicated.
  1. Copper Unions: Cast-copper-alloy, hexagonal-stock body, with ball-and-socket, metal-to-metal seating surfaces and solder-joint or threaded ends.
  2. Joining Materials: Use ASTM B 813, water-flushable, lead-free flux; ASTM B 32, lead-free-alloy solder.
- B. Soft Copper Tubing: ASTM B 88, Types K and L, water tube, annealed temper with copper pressure fittings, cast-copper-alloy or wrought-copper, solder-joint fittings. Furnish wrought-copper fittings if indicated.
  1. Joining Materials: Use ASTM B 813, water-flushable, lead-free flux; ASTM B 32, lead-free-alloy solder.
- C. Special-Duty Valves:
  1. Comply with requirements in Section 220523 "General-Duty Valves for Plumbing Piping" for general-duty metal valves.
  2. Comply with requirements in Section 221119 "Domestic Water Piping Specialties" for balancing valves, drain valves, backflow preventers, and vacuum breakers.
- D. Transition Fittings: Manufactured piping coupling or specified piping system fitting. Same size as pipes to be joined and pressure rating at least equal to pipes to be joined.
- E. Flexible Connectors: Stainless-steel, corrugated-metal tubing with wire-braid covering. Working-pressure rating a minimum of 200 psig (1380 kPa).

### PART 3 - EXECUTION

#### 3.1 INSTALLATION

- A. Comply with requirements in Section 220500 "Common Work Results for Plumbing" for basic piping installation requirements.
- B. Install shutoff valve, hose-end drain valve, at each domestic water service entrance.
- C. Install domestic water piping without pitch for horizontal piping and plumb for vertical piping.
- D. Comply with requirements in Section 220500 "Common Work Results for Plumbing" for basic piping joint construction.
  - 1. Soldered Joints: Comply with procedures in ASTM B 828 unless otherwise indicated.
- E. Comply with requirements in Section 220500 "Common Work Results for Plumbing" for pipe hanger and support devices.
  - 1. Install hangers for copper piping with the following maximum horizontal spacing and minimum rod diameters:
    - a. NPS 1-1/2 and Smaller: 72 inches with 3/8-inch rod.
    - b. NPS 2 and larger. 10 feet with 3/8-inch rod.
    - c. Support vertical piping at each floor.

#### 3.2 INSPECTING AND CLEANING

- A. Inspect and test piping systems as follows:
  - 1. Fill domestic water piping. Check components to determine that they are not air bound and that piping is full of water.
  - 2. Test for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired.
- B. Clean and disinfect potable domestic water piping by filling system with water/chlorine solution with at least 50 ppm (50 mg/L) of chlorine. Isolate with valves and allow to stand for 24 hours. Flush system with clean, potable water until no chlorine is in water coming from system after the standing time.

#### 3.3 PIPING SCHEDULE

- A. Underground, Service Entrance Piping: Soft copper tubing,
- B. Aboveground Distribution Piping: Type L hard copper tubing,

#### 3.4 VALVE SCHEDULE

- A. Drawings indicate valve types to be used. Where specific valve types are not indicated, the following requirements apply:

1. Shutoff Duty: Use bronze ball or gate valves for piping NPS 2 (DN 50) and smaller. Use cast-iron butterfly or gate valves with flanged ends for piping NPS 2-1/2 (DN 65) and larger.
  2. Throttling Duty: Use bronze ball or globe valves for piping NPS 2 (DN 50) and smaller. Use cast-iron butterfly valves with flanged ends for piping NPS 2-1/2 (DN 65) and larger.
  3. Hot-Water-Piping, Balancing Duty: Calibrated balancing valves.
  4. Drain Duty: Hose-end drain valves.
- B. Install ball valves close to main on each branch and riser serving two or more plumbing fixtures or equipment connections and where indicated.
- C. Install ball valves on inlet to each plumbing equipment item, on each supply to each plumbing fixture not having stops on supplies, and elsewhere as indicated.
- D. Install drain valve at base of each riser, at low points of horizontal runs, and where required to drain water distribution piping system.
- E. Install swing check valve on discharge side of each pump and elsewhere as indicated.
- F. Install ball valves in each hot-water circulating loop and discharge side of each pump.

END OF SECTION

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**22 11 19**  
**DOMESTIC WATER PIPING SPECIALTIES**

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Submittals:

1. Reference Division 1 "Submittals"
2. Product Data: For each type of product.
3. Operation and maintenance data.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR PIPING SPECIALTIES

- A. Potable-water piping and components shall comply with NSF 61 and NSF 14.
- B. Potable-water piping and components shall comply with AB1953.

2.2 PERFORMANCE REQUIREMENTS

- A. Minimum Working Pressure for Domestic Water Piping Specialties: 125 psig (860 kPa) unless otherwise indicated.

2.3 MANUFACTURED UNITS

A. Pipe-Applied, Atmospheric-Type Vacuum Breakers:

1. Standard: ASSE 1001.
2. Size: NPS 1/4 to NPS 3 (DN 8 to DN 80), as required to match connected piping.
3. Body: Bronze.
4. Inlet and Outlet Connections: Threaded.
5. Finish: Chrome plated.

B. Hose-Connection Vacuum Breakers:

1. Standard: ASSE 1011.
2. Body: Bronze, nonremovable, with manual drain.
3. Outlet Connection: Garden-hose threaded complying with ASME B1.20.7.
4. Finish: Chrome or bronze. As indicated on drawings.

C. Reduced-Pressure-Principle Backflow Preventers:

1. Standard: ASSE 1013.
2. Operation: Continuous-pressure applications.

3. Pressure Loss: 12 psig (83 kPa) maximum, through middle third of flow range.
4. Size: As indicated on drawings.
5. Design Flow Rate: As indicated on drawings.
6. Selected Unit Flow Range Limits: As indicated on drawings.
7. Body: Bronze for NPS 2 (DN 50) and smaller; ductile iron with interior lining that complies with AWWA C550 or that is FDA approved for NPS 2-1/2 (DN 65) and larger.
8. End Connections: Threaded for NPS 2 (DN 50) and smaller; flanged for NPS 2-1/2 (DN 65) and larger.
9. Configuration: As indicated on drawings.
10. Accessories:
  - a. Valves NPS 2 (DN 50) and Smaller: Ball type with threaded ends on inlet and outlet.
  - b. Valves NPS 2-1/2 (DN 65) and Larger: Outside-screw and yoke-gate type with flanged ends on inlet and outlet.
  - c. Air-Gap Fitting: ASME A112.1.2, matching backflow-preventer connection.

D. Water Regulators:

1. Standard: ASSE 1003.
2. Pressure Rating: Initial working pressure of 150 psig (1035 kPa).
3. Size: As indicated on drawings.
4. Design Flow Rate: As indicated on drawings.  
Body: Bronze for NPS 2 (DN 50) and smaller; cast iron with interior lining that complies with AWWA C550 or that is FDA approved for NPS 2-1/2 and NPS 3 (DN 65 and DN 80).
5. Valves for Booster Heater Water Supply: Include integral bypass.
6. End Connections: Threaded for NPS 2 (DN 50) and smaller; flanged for NPS 2-1/2 and NPS 3 (DN 65 and DN 80).

E. Memory-Stop Balancing Valves :

1. Standard: MSS SP-110 for two-piece, copper-alloy ball valves.
2. Pressure Rating: 400-psig (2760-kPa) minimum CWP.
3. Size: NPS 2 (DN 50) or smaller.
4. Body: Copper alloy.
5. Port: Standard or full port.
6. Ball: Chrome-plated brass.
7. Seats and Seals: Replaceable.
8. End Connections: Solder joint or threaded.
9. Handle: Vinyl-covered steel with memory-setting device.

F. Thermostatic, Water Mixing Valves:

1. Standard: ASSE 1017.
2. Pressure Rating: 125 psig (860 kPa) minimum unless otherwise indicated.
3. Type: thermostatically controlled, water mixing valve.
4. Material: Bronze body with corrosion-resistant interior components.
5. Connections: Union inlets and outlet.
6. Accessories: Manual temperature control, check stops on hot- and cold-water supplies, and adjustable, temperature-control handle.
7. Tempered-Water Setting: As indicated on drawings.
8. Tempered-Water Design Flow Rate: As indicated on drawings.
9. Valve Finish: As indicated on drawings.
10. Piping Finish: As indicated on drawings.

G. Y-Pattern Strainers:

1. Pressure Rating: 125 psig (860 kPa) minimum unless otherwise indicated.
2. Body: Bronze for NPS 2 (DN 50) and smaller; cast iron with interior lining that complies with AWWA C550 or that is FDA approved, for NPS 2-1/2 (DN 65) and larger.
3. End Connections: Threaded for NPS 2 (DN 50) and smaller; flanged for NPS 2-1/2 (DN 65) and larger.
4. Screen: Stainless steel with round perforations unless otherwise indicated.
5. Perforation Size: As indicated on drawings.

H. Clothes Washer Outlet Boxes:

1. Mounting: Recessed.
2. Material and Finish: Steel or Plastic box and faceplate. As indicated on drawings.
3. Faucet: Separate hot- and cold-water valved fittings complying with ASME A112.18.1. Include garden-hose thread complying with ASME B1.20.7 on outlets.
4. Supply Shutoff Fittings: NPS 1/2 (DN 15) gate, globe, or ball valves and NPS 1/2 (DN 15) copper, water tubing.
5. Drain: [NPS 2 (DN 50)] standpipe and P-trap for direct waste connection to drainage piping.

I. Icemaker Outlet Boxes:

1. Mounting: Recessed.
2. Material and Finish: Steel or Plastic box and faceplate. As indicated on drawings.
3. Faucet: Valved fitting complying with ASME A112.18.1. Include NPS 1/2 (DN 15) or smaller copper tube outlet.
4. Supply Shutoff Fitting: NPS 1/2 (DN 15) gate, globe, or ball valve and NPS 1/2 (DN 15) copper, water tubing.

J. Hose Bibbs:

1. Standard: ASME A112.18.1 for sediment faucets.
2. Body Material: Bronze.
3. Seat: Bronze, replaceable.
4. Supply Connections: NPS 3/4 (DN 20) threaded or solder-joint inlet.
5. Outlet Connection: Garden-hose thread complying with ASME B1.20.7.
6. Pressure Rating: 125 psig (860 kPa).
7. Vacuum Breaker: Integral, nonremovable, drainable, hose-connection vacuum breaker complying with ASSE 1011.
8. Finish for Equipment Rooms: As indicated on drawings..
9. Finish for Service Areas: As indicated on drawings.
10. Finish for Finished Rooms: As indicated on drawings.
11. Operation for Equipment Rooms: As indicated on drawings.
12. Operation for Service Areas: As indicated on drawings.
13. Operation for Finished Rooms: As indicated on drawings.
14. Include operating key with each operating-key hose bibb.
15. Include integral wall flange with each chrome- hose bibb.

K. Nonfreeze Wall Hydrants:

1. Standard: ASME A112.21.3M for concealed-outlet, self-draining wall hydrants.
2. Pressure Rating: 125 psig (860 kPa).
3. Operation: Loose key.

4. Casing and Operating Rod: Of length required to match wall thickness. Include wall clamp.
5. Inlet: NPS 3/4 (DN 25).
6. Outlet: Concealed, with integral vacuum breaker and garden-hose thread complying with ASME B1.20.7.
7. Box: Deep, flush mounted with cover.
8. Box and Cover Finish: As indicated on drawings.

L. Ball-Valve-Type, Hose-End Drain Valves:

1. Standard: MSS SP-110 for standard-port, two-piece ball valves.
2. Pressure Rating: 400-psig (2760-kPa) minimum CWP.
3. Size: NPS 3/4 (DN 20).
4. Body: Copper alloy.
5. Ball: Chrome-plated brass.
6. Seats and Seals: Replaceable.
7. Handle: Vinyl-covered steel.
8. Inlet: Threaded or solder joint.
9. Outlet: Threaded, short nipple with garden-hose thread complying with ASME B1.20.7

M. Water-Hammer Arresters:

1. Standard: ASSE 1010 or PDI-WH 201.
2. Type: Copper tube with piston.
3. Size: ASSE 1010, Sizes AA and A through F, or PDI-WH 201, Sizes A through F.

N. Supply-Type, Trap-Seal Primer Device:

1. Manufacturers:[ One of the following:]
2. Basis-of-Design Product: Precision Plumbing Products, Inc or a comparable product of one of the following or equal:
  - a. MIFAB, Inc.
  - b. Sioux Chief Manufacturing Company, Inc.
3. Standard: ASSE 1018.
4. Pressure Rating: 125 psig (860 kPa) minimum.
5. Body: Bronze.
6. Inlet and Outlet Connections: NPS 1/2 (DN 15) threaded, union, or solder joint.
7. Gravity Drain Outlet Connection: NPS 1/2 (DN 15) threaded joint.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Install backflow preventers in each water supply to mechanical equipment and systems and to other equipment and water systems that may be sources of contamination. Comply with authorities having jurisdiction.
- B. Install water regulators with inlet and outlet shutoff valves.
- C. Install balancing valves in locations where they can easily be adjusted.

- D. Install temperature-actuated, water mixing valves with check stops or shutoff valves on inlets and with shutoff valve on outlet.
- E. Install Y-pattern strainers for water on supply side of each water pressure-reducing valve and pump.
- F. Set nonfreeze, nondraining-type post hydrants in concrete or pavement.
- G. Set freeze-resistant yard hydrants with riser pipe in concrete or pavement. Do not encase canister in concrete.
- H. Install water-hammer arresters in water piping according to PDI-WH 201.
- I. Install supply-type, trap-seal primer valves with outlet piping pitched down toward drain trap a minimum of 1 percent, and connect to floor-drain body, trap, or inlet fitting. Adjust valve for proper flow.

### 3.2 FIELD QUALITY CONTROL

- A. Perform the following tests and inspections:
  - 1. Test each pressure vacuum breaker, reduced-pressure-principle backflow preventer, double-check, backflow-prevention assembly and double-check detector-assembly, backflow preventer according to authorities having jurisdiction and the device's reference standard.
  - 2. Domestic water piping specialties will be considered defective if they do not pass tests and inspections.
  - 3. Prepare test and inspection reports.

END OF SECTION

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**22 11 23**  
**DOMESTIC WATER PUMPS**

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Submittals:

1. Reference Division 1 "Submittals"
2. Product Data. For each type of product indicated.
  - a. Include certified performance curves with operating points plotted on curves, operating characteristics, electrical characteristics, and furnished specialties and accessories.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. All domestic water pumps shall comply with NSF 61.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- C. Comply with UL 778 for motor-operated water pumps.

2.2 DOMESTIC WATER PUMPS

- A. In-Line, Sealless Centrifugal Pumps: Factory-assembled and -tested, in-line, close-coupled, canned-motor, sealless, overhung-impeller centrifugal pumps. Hermetically sealed, replaceable-cartridge type with motor and impeller on common shaft and designed for installation with pump and motor shaft horizontal; rated for 125-psig (860-kPa) minimum working pressure and minimum continuous water temperature of 225 deg F (107 deg C).
  1. Basis-of-Design Product: Product indicated on Drawings or a comparable product of one of the following or equal:
    - a. Bell & Gossett Domestic Pump; ITT Corporation.
    - b. Grundfos Pumps Corp.
    - c. TACO Incorporated.
  2. Casing: Bronze, with threaded or companion-flange connections.
  3. Impeller: Plastic.

## 2.3 MOTORS

- A. Comply with NEMA designation, temperature rating, service factor, enclosure type, and efficiency requirements for motors specified in Section 220513 "Common Motor Requirements for Plumbing Equipment."
- B. Motor Sizes: Minimum size as indicated. If not indicated, large enough so driven load will not require motor to operate in service factor range above 1.0.
- C. Controllers, Electrical Devices, and Wiring: Comply with requirements for electrical devices and connections specified in Section 262913 "Enclosed Controllers."

## 2.4 CONTROLS

- A. Thermostats: Electric; adjustable for control of hot-water circulation pump.
  - 1. Type: Water-immersion temperature sensor, for installation in piping.
  - 2. Settings: Start pump at 105 deg F (41 deg C) and stop pump at 125 deg F (52 deg C)]
- B. Timers: Electric, for control of hot-water circulation pump.
  - 1. Type: Programmable, seven-day clock with manual override on-off switch.
  - 2. Programmable Sequence of Operation: Up to two on-off cycles each day for seven days

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Comply with HI 1.4.
- B. Install pumps with access for periodic maintenance, including removal of motors, impellers, couplings, and accessories.
- C. Support pumps and piping so weight of piping is not supported by pump volute.
- D. Install electrical connections for power, controls, and devices.
- E. Suspend in-line pumps independent from piping. Use continuous-thread hanger rods and vibration isolation hangers. Fabricate brackets or supports as required for pumps.
- F. Connect piping with valves that are at least the same size as piping connecting to pumps.
- G. Install shutoff valve and strainer on suction side of pumps.
- H. Install nonslam check valve and throttling valve on discharge side of pumps.
- I. Install thermostats in hot-water return piping.

END OF SECTION



**22 13 16**  
**SANITARY WASTE AND VENT PIPING**

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Submittals:

1. Reference Division 1 "Submittals"
2. Product Data: For each type of product indicated.
3. For solvent cements and adhesive primers, documentation including printed statement of VOC content.
4. Seismic Qualification Certificates: For waste and vent piping, accessories, and components, from manufacturer.

1.2 FIELD CONDITIONS

A. Do not interrupt service to facilities occupied by the Owner or others unless permitted under the following conditions and then only after arranging to provide temporary service according to requirements indicated:

1. Notify Architect in advance of proposed interruption of sanitary waste service and do not proceed without written permission.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Components and installation shall be capable of withstanding the following minimum working pressure unless otherwise indicated:

1. Soil, Waste, and Vent Piping: 10-foot head of water .

B. Seismic Performance: Soil, waste, and vent piping and support and installation shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

C. Piping materials shall bear label, stamp, or other markings of CISPI and the NSF international listed trademark.

2.2 PIPES AND FITTINGS

A. Waste piping within the building: Hubless Cast-Iron Soil Pipe: CISPI 301, ASTM A 888 or ASTM A 74.

1. Manufacturers:
2. Basis-of-Design Product: AB&I Foundry or a comparable product of one of the following:

- a. Charlotte Pipe and Foundry
  - b. Tyler Pipe Company
- B. Waste piping within the building: Fittings: CISPI 301, ASTM C 1277 shielded couplings.
- 1. Manufacturers:
  - 2. Basis-of-Design Product: Anaco or a comparable product of one of the following:
    - a. Tyler Pipe Company
    - b. Mission Rubber Company

### PART 3 - EXECUTION

#### 3.1 PIPING INSTALLATION

- A. Comply with requirements in Section 220513 "Common Work Results for Plumbing" for basic piping installation requirements.
- B. 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."
- C. Install wall penetration system at each pipe penetration through foundation wall. Make installation watertight. Comply with requirements in Section 220513 "Common Work Results for Plumbing" for wall penetration systems.
  - 1. Sleeves are not required for cast-iron soil piping passing through concrete slabs-on-grade if slab is without membrane waterproofing.
- D. Make changes in direction for soil and waste drainage and vent piping using appropriate branches, bends, and long-sweep bends. Sanitary tees and short-sweep 1/4 bends may be used on vertical stacks if change in direction of flow is from horizontal to vertical. Use long-turn, double Y-branch and 1/8-bend fittings if two fixtures are installed back to back or side by side with common drain pipe. Straight tees, elbows, and crosses may be used on vent lines. Do not change direction of flow more than 90 degrees. Use proper size of standard increasers and reducers if pipes of different sizes are connected. Reducing size of drainage piping in direction of flow is prohibited.
- E. 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.
- F. 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.
  - 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.
- G. Do not enclose, cover, or put piping into operation until it is inspected and approved by authorities having jurisdiction.

- H. Comply with requirements in Section 220513 "Common Work Results for Plumbing" for basic piping joint construction.
- I. Comply with requirements in Section 220513 "Common Work Results for Plumbing" for pipe hanger and support devices.

### 3.2 PIPE SCHEDULE

- A. Aboveground Waste Applications: Hubless, cast-iron soil pipe and fittings.

END OF SECTION

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**22 13 19**  
**SANITARY WASTE PIPING SPECIALTIES**

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Submittals:

1. Reference Division 1 "Submittals"
2. Product Data: For each type of product indicated.
  - a. Include rated capacities, operating characteristics, and accessories for grease interceptors.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Drainage piping specialties shall bear label, stamp, or other markings of specified testing agency.

2.2 MANUFACTURED UNITS

- A. Horizontal, Cast-Iron Backwater Valves: ASME A112.14.1, gray-iron body with bronze seat.

1. Extension: ASTM A 74, Service class; full-size, cast-iron, soil-pipe extension to field-installed cleanout at floor; replaces backwater valve cover.

- B. PVC Backwater Valves: Horizontal type; with PVC body, PVC removable cover, and PVC swing check valve.

C. Cleanouts:

1. Application: Cleanout to Grade, Floor cleanout, Wall cleanout, For installation in exposed piping
2. Body or Ferrule: As indicated on drawings.
3. Clamping Device: As indicated on drawings.
4. Outlet Connection: As indicated on drawings.
5. Closure: As indicated on drawings.
6. Adjustable Housing Material: As indicated on drawings.
7. Frame and Cover Material and Finish: Nickel-bronze, copper alloy
8. Frame and Cover Shape: As indicated on drawings.
9. Top-Loading Classification: As indicated on drawings.

D. Floor Drains:

1. Manufacturers:

2. Basis-of-Design Product: Product indicated on Drawings or a comparable product of one of the following:
    - a. Smith, Jay R. Mfg. Co.; Division of Smith Industries, Inc.
    - b. Tyler Pipe; Wade Div.
    - c. Zurn Plumbing Products Group; Specification Drainage Operation.
  3. Standard: ASME A112.6.3
  4. Pattern: As indicated on drawings.
  5. Body Material: As indicated on drawings.
  6. Seepage Flange: As indicated on drawings.
  7. Clamping Device: As indicated on drawings.
  8. Outlet: As indicated on drawings.
  9. Exposed Surfaces and Interior Lining: As indicated on drawings.
  10. Sediment Bucket: As indicated on drawings.
  11. Top or Strainer Material: As indicated on drawings.
  12. Top of Body and Strainer Finish: Nickel bronze
  13. Top Shape: As indicated on drawings.
  14. Dimensions of Top or Strainer: As indicated on drawings. Retain "Top-Loading Classification" Subparagraph below if applicable.
  15. Top-Loading Classification: As indicated on drawings..
  16. Funnel: As indicated on drawings.
  17. Inlet Fitting: As indicated on drawings.
  18. Trap Material: As indicated on drawings..
  19. Trap Pattern: As indicated on drawings.
  20. Trap Features: As indicated on drawings.
- E. Roof Flashing Assemblies:
1. Manufactured assembly made of 6.0-lb/sq. ft. (30-kg/sq. m), 0.0938-inch- (2.4-mm-) thick, lead flashing collar and skirt extending at least 10 inches (250 mm) from pipe, with galvanized-steel boot reinforcement and counterflashing fitting.
    - a. Open-Top Vent Cap: Without cap.
    - b. Low-Silhouette Vent Cap: With vandal-proof vent cap.
    - c. Extended Vent Cap: With field-installed, vandal-proof vent cap.
- F. Air-Gap Fittings: ASME A112.1.2, chrome-plated brass cover.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Install cleanouts at grade and extend to where building sanitary drains connect to building sanitary sewers.
- B. Install floor drains at low points of surface areas to be drained. Set grates of drains flush with finished floor unless otherwise indicated.
  1. Install floor-drain flashing collar or flange so no leakage occurs between drain and adjoining flooring. Maintain integrity of waterproof membranes where penetrated.
  2. Install individual traps for floor drains connected to sanitary building drain, unless otherwise indicated.

- C. Install roof flashing assemblies on sanitary stack vents and vent stacks that extend through roof.
- D. Install air-gap fittings on draining-type backflow preventers and on indirect-waste piping discharge into sanitary drainage system.
- E. Engage a factory-authorized service representative to train maintenance personnel to adjust, operate, and maintain grease removal devices.

END OF SECTION

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**22 34 00**  
**FUEL-FIRED DOMESTIC WATER HEATERS**

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Submittals:

1. Reference Division 1 "Submittals"
2. Product Data: For each type and size of domestic-water heater indicated.
3. Documentation indicating that units comply with applicable requirements in ASHRAE/IESNA 90.1, Section 7, "Service Water Heating."
4. Seismic Qualification Certificates: For fuel-fired, domestic-water heaters, accessories, and components, from manufacturer.
5. Domestic-Water Heater Labeling: Certified and labeled by testing agency acceptable to authorities having jurisdiction.
6. Operation and maintenance data.

- B. Warranties: Submit a written warranty executed by manufacturer agreeing to repair or replace water heaters that fail in materials or workmanship within six years from date of Substantial Completion. Failures include, but are not limited to, tanks and elements.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Seismic Performance: Commercial domestic-water heaters shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- C. ASHRAE/IESNA Compliance: Fabricate and label fuel-fired, domestic-water heaters to comply with ASHRAE/IESNA 90.1.
- D. NSF Compliance: Fabricate and label equipment components that will be in contact with potable water to comply with NSF 61, "Drinking Water System Components - Health Effects."
- E. Gas-Fired Water Heaters: Bear AGA certification label.
- F. Comply with requirements of applicable NSF, AWWA, or FDA and EPA regulatory standards for tasteless and odorless, potable-water-tank linings.
- G. Comply with performance efficiencies prescribed in ASHRAE 90.2, "Energy Efficient Design of New Low-Rise Residential Buildings."

## 2.2 WATER HEATERS, GENERAL

- A. Insulation: Suitable for operating temperature and required insulating value. ASHRAE/IESNA 90.1. Surround entire tank except connections and controls.
- B. Anode Rods: Factory installed, replaceable magnesium.
- C. Combination Temperature and Pressure Relief Valve: ANSI Z21.22/CSA 4.4-M, ASME rated and stamped. Include relieving capacity at least as great as heat input and pressure setting less than water heater working-pressure rating. Select relief valve with sensing element that extends into tank.
- D. Drain Valve: ASSE 1005. Factory or field installed.

## 2.3 GAS-FIRED WATER HEATERS

- A. Basis-of-Design Product: Product indicated on Drawings or a comparable product of one of the following or equal:
  - 1. American Water Heaters.
  - 2. Bradford White Corporation.
  - 3. Smith, A. O. Water Products Co.; a division of A. O. Smith Corporation.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Install heaters on as shown on drawings.
  - 1. Maintain manufacturer's recommended clearances.
  - 2. Arrange units so controls and devices that require servicing are accessible.
- B. Install temperature and pressure relief valves and extend to exterior of building or as shown on drawings.
- C. Install vacuum relief valves in cold-water-inlet piping.
- D. Install shutoff valves and unions at hot- and cold-water piping connections.
- E. Make piping connections with dielectric fittings where dissimilar piping materials are joined.
- F. Connect gas water heaters according to NFPA 54. Connect gas vent and draft hoods and diverters where required. Extend to outside and terminate in vent cap.

END OF SECTION

**23 05 00**  
**COMMON WORK RESULTS FOR HVAC**

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Submittals:

1. Reference Division 1 "Submittals"
2. Product Data: For each type of product indicated.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Hangers and Supports for Plumbing Piping Equipment:

1. Structural Performance: Hangers and supports shall withstand the effects of gravity loads and stresses within limits and under conditions indicated according to ASCE/SEI 7.
  - a. Design supports for multiple pipes capable of supporting combined weight of supported systems, and system contents.
  - b. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.
  - c. Design seismic-restraint hangers and supports for piping and equipment and obtain approval from authorities having jurisdiction.

2.2 SLEEVES AND SLEEVE SEALS

- A. Galvanized-Steel Pipe Sleeves: ASTM A 53, Type E, Grade B, Schedule 40, galvanized, plain ends.
- B. Galvanized-Steel Sheet: 0.0239-inch (0.6-mm) minimum thickness; round tube closed with welded longitudinal joint.
- C. Modular rubber sealing element unit, designed for field assembly, to fill annular space between pipe and sleeve.
  1. Sealing Elements: EPDM-rubber or NBR interlocking links shaped to fit surface of pipe. Include type and number required for pipe material and size of pipe.
  2. Pressure Plates: Stainless steel.
  3. Connecting Bolts and Nuts: Stainless steel of length required to secure pressure plates to sealing elements.
- D. Stack-Seal Fitting: Manufactured, cast-iron sleeve with integral clamping flange. Include clamping ring, bolts, and nuts for membrane flashing.
  1. Underdeck Clamp: Clamping ring with setscrews.

### 2.3 GROUT

- A. Description: ASTM C 1107, Grade B, nonshrink and nonmetallic, dry hydraulic-cement grout.

### 2.4 ESCUTCHEONS AND FLOOR PLATES

- A. One-Piece, Deep-Pattern Type: Deep-drawn, box-shaped brass with chrome-plated finish and spring-clip fasteners.
- B. One-Piece, Stamped-Steel Type: With chrome-plated finish and spring-clip fasteners.
- C. One-Piece Floor Plates: Cast-iron flange with holes for fasteners.

### 2.5 PRESSURE GAGES AND TEST PLUGS

- A. Direct-Mounted, Metal-Case, Dial-Type Pressure Gages:
  - 1. Standard: ASME B40.100.
  - 2. Case: Sealed Solid-front, pressure relief cast aluminum or drawn steel 4-1/2-inch (114-mm) nominal diameter.
  - 3. Movement: Mechanical, with link to pressure element and connection to pointer.
  - 4. Dial: Nonreflective aluminum with permanently etched scale markings graduated in psi (kPa).
  - 5. Pointer: Dark-colored metal.
  - 6. Window: Plastic.
  - 7. Ring: Metal.
  - 8. Accuracy: Grade B, plus or minus 2 percent of middle half of scale range.
- B. Test Plug: Corrosion-resistant brass or stainless-steel body with two self-sealing rubber core inserts and gasketed and threaded cap, with extended stem for units to be installed in insulated piping. Minimum pressure and temperature rating of 500 psig at 200 deg F (3450 kPa at 93 deg C).

### 2.6 HANGERS AND SUPPORTS FOR HVAC

- A. Carbon-Steel Pipe Hangers and Supports:
  - 1. Description: MSS SP-58, Types 1 through 58, factory-fabricated components.
  - 2. Galvanized Metallic Coatings: Pregalvanized or hot dipped.
  - 3. Nonmetallic Coatings: Plastic coating, jacket, or liner.
  - 4. Padded Hangers: Hanger with fiberglass or other pipe insulation pad or cushion to support bearing surface of piping.
  - 5. Hanger Rods: Continuous-thread rod, nuts, and washer made of carbon steel.
- B. Copper Pipe Hangers:
  - 1. Description: MSS SP-58, Types 1 through 58, copper-coated-steel, factory-fabricated components.
  - 2. Hanger Rods: Continuous-thread rod, nuts, and washer made of copper-coated steel.
- C. Fastener Systems:

1. Verify suitability of fasteners in this article for use in lightweight concrete or concrete slabs less than 4 inches (100 mm) thick.
2. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.
3. Mechanical-Expansion Anchors: Insert-wedge-type, stainless steel anchors, for use in hardened portland cement concrete; with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

D. Miscellaneous Materials:

1. Structural Steel: ASTM A 36/A 36M, carbon-steel plates, shapes, and bars; black and galvanized.
2. Grout: ASTM C 1107, factory-mixed and -packaged, dry, hydraulic-cement, nonshrink and nonmetallic grout; suitable for interior and exterior applications.
  - a. Properties: Nonstaining, noncorrosive, and nongaseous.
  - b. Design Mix: 5000-psi (34.5-MPa), 28-day compressive strength.

### PART 3 - EXECUTION

#### 3.1 GENERAL PIPING INSTALLATIONS

- A. Install piping free of sags and bends.
- B. Install fittings for changes in direction and branch connections.
- C. Sleeves:
  1. Install sleeves for piping passing through penetrations in floors, partitions, roofs, and walls.
  2. Install sleeves in concrete floors, concrete roof slabs, and concrete walls as new slabs and walls are constructed.
    - a. Using grout, seal the space outside of sleeves in slabs and walls without sleeve-seal system.
  3. Install stack-sleeve fittings in new slabs as slabs are constructed.
  4. Exterior Wall, Pipe Penetrations: Mechanical sleeve seals installed in steel or cast-iron pipes for wall sleeves.
  5. Fire-Barrier Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at pipe penetrations. Seal pipe penetrations with firestop materials. Comply with requirements for firestopping specified in Section 078446 "Penetration Firestopping."
- D. Sleeve-Seal-System Installation:
  1. Install sleeve-seal systems in sleeves in exterior concrete walls and slabs-on-grade at service piping entries into building.
  2. Select type, size, and number of sealing elements required for piping material and size and for sleeve ID or hole size. Position piping in center of sleeve. Center piping in penetration, assemble sleeve-seal system components, and install in annular space between piping and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make a watertight seal.

- E. Escutcheons & Floor Plates:
  - 1. Install escutcheons for piping penetrations of walls, ceilings, and finished floors.
  - 2. Install escutcheons with ID to closely fit around pipe, tube, and insulation of piping and with OD that completely covers opening.
  - 3. Install floor plates for piping penetrations of equipment-room floors.
  - 4. Install floor plates with ID to closely fit around pipe, tube, and insulation of piping and with OD that completely covers opening.
- F. Install unions at final connection to each piece of equipment.
- G. Install dielectric unions and flanges to connect piping materials of dissimilar metals in gas piping.
- H. Install dielectric coupling and nipple fittings to connect piping materials of dissimilar metals in water piping.

### 3.2 HANGERS AND SUPPORTS

- A. Comply with MSS SP-69 and MSS SP-89. Install building attachments within concrete or to structural steel.
- B. Install hangers and supports to allow controlled thermal and seismic movement of piping systems.
- C. Install powder-actuated fasteners and mechanical-expansion anchors in concrete after concrete is cured. Do not use in lightweight concrete or in slabs less than 4 inches (100 mm) thick.
- D. Load Distribution: Install hangers and supports so piping live and dead loading and stresses from movement will not be transmitted to connected equipment.
- E. Horizontal-Piping Hangers and Supports: Unless otherwise indicated and except as specified in piping system Specification Sections, install the following types:
  - 1. Adjustable Steel Clevis Hangers (MSS Type 1): For suspension of noninsulated or insulated stationary pipes, NPS 1/2 to NPS 30 (DN 15 to DN 750).
  - 2. Pipe Hangers (MSS Type 5): For suspension of pipes, NPS 1/2 to NPS 4 (DN 15 to DN 100), to allow off-center closure for hanger installation before pipe erection.
  - 3. Adjustable Steel Band Hangers (MSS Type 7): For suspension of noninsulated stationary pipes, NPS 1/2 to NPS 8 (DN 15 to DN 200).
  - 4. Adjustable Band Hangers (MSS Type 9): For suspension of noninsulated stationary pipes, NPS 1/2 to NPS 8 (DN 15 to DN 200).
  - 5. Adjustable Swivel-Ring Band Hangers (MSS Type 10): For suspension of noninsulated stationary pipes, NPS 1/2 to NPS 2 (DN 15 to DN 50).
- F. Vertical-Piping Clamps: Unless otherwise indicated and except as specified in piping system Specification Sections, install the following types:
  - 1. Extension Pipe or Riser Clamps (MSS Type 8): For support of pipe risers, NPS 3/4 to NPS 20 (DN 20 to DN 500).
  - 2. Carbon- or Alloy-Steel Riser Clamps (MSS Type 42): For support of pipe risers, NPS 3/4 to NPS 20 (DN 20 to DN 500), if longer ends are required for riser clamps.

3.3 GENERAL EQUIPMENT INSTALLATIONS

- A. Install equipment to allow maximum possible headroom unless specific mounting heights are not indicated.
- B. Install equipment level and plumb, parallel and perpendicular to other building systems and components, unless otherwise indicated.
- C. Install mechanical equipment to facilitate service, maintenance, and repair or replacement of components. Connect equipment for ease of disconnecting, with minimum interference to other installations. Extend grease fittings to accessible locations.
- D. Install equipment to allow right of way for piping installed at required slope.
- E. Mix and install grout for pump and other equipment base plates, and anchors. Place grout, completely filling equipment bases.

END OF SECTION

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**23 05 13**  
**COMMON MOTOR REQUIREMENTS FOR HVAC EQUIPMENT**

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Coordination:

1. Coordinate features of motors, installed units, and accessory devices to be compatible with the following:
  - a. Motor controllers.
  - b. Torque, speed, and horsepower requirements of the load.
  - c. Ratings and characteristics of supply circuit and required control sequence.
  - d. Ambient and environmental conditions of installation location.

PART 2 - PRODUCTS

2.1 MOTOR CHARACTERISTICS

- A. Comply with requirements in this Section except when stricter requirements are specified in plumbing equipment schedules or Sections.
- B. Comply with NEMA MG 1 unless otherwise indicated.
  1. Duty: Continuous duty at ambient temperature of 40 deg C and at altitude of 3300 feet (1000 m) above sea level.
- C. Polyphase Motors:
  1. Description: NEMA MG 1, Design B, medium induction motor.
    - a. Service Factor: 1.15.
  2. Multispeed Motors: Variable torque.
    - a. For motors with 2:1 speed ratio, consequent pole, single winding.
    - b. For motors with other than 2:1 speed ratio, separate winding for each speed.
  3. Rotor: Random-wound, squirrel cage.
  4. Bearings: Regreasable, shielded, antifriction ball bearings suitable for radial and thrust loading.
  5. Temperature Rise: Match insulation rating.
  6. Insulation: Class F.
  7. Code Letter Designation:
    - a. Motors 15 HP and Larger: NEMA starting Code F or Code G.
    - b. Motors Smaller Than 15 HP: Manufacturer's standard starting characteristic.

8. Enclosure Material: Cast iron for motor frame sizes 324T and larger; rolled steel for motor frame sizes smaller than 324T.

D. Polyphase Motors with Additional Requirements

1. Motors Used with Reduced-Voltage and Multispeed Controllers: Match wiring connection requirements for controller with required motor leads. Provide terminals in motor terminal box, suited to control method.
2. Motors Used with Variable Frequency Controllers: Ratings, characteristics, and features coordinated with and approved by controller manufacturer.

E. Single Phase Motors:

1. Motors larger than 1/20 hp shall be one of the following, to suit starting torque and requirements of specific motor application:
  - a. Permanent-split capacitor.
  - b. Split phase.
  - c. Capacitor start, inductor run.
  - d. Capacitor start, capacitor run.
2. Multispeed Motors: Variable-torque, permanent-split-capacitor type.
3. Bearings: Prelubricated, antifriction ball bearings or sleeve bearings suitable for radial and thrust loading.
4. Motors 1/20 HP and Smaller: Shaded-pole type.
5. Thermal Protection: Internal protection to automatically open power supply circuit to motor when winding temperature exceeds a safe value calibrated to temperature rating of motor insulation. Thermal-protection device shall automatically reset when motor temperature returns to normal range.

PART 3 - EXECUTION (Not Used)

END OF SECTION

**23 05 48**  
**VIBRATION AND SEISMIC CONTROLS FOR HVAC PIPING AND EQUIPMENT**

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Submittals:

1. Product Data: For each product indicated.
2. Delegated-Design Submittal: For vibration isolation and seismic-restraint calculations and details indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
3. Welding certificates.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Comply with seismic-restraint requirements in the IBC unless requirements in this Section are more stringent.
- B. Welding: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

2.2 VIBRATION ISOLATORS

- A. Restrained Mounts: All-directional mountings with seismic restraint.
  1. Materials: Cast-ductile-iron or welded steel housing containing two separate and opposing, oil-resistant rubber or neoprene elements that prevent central threaded element and attachment hardware from contacting the housing during normal operation.
  2. Neoprene: Shock-absorbing materials compounded according to the standard for bridge-bearing neoprene as defined by AASHTO.
- B. Elastomeric Hangers: Single or double-deflection type, fitted with molded, oil-resistant elastomeric isolator elements bonded to steel housings with threaded connections for hanger rods. Color-code or otherwise identify to indicate capacity range.
- C. Spring Hangers: Combination coil-spring and elastomeric-insert hanger with spring and insert in compression.
  1. Frame: Steel, fabricated for connection to threaded hanger rods and to allow for a maximum of 30 degrees of angular hanger-rod misalignment without binding or reducing isolation efficiency.
  2. Outside Spring Diameter: Not less than 80 percent of the compressed height of the spring at rated load.
  3. Minimum Additional Travel: 50 percent of the required deflection at rated load.

4. Lateral Stiffness: More than 80 percent of rated vertical stiffness.
  5. Overload Capacity: Support 200 percent of rated load, fully compressed, without deformation or failure.
  6. Elastomeric Element: Molded, oil-resistant rubber or neoprene. Steel-washer-reinforced cup to support spring and bushing projecting through bottom of frame.
  7. Self-centering hanger rod cap to ensure concentricity between hanger rod and support spring coil.
- D. Pipe Riser Resilient Support: All-directional, acoustical pipe anchor consisting of two steel tubes separated by a minimum of 1/2-inch thick neoprene. Include steel and neoprene vertical-limit stops arranged to prevent vertical travel in both directions. Design support for a maximum load on the isolation material of 500 psig and for equal resistance in all directions.

### 2.3 SEISMIC-RESTRAINT DEVICES

- A. General Requirements for Restraint Components: Rated strengths, features, and applications shall be as defined in reports by an agency acceptable to authorities having jurisdiction.
1. Structural Safety Factor: Allowable strength in tension, shear, and pullout force of components shall be at least four times the maximum seismic forces to which they will be subjected.
- B. Channel Support System: MFMA-3, shop- or field-fabricated support assembly made of slotted steel channels with accessories for attachment to braced component at one end and to building structure at the other end and other matching components and with corrosion-resistant coating; and rated in tension, compression, and torsion forces.
- C. Restraint Cables: ASTM A 603 galvanized- steel cables with end connections made of steel assemblies with thimbles, brackets, swivel, and bolts designed for restraining cable service; and with a minimum of two clamping bolts for cable engagement.
- D. Bushings for Floor-Mounted Equipment Anchor Bolts: Neoprene bushings designed for rigid equipment mountings, and matched to type and size of anchor bolts and studs.
- E. Resilient Isolation Washers and Bushings: One-piece, molded, oil- and water-resistant neoprene, with a flat washer face.
- F. Mechanical Anchor Bolts: Drilled-in and stud-wedge or female-wedge type in zinc-coated steel for interior applications and stainless steel for exterior applications. Select anchor bolts with strength required for anchor and as tested according to ASTM E 488. Minimum length of eight times diameter.

## PART 3 - EXECUTION

### 3.1 VIBRATION-CONTROL AND SEISMIC-RESTRAINT DEVICE INSTALLATION

- A. Equipment Restraints:
1. Install resilient bolt isolation washers on equipment anchor bolts where clearance between anchor and adjacent surface exceeds 0.125 inch.
  2. Install seismic-restraint devices using methods approved by an agency acceptable to authorities having jurisdiction providing required submittals for component.

- B. Piping Restraints:
  - 1. Comply with requirements in MSS SP-127.
- C. Install cables so they do not bend across edges of adjacent equipment or building structure.
- D. Install bushing assemblies for anchor bolts for floor-mounted equipment, arranged to provide resilient media between anchor bolt and mounting hole in concrete base.
- E. Attachment to Structure: If specific attachment is not indicated, anchor bracing to structure at flanges of beams, at upper truss chords of bar joists, or at concrete members.
- F. Drilled-in Anchors:
  - 1. Identify position of reinforcing steel and other embedded items prior to drilling holes for anchors. Do not damage existing reinforcing or embedded items during coring or drilling. Notify the Architect if reinforcing steel or other embedded items are encountered during drilling. Locate and avoid pre-stressed tendons, electrical and telecommunications conduit, and gas lines.
  - 2. Do not drill holes in concrete or masonry until concrete, mortar, or grout has achieved full design strength.
  - 3. Wedge Anchors: Protect threads from damage during anchor installation. Heavy-duty sleeve anchors shall be installed with sleeve fully engaged in the structural element to which anchor is to be fastened.
  - 4. Set anchors to manufacturer's recommended torque, using a torque wrench.
  - 5. Install zinc-coated steel anchors for interior and stainless-steel anchors for exterior applications.

### 3.2 FIELD QUALITY CONTROL

- A. Perform tests and inspections.
- B. Remove and replace malfunctioning units and retest as specified above.
- C. Prepare test and inspection reports.

### 3.3 ADJUSTING

- A. Adjust isolators after piping system is at operating weight.
- B. Adjust limit stops on restrained spring isolators to mount equipment at normal operating height. After equipment installation is complete, adjust limit stops so they are out of contact during normal operation.
- C. Adjust active height of spring isolators.
- D. Adjust restraints to permit free movement of equipment within normal mode of operation.

END OF SECTION

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**23 05 93**  
**TESTING, ADJUSTING, AND BALANCING FOR HVAC**

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

- A. Submittals:
  - 1. Reference Division 1 "Submittals"
  - 2. Certified TAB reports.
  - 3. Documentation of work performed per ASHRAE 62.1, Section 7.2.2 - "Air Balancing."
  - 4. Documentation of work performed per ASHRAE/IESNA 90.1, Section 6.7.2.3 - "System Balancing."
- B. TAB Firm Qualifications: AABC, NEBB or TABB certified.
- C. TAB Report Forms: Standard TAB contractor's forms approved by the Architect.
- D. Perform TAB after leakage and pressure tests on air and water distribution systems have been satisfactorily completed.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine the Contract Documents to become familiar with Project requirements and to discover conditions in systems' designs that may preclude proper TAB of systems and equipment.
- B. Examine the approved submittals for HVAC systems and equipment.
- C. Examine systems for installed balancing devices, such as test ports, gage cocks, thermometer wells, flow-control devices, balancing valves and fittings, and manual volume dampers. Verify that locations of these balancing devices are accessible.
- D. Examine system and equipment installations and verify that field quality-control testing, cleaning, and adjusting specified in individual Sections have been performed.
- E. Examine HVAC equipment and filters and verify that bearings are greased, belts are aligned and tight, and equipment with functioning controls is ready for operation.
- F. Examine automatic temperature system components to verify the following:
  - 1. Dampers, valves, and other controlled devices are operated by the intended controller.
  - 2. Dampers and valves are in the position indicated by the controller.

3. Thermostats and humidistats are located to avoid adverse effects of sunlight, drafts, and cold walls.
  4. Sensors are located to sense only the intended conditions.
  5. Sequence of operation for control modes is according to the Contract Documents.
  6. Controller set points are set at indicated values.
  7. Interlocked systems are operating.
- G. Report deficiencies discovered before and during performance of test and balance procedures.

### 3.2 GENERAL PROCEDURES FOR TESTING AND BALANCING

- A. Perform testing and balancing procedures on each system according to the procedures contained in AABC's "National Standards for Total System Balance" ASHRAE 111, NEBB's "Procedural Standards for Testing, Adjusting, and Balancing of Environmental Systems" SMACNA's "HVAC Systems - Testing, Adjusting, and Balancing" and in this Section.
- B. Cut insulation, ducts, pipes, and equipment cabinets for installation of test probes to the minimum extent necessary for TAB procedures. After testing and balancing, patch probe holes in ducts with same material and thickness as used to construct ducts. Install and join new insulation that matches removed materials. Restore insulation, coverings, vapor barrier, and finish.
- C. Mark equipment and balancing devices, including damper-control positions, valve position indicators, fan-speed-control levers, and similar controls and devices, with paint or other suitable, permanent identification material to show final settings.
- D. Take and report testing and balancing measurements in inch-pound (IP) units.

### 3.3 GENERAL PROCEDURES FOR BALANCING AIR SYSTEMS

- A. Prepare schematic diagrams of systems' "as-built" duct layouts.
- B. Determine the best locations in main and branch ducts for accurate duct airflow measurements.
- C. Verify that motor starters are equipped with properly sized thermal protection.
- D. Check for airflow blockages.
- E. Check for proper sealing of air-handling unit components.
- F. Check for proper sealing of air duct system.

### 3.4 TOLERANCES

- A. Set HVAC system airflow and water flow rates within the following tolerances:
  1. Supply, Return, and Exhaust Fans and Equipment with Fans: Plus or minus 10 percent.
  2. Air Outlets and Inlets: Plus or minus 10 percent.

END OF SECTION



**23 11 23**  
**FACILITY NATURAL GAS PIPING**

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Submittals:

1. Reference Division 1 "Submittals"
2. Product Data: For each type of product indicated.
3. Shop Drawings: For facility natural-gas piping layout.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Minimum Operating-Pressure Ratings:

1. Piping and Valves: 100 psig (690 kPa) minimum unless otherwise indicated.
2. Service Regulators: 65 psig (450 kPa) minimum unless otherwise indicated.
3. Service Meter Minimum Operating Pressure: 5 psig (34.5 kPa)

B. Natural-Gas System Pressure within Building: One distribution pressure. 7 to 11 wg.

2.2 PIPES, TUBES, AND FITTINGS

A. Steel Pipe: ASTM A 53/A 53M, black steel, Schedule 40, Type E or S, Grade B.

1. Malleable-Iron Threaded Fittings: ASME B16.3, Class 150, standard pattern.
2. Wrought-Steel Welding Fittings: ASTM A 234/A 234M for butt welding and socket welding.
3. Unions: ASME B16.39, Class 150, malleable iron with brass-to-iron seat, ground joint, and threaded ends.
4. Protective Coating for Underground Piping: Factory-applied, three-layer coating of epoxy, adhesive, and PE.

B. PE Pipe: ASTM D 2513, SDR 11. (Underground Only)

1. PE Fittings: ASTM D 2683, socket-fusion type or ASTM D 3261, butt-fusion type with dimensions matching PE pipe.
2. PE Transition Fittings: Factory-fabricated fittings with PE pipe complying with ASTM D2513, SDR 11 and steel pipe complying with ASTM A 53/A 53M, black steel, Schedule 40, Type E or S, Grade B.

2.3 SPECIALTIES

A. Appliance Flexible Connectors:

1. Indoor, Fixed-Appliance Flexible Connectors: Comply with ANSI Z21.24.
  2. Indoor, Movable-Appliance Flexible Connectors: Comply with ANSI Z21.69.
  3. Outdoor, Appliance Flexible Connectors: Comply with ANSI Z21.75.
  4. Corrugated stainless-steel tubing with polymer coating.
- B. Strainers: ASTM A 126, Class B, cast-iron body, Y-pattern, full size of connecting piping, CWP rating of 125 psig (860 kPa). Include 40-mesh startup strainer, and perforated stainless-steel basket.
- C. Weatherproof Vent Cap: Cast- or malleable-iron increaser fitting with corrosion-resistant wire screen, with free area at least equal to cross-sectional area of connecting pipe and threaded-end connection.
- D. Service Meters: Comply with gas company requirements.
- E. Detectable Warning Tape: PE film warning tape 6 inches (150 mm) wide and 4 mils (0.1 mm) thick, continuously inscribed with a description of utility, with metallic core encased in a protective jacket for corrosion protection; colored yellow.

## 2.4 VALVES

- A. General Requirements for Metallic Manual Gas Shutoff Valves: Comply with ASME B16.33.
1. CWP Rating: 125 psig (860 kPa).
- B. One-Piece, Bronze Ball Valve with Bronze Trim: MSS SP-110.
1. Body: Bronze, complying with ASTM B 584.
  2. Ball: Chrome-plated brass.
  3. Stem: Bronze; blowout proof.
  4. Seats: Reinforced TFE; blowout proof.
  5. Packing: Separate packnut with adjustable stem packing threaded ends.
  6. CWP Rating: 600 psig (4140 kPa).
  7. Listing: Valves NPS 1 (DN 25) and smaller shall be listed and labeled by an NRTL acceptable to authorities having jurisdiction.
  8. Service: Suitable for natural-gas service with "WOG" indicated on valve body.
- C. Two-Piece, Full-Port, Bronze Ball Valves with Bronze Trim: MSS SP-110.
1. Body: Bronze, complying with ASTM B 584.
  2. Ball: Chrome-plated bronze.
  3. Stem: Bronze; blowout proof.
  4. Seats: Reinforced TFE; blowout proof.
  5. Packing: Threaded body packnut design with adjustable stem packing.
  6. CWP Rating: 600 psig (4140 kPa).
  7. Listing: Valves NPS 1 (DN 25) and smaller shall be listed and labeled by an NRTL acceptable to authorities having jurisdiction.
  8. Service: Suitable for natural-gas service with "WOG" indicated on valve body.
- D. Bronze Plug Valves: MSS SP-78.
1. Body: Bronze, complying with ASTM B 584.
  2. Plug: Bronze.
  3. Operator: Square head or lug type with tamperproof feature where indicated.

4. Pressure Class: 125 psig (862 kPa).
  5. Listing: Valves NPS 1 (DN 25) and smaller shall be listed and labeled by an NRTL acceptable to authorities having jurisdiction.
  6. Service: Suitable for natural-gas service with "WOG" indicated on valve body.
- E. Cast-Iron, Nonlubricated Plug Valves: MSS SP-78.
1. Body: Cast iron, complying with ASTM A 126, Class B.
  2. Plug: Bronze or nickel-plated cast iron.
  3. Seat: Coated with thermoplastic.
  4. Stem Seal: Compatible with natural gas.
  5. Operator: Square head or lug type with tamperproof feature where indicated.
  6. Pressure Class: 125 psig (862 kPa).
  7. Listing: Valves NPS 1 (DN 25) and smaller shall be listed and labeled by an NRTL acceptable to authorities having jurisdiction.
  8. Service: Suitable for natural-gas service with "WOG" indicated on valve body.
- F. Valve Boxes: Cast iron, two sections, with base to fit over valve and barrel a minimum of 5 inches (125 mm) in diameter and cover with "GAS" lettering.
- G. Electrically Operated, Automatic Gas Valves: Comply with UL 429.
- H. Earthquake Valves: ASCE 25, listed and labeled by an NRTL acceptable to authorities having jurisdiction.

## 2.5 PRESSURE REGULATORS

- A. General Requirements: Single stage, steel jacketed, and corrosion resistant. Include elevation compensator.
- B. Service-Pressure Regulators: ANSI Z21.80; 100-psig- (690-kPa-) maximum inlet pressure. Factory- or field-installed, stainless-steel screen in vent opening if not connected to vent piping.
- C. Line Pressure Regulators: ANSI Z21.80; 5-psig- (34.5-kPa-) maximum inlet pressure. Factory- or field-installed, stainless-steel screen in vent opening if not connected to vent piping.
- D. Appliance Pressure Regulators: ANSI Z21.18; Regulator may include vent limiting device, instead of vent connection, if approved by authorities having jurisdiction.

## PART 3 - EXECUTION

### 3.1 OUTDOOR PIPING INSTALLATION

- A. Comply with requirements in Section 230500 "Common Work Results for HVAC" for basic piping installation requirements.
- B. Install underground, natural-gas piping buried at least 36 inches below finished grade.
  1. If natural-gas piping is installed less than 36 inches below finished grade, install it in containment conduit.
- C. Install underground, PE, natural-gas piping according to ASTM D 2774.

- D. Install underground, PE, natural-gas piping with tracer wire and warning tape.
- E. Install shutoff valve, downstream from gas meter, outside building at gas service entrance.
- F. Install earthquake valves aboveground outside buildings according to listing.
- G. Install wall penetration system at each service pipe penetration through foundation wall. Make installation watertight. Comply with requirements in Section 230500 "Common Work Results for HVAC" for wall penetration systems.
- H. Install pressure gage upstream and downstream from each service regulator. Pressure gages are specified in Section 230500 "Common Work Results for HVAC."
- I. Install service meters to comply with gas company requirements.

### 3.2 INDOOR PIPING INSTALLATION

- A. Comply with requirements in Section 230500 "Common Work Results for HVAC" for basic piping installation requirements.
- B. Install piping in concealed locations unless otherwise indicated and except in equipment rooms and service areas.
- C. Piping Installed under Buildings: Install piping under the building in containment conduit constructed of steel pipe with welded joints as described in Part 2. Install a vent pipe from containment conduit to outdoors and terminate with a weatherproof vent cap.
- D. Install escutcheons at penetrations of interior walls, ceilings, and floors.
- E. Fire-Barrier Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at pipe penetrations. Seal pipe penetrations with firestop materials. Comply with requirements in Section 078413 "Penetration Firestopping."
- F. Install service meters to comply with gas company requirements.
- G. Install gas stops for shutoff to appliances with low-pressure gas supply.
- H. Install natural-gas piping at uniform grade of 2 percent down toward drip and sediment traps.
- I. Use eccentric reducer fittings to make reductions in pipe sizes. Install fittings with level side down.
- J. Connect branch piping from top or side of horizontal piping.
- K. Install unions in pipes NPS 2 (DN 50) and smaller, adjacent to each valve, at final connection to each piece of equipment. Unions are not required at flanged connections.
- L. Install strainer on inlet of each line pressure regulator and automatic or electrically operated valve.
- M. Install pressure gage upstream and downstream from each line regulator. Pressure gages are specified in Section 230500 "Common Work Results for HVAC."

- N. Connect gas piping to equipment and appliances with shutoff valves and unions. Install gas valve upstream from and within 72 inches (1800 mm) of each appliance using gas. Install union or flanged connections downstream from valves.
- O. Extend relief vent connections for service regulators, line regulators, and overpressure protection devices to the outdoors and terminate with weatherproof vent cap.
- P. Do not use natural-gas piping as grounding electrode.

### 3.3 PIPING JOINT CONSTRUCTION

- A. Threaded Joints: Thread pipe with tapered pipe threads complying with ASME B1.20.1.
- B. Welded Joints: 3" and larger. Construct joints according to AWS D10.12M/D10.12, using qualified processes and welding operators.
- C. Joints in Steel Piping with Protective Coating: Apply joint cover kits to pipe after joining to cover, seal, and protect joints.
- D. Flanged Joints: Install gasket material, size, type, and thickness appropriate for natural-gas service. Install gasket concentrically positioned.
- E. Flared Joints: Cut tubing with roll cutting tool. Flare tube end with tool to result in flare dimensions conforming to SAE J513. Tighten finger tight then using wrench. Do not overtighten.
- F. PE Piping Heat-Fusion Joints: Clean and dry joining surfaces by wiping with clean cloth or paper towels. Join according to ASTM D 2657.
  - 1. Plain-End Pipe and Fittings: Use butt fusion.
  - 2. Plain-End Pipe and Socket Fittings: Use socket fusion.

### 3.4 VALVE INSTALLATION

- A. Install manual gas shutoff valve for each gas appliance ahead of corrugated stainless-steel tubing, aluminum, or copper connector.
- B. Install underground valves with valve boxes.
- C. Install regulators and overpressure protection devices with maintenance access space adequate for servicing and testing.
- D. Install anode for metallic valves in underground PE piping.

### 3.5 OUTDOOR PIPING SCHEDULE

- A. Underground natural-gas piping shall be the following:
  - 1. PE pipe and fittings joined by heat-fusion, or mechanical couplings; service-line risers with tracer wire terminated in an accessible location.
- B. Aboveground natural-gas piping shall be the following:

1. Steel pipe with malleable-iron fittings and threaded joints.
- C. Containment Conduit: Steel pipe with wrought-steel fittings and welded joints. Coat pipe and fittings with protective coating for steel piping. (Containment conduit is required for piping with insufficient depth of bury).
- 3.6 INDOOR PIPING SCHEDULE FOR SYSTEM PRESSURES LESS THAN 0.5 PSIG (3.45 kPa)
- A. Aboveground, branch piping NPS 1" and smaller shall be one of the following:
1. Steel pipe with malleable-iron fittings and threaded joints.
- B. Aboveground, distribution piping shall be the following:
1. Steel pipe with malleable-iron fittings and threaded joints.
- C. Underground, below building, shall be one of the following:
1. Steel pipe with malleable-iron fittings and threaded joints.
  2. Steel pipe with wrought-steel fittings and welded joints.
- D. Containment Conduit: Steel with wrought-steel fittings and welded joints. Coat pipe and fittings with protective coating for steel piping. (Containment conduit is required for piping with insufficient depth of bury).
- E. Containment Conduit Vent Piping: Steel pipe with malleable-iron fittings and threaded or wrought-steel fittings with welded joints. Coat underground pipe and fittings with protective coating for steel piping.
- 3.7 UNDERGROUND MANUAL GAS SHUTOFF VALVE SCHEDULE
- A. Connections to Existing Gas Piping: Use valve and fitting assemblies made for tapping utility's gas mains and listed by an NRTL.
- B. Underground:
1. PE valves.
  2. NPS 2 (DN 50) and Smaller: Bronze plug valves.
  3. NPS 2-1/2 (DN 65) and Larger: Cast-iron, nonlubricated plug valves.
- 3.8 ABOVEGROUND MANUAL GAS SHUTOFF VALVE SCHEDULE
- A. Valves for pipe sizes NPS 2 (DN 50) and smaller shall be one of the following:
1. One-piece, bronze ball valve with bronze trim.
  2. Two-piece, full-port, bronze ball valves with bronze trim.
  3. Bronze plug valve.
- B. Valves for pipe sizes NPS 2-1/2 (DN 65) and larger shall be one of the following:
1. Two-piece, full-port, bronze ball valves with bronze trim.
  2. Bronze plug valve.

3. Cast-iron, nonlubricated plug valve.
- C. Valves in branch piping for single appliance shall be one of the following:
1. One-piece, bronze ball valve with bronze trim.
  2. Two-piece, full-port, bronze ball valves with bronze trim.
  3. Bronze plug valve.

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**23 31 00**  
**HVAC DUCTS AND CASINGS**

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Submittals:

1. Reference Division 1 "Submittals"
2. Product Data: For each type of product indicated.
3. Documentation indicating that duct systems and accessories comply with ASHRAE 62.1, Section 5 - "Systems and Equipment."
4. Documentation indicating that duct systems comply with ASHRAE/IESNA 90.1, Section 6 - "Heating, Ventilating, and Air Conditioning." and Section 6.4.4 - "HVAC System Construction and Insulation."
5. Documentation of work performed for compliance with ASHRAE 62.1, Section 7.2.4 - "Ventilation System Start-up."
6. For adhesives and sealants, documentation including printed statement of VOC content.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."
- B. Structural Performance: Duct hangers and supports and seismic restraints shall withstand the effects of gravity and seismic loads and stresses within limits and under conditions described in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" and SMACNA's "Seismic Restraint Manual: Guidelines for Mechanical Systems."
- C. Airstream Surfaces: Surfaces in contact with the airstream shall comply with requirements in ASHRAE 62.1.
- D. ASHRAE Compliance: Applicable requirements in ASHRAE 62.1, Section 5 - "Systems and Equipment" and Section 7 - "Construction and System Start-up."
- E. ASHRAE/IESNA Compliance: Applicable requirements in ASHRAE/IESNA 90.1, Section 6.4.4 - "HVAC System Construction and Insulation."
- F. Comply with NFPA 90A, "Installation of Air Conditioning and Ventilating Systems," and with NFPA 90B, "Installation of Warm Air Heating and Air Conditioning Systems."
- G. Comply with NFPA 96 for ducts connected to commercial kitchen hoods.
- H. Comply with UL 181 for ducts and closures.

## 2.2 DUCTS

- A. Galvanized-Steel Sheet: ASTM A 653/A 653M, with G60 (Z180) hot-dip galvanized coating.
  - 1. Galvanized Coating Designation: G90 (Z275).
  - 2. Finishes for Surfaces Exposed to View: Mill phosphatized.
- B. Joint and Seam Tape, and Sealant: Comply with UL 181A.
- C. Rectangular Metal Duct Fabrication: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."
- D. Fibrous-Glass Liner: Comply with NFPA 90A or NFPA 90B and with NAIMA AH124.
  - 1. Thickness: 2 inches (50 mm), R-8.
  - 2. Airstream surface coated with an antimicrobial erosion-resistant coating.
  - 3. Liner Adhesive: Comply with NFPA 90A or NFPA 90B and with ASTM C 916.
  - 4. Mechanical Fasteners: Galvanized steel suitable for adhesive attachment, mechanical attachment, or welding attachment.

## 2.3 ACCESSORIES

- A. Volume Dampers and Control Dampers: Single-blade and multiple opposed-blade dampers, standard leakage rating, and suitable for horizontal or vertical applications; factory fabricated and complete with required hardware and accessories.
- B. Fire Dampers: Rated and labeled according to UL 555 by an NRTL; factory fabricated and complete with required hardware and accessories.
- C. Ceiling Fire Dampers: Labeled according to UL 555C by an NRTL and complying with construction details for tested floor- and roof-ceiling assemblies as indicated in UL's "Fire Resistance Directory." Provide factory-fabricated units complete with required hardware and accessories.
- D. Smoke Dampers: Labeled according to UL 555S by an NRTL. Combination fire and smoke dampers shall also be rated and labeled according to UL 555. Provide factory-fabricated units complete with required hardware and accessories.
- E. Flexible Connectors: Flame-retarded or noncombustible fabrics, coatings, and adhesives complying with UL 181, Class 1.
- F. Flexible Ducts: Factory-fabricated, insulated, round duct, with an outer jacket enclosing 1-inch-(25-mm-) thick, glass-fiber insulation around a continuous inner liner complying with UL 181, Class 1.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Install ducts according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" unless otherwise indicated.

- B. Seal ducts to the following seal classes according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible":
    - 1. Outdoor, Supply-Air Ducts: Seal Class A.
    - 2. Outdoor, Exhaust Ducts: Seal Class C.
    - 3. Outdoor, Return-Air Ducts: Seal Class C.
    - 4. Unconditioned Space, Supply-Air Ducts in Pressure Classes 2-Inch wg (500 Pa) and Lower: Seal Class B.
    - 5. Unconditioned Space, Supply-Air Ducts in Pressure Classes Higher Than 2-Inch wg (500 Pa): Seal Class A.
    - 6. Unconditioned Space, Exhaust Ducts: Seal Class C.
    - 7. Unconditioned Space, Return-Air Ducts: Seal Class B.
    - 8. Conditioned Space, Supply-Air Ducts in Pressure Classes 2-Inch wg (500 Pa) and Lower: Seal Class C.
    - 9. Conditioned Space, Supply-Air Ducts in Pressure Classes Higher Than 2-Inch wg (500 Pa): Seal Class B.
    - 10. Conditioned Space, Exhaust Ducts: Seal Class B.
    - 11. Conditioned Space, Return-Air Ducts: Seal Class C.
  - C. Conceal ducts from view in finished and occupied spaces.
  - D. Avoid passing through electrical equipment spaces and enclosures.
  - E. Support ducts to comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Ch. 4, "Hangers and Supports."
  - F. Install duct accessories according to applicable details in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for metal ducts and in NAIMA AH116, "Fibrous Glass Duct Construction Standards," for fibrous-glass ducts.
  - G. Install volume and control dampers in lined duct with methods to avoid damage to liner and to avoid erosion of duct liner.
  - H. Install fire and smoke dampers according to UL listing.
  - I. Install fusible links in fire dampers.
  - J. Clean new duct systems before testing, adjusting, and balancing.
- 3.2 TESTING, ADJUSTING, AND BALANCING
- A. Balance airflow within distribution systems, including submains, branches, and terminals to indicated quantities.

END OF SECTION

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**23 34 23**  
**HVAC POWER VENTILATORS**

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Submittals:

1. Reference Division 1 "Submittals"
2. Product Data: For each type of product indicated.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Products shall be licensed to use the AMCA-Certified Ratings Seal.
- B. Power ventilators shall comply with UL 705.
- C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

2.2 CENTRIFUGAL VENTILATORS

- A. Basis-of-Design Product: Product indicated on Drawings or a comparable product of one of the following or equal:
  1. Acme Engineering & Manufacturing Corporation.
  2. Greenheck Fan Corporation.
  3. Loren Cook Company.
- B. Housing: Removable, spun-aluminum, dome top and outlet baffle, one-piece, aluminum base with venturi inlet cone.
  1. Downblast Units: Aluminum discharge baffle to direct discharge air downward.
  2. Wall-Mounting Units: Aluminum rectangular base with venturi inlet cone, motor mount, and vibration isolators designed for wall mounting.
- C. Fan Wheels: Aluminum hub and wheel with backward-inclined blades.
- D. Belt-Driven Drive Assembly: Resiliently mounted to housing.
  1. Fan Shaft: Turned, ground, and polished steel; keyed to wheel hub.
  2. Shaft Bearings: Permanently lubricated, permanently sealed, self-aligning ball bearings.
  3. Pulleys: Cast-iron, adjustable-pitch motor pulley.
  4. Fan and motor isolated from exhaust airstream.
- E. Accessories:

1. Disconnect Switch: Nonfusible type, with thermal-overload protection mounted inside fan housing, factory wired through an internal aluminum conduit.
  2. Bird Screens: Removable, 1/2-inch (13-mm) mesh, aluminum or brass wire.
  3. Dampers: Counterbalanced, parallel-blade, backdraft dampers mounted in curb base; factory set to close when fan stops.
  4. Motorized Dampers: Parallel-blade dampers mounted in curb base with electric actuator; wired to close when fan stops.
- F. Roof Curbs: Galvanized steel; mitered and welded corners; 1-1/2-inch- (40-mm-) thick, rigid, fiberglass insulation adhered to inside walls; and 1-1/2-inch (40-mm) wood nailer. Size as required to suit roof opening and fan base.
1. Configuration: Built-in cant and mounting flange] [Built-in raised cant and mounting flange.
  2. Pitch Mounting: Manufacture curb for roof slope.
  3. Mounting Pedestal: Galvanized steel with removable access panel.
- G. Capacities and Characteristics:
1. See Drawings

### 2.3 CEILING-MOUNTED VENTILATORS

- A. Basis-of-Design Product: Product indicated on Drawings or a comparable product of one of the following or equal:
1. Breidert Air Products.
  2. Broan-NuTone LLC; NuTone Inc.
  3. Greenheck Fan Corporation.
  4. Loren Cook Company.
- B. Housing: Steel, lined with acoustical insulation.
- C. Fan Wheel: Centrifugal wheels directly mounted on motor shaft. Fan shrouds, motor, and fan wheel shall be removable for service.
- D. Grille: Aluminum, louvered or egg-crate grille with flange on intake and thumbscrew attachment to fan housing.
- E. Electrical Requirements: Junction box for electrical connection on housing and receptacle for motor plug-in.
- F. Accessories:
1. Variable-Speed Controller: Solid-state control to reduce speed from 100 to less than 50 percent.
  2. Manual Starter Switch: Single-pole rocker switch assembly with cover and pilot light.
  3. Motion Sensor: Motion detector with adjustable shutoff timer.
  4. Ceiling Radiation Damper: Fire-rated assembly with ceramic blanket, stainless-steel springs, and fusible link.
  5. Filter: Washable aluminum to fit between fan and grille.
  6. Isolation: Rubber-in-shear vibration isolators.
  7. Energy Star rated with humidistat.
- G. Capacities and Characteristics:

1. See Drawing.

## 2.4 MOTORS

- A. Comply with NEMA designation, temperature rating, service factor, enclosure type, and efficiency requirements for motors specified in Section 230513 "Common Motor Requirements for HVAC Equipment."
  1. Motor Sizes: Minimum size as indicated. If not indicated, large enough so driven load will not require motor to operate in service factor range above 1.0.
- B. Enclosure Type: Totally enclosed, fan cooled.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Install units with clearances for service and maintenance.
- B. Roof-Mounted Units: Install roof curb on roof structure, according to NRCA's "Low-Slope Membrane Roofing Construction Details Manual," Illustration "Raised Curb Detail for Rooftop Air Handling Units and Ducts." Install and secure roof-mounted fans on curbs, and coordinate roof penetrations and flashing with roof construction.
- C. In-Line Centrifugal Fans: Suspend units from structural-steel support frame using threaded steel rods and vibration isolation springs.
- D. Ceiling-Mounted Units: Suspend units from structure using steel wire or metal straps.
- E. Ground power ventilators.

END OF SECTION

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**23 37 13**  
**DIFFUSERS, REGISTERS, AND GRILLES**

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Submittals:

1. Reference Division 1 "Submittals"
2. Product Data: For each type of product indicated, including color charts for factory finishes.

PART 2 - PRODUCTS

2.1 OUTLETS AND INLETS

A. Diffusers:

1. Basis-of-Design Product: Product indicated on Drawings or a comparable product of one of the following or equal:
  - a. Anemostat Products; a Mestek company.
  - b. METALAIRE, Inc.
  - c. Price Industries.
2. Material: Aluminum.
3. Finish: See Drawings.
4. Mounting: See Drawings.

B. Wall, Ceiling and Floor Registers and Grilles:

1. Basis-of-Design Product: Product indicated on Drawings or a comparable product of one of the following or equal:
  - a. Anemostat Products; a Mestek company.
  - b. METALAIRE, Inc.
  - c. Price Industries.
2. Material: Aluminum.
3. Finish: See Drawings.
4. Mounting: See Drawings.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install diffusers, registers, and grilles level and plumb.

- B. Ceiling-Mounted Outlets and Inlets: Drawings indicate general arrangement of ducts, fittings, and accessories. Make final locations where indicated, as much as practical. For units installed in lay-in ceiling panels, locate units in the center of panel unless otherwise indicated. Where architectural features or other items conflict with installation, notify the Architect for a determination of final location.
  
- C. After installation, adjust diffusers, registers, and grilles to air patterns indicated, or as directed, before starting air balancing.

END OF SECTION

**23 73 33**  
**INDIRECT-FIRED H&V UNITS**

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Submittals:

1. Product Data: Include rated capacities, furnished specialties, and accessories.
2. Documentation indicating that units comply with ASHRAE 62.1, Section 5 - "Systems and Equipment."

- B. Warranty Period for Heat Exchangers: Manufacturer's standard, but not less than 5 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Comply with NFPA 70.
- C. ASHRAE Compliance: Applicable requirements in ASHRAE 62.1, Section 5 - "Systems and Equipment" and Section 7 - "Construction and Startup."
- D. ASHRAE/IESNA 90.1-2004 Compliance: Applicable requirements in ASHRAE/IESNA 90.1-2004, Section 6 - "Heating, Ventilating, and Air-Conditioning."

2.2 PACKAGED UNITS

- A. Factory-assembled, prewired, self-contained unit consisting of cabinet, supply fan, controls, and indirect-fired propane furnace to be installed inside the building.
1. Manufacturers:
  2. Basis-of-Design Product: Product indicated on Drawings or a comparable product of one of the following:
    - a. Reznor-Thomas & Betts Corporation; Mechanical Products Division.
    - b. Sterling Gas; Mestek, Inc.

2.3 CABINET

- A. Cabinet: Single - wall, galvanized-steel panels with lifting lugs. Fibrous-glass duct lining 1 inch thick, complying with ASTM C 1071, Type II, applied on furnace and fan sections only. Heat-resistant, baked-enamel finish. Horizontal - pattern, galvanized-steel discharge plenum with diffusers incorporating individually adjustable vanes.

2.4 SUPPLY-AIR FAN

- A. Fan Type: Centrifugal, rated according to AMCA 210; statically and dynamically balanced, galvanized steel; mounted on solid-steel shaft.
- B. Motor: Open drip-proof, single-speed motor.
- C. Drive: direct drive.

2.5 INDIRECT-FIRED GAS FURNACE

- A. Description: Factory assembled, piped, and wired; and complying with ANSI Z21.47, "Gas-Fired Central Furnaces," and with NFPA 54, "National Fuel Gas Code." Designed and certified by and bearing label of AGA. Propane gas-fired aluminized steel with stainless-steel inserts burners. Single-stage gas control valve. Minimum thermal efficiency, 80 percent. Electronically controlled electric spark igniter with flame sensor.
  - 1. Power Vent: Integral, motorized centrifugal fan interlocked with gas valve.
  - 2. Combustion-Air Intake: Separate combustion-air intake and vent terminal assembly.
  - 3. Heat Exchanger: Aluminized steel.
- B. Safety controls include vent flow verification, high-temperature limit, purge-period sequence, and safety lockout switch. Regulated, redundant, 24-V ac gas valve assembly containing pilot solenoid valve, electronic-modulating temperature control valve, pilot filter, pressure regulator, pilot shutoff, and manual shutoff all in one body. Safety switches and controls to comply with ANSI standards.

2.6 CONTROLS

- A. Factory-wired, fuse-protected control transformer, connection for power supply and field-wired unit to thermostat.
- B. Temperature Control: Operates burner to maintain room temperature.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install gas-fired units according to NFPA 54.
- B. Install suspended units from spring hangers with minimum 1-inch static deflection; see Section 230548 "Vibration and Seismic Controls for HVAC Piping and Equipment."
- C. Connect fuel piping with shutoff valve and union and with sufficient clearance for burner removal and service.

END OF SECTION

**SECTION 26 05 00  
COMMON WORK RESULTS FOR ELECTRICAL**

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. This Section Includes:

1. Materials and equipment shall be furnished and installed in support of electrical work described in these plans and specifications including but not limited to, raceways, boxes, enclosures, branch circuiting, supports, terminal cabinets, sleeves, lighting fixtures, controls, relays, contactors, in order to complete and make fully functional the systems described.
2. Lighting systems, both interior and exterior as shown on the plans and as specified herein, including controls, occupancy sensors, lumen sensors, photocell controls, lamps, dimmers, racks, dimming ballasts, supports, fasteners, straps, and miscellaneous mounting hardware and support structures for such equipment.
3. Duct banks and raceways for all power and communications systems as shown and/or required. Duct banks shall include all trenching, racking, conduit, concrete, backfill, boxes, pads, substructures required for a fully developed and useable pathway for cables, conductors, as shown on site, etc.
4. HVAC and plumbing electrical: Conduit, conductors and terminations for all line voltage power, line voltage controls and fusible and/or non-fusible safety disconnect switches for HVAC equipment, including but not limited to air conditioners, furnaces, fans, heat pumps, cooling towers, system pumps, condensing units. Provide protective equipment unless otherwise noted, etc. including protective devices.
5. Plumbing Electrical: Conduit, conductors and terminations for plumbing equipment with power requirements including necessary fusible and/or non-fusible safety disconnect devices. Provide motor starters where required unless provided by mechanical specification.
6. Power and Lighting Distribution: Furnish and install power and lighting distribution systems including but not limited to panels, feeders, branch circuits, devices, fixtures, disconnect switches, contactors, controls, etc. for a complete working system.
7. Lighting acceptance testing, documentation and completion of required forms as specified in Section 26 56 70, LIGHTING ACCEPTANCE TESTING.
8. Allocation of time to adequately train the Owner on the use and operation of all systems installed within the facility or on the property. Minimum two week advance notice shall be coordinated with the Owner and his representatives. Training shall be as outlined in individual system specifications identified to follow.

B. Related Sections Under Other Divisions:

1. Mechanical Wiring: Control circuit wiring, energy management controls and interlocks for mechanical equipment shall be installed by Mechanical Contractor.
2. Painting of electrical equipment where exposed and required by the Architect to be painted as described elsewhere in the specification.
3. HVAC Control Raceway: Raceways, boxes, and control wiring for thermostats, temperature sensors and control components specified within the mechanical

specifications, shall be furnished and installed as required by Division 25 and installed in accordance with the minimum wiring methods allowed for branch circuit wiring in Division 26.

4. Security System: Shall be installed by Owner's vendor. Contractor shall provide conduits, boxes, stubs to accessible ceilings, dedicated circuit(s) for alarm panel, access control system (key pads, electric locks), etc. as shown and/or required by the Owner's vendor.

### 1.03 SYSTEM DESCRIPTION

- A. The electrical plans indicate the general layout and arrangement; the architectural drawings and field conditions shall determine exact locations. Field verify all conditions and modify as required to satisfy design requirements as well as code minimums. Maintain all required working clearances as described in CEC Article 110 as well as other applicable articles.
- B. Discrepancies shall be brought immediately to the attention of the Architect for clarification. The Architect shall approve any changes. Prior to rough-in, refer to architectural plans that shall take precedence over electrical plans with respect to locations.
- C. Verify all power and communications utility company requirements prior to commencement of utility work. Make proper adjustments to the construction to satisfy the serving utility requirements if they differ from the construction documents. It shall be the Contractor's responsibility to contact each utility company for obtaining finalized utility design drawings and/or approval, and for scheduling inspection of utility infrastructure installations.
- D. Charges imposed by the electric and communications utility companies shall be paid by Owner directly to utility companies.

### 1.04 SUBMITTALS AND SHOP DRAWINGS

- A. Before construction, submit in accordance with the General Conditions of this Specification: A complete list of all materials proposed to be furnished and installed under this section.
- B. Manufacturers' specifications, catalog cuts and shop drawings as required to demonstrate compliance with the specifications. Identify specific intended use for each component where submittal may be ambiguous. Submit entire bound submittal at one time; partial submittals will not be accepted. At a minimum, submittals will be required for the following:
  1. Electrical equipment including disconnects, fuses, raceways, straps and racks, fittings, conductors, boxes, gutters, devices, plates, etc.
  2. Lighting equipment including fixtures, ballasts, lamps, mounting accessories, color charts (where required), etc.
  3. Lighting control equipment including low voltage switching system, dimmer switchbank / accessories, occupancy sensing equipment, time clocks, contactors, photocells, lumen sensors, etc.
  4. Constructability review letter/comments for lighting acceptance testing as required by Section 26 56 70, LIGHTING ACCEPTANCE TESTING.
  5. Complete system component submittals and shop drawings for:
    - a. Generator and Transfer Switches.
  6. Conduit including all fittings, etc.
  7. Wiring and cable, terminations, etc.
  8. Fire rating penetration materials, details, etc.

C. The intent of these specifications is to establish a standard of quality for materials and equipment. Therefore, some items are identified by manufacturer or trade name designation. Substitutions shall be subject to the Architect's approval. Samples of the proposed and substitute materials may be required for inspection prior to approval. Costs, if any, for evaluation of substitutions shall be the Contractor's responsibility. The decision of the Architect shall be final. Where the substitution will affect other trades, coordinate all changes with those trades concerned and pay any additional costs incurred by them as a result of this substitution. Approval of substitutions shall not relieve the Contractor from providing an operational system in accordance with all applicable codes and ordinances.

D. SUPPORTING DEVICES

1. Provide all details of suspension and support for ceiling hung equipment.
2. Where walls, floor, slabs or supplementary steel work are used for seismic restraint locations, details of acceptable attachment methods for ducts, conduit and pipe must be included and approved before the submittals must include spacing, static loads and seismic loads at all attachment and support points.
3. Provide seismic details of seismic restraints and anchors; including number, size and locations for each piece of equipment.

1.05 DELIVERY, STORAGE AND HANDLING

A. Storage of equipment for the job is the responsibility of the Electrical Contractor and shall be scheduled for delivery to the site, as the equipment is required. Damage to the equipment delivered to the site or in transport to the job shall be the responsibility of the Electrical Contractor.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Materials shall be new and bear the label of or be listed by a nationally recognized testing laboratory. The quality and suitability of all materials shall conform to the standards and practices of this trade.
- B. Supplied materials shall be of a current manufactured product line. Discontinued products are not acceptable. Where products are identified on the contract documents by part number, supply the current product model or series which meets the specification and intended use of the specified component.

2.02 SUPPORTING DEVICES

- A. Hangers: Kindorf B-905-2A Channel, H-119-D washer, C105 strap, 3/8" rod with ceiling flange.
- B. Concrete Inserts: Kindorf D-255, cast in concrete for support fasteners for loads up to 800 lbs.
- C. Pipe Straps: Two-hole galvanized or malleable iron.
- D. Luminaire Chain: Campbell Chain 75031, 90-lb. test with steel hooks.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Professionalism and appearance of installations shall be in accordance with accepted practices of this trade. Installation methods shall conform to manufacturers' specifications and recommendations. The Contractor shall man the job with qualified journeymen and helpers in this trade for the duration of the job. It is the Contractor's responsibility to communicate with and keep the job superintendent apprised of changes or clarifications, etc.
- B. Employment of any person on any job in the capacity of an electrician is not permitted unless such person has qualified for and holds a valid Journeyman Electrician Pocket Card or General Journeyman Electrician Certificate issued by the State of California Division of Apprenticeship Standards except, Contractor may employ electrical helpers or apprentices on any job of electrical construction, new or existing, when the work of such helpers or apprentices is performed under the direct and constant personal supervision of a journeyman electrician holding a valid Pocket Card accepted by the State of California Division of Apprenticeship Standards.
  - 1. Each Pocket Card carrying journeyman electrician will be permitted to be responsible for the quality of workmanship for a maximum of one helper or apprentice during any same time period, provided the nature of work is such that good supervision can be maintained and the quality of workmanship is the best, as expected by Owner and implied by the latest edition of the National Electrical Code.
  - 2. Before each journeyman electrician commences work, deliver to Owner at the project site, a photocopy of the journeyman's valid Pocket Card.
- C. Materials shall be installed in accordance with the manufacturers' specification and recommendations. They must conform to the approval AHJ adopted codes and standards, but not less than the 2013 CEC and all applicable codes and standards, including but not necessarily limited to California Code of Regulations Title 24, NFPA, National Electrical Manufacturers Association, ANSI, CBC, and any other adopted ordinances of applicable agencies having jurisdiction. Refer to general conditions of specifications.
- D. Electrical Contractor shall lay work out in advance in order to avoid unnecessary cutting, chasing, and drilling of floors, walls, ceilings and other surfaces. Work of this nature shall be carefully done so as not to damage work already performed by other trades. Any damage which results must be properly repaired at no extra cost to the Owner. Such alterations shall not depreciate the integrity of the structure. Approval for cuts or penetrations in structural members shall be by the Architect.
- E. Supporting Devices:
  - 1. Verify mounting height of all luminaires or items prior to installation when heights are not detailed.
  - 2. Install vertical support members for equipment and luminaires, straight and parallel to building walls. Provide independent supports to structural member for electrical luminaires, materials, or equipment installed in or on ceiling, walls or in void spaces or over furred or suspended ceilings.
  - 3. Do not use other trade's fastening devices as supporting means for electrical equipment, materials or luminaires. Do not use supports or fastening devices to support other than one particular item.
  - 4. Support conduits within 18" of outlets, boxes, panels, cabinets and deflections. Maximum distance between supports not to exceed 8' spacing.



5. Securely suspend all junction boxes, pull boxes or other conduit terminating housings located above suspended ceiling from the floor above or roof structure to prevent sagging and swaying.
  6. Provide seismic bracing per UBC requirements for this building location.
- F. Coordinate work with other trades as required to eliminate any delays during construction. Coordinate changes with other prime contractors to avoid construction conflicts.
- G. Engineer's Field Observation: Site visits during construction for field observations and reports will be conducted by electrical engineer when directed by the Architect. A list of items that need to be addressed will be submitted to the Architect for forwarding to the Contractor. A written response to all items shall be submitted for Owner's review once complete. When Electrical Engineering representative performs a field observation, the Electrical Contractor shall be present and available to remove equipment covers as needed.
- H. Drawings of Record: Provide a full and accurate set of field record drawings marked up in a neat and understandable manner submitted to the Owner Representative, Construction Manager, or Architect upon completion of the work and prior to issuance of a certificate of completion. The drawings shall dimension all electrical facilities including but not limited to underground conduit, vaults, boxes as well as conduit routing scaled to within 12" of actual field conditions and shall be kept up to date on a daily basis reflecting changes or deviations. Electrical facilities shall be accurately drawn on the plan to scale. Refer to the general conditions of these specifications for additional requirements. Record drawings shall be required to identify both horizontal and vertical dimensions to visible and fixed points such as concrete, asphalt, buildings, sidewalks, etc.
- I. Identification: Provide engraved laminated plastic nameplates for all switchboards, panelboards, fire alarm terminal cabinets, telephone and cable television backboards, main devices, control panels, time clocks, contactors and safety disconnect switches accurately identifying each device. Labels shall be attached to the equipment by means of screws or rivets. Self-adhering labels will not be acceptable. Refer to Section 26 05 53, IDENTIFICATION OF ELECTRICAL SYSTEMS.
- J. Safety: The Electrical Contractor is responsible to maintain equipment in a safe and responsible manner. Keep dead front equipment in place while equipment is energized. Conduct construction operations in a safe manner for employees as well as other work persons or anyone visiting the job site. Provide barriers, trench plates, flags, tape, etc. The Contractor shall hold all parties harmless of negligent safety practices that may cause injury to others on or near the job site.
- K. Guarantees: Equipment and labor shall be guaranteed and warranted free of defects, unless otherwise stated to be more restrictive, for a period of one year from the date of final acceptance by the Owner. A written warranty shall be presented to the Architect at the time of completion prior to final acceptance. Equipment deemed to be damaged, broken or failed should be repaired or replaced at no additional cost to the Owner. Materials or system requiring longer than a one-year warranty as described herein shall be separately warranted in separate letters of guarantee stating the duration of warranty.
- L. Operating and Installation Manuals: Provide two copies each of manuals, operating and installation instructions for equipment indicated in submittal packages. Instruct the Owner's representative as to the operation and location of equipment necessary to allow them to operate the facility upon final acceptance. This instruction period shall be prearranged with the Owner's representative prior to occupancy of the facility and the weeks prior to training scheduled.

- M. Lighting Acceptance Testing: Provide two copies of lighting acceptance testing results and equipment operating manuals as specified in Section 26 56 70, LIGHTING ACCEPTANCE TESTING. Instruct the Owner on operation of control systems.

END OF SECTION

**SECTION 26 05 01  
SELECTIVE ELECTRICAL DEMOLITION**

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. This Section Includes:
  - 1. Electrical demolition.

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

- A. Materials and equipment for patching and extending work shall be as specified in individual sections.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Contractor to walk job to observe existing conditions and account for variance as needed.
- B. Verify field measurements and circuiting arrangements as shown on drawings.
- C. Verify that abandoned wiring and equipment serve only abandoned facilities.
- D. Demolition Drawings are based on limited field observation and existing record documents. Report discrepancies to Owner/Architect before disturbing existing installation.

3.02 PREPARATION

- A. Disconnect electrical systems in walls, floors, and ceilings scheduled for removal.
- B. Coordinate utility service outages with utility company.
- C. Provide temporary wiring and connections to maintain existing systems in service during construction. When work must be performed on energized equipment or circuits, observe provisions of NFPA 70E and CALOSHA, use personnel experienced in such operations.

- D. Existing Electrical Service: Maintain existing system in service until new system is complete and ready for service. Disable system only to make switchovers and connections. Obtain permission from Owner at least 48 hours before partially or completely disabling system. Minimize outage duration. Make temporary connections to maintain service in areas adjacent to work area as required.
  - E. Existing Fire Alarm System: Maintain existing system in service until new system is accepted. Disable system only to make switchovers and connections. Coordinate outages with Owner and local fire service. Notify Owner/Owner's representative at least 48 hours before partially or completely disabling system. Minimize outage duration. Make temporary connections to maintain service in areas adjacent to work area.
  - F. Existing Telephone System: Maintain existing system in service until new system is complete and ready for service. Disable system only to make switchovers and connections. Notify Owner at least 48 hours before partially or completely disabling system. Minimize outage duration. Make temporary connections to maintain service in areas adjacent to work area.
- 3.03 DEMOLITION AND EXTENSION OF EXISTING ELECTRICAL WORK
- A. Demolish and extend existing electrical work under provisions of this section.
  - B. Remove, relocate, and extend existing installations to accommodate new construction.
  - C. Allow the owner first right to retain ownership of salvaged materials, otherwise the Electrical Contractor is responsible for its removal from the site and proper disposal or recycling.
  - D. Remove abandoned wiring to source of supply.
  - E. Remove exposed abandoned conduit, including abandoned conduit above accessible ceiling finishes. Cut conduit flush with walls and floors, and patch surfaces.
  - F. Disconnect abandoned outlets and remove devices. Remove abandoned outlets if conduit servicing them is abandoned and removed. Provide blank cover for abandoned outlets which are not removed.
  - G. Disconnect and remove abandoned panelboards and distribution equipment.
  - H. Disconnect and remove electrical devices and equipment serving utilization equipment that has been removed.
  - I. Disconnect and remove abandoned luminaires. Remove brackets, stems, hangers, and other accessories.
  - J. Discarded electrical components and lamps containing hazardous waste (i.e., mercury in fluorescent lamps) shall be disposed of as required by the State Laws and Local Ordinances regarding hazardous materials.
  - K. Repair adjacent construction and finishes damaged during demolition and extension work.
  - L. Maintain access to existing electrical installations which remain active. Modify installation or provide access panel as appropriate.

- M. Extend existing installations using materials and methods compatible with existing electrical installations, or as specified.

3.04 CLEANING AND REPAIR

- A. Clean and repair existing materials and equipment which remain or are to be reused.
- B. Panelboards: Clean exposed surfaces and check tightness of electrical connections. Replace damaged circuit breakers and provide closure plates for vacant positions. Provide typed circuit directory showing revised circuiting arrangement.
- C. Luminaires: Cleaning light fixtures. Use mild detergent to clean all exterior and interior surfaces; rinse with clean water and wipe dry. Replace ballasts and broken electrical parts as required for any inoperative fixtures. Provide new lamps for all fixtures that are to remain.

3.05 INSTALLATION

- A. Install relocated materials and equipment as shown and/or as required.

END OF SECTION

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**SECTION 26 05 19**  
**LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES**

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. Section Includes:
  - 1. Wires and cables.
  - 2. Connectors.
  - 3. Lugs and pads.
  - 4. MC cable (Not allowed)

1.03 SYSTEM DESCRIPTION

- A. Provide wires, cables, connectors, lugs, strain reliefs, racking insulators for a complete and operational electrical system.

1.04 SUBMITTALS

- A. Provide product data for the following equipment:
  - 1. Wires.
  - 2. Cables.
  - 3. Connectors.
  - 4. Lugs.
  - 5. Splice Kits.
  - 6. Strain Relief Fittings.
  - 7. Cable Racking and Insulators.
- B. Provide the insulation cable testing report in the project closeout documentation, refer to Closeout Requirements in the General Conditions portion of this specification.

1.05 REGULATORY REQUIREMENTS

- A. Conform to requirements of the CEC, latest adopted version with amendments by local Authority Having Jurisdiction (AHJ).
- B. Furnish products listed by UL or other testing firm acceptable to AHJ.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Wires and Cables: General Cable, Okonite, Southwire, or approved equal.
- B. Connectors: Burndy, IlSCO, Thomas & Betts, or approved equal.
- C. Wire connectors shall be minimum 75 degree centigrade rated and properly sized for the number of conductors being connected, terminated, spliced etc. All above grade connectors shall be solderless lug or plastic wire nut type, screw on, pressure cable type (wire nut or spring nut type), 600 volt, 105 degree C, with skirt to cover all portions of stripped wires. Connector shall be U.L. rated for number and size of conductors being joined together as a splice.
- D. Splices:
  - 1. Branch Circuit Splices: Ideal, Scotch-Lock, 3M, or approved.
  - 2. Feeder Splices: Compression barrel splice with two layers Scotch 23 and four layers of Scotch 33+ as vapor barrier.
  - 3. Screw Terminal Lugs.
  - 4. Kearney Split Bolt.

2.02 WIRES AND CABLES FOR LINE VOLTAGE SYSTEM AND CONTROLS. WIRE AND CABLE SHALL BE:

- A. Copper, 600 volt rated throughout. Conductors 14AWG to 10AWG, solid or stranded. Conductors 8AWG and larger, stranded.
- B. Phase color to be consistent at all feeder terminations; A-B-C, top to bottom, left to right, front to back. Phasing tape shall be permitted on sizes #6 and larger.
- C. Color Code Conductors as Follows:

PHASE	240 VOLT DELTA
A	Black
B.	Orange (High Leg)
C.	Blue
Neutral	White
Ground	Green
- D. All conductors shall be copper unless otherwise noted. Minimum size for individual conductors shall be #12 AWG unless otherwise noted. Sizes #8 AWG and larger shall be stranded conductor. Individual conductors shall be insulated with type, XHHW, THW, THHN/THWN 600-volt insulation unless otherwise noted. Control, signal, communication conductors shall be as dictated by the vendor of that equipment or as specified here-in. Proper insulation type shall be used for the proper environmental application (i.e., waterproof, wet location, plenum, temperature rated). If a condition exists where the application is uncertain, contact the Engineer for direction. Contractor is responsible to follow specific cabling requirements described in other sections of this specification relative to various communications and controls systems as well as the respective riser diagrams shown on plans. If a discrepancy occurs, communicate such discrepancy to the Architect and Engineer immediately for resolution.
- E. Insulation types THWN, THHN or XHHW. Minimum insulation rating of 90C for branch circuits.
- F. Refer to signal and communications specification sections for cable requirements.



2.03 CONNECTORS

- A. Copper Pads: Drilled and tapped for multiple conductor terminals.
- B. Lugs: Indent/compression type for use with stranded branch circuit or control conductors.
- C. Solid Conductor Branch Circuits: Spring connectors, wire nuts, for conductors 18 through 8AWG.

2.04 LUGS AND PADS

- A. Ampacity: Cross-sectional area of pad for multiple conductor terminations to match ampere rating of panelboard bus or equipment line terminals.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Installation: Conductors shall not be installed until after conduit systems are permanently in place. Use an approved non hardening type wire pulling lubricant if lubricant is to be used. Maintain all conduits and wire pulls free from foreign material. If due to field conditions, more than a total of 300 degrees of bend are required; a pull box shall be furnished and installed for ease of installation. Said pull boxes must be sized and rated for the appropriate application and must remain easily accessible upon completion of the project (approval of the location shall be obtained from the Architect prior to installation). Show these pullboxes on the field record drawings. Conductors installed in underground raceways on site shall be duct sealed and taped where they exit the raceway to prevent the entrance of foreign material and moisture after the conductors are installed. Proper drainage shall be provided for underground pull and splice boxes.
- B. Insulation: Use proper insulation types where temperature and environment are a factor.
- C. Splices at or below grade level shall be made with wet location rated and approved mechanical connectors and shall be encapsulated in epoxy or plastic molded poured kits. The connections must be assured to be watertight. Splices at or below grade shall always be avoided and minimized. Prior approval is required for feeder splices below grade. Submit proposed materials and exhibit showing location of intended splices for Engineer's review and approval prior to commencing with the work.
- D. Labeling: All conductors in panels, switchboards, terminal cabinets, vaults, pull boxes, and junction boxes shall be labeled with tape number markers indicating circuit number and identifying system. All labeling shall be permanent. In manholes and vaults, provide embossed brass tags identifying system serviced and function. See Section 26 05 53 IDENTIFICATION OF ELECTRICAL SYSTEMS.
- E. All conductors, wiring, cable where installed below floor, slab or underground shall be considered wet locations, and shall be rated accordingly. Non waterproof cabling is not allowed in any below grade or wet application.
- F. Cables routed together in cable tray shall be stacked, organized and tie wrapped together in a neat and workman like manner. Random cable routing is not acceptable.

- G. Cable and conductors routed through pull boxes and vaults shall be properly supported on porcelain or equal insulators mounted on steel rack inserts. Bend radius of cable or conductor shall not be less than six times the overall cable diameter.
- H. Wires and Cables:
1. Conductor Installation:
    - a. Install conductors in raceways having adequate, code size cross-sectional area for wires indicated.
    - b. Install conductors with care to avoid damage to insulation.
    - c. Do not apply greater tension on conductors than recommended by manufacturer during installation.
    - d. Use of pulling compounds is permitted. Clean residue from exposed conductors and raceway entrances after conductor installation.
  2. Conductor Size and Quantity:
    - a. Install no conductors smaller than 12AWG unless otherwise shown.
    - b. Provide all required conductors for a fully operable system.
  3. Provide dedicated neutrals (one neutral conductor for each phase conductor) in the following single phase circuits:
    - a. Dimmer controlled circuits.
    - b. 120v branch circuit.
    - c. Ground fault and arc fault protected circuits where a GFI and arc fault breakers are used in panelboards.
    - d. Other electronic equipment which produces a high level of harmonic distortion including but not limited to computers, printers, plotters, copy machines, fax machines, where indicated.
  4. Conductors in Cabinets:
    - a. Cable and train all wires in panels and cabinets for power and control neatly and uniformly. Use plastic ties in panels and cabinets.
    - b. Tie and bundle feeder conductors in wireways of panelboards.
    - c. Hold conductors away from sharp metal edges.
    - d. Connectors: Retighten mechanical type lugs and connectors for conductors to equipment prior to Notice of Completion.

END OF SECTION

**SECTION 26 05 26  
GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS**

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. This Section Includes:
  - 1. Grounding and bonding requirements of electrical installations for personnel safety and to provide a low impedance path for possible ground fault currents as described in CEC Article 250.
  - 2. "Grounding electrode system" refers to all electrodes required by CEC, as well as including made, supplementary, lightning protection system and telecommunications system grounding electrodes.
  - 3. The terms "connect" and "bond" are used interchangeably in this specification and have the same meaning.
- B. Related Work:
  - 1. Section 26 05 00, COMMON WORK RESULTS FOR ELECTRICAL.
  - 2. Section 26 05 19, LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES.

PART 2 - PRODUCTS

2.01 GROUNDING AND BONDING CONDUCTORS

- A. Equipment grounding conductors shall be UL 83 insulated stranded copper, except that sizes No. 10 AWG and smaller shall be solid copper. Insulation color shall be continuous green for all equipment grounding conductors, except that wire sizes No. 4 AWG and larger shall be permitted to be identified per CEC.
- B. Bonding conductors shall be ASTM B8 bare stranded copper, except that sizes No. 10 AWG and smaller shall be ASTM B1 solid bare copper wire.
- C. Conductor sizes shall not be less than what is shown on the drawings and not less than required by the CEC, whichever is greater.

2.02 GROUND RODS

- A. Copperclad steel, 3/4" diameter by 10' long, conforming to UL 467 unless otherwise noted on drawings and details.

- B. Quantity of rods shall be as required to obtain the specified ground resistance or additional rods shall be driven to obtain specified resistance or less.

### 2.03 SPLICES AND TERMINATION COMPONENTS

- A. Components shall meet or exceed UL 467 and be clearly marked with the manufacturer, catalog number, and permitted conductor size(s).

## PART 3 - EXECUTION

### 3.01 GENERAL

- A. Ground in accordance with the CEC, as shown on drawings, and as hereinafter specified.
- B. System Grounding:
  - 1. Secondary service neutrals: Ground at the supply side of the secondary disconnecting means and at the related transformers.
  - 2. Separately derived systems (transformers downstream from the service entrance): Ground the secondary neutral.
- C. Equipment Grounding: Metallic structures (including ductwork and building steel), enclosures, fire sprinklers, plumbing piping, raceways, junction boxes, outlet boxes, cabinets, machine frames, and other conductive items in close proximity with electrical circuits shall be bonded and grounded.

### 3.02 SECONDARY EQUIPMENT AND CIRCUITS

- A. Main Bonding Jumper: Bond the secondary service neutral to the ground bus in the service equipment.
- B. Metallic Piping, Building Steel, and Supplemental Electrode(s):
  - 1. Provide a grounding electrode conductor sized per CEC between the service equipment ground bus and all metallic water and gas pipe systems, building steel, and supplemental or made electrodes. Jumper insulating joints in the metallic piping. All connections to electrodes shall be made with fittings that conform to UL 467.
  - 2. Provide a supplemental ground electrode and bond to the grounding electrode system.
- C. Service Disconnect: Provide a ground bar bolted to the enclosure with lugs for connecting the various grounding conductors.
- D. Conduit Systems:
  - 1. Ground all metallic conduit systems. All metallic conduit systems shall contain an equipment grounding conductor sized per CEC.
  - 2. Non metallic conduit systems shall contain an equipment grounding conductor, except that non-metallic feeder conduits which carry a grounded conductor from exterior transformers to interior or building-mounted service entrance equipment need not contain an equipment grounding conductor.
  - 3. Metal conduit containing only a grounding conductor, and which is provided for mechanical protection of the conductor, shall be bonded to that conductor at the entrance and exit from the conduit.

- E. Feeders and Branch Circuits: Install equipment grounding conductors with all feeders, power and lighting branch circuits.
  - F. Boxes, Cabinets, and Enclosures:
    - 1. Bond the equipment grounding conductor to each pullbox, junction box, outlet box, device box, cabinets, and other enclosures through which the conductor passes.
    - 2. Provide lugs in each box and enclosure for equipment grounding conductor termination.
  - G. Receptacles shall not be grounded through their mounting screws. Ground with a jumper from the receptacle green ground terminal to the device box ground screw and the branch circuit equipment grounding conductor.
  - H. Ground lighting fixtures to the equipment grounding conductor of the wiring system when the green ground is provided; otherwise, ground the fixtures through the conduit systems. Fixtures connected with flexible conduit shall have a green ground wire included with the power wires from the fixture through the flexible conduit to the first outlet box.
  - I. Fixed electrical appliances and equipment shall be provided with a ground lug for termination of the equipment grounding conductor.
- 3.03 CONDUCTIVE PIPING
- A. Bond all conductive piping systems, interior and exterior, to the building to the grounding electrode system. Bonding connections shall be made as close as practical to the equipment ground bus.

END OF SECTION

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**SECTION 26 05 29  
HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS**

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. This Section includes the following:
  - 1. Hangers and supports for electrical equipment and systems.
  - 2. Construction requirements for concrete bases.
- B. Related Sections include the following:
  - 1. Section 26 05 48 "Vibration and Seismic Controls for Electrical Systems" for products and installation requirements necessary for compliance with seismic criteria.

1.03 DEFINITIONS

- A. EMT: Electrical metallic tubing.
- B. IMC: Intermediate metal conduit.
- C. RMC: Rigid metal conduit.

1.04 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Design supports for multiple raceways, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- B. Design supports for multiple raceways capable of supporting combined weight of supported systems and its contents.
- C. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.
- D. Rated Strength: Adequate in tension, shear, and pullout force to resist maximum loads calculated or imposed for this Project, with a minimum structural safety factor of five times the applied force.

1.05 ACTION SUBMITTALS

- A. Product Data: For the following:
  - 1. Steel slotted support systems.

2. Nonmetallic slotted support systems.
  - B. Shop Drawings: Show fabrication and installation details and include calculations for the following:
    1. Trapeze hangers. Include Product Data for components.
    2. Steel slotted channel systems. Include Product Data for components.
    3. Equipment supports.
- 1.06 INFORMATIONAL SUBMITTALS
- A. Welding certificates.
- 1.07 QUALITY ASSURANCE
- A. Welding: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
  - B. Comply with NFPA 70.
- 1.08 COORDINATION
- A. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified together with concrete Specifications.
  - B. Coordinate installation of roof curbs, equipment supports, and roof penetrations. These items are specified in Section 07 72 00 "Roof Accessories."

## PART 2 - PRODUCTS

- 2.01 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS
- A. Steel Slotted Support Systems: Comply with MFMA-4, factory-fabricated components for field assembly.
    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. Allied Tube & Conduit.
      - b. Cooper B-Line, Inc.; a division of Cooper Industries.
      - c. ERICO International Corporation.
      - d. GS Metals Corp.
      - e. Thomas & Betts Corporation.
      - f. Unistrut; Tyco International, Ltd.
      - g. Wesanco, Inc.
    2. Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA-4.
    3. Painted Coatings: Manufacturer's standard painted coating applied according to MFMA-4.
    4. Channel Dimensions: Selected for applicable load criteria.
  - B. Raceway and Cable Supports: As described in NECA 1 and NECA 101.



- C. Conduit and Cable Support Devices: Steel hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.
- D. Structural Steel for Fabricated Supports and Restraints: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.
- E. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:
  - 1. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete, steel, or wood, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.
    - a. 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) Hilti Inc.
      - 2) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.
      - 3) MKT Fastening, LLC.
      - 4) Simpson Strong-Tie Co., Inc.; Masterset Fastening Systems Unit.
  - 2. Mechanical-Expansion Anchors: Insert-wedge-type, zinc-coated steel, for use in hardened portland cement concrete with tension, shear, and pullout capacities appropriate for supported loads and building materials in which used.
    - 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) Cooper B-Line, Inc.; a division of Cooper Industries.
      - 2) Empire Tool and Manufacturing Co., Inc.
      - 3) Hilti Inc.
      - 4) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.
      - 5) MKT Fastening, LLC.
  - 3. Concrete Inserts: Steel or malleable-iron, slotted support system units similar to MSS Type 18; complying with MFMA-4 or MSS SP-58.
  - 4. Clamps for Attachment to Steel Structural Elements: MSS SP-58, type suitable for attached structural element.
  - 5. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM A 325.
  - 6. Toggle Bolts: All-steel springhead type.
  - 7. Hanger Rods: Threaded steel.

## 2.02 FABRICATED METAL EQUIPMENT SUPPORT ASSEMBLIES

- A. Description: Welded or bolted, structural-steel shapes, shop or field fabricated to fit dimensions of supported equipment.
- B. Materials: Comply with requirements in Section 05 5000 "Metal Fabrications" for steel shapes and plates.

## PART 3 - EXECUTION

### 3.01 APPLICATION

- A. Comply with NECA 1 and NECA 101 for application of hangers and supports for electrical equipment and systems except if requirements in this Section are stricter.

- B. Maximum Support Spacing and Minimum Hanger Rod Size for Raceway: Space supports for EMT, IMC, and RMC as required by NFPA 70. Minimum rod size shall be 1/4 inch (6 mm) in diameter.
- C. Multiple Raceways or Cables: Install trapeze-type supports fabricated with steel slotted support system, sized so capacity can be increased by at least 25 percent in future without exceeding specified design load limits.
  - 1. Secure raceways and cables to these supports with two-bolt conduit clamps.

### 3.02 SUPPORT INSTALLATION

- A. Comply with NECA 1 and NECA 101 for installation requirements except as specified in this Article.
- B. Raceway Support Methods: In addition to methods described in NECA 1, EMT, IMC, and RMC may be supported by openings through structure members, as permitted in NFPA 70.
- C. Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb (90 kg).
- D. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods unless otherwise indicated by code:
  - 1. To Wood: Fasten with lag screws or through bolts.
  - 2. To New Concrete: Bolt to concrete inserts.
  - 3. To Masonry: Approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.
  - 4. To Existing Concrete: Expansion anchor fasteners.
  - 5. Instead of expansion anchors, powder-actuated driven threaded studs provided with lock washers and nuts may be used in existing standard-weight concrete 4 inches (100 mm) thick or greater. Do not use for anchorage to lightweight-aggregate concrete or for slabs less than 4 inches (100 mm) thick.
  - 6. To Steel: Beam clamps (MSS Type 19, 21, 23, 25, or 27) complying with MSS SP-69.
  - 7. To Light Steel: Sheet metal screws.
  - 8. Items Mounted on Hollow Walls and Nonstructural Building Surfaces: Mount cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices on slotted-channel racks attached to substrate by means that meet seismic-restraint strength and anchorage requirements.
- E. Drill holes for expansion anchors in concrete at locations and to depths that avoid reinforcing bars.

### 3.03 INSTALLATION OF FABRICATED METAL SUPPORTS

- A. Comply with installation requirements in Section 05 5000 "Metal Fabrications" for site-fabricated metal supports.
- B. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor electrical materials and equipment.
- C. Field Welding: Comply with AWS D1.1/D1.1M.

3.04 CONCRETE BASES

- A. Construct concrete bases of dimensions indicated but not less than 4 inches (100 mm) larger in both directions than supported unit, and so anchors will be a minimum of 10 bolt diameters from edge of the base.
- B. Use 3000-psi (20.7-MPa), 28-day compressive-strength concrete. Concrete materials, reinforcement, and placement requirements are specified in Section 03 30 00 "Cast-in-Place Concrete."
- C. Anchor equipment to concrete base.
  - 1. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
  - 2. Install anchor bolts to elevations required for proper attachment to supported equipment.
  - 3. Install anchor bolts according to anchor-bolt manufacturer's written instructions.

3.05 PAINTING

- A. Touchup: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.
  - 1. Apply paint by brush or spray to provide minimum dry film thickness of 2.0 mils (0.05 mm).
- B. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

END OF SECTION

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**SECTION 26 05 33  
RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS**

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. Section Includes:
1. Conduit and fittings.
  2. Outlet boxes.
  3. Weatherproof outlet boxes.
  4. Junction and pull boxes.
  5. Cabinets, termination cabinets.
  6. Concrete boxes and vaults.
- B. Related Work:
1. Installation of all wire, cable, conductor, boxes/gutters, pull ropes, fiber optic cable raceway, conduit, innerduct, cable sleeve and duct as described on the plans and/or as specified here-in. This scope shall include pathways to be installed underground on site and offsite, underslab, above grade, both concealed and exposed, overhead concealed and exposed as appropriately applied. Raceways/boxes shall be installed in accordance with their intended and allowed uses and as specified here-in whichever is more restrictive. Size and capacity of all raceway/boxes shall be as specified here-in or as depicted on the drawings, but shall not be less than that required by code. Larger raceway sizes may be specified than code would permit. The specifications shall govern.
  2. Listed products for termination, coupling, extending, benching supports of raceways shall be used.
  3. Raceways/boxes described by this section shall include, but not be limited to, power for site utilities and lighting, site and building communications, controls, fire alarm, security, access control, sound systems, data system, energy management systems, power distribution, lighting, lighting controls, video, CATV, voice communications, intercom, nurse call, HVAC and other building low voltage/communications systems controls as may be required. Raceways, boxes and duct paths required for utility companies shall be installed per plans unless utility company requirements are more restrictive at which time those requirements shall take precedence.
  4. Protection of and cleanliness of pathways and raceways must be assured during the construction process in order to eliminate the possibility of debris entering the conduit, duct, pathway resulting in decreased wire capacity and potential damage to installed conductors and cables.
  5. Pathways are shown in a diagrammatic way and are generally accurate as to routing, however, it is the Contractor's responsibility as a means and methods process to coordinate with all other trades that require space within a building. The Contractor shall obtain approval for installation of raceways routing through structural footings, retaining walls, columns, beams, perlins, grade beams, etc.

6. It is the Contractor's responsibility to insure that all raceway and boxes systems penetrate fire assemblies and sound rated assemblies in an approved manner using the appropriate and listed products for the purpose.
7. Trenching and backfilling for all underground conduit systems installed by the Electrical Contractor shall be the responsibility of the Contractor. Conduits shall have minimum cover requirement of 36" below finish grade with the exception of site lighting conduits which may be 24" below finish grade minimum. More stringent depth requirements may be imposed by the local agency and utility company and shall be adhered to, and / or this specification or as detailed on the plans. Joint trenching may be utilized where practicable and where permitted by this specification. Concrete, native material and sand shall be used as backfill material and shall be compacted in accordance with and coordinated with the grading and site preparation requirements. Conduits shall rest in a minimum of 4" bed of sand prior to backfill and compaction. Locations of existing underground (UG) utility systems shall be determined by calling Underground Service Alert (USA) at least 48 hours prior to any excavation.
8. Minimum conduit size shall be 1/2" except if plan shows or code requires larger size. Exception: Use minimum 3/4" for underslab and below grade applications outside of building exterior walls.
9. All electrical, control, communications systems shall be installed in metallic conduit system. This shall include but not be limited to all systems described in Section B.3 above, except for voice and data systems which shall be installed as described on these plans and as specified here-in but shall not be less than the recommendations of EIA/TIA standards.
10. All line voltage wiring within the building shall be installed in metallic conduit.
11. All conduit, concrete pads, underground concrete or fiberglass substructures shall be furnished and installed with the approved materials and type for the application. Provide proper traffic control during construction as well as barriers and protection of all excavations and trenching.
12. Empty or future conduits shall be properly plugged with plastic caps or inserts with a 3/8" polyethylene pull rope. Plastic or "duct" tape will not be acceptable.
13. Exterior installations: After conductors are installed, seal conduit ends to prevent entrance of foreign material using pliable duct seal, caps or waterproof expanding foam.
14. All low voltage systems including intercom, fire alarm, public address, etc. shall be in dedicated conduit systems. It shall be the contractor's responsibility to provide raceway down walls to outlet boxes and to provide sleeves across inaccessible ceiling spaces.
15. Underground conduits entering building shall have the open end of conduit within building above the elevation of the conduit outside the building such that water cannot enter building through conduit. If such a condition exists, a pull box outside of building footprint shall be installed in conduit route before conduit enters building whereby top of pull box is below finish floor of building and moisture may exit box before entering building.
16. No single conduit run of any type shall exceed 300 degrees of radius bend from termination box to termination box.
17. Separate Raceway System: Provide a separate dedicated raceway system for each system installed, do not combine different systems into a raceway or cable tray system, unless otherwise noted or allowed.
18. Spare, Future Conduits: Conduits labeled conduit only, spare, or for future use, shall be provided with a pullrope, capped at each end, labeled as spare with destination marked, and turned over to the Owner in an unused state. Contractor shall not utilize these conduits for the installation of cabling or conductors as part of this scope of work. Contractor to verify and install at no additional cost to the Owner, additional conduits as required for the installation of the systems being installed.
19. Outlet System: Provide electrical boxes and fittings as required for a complete installation. Including but not limited to outlet boxes, junction boxes, pull boxes, bushings, locknuts, covers and all other necessary components.

20. Code Compliance: Comply with CEC as applicable to construction and installation of electrical boxes and fittings and size boxes according to CEC 312, 314 and 366 except as noted otherwise.
21. Outlets to be flush mounted: Maintain integrity of insulation and vapor barrier. Unless otherwise noted, flush mount all outlet boxes.
22. Provide putty pads of proper type around outlet boxes and/or as detailed on plan to meet sound transmission restrictions and fire ratings of walls.

### 1.03 SUBMITTALS

- A. Provide Shop Drawings and Product Data for the Following Equipment:
  1. Conduit and fittings.
  2. Outlet boxes.
  3. Weatherproof outlet boxes.
  4. Junction and pull boxes.
  5. Cabinets, termination cabinets.
  6. Gutters.
  7. Concrete boxes and vaults.
  8. Putty pads.
  9. Raceways

### 1.04 REGULATORY REQUIREMENTS

- A. Conform to requirements of the CEC, latest adopted version with amendments by local AHJs.
- B. Furnish products listed by UL or other independent and nationally recognized testing firm.

## PART 2 - PRODUCTS

### 2.01 MATERIALS

- A. Heavy wall Rigid Non-Metallic Conduit, shall be PVC schedule 40 manufactured in accordance with NEMA Standard TC-2, UL-651 and WC 1094A specifications.
- B. Extra heavy wall non-metallic conduit, shall be PVC schedule 80 manufactured in accordance with NEMA Standard TC-2, UL-651 and WC 1094A specifications.
- C. Galvanized Rigid Steel (GRS) conduit shall be hot dipped galvanized, zinc coated and shall comply with Underwriters Laboratories UL-6, ANSI Specification C-80.1 and Federal Specification WW-C-581E.
- D. Electrical Metallic Tubing (EMT) shall be zinc coated, with a protective coating applied to the inside surface and shall comply with Underwriter Laboratories UL-797 ANSI Specification C-80.3 and Federal Specification WW-C-563A.
- E. Flexible Metal Conduit (FMC) shall be continuous wound reduced wall galvanized steel produced to UL standards.

- F. Liquid tight flexible metal conduit shall have a thermoplastic cover over a galvanized steel core containing an integral copper ground in sizes to 1 1/4" and shall be in compliance with UL standards and CEC Article 350.
- G. Cable runway tray shall be 12" wide with 4" side rails unless otherwise noted. It shall be U.L. listed and use listed connectors, elbows, tees, etc. Material shall be hollow steel with gray painted finish.
- H. Manufacturers:
  - 1. Outlet Boxes: Bowers, Raco, Steel City or equal.
  - 2. Weatherproof Outlet Boxes: Bell, Red Dot, [Carlon] or equal.
  - 3. Floor Boxes: Wiremold/Walker, Hubbell, Steel City, or equal.
  - 4. Junction and Pull Boxes: Circle AW, Hoffman, Wireguard or equal.
  - 5. Box Extension Adapter: Bell, Red Dot, [Carlon] or equal.
  - 6. Conduit Fittings: O-Z Gedney, Thomas & Betts, or equal.
  - 7. Vaults: Christy, Brooks, Utility Vault or equal.
  - 8. Putty pads: 3M, Hilti, or equal.
  - 9. Heavy wall rigid non-metallic conduit, Carlon, Certainteed, R&G Sloane or equal.
  - 10. Extra heavy wall non-metallic conduit, Carlon, Certainteed, R&G Sloane or equal.
  - 11. Galvanized Rigid Steel (GRS) conduit shall be hot dipped galvanized, zinc coated and shall comply with Underwriters Laboratories UL-6, ANSI Specification C-80.1 and Federal Specification WW-C-581E.
  - 12. Electrical Metallic Tubing (EMT) shall be zinc coated, with a protective coating applied to the inside surface and shall comply with Underwriter Laboratories UL-797 ANSI Specification C-80.3 and Federal Specification WW-C-563A.
  - 13. Flexible Metal Conduit (FMC), Alflex, American Flexible Conduit or equal.
  - 14. Liquid tight flexible metal conduit, Anacanda (type UA), Electri-flex Liguatite or equal.
  - 15. Surface mount raceway, Wiremold, Three Compartment Series 5500 or equal
  - 16. Cable runway tray, B-line, CPI, Homaco or equal.
  - 17. Masonry Boxes, outlets in concrete, Raco Series 690 or equal.
  - 18. Exterior In-Grade Boxes for Non-Utility Company, Precast concrete or polymer concrete, Utility Vault and Christy.

## 2.02 OUTLET BOXES

- A. NEMA 1 gutter, junction and pull boxes shall be fabricated from code gage steel finished in grey enamel with screw cover fronts and concentric knockouts in all sides.
- B. NEMA 3R gutter, junction and pull boxes shall be fabricated from code gage galvanized steel with screw cover fronts and concentric knockouts in the bottom only. Any penetrations to the side, top or back shall be weatherproofed in an approved manner such as "MYERS" gasketed type hub or equal.
- C. Steel outlet boxes and plaster rings shall be galvanized rigid assemblies, either one piece pressed or factory welded construction containing the size and number of knockouts required. Steel outlet boxes shall be manufactured, sized and installed in accordance with CEC Article 314. Device Outlet: Installation of one or two devices at common location, minimum 4" square, minimum 1 1/2" deep. Single or 2 gang flush device plaster ring. Raco Series 681 and 686 or equal.
- D. Luminaire Outlet: minimum 4" square with correct plaster ring depth, minimum 1 1/2" deep with 3/8" luminaire stud if required. Provide proper depth plaster ring on bracket outlets and on ceiling outlets.



- E. Multiple Devices: Three or more devices at common location. Install 1 piece gang boxes with 1 piece device plastering. Install one device per gang unless otherwise allowed.
- F. Construction: Provide galvanized steel interior outlet wiring boxes, of the type, shape and size, including depth of box, to suit each respective location and installation; constructed with stamped knockouts in back and sides, and with threaded holes with screws for securing box covers or wiring devices. Boxes shall be properly secured to the structure such that they are flush with the finish surface. Boxes shall be made structurally secure by means of the proper fastening devices.
- G. Accessories: Provide outlet box accessories as required for each installation, including mounting brackets, wallboard hangers, extension rings, plaster rings, luminaire studs, cable clamps and metal straps for supporting outlet boxes, compatible with outlet boxes being used and meeting requirements of individual wiring situations.

#### 2.03 WEATHERPROOF OUTLET BOXES

- A. Cover plates on outlet boxes mounted flush in the wall shall be gasketed to the wall in a watertight manner. Weatherproof boxes in wet locations as described in CEC 406.8 (B) shall be provided with a "while-in-use" cover; red dot 'CK' Series of aluminum die-cast construction, NEMA 3R, with lacquer finish.

#### 2.04 JUNCTION AND PULL BOXES

- A. Construction: Provide galvanized sheet steel junction and pull boxes, with screw-on covers; of the type shape and size, to suit each respective location and installation; with welded seams and equipped with steel nuts, bolts, screws and washers.
- B. Location:
  - 1. Install junction boxes above accessible ceilings for drops into walls for receptacle outlets from overhead.
  - 2. Install junction boxes and pull boxes as required to facilitate the installation of conductors and limiting the accumulated angular sum of bends between boxes, cabinets and appliances to 300 degrees.
  - 3. Locations: Junction boxes shall be located only where necessary and only in equipment rooms, closets, and accessible attic and underfloor spaces. A horizontal distance of 24" shall separate outlet boxes on opposite sides of occupancy separation walls, fire-rated walls or partitions.
  - 4. Labeling: Junction box covers shall be marked with indelible ink indicated the circuit numbers passing through the box.

#### 2.05 BOX EXTENSION ADAPTER

- A. Construction: Diecast aluminum.
- B. Location: Install over flush wall outlet boxes to permit flexible raceway extension from flush outlet to fixed or movable equipment.

2.06 CONDUIT FITTINGS

- A. Requirements: Provide corrosion-resistant punched-steel box knockout closures, conduit locknuts and plastic conduit bushings of the type and size to suit each respective use and installation.
- B. Steel boxes may allow for field knock-out modifications, but shall in all other ways conform to code requirements.

2.07 EXTERIOR IN-GRADE BOXES FOR NON-UTILITY COMPANY USE SHALL BE:

- A. Precast concrete or polymer concrete type with full bottoms and draining into gravel drywell. . Open bottom splice/pull boxes 24" x 36" and smaller shall be open bottom, with minimum 12" of gravel below for drainage.
- B. Flushmount in hardscape and 1" above grade in softscape.
- C. Provided with correct traffic type lid, i.e., full vehicular, intermediate incidental vehicular or pedestrian-rated as applicable stamped with "ELECTRIC", "LIGHTING", "COMMUNICATIONS", etc. cover identification as shown on the drawings or as applicable. All boxes or vaults located in streets, driveways, sidewalks wider than 8', and turf areas where mowing takes place shall be traffic rated.
- D. Provided with brass hold-down bolts in cover.
- E. Provided with necessary box extensions to gain proper depth.
- F. Seal all conduit in underground boxes with duct seal after conductors have been installed.

2.08 HAZARDOUS LOCATION SEALING FITTING

- A. Copper free aluminum gas seal fitting to prevent passage of gases and vapor through electrical conduit.
- B. Provide proper sealing fitting listed for the hazard classification and orientation of installation.
- C. Include a drain canal and drain plug in installations which have a probability that liquid or vapor condensation may be trapped in raceway.
- D. Splices are not allowed in sealing fitting.
- E. Install packing fiber and sealing compound per manufacturers recommendations.

2.09 IN-GRADE UTILITY COMPANY BOXES AND VAULTS

- A. In-grade boxes and pads for utility company, shall be as specified by the respective utility company with all of the company's requirements and construction methods met.

2.10 PUTTY PADS

- A. Intumescent moldable firestop putty designed to protect electrical outlet boxes.
- B. Designed to install around outside of outlet boxes.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Conduit systems listed below are for use in installations where they are permitted to be used by CEC and/or other occupancy restrictions. The below installation methods do not intend to suggest that these materials be installed in conflict with any applicable code. Special attention to applications shall be made in building types such as Educational, Health Care, wet location, hazardous locations, assembly occupancy and multi-story, but not limited to these. Requirements which are more restrictive than the CEC may be called for by the drawings and / or these specifications. These requirements must be adhered to. The Electrical Contractor shall be responsible to use the proper conduit system for the application. Exposed conduit is not allowed below ceilings or above slab of floor, without the permission and approval of the Architect. All conduits shall be concealed except in electrical and telecommunication rooms or where shown to be surface mounted. Exposed conduit (where allowed) shall be run square and plumb with building lines in an approved manner. Support roofmount conduits, where allowed, with minimum 12" wide redwood blocks set in mastic unless otherwise detailed in roof requirements or as specified in roofing specification, by the Architect. Strap conduits to blocks with proper sized conduit straps. Spacing of support shall be a minimum as provided for in the CEC. All exposed conduit mounted below 8' above finished grade shall be strapped at a minimum of 5' spacing.
- B. Non-Metallic Rigid Conduit shall be used in concrete slabs, below concrete slabs on grade, or underground outside of a building slab or foundation. Maintain minimum depth requirements and cover with appropriate fill material. Minimum 4" of bedding and cover of backfill material 1/4" size grain and smaller maximum. Conduit shall be heavy wall Schedule 40 or 80, rigid PVC only. Rigid utility P&C duct shall not be used in any application. Properly sized grounding conductors shall be installed per CEC article 250, in all non-metallic conduit branch circuit and feeder runs. PVC conduit shall be formed or field bent only with the use of properly approved bending tools such as to not decrease the internal bore of the conduit. All conduits shall be cut square and reamed of burrs. Approved and compatible glue shall be used on all PVC fittings to attain watertight joints. All non-metallic conduit runs over 150' in length and over 1 1/4" trade size conduit shall utilize galvanized rigid steel elbows.
- C. Galvanized Rigid Steel (GRS) conduit shall be used where exposed less than 8'-0" above finished grade to 18" below finished grade and where subject to physical damage. Conduits shall be cut square and reamed to remove burrs and sharp edges. Strap conduit below 8' above grade at 5' intervals. Unless otherwise noted, threadless setscrew and threadless weathertight fittings may be used in lieu of threaded fittings. All threaded ends entering a junction box of any type shall require one locknut on the inside and one on the outside of the enclosure and be provided with a plastic bushing or grounding bushing where necessary for proper grounding. Where exposed to moisture, a watertight hub or other approved method shall be required. All conduits shall be stubbed up straight and uniform into junction boxes, panels, cabinets, etc., and shall be (GRS) properly supported and strapped. All GRS conduit located below grade, shall be tape wrapped.

- D. Electrical Metallic Tubing (EMT) shall be used as allowed by code and as permitted by this specification. It shall not be in contact with soil or the concrete slab on the ground floor of any structure. Connectors and couplings shall be steel insulated set screw type where installed in indoor dry locations not subject to moisture. Where the potential for moisture is present, compression type weathertight fittings are required. One hole conduit straps are permitted from 1/2" to 1" and two hole conduit straps are required for size 1 1/4" and larger. EMT shall not be allowed in areas subject to severe physical damage. Install copper ground wire sized per CEC 250-122 in all EMT conduits.
- E. Flexible conduit may be used where concealed in building construction or above dropped ceilings, but shall meet the following criteria: No individual circuit path from distribution panel to last device shall exceed a cumulative length of 3' of flexible conduit from start to end. Flexible conduit shall not exceed a total directional change of 270 bending degrees in any one run between conduit terminations. Squeeze type or Jake type steel flex fittings of a grounding type are required. Flexible conduit must be supported in accordance with CEC. Where exposed to the weather, moisture, or spray down flexible conduit shall be of the liquidtight type. Fittings shall be manufactured for use with liquidtight flexible conduit. All motor connections shall be made with liquidtight flex. Flexible conduit may not be used where exposed except for last 2' of equipment connection and unless otherwise noted or approved. A copper ground wire sized per CEC 250-122 shall be installed in all flexible conduit runs. Flexible conduit may not be used exposed. Weatherproof liquid tight conduit shall not be used at roof level for equipment connections with lengths exceeding 24" nor shall it be used to circumvent a rigid conduit system in a horizontal direction. Connect recessed lighting fixtures to conduit runs with a maximum of 6' of flexible metal conduit extending from junction box to fixture. "Master" "Slave" fixtures are permitted to use manufactured flexible cable of longer dimension up to 12' between "Master" and "Slave" only and only as a U.L. listed system component.
- F. Underground conduits and transition to above grade/slab shall be as follows:
1. PVC elbows allowed if top of elbow is minimum 18" BFG or below top of slab, otherwise GRS elbows are required.
  2. GRS elbows are required if conduit run is 150' or greater.
  3. GRS risers are required from elbow below grade to equipment (device, outlet, panel, cabinet, etc.) above grade.
  4. GRS elbows/risers to be PVC coated or 10 MIL taped wrapped (1/2" lapped) to 3" above finish grade or top of slab.
- G. Conduit Supports: Conduit runs may be supported by one-hole and two-hole straps or supports as manufactured by Unistrut, Minerallac, Caddy or equals. Supports may be fastened by means of anchors, shields, beam clamps, toggle bolts, or other approved methods appropriate for the application and size of conduit. Pipe nailers (J-hooks) may only be used for 1" conduit and smaller and only in wood frame construction. Conduit support methods are subject to review by the engineer and authority having jurisdiction for adequacy. Installations deemed inadequate shall be corrected by the contractor at no cost to the Owner.
- H. Bends and offsets shall be made with approved tools for the type of conduit being utilized. Bends shall be made without kinking or destroying the smooth bore of the conduit. Parallel conduits shall be run straight and true with bends uniform and symmetrical. Minimum radii shall be per CEC 344-24.
- I. Conduit Stub-outs below grade shall be capped with plastic cap, and identified by placing a pull box marked with correctly identified utility such as "Elec", "Tel", etc. Dimension for exact location on field record drawings. Provide lids for proper field application (i.e. traffic, incidental, pedestrian).

- J. Conduit Seals: Where below grade conduits enter structure through slab or retaining wall of building or basement, seal the inside of each conduit as follows:
1. Provide damming material around conductors 3" into conduit.
  2. Fill 3" of conduit with 3M #2123 sealing compound.
  3. Wrap conductors where they exit the conduit with 3M #2229 "Scotch Seal" mastic tape. Lap tape to approximate diameter of the raceway and wrap outside of conduit opening with (minimum) one turn.
  4. Use conduit sealing bushings type CSB (O-Z/Gedney) or equal.
  5. Empty conduits shall be sealed with standard non-hardening duct seal compound and then capped to prevent entrance of moisture and gases and to meet fire resistance requirements.
  6. Provide cable drip loop minimum 12" high.
- K. Marker tape: Place plastic yellow marker tape at 12" below finish grade along and above buried conduits. Label tape "CAUTION: ELECTRICAL LINES BELOW" or similar wording.
- L. Electrical and communications systems raceways routed underground shall not occupy the same trench as plumbing utilities such as sewer, water, storm drain, gas or other wet or dry gaseous utility system. A minimum of 12" of undisturbed earth is required. Where utilities must cross in closer proximity to each other due to physical constraints, 6" minimum crossing distances are allowed, however 18" on all sides of a utility crossing must be concrete encased.
- M. Duct bank defined here-in shall be four or more conduits in a common trench, conduit spacers and saddles shall be required in all trenches where more than two conduits over 2" in diameter travel in the same trench. Proper spacing between systems as outlined above shall be required and spacers shall be located each 5' (maximum) along trench route from point to point.
- N. Conduits, routed below footings, slabs, grade beams, columns, and other structural elements shall be installed in strict compliance with structural details and criteria shown on structural plans. Clearances below structural elements and sleeves through structural elements must be carefully planned to avoid conflict and must be approved by the structural engineer if conflict arises.
- O. All conduit or raceways passing through fire rated walls, floors, or ceilings shall be installed with a listed penetration method which protects the opening to the same rating as the assembly and is non hardening.
- P. Expansion Joints
1. Conduits 3" and larger, that are secured to the building structure on opposite sides of a building expansion joint, require expansion and deflection couplings. Install the couplings in accordance with the manufacturer's recommendations.
  2. Provide conduits smaller than 3" with junction boxes on both sides of the expansion joint. Connect conduits to junction boxes with sufficient slack of flexible conduit to produce 5" vertical drop midway between the end. All conduit shall have a copper green grounding bonding conductor installed.
- Q. Seismic Joints
1. At seismic joints, provide conduits rigidly secured to the building structure on opposite sides of a building expansion joint with junction boxes or approved fittings, on both sides of the joint. Connect conduits to junction boxes with sufficient slack flexible conduit such that these slack conduits are 1 1/2 times the distance between conduit ends. Flexible conduit shall have a copper green ground bonding jumper installed.
- R. Location: Locate boxes and conduit bodies so as to ensure accessibility of electrical wiring.

- S. Anchoring: Secure boxes rigidly to the substrate upon which they are being mounted, or solidly embed boxes in concrete or masonry.
- T. Special Application: Provide weatherproof outlets for locations exposed to weather or moisture.
- U. Knockout Closures: Provide knockout closures to cap unused knockout holes where blanks have been removed.
- V. Coordinate all electrical device locations with the architectural floor plan and interior and exterior elevations to prevent mounting devices within elements that they may conflict such as cabinetry, mirrors, planters, etc.
- W. Size outlet and junction boxes to minimum wire fill space requirements. Upsize box as required to allow ease of wire installation and device installation.
- X. Outlet and junction boxes in fire rated walls shall be gauged and spaced so as not to exceed the maximum penetration allowed by the assembly without compromising the fire rating. If a conflict arises relative to a specific condition, the contractor shall follow the requirements of the fire authority and ask for guidance from the design team. At no time should a larger box be installed prior to resolution of conflict.

END OF SECTION

**SECTION 26 05 53  
IDENTIFICATION OF ELECTRICAL SYSTEMS**

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. This Section Includes:
  - 1. Nameplates and warning signs where specified herein and as shown on contract documents including the following:
    - a. Nameplates and warning signs permanently installed on all electrical equipment and devices including, but not limited to, the following items:
      - 1) Enclosures for pullboxes, cabinets, motors, generators.
      - 2) Enclosures for all separately enclosed devices including, but not limited to, disconnect switches, circuit breakers, contactors, time switches, control stations and relays, fire alarm panels and lighting control panel.
      - 3) Wall switches not within sight of outlet controlled.
      - 4) Special systems such as, but not limited to, telephone, fire alarm, warning and signal systems. Identification shall be at each equipment rack, terminal cabinet, control panel, annunciator and pullbox.
      - 5) Devices mounted within and part of equipment including circuit breakers, switches, control devices, control transformers, relays, indication devices and instruments.
- B. Related Work:
  - 1. Section 26 05 00, COMMON WORK RESULTS FOR ELECTRICAL.

PART 2 - PRODUCTS

2.01 EQUIPMENT LABEL DESIGNATIONS

- A. Equipment labels indicating equipment designations both emergency and normal. Designation data per drawings or to be supplied with shop drawings approval.
- B. Panelboard labels showing panel designation, voltage, phase and source.
- C. In accordance with CEC 110.16, provide arc flash protection warning labels on all switchboards, panelboards, distribution panels, transformers, safety switches, transfer equipment, etc. Labels shall be per ANSI Z535.4 guidelines.

2.02 MATERIALS

- A. For Labels: Three layer laminated plastic or micarta with engraved white letters over black background.
- B. For Emergency Equipment: Use engraved white letters over red background.
- C. For Warning Signs: Minimum 18 gauge steel with red lettering on white porcelain enamel finish.
- D. Arc flash labels shall be provided as required by CEC Article 70E.

PART 3 - EXECUTION

3.01 MOUNTING

- A. Equipment labels shall be mounted by self-tapping, threaded screws and bolts, or by rivets. Adhesive types are not acceptable unless specifically noted in this section.

3.02 HEIGHTS ON LABELS

- A. Panelboards, Switchboards and Motor Control Centers and Special Systems Enclosures: 1/4" identify equipment designation; 1/8" identify voltage rating and source.
- B. Individual Circuit Breakers, Switches, and Motor Starters in Panelboards, Switchboards, and Motor Control Centers: 3/16" identify circuit and load served, including location of equipment.
- C. Enclosed Circuit Breakers, Enclosed Switches, and Motor Starters: 3/16" identify load served.
- D. Transformers: 3/16" identify equipment designation; 1/8" identify primary and secondary voltages, primary source and secondary load. Include location of primary source or secondary load if remote from transformer.

3.03 WARNING SIGNS

- A. Warning signs shall be permanently mounted with cadmium plated steel screws or nickel-plated brass bolts.
- B. Warning signs to read "DANGER - HIGH VOLTAGE", with letters 1 1/2" high, 3/16" stroke minimum.
- C. Provide warning sign on all doors or immediately next to door for equipment rooms, enclosures or closets containing equipment energized above 150 volts to ground as per CEC, and/or as directed by the Architect. For interior finish spaces and interior doors, signage shall be coordinated and approved with the Architect in advance of installation.

END OF SECTION



**SECTION 26 27 26  
WIRING DEVICES**

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. This Section Includes:
1. Wiring devices.
- B. Related Work:
1. Section 26 05 00, COMMON WORK RESULTS FOR ELECTRICAL.
  2. Section 26 05 33, RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS.
  3. Section 26 05 19, LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES.
  4. Section 26 05 26, GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS.

PART 2 - PRODUCTS

2.01 RECEPTACLES

- A. General: All receptacles shall be listed by Underwriters Laboratories, Inc.
1. Mounting straps shall be plated steel, with break-off plaster ears and shall include a self-grounding feature (this feature does not substitute for a grounding conductor terminated on grounding strap of device). Terminal screws shall be brass, brass plated or a copper alloy metal.
  2. Receptacles shall be of a screw terminal type, "pressure type quick wire" terminations are not allowed.
- B. Duplex receptacles shall be premium specification grade single phase, 20 ampere, 120 volts, 2-pole, 3-wire, and conform to the NEMA 5-20R configuration in NEMA WD 6. The duplex type shall have bussing break-off feature for two-circuit operation. The ungrounded pole of each receptacle shall be provided with a separate terminal.
1. Bodies shall be white in color. Contractor to verify device color with Architect prior to procurement.
  2. Switched duplex receptacles shall be wired so that only the top receptacle is switched. The remaining receptacle shall be unswitched.
  3. Duplex Receptacles on Emergency Circuit:
    - a. Receptacle bodies shall be red in color. Wall plates shall also be powder coat painted red finish. Cover shall be labeled with panel and circuit number.
  4. Ground Fault Interrupter Duplex Receptacles: Shall be an integral unit suitable for mounting in a standard outlet box.
    - a. Ground fault interrupter shall be commercial grade and consist of a differential current transformer, solid state sensing circuitry and a circuit interrupter switch. It shall be rated for operation on a 60 Hz, 120 volt, 20-ampere branch circuit. Device

shall meet CEC requirements. Device shall have a minimum nominal tripping time of 1/30th of a second. Devices shall meet UL 943.

- C. Receptacles; 20, 30 and 50 ampere, 250 volts: Shall be complete and match with appropriate cord grip plug. Devices shall meet UL 231.
- D. Weatherproof Receptacles: Shall consist of a listed weather resistant duplex receptacle, mounted in box with a gasketed, while in use weatherproof, cast metal cover plate and cap receptacle opening. The cap shall be permanently attached to the cover plate by a spring-hinged flap. Approved manufacturers: Intermatic WP10 Series, Thomas & Betts/Red Dot 2CK Series, or engineer approved equal.

## 2.02 SWITCHES AND DIMMERS

- A. Toggle switches shall be totally enclosed tumbler type with bodies of phenolic compound. Toggle handles color to match receptacle device color unless otherwise specified.
  - 1. Shall be single unit toggle, butt contact, quiet AC type, heavy-duty general-purpose use with an integral self grounding mounting strap with break-off plaster ears and be of a screw terminal type.
  - 2. Shall be color coded for current rating, listed by Underwriters Laboratories, Inc., and meet the requirements of NEMA WD 1, Heavy-Duty and UL 20.
  - 3. Ratings:
    - a. 120 volt circuits: 20 amperes at 120-277 volts AC.
    - b. 277 volt circuits: 20 amperes at 277 volts AC.
  - 4. The switches shall be mounted on the strike plate side of doors.
  - 5. Incorporate barriers between switches with multi-gang outlet boxes where required by the CEC.
  - 6. All toggle switches shall be of the same manufacturer.

## 2.03 WALL PLATES

- A. Wall plates for switches and receptacles shall be type 302 stainless steel.
- B. Standard NEMA design, so that products of different manufacturers will be interchangeable. Dimensions for openings in wall plates shall be accordance with NEMA WD1.
- C. For receptacles or switches ganged together, wall plates shall be a single ganged plate.
- D. Wall plates for data, telephone or other communication outlets shall be as specified in the associated specification.
- E. Surface mounted boxes, NEMA1, shall be industrial grade raised galvanized steel covers. In shop areas all receptacles shall be dust proof and or waterproof where applicable.
- F. Waterproof device covers shall be cast iron, 4-corner screw type, for FS and FD type mounting. Device covers shall be zinc galvanized finish. Weatherproof covers shall be lockable.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Switches installed in hazardous areas shall be explosion proof type in accordance with the CEC and as shown on the drawings.
- B. Installation shall be in accordance with the CEC, NECA "Standard of Installation", and as shown as on the drawings.
- C. Ground terminal of each receptacle shall be bonded to the outlet box with an approved green bonding jumper, and also be connected to the green equipment grounding conductor.
- D. General: Devices shall be of the type specified herein. All devices shall be installed with "pigtailed" leads from the outlet box. No device shall be used in the "feed through" application. Screw terminals shall be used to connect all devices to the circuit and shall be grounded by means of a ground wire where grounding terminals are provided in the device.
- E. Installation: Devices and plates shall be installed in a "plumb" condition and must be flush with the finish surface of the wall where boxes are recessed.
- F. Mounting heights: All control and convenience devices shall comply with California Code of Regulations Title 24 and ADA with respect to accessibility requirements. Mounting heights indicated on plans shall have precedence.
- G. Install switches with the off position down.
- H. Clean debris from outlet boxes.
- I. Provide extension rings as required to bring outlet boxes flush with finished surface or casework.
- J. Test each receptacle device for proper polarity.

END OF SECTION

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**SECTION 26 51 00  
INTERIOR LIGHTING**

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. This Section Includes:
  - 1. Interior lighting systems, including luminaires and LED; driver.
- B. Related Work:
  - 1. Section 26 05 00, COMMON WORK RESULTS FOR ELECTRICAL.
  - 2. Section 26 05 33, RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS: Conduits, fittings, and boxes for raceway systems.
  - 3. Section 26 05 19, LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES (600 VOLTS AND BELOW): Low voltage power and lighting wiring.
  - 4. Section 26 05 26, GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS: Requirements for personnel safety and to provide a low impedance path for possible ground fault currents.
  - 5. Section 26 56 00, SITE LIGHTING.
  - 6. Section 26 56 70, LIGHTING ACCEPTANCE TESTING.

1.03 SUBMITTALS

- A. Submit in accordance with Section 26 05 00, COMMON WORK RESULTS FOR ELECTRICAL.
- B. Shop Drawings:
  - 1. Sufficient information, clearly presented, shall be included to determine compliance with drawings and specifications.
  - 2. Include electrical ratings, dimensions, mounting, details, materials, terminations, wiring and connection diagrams, photometric data, ballasts, luminaires, lamps and controls.

1.04 APPLICABLE PUBLICATIONS

- A. Publications listed below (including amendments, addenda, revisions, supplements) form a part of this specification to the extent referenced. Publications are referenced in the text by the basic designation only.
- B. American Society for Testing and Materials (ASTM).
- C. American National Standards Institute (ANSI).
- D. Aluminum Association Inc. (AA).
- E. Illuminating Engineering Society of North America (IESNA).

- F. National Electrical Manufacturers Association (NEMA).
- G. National Fire Protection Association (NFPA).
- H. Underwriters Laboratories, Inc. (UL).

#### 1.05 DEFINITIONS

- A. Lighting terminology used herein is defined in IES
- B. Exception: The term "driver" is used herein to cover both drivers and power supplies, where applicable.
- C. Clarification: The term "LED light source(s)" is used herein per IES to cover LED package(s), module(s), and array(s).

### PART 2 - PRODUCTS

#### 2.01 MATERIALS AND EQUIPMENT

- A. Materials and equipment shall be in accordance with CEC, UL, ANSI, and as shown on the drawings and specified.

#### 2.02 LIGHTING FIXTURES (LUMINAIRES)

- A. Shall be in accordance with NFPA 70, UL 1598 and shall be as shown on drawings and as specified. All luminaires shall have been certified to the California Energy Commission by its manufacturer to comply with the efficiency standards as per California Code of Regulations Title 24, Part 6, Section 111 referencing the Appliance Efficiency Regulations in Title 20. Post certification with building permit.
- B. Sheet Metal:
  - 1. Shall be formed to prevent warping and sagging. Housing, trim and lens frame shall be true, straight (unless intentionally curved) and parallel to each other as designed.
  - 2. Wireways and fittings shall be free of burrs and sharp edges and shall accommodate internal and branch circuit wiring without damage to the wiring.
  - 3. When installed, any exposed fixture housing surface, trim frame, door frame and lens frame shall be free of light leaks; lens doors shall close in a light tight manner.
    - a. Hinged door closure frames shall operate smoothly without binding when the fixture is in the installed position, and latches shall function easily by finger action without the use of tools.
- C. Ballasts shall be serviceable while the fixture is in its normally installed position, and shall not be mounted to removable reflectors or wireway covers.
- D. Recessed fixtures shall be of the type approved for the ceiling and insulation conditions and appropriate for the installation location. Insulation must be held back from the fixture to provide manufacturers' recommended clearances for proper operation. Thermal tripping shall be the installer's responsibility to correct. Where installed in fire rated ceilings, coordinate installation of fire rated enclosures around the ceiling penetrations. Fixtures shall contain the proper through wiring capacity for that which is shown on the plans.

- E. Recessed fixtures shall be provided with the appropriate trims and hardware compatible with the ceiling type shown. Plaster frames are required where plaster or gypsum board ceilings are encountered.
- F. Mechanical Safety: Lighting fixture closures (lens doors, trim frame, hinged housings, etc.) shall be retained in a secure manner by captive screws, chains, captive hinges or fasteners such that they cannot be accidentally dislodged during normal operation or routine maintenance.
- G. Metal Finishes:
  - 1. The manufacturer shall apply standard finish (unless otherwise specified) over a corrosion resistant primer, after cleaning to free the metal surfaces of rust, grease, dirt and other deposits. Edges of pre-finished sheet metal exposed during forming, stamping or shearing processes shall be finished in a similar corrosion resistant manner to match the adjacent surface(s). Fixture finish shall be free of stains or evidence of rusting, blistering, or flaking.
  - 2. Interior light reflecting finishes shall be white with not less than 85 percent reflectances, except where otherwise specified on the drawing.
  - 3. Exterior finishes shall be as shown on the drawings.
- H. Provide all lighting fixtures with a specific means for grounding metallic wireways and housings to an equipment grounding conductor.
- I. Provide fixtures with a U.L. listing for shower or shower rating above shower or tub areas.

## 2.03 LED LUMINAIRE REQUIREMENTS

- A. General Requirements:
  - 1. Luminaire shall have an external label per ANSI C136.15
  - 2. Luminaire shall have an internal label per ANSI C136.22.
  - 3. Luminaires shall start and operate in -20°C to +40°C ambient.
  - 4. LED light source(s) and driver(s) shall be RoHS compliant.

## 2.04 LED DRIVER

- A. Driver
  - 1. Rated case temperature shall be suitable for operation in the luminaire operating in the ambient temperatures as indicated.
  - 2. Shall accept the voltage or voltage range indicated, and shall operate normally for input voltage fluctuations of plus or minus 10 percent. Consistent with NEMA SSL 1.
  - 3. Shall have a minimum Power Factor (PF) of 0.90 at full input power and across specified voltage range.
- B. Electromagnetic interference
  - 1. Shall have a maximum Total Harmonic Distortion (THD) of 20% at full input power and across specified voltage range.
  - 2. Shall comply with FCC 47 CFR part 15 non-consumer RFI/EMI standards.
- C. The following shall be in accordance with corresponding sections of ANSI C136.37
  - 1. Wiring and grounding
  - 2. All internal components shall be assembled and pre-wired using modular electrical connections.
  - 3. Mounting provisions
  - 4. Terminal blocks for incoming AC lines
  - 5. Latching and hinging

- 6. Ingress protection

2.05 LAMPS

- A. Provide lamps for all luminaires.
- B. LED LIGHT SOURCE
  - 1. Minimum Color Rendering Index (CRI): 60.
  - 2. Correlated Color Temperature (CCT)
    - a. CCT shall be as listed in Table 1 below:

Table 1. Allowable CCT

Manufacturer-Rated Nominal CCT (K)	Allowable LM-79 Chromaticity Values
	Measured CCT (K)
2700	2580 to 2870
3000	2870 to 3220
3500	3220 to 3710
4000	3710 to 4260
4500	4260 to 4746
5000	4745 to 5311
5700	5310 to 6020
6500	6020 to 7040

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Installation and furnishing of lighting fixtures shall be in accordance with the CEC, manufacturer's instructions and as shown on the drawings or specified. Fixtures damaged in transit and storage prior to completion shall be replaced at Contractor's expense.
- B. Align, mount and level the lighting fixtures uniformly.
- C. Avoid interference with and provide clearance for equipment. Where the indicated locations for the lighting fixtures conflict with the locations for equipment, change the locations for the lighting fixtures by the minimum distances necessary as approved by the Architect. The Architectural reflected ceiling plan will take precedence over electrical plans.
- D. Lighting Fixture Supports:
  - 1. Shall maintain the fixture positions after cleaning and relamping.
  - 2. Fixtures shall be supported as detailed on drawings and as required by DSA standards.
  - 3. Surface mounted lighting fixtures:
    - a. Fixtures shall be bolted against the ceiling independent of the outlet box at four points spaced near the corners of each unit. The bolts shall be minimum ¼-20 bolt, secured to structural ceiling. Non-turning studs may be attached to the building structure by 12 gauge safety hangers.
  - 4. Fixtures mounted in open construction shall be secured directly to the building structure with approved bolting and clamping devices.
- E. Furnish and install the specified lamps for all lighting fixtures as part of this project.



- F. Coordinate between the electrical and ceiling trades to ascertain that approved lighting fixtures are furnished in the proper sizes and installed with the proper devices (hangers, clips, trim frames, flanges), to match the ceiling system being installed.
- G. Bond lighting fixtures and metal accessories to the grounding system as specified in Section 26 05 26, GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS.
- H. At completion of project, relamp all fixtures which have failed/burned-out lamps. Clean all fixtures, lenses, diffusers and louvers that have accumulated dust/dirt during construction.
- I. Wallmount fixtures in walkway areas shall not project more than 4 inches from wall when projection occurs lower than 80 inches.

END OF SECTION

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**SECTION 26 56 00  
EXTERIOR LIGHTING**

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This section specifies the furnishing, installation, and connection of exterior luminaires, controls, poles and supports.

1.02 RELATED WORK

- A. Section 26 05 00, COMMON WORK RESULTS FOR ELECTRICAL.
- B. Section 26 05 33, RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS: Conduits, fittings, and boxes for raceway systems.
- C. Section 26 05 19, LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES (600 VOLTS AND BELOW): Low voltage power and lighting wiring.
- D. Section 26 05 26, GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS: Requirements for personnel safety and to provide a low impedance path for possible ground fault currents.
- E. Section 26 51 00, INTERIOR LIGHTING.
- F. Section 26 56 70, LIGHTING ACCEPTANCE TESTING.

1.03 SUBMITTALS

- A. Submit in accordance with Section 26 05 00, COMMON WORK RESULTS FOR ELECTRICAL.
- B. Shop Drawings:
  - 1. Sufficient information, clearly presented, shall be included to determine compliance with drawings and specifications.

1.04 APPLICABLE PUBLICATIONS

- A. Publications listed below (including amendments, addenda, revisions, supplements) form a part of this specification to the extent referenced. Publications are referenced in the text by the basic designation only.
- B. American Society for Testing and Materials (ASTM).
- C. American Concrete Institute (ACI).
- D. American National Standards Institute (ANSI).
- E. Aluminum Association Inc. (AA).
- F. Illuminating Engineering Society of North America (IESNA).

- G. National Electrical Manufacturers Association (NEMA).
- H. National Fire Protection Association (NFPA).
- I. Underwriters Laboratories, Inc. (UL).

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Poles: Do not store poles on ground. Store poles so they are at least one foot above ground level. Do not remove factory-applied pole wrappings until just prior to installation of pole.

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

- A. Materials and equipment shall be in accordance with CEC, UL, ANSI, as shown on the drawings and as specified.

2.02 LUMINAIRES

- A. Light emitting diode (LED)-based solid state lighting (SSL) products shall be factory tested in accordance to the International Engineering Society (IES) LM-79 recommendations and meet ANSI C78.377-2008 standards.
- B. LED light sources shall be factory tested in accordance to IES LM-80 recommendations.
- C. LED-based SSL product shall incorporate an external heat sink, integral to the luminaire.
- D. IESNA HB-9 and RP-8 light distribution pattern types shall be as indicated on the drawings.
- E. Incorporate associated ballasts and drivers within the luminaire housing.
- F. Lenses shall be frame-mounted heat-resistant, borosilicate glass, prismatic refractors. Attach the frame to the luminaire housing by hinges or chain.
- G. Pre-wire internal components to terminal strips at the factory.
- H. Bracket mounted luminaires shall have leveling provisions and clamp type adjustable slip-fitters with locking screws.
- I. Materials shall be rustproof. Latches and fittings shall be non-ferrous metal.
- J. LED-based SSL luminaires shall be manufactured specifically for LED lamps with drivers integral to the luminaire housing.

2.03 LAMPS

- A. Luminaires shall be listed for the lamp specified on the associated electrical plans. Install the proper lamps in every luminaire installed.

- B. Lamps shall be clear or coated as recommended by luminaire manufacturer to provide for maximum luminaire efficiency in fixture used.

2.04 LED-BASED SOLID STATE DRIVERS

- A. Shall be listed by either U.L. or equal listing agency and comply with IEEE C.62.41-1991, Class A operation.
- B. Provide a minimum power factor of 0.9.
- C. Minimum operating temperature appropriate for outdoor environments.
- D. Shall operate at a frequency greater than or equal to 120Hz.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install lighting in accordance with the CEC, as shown on the drawings, and in accordance with manufacturer's recommendations.

3.02 GROUNDING

- A. Ground noncurrent-carrying parts of equipment including luminaries, mounting arms, brackets, and metallic enclosures as specified in Section 26 05 26, GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS. Where copper grounding conductor is connected to a metal other than copper, provide specially treated or alloyed connectors suitable and listed for this purpose.

END OF SECTION

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**SECTION 26 56 70  
LIGHTING ACCEPTANCE TESTING**

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. This Section Includes:

1. A Certificate of Acceptance will be required to be filed (by the Contractor) with and approved by the enforcement agency prior to receiving a final occupancy permit. The Certificate of Acceptance will indicate that the Contractor has demonstrated acceptance requirements of the plans and specifications, that current requirements for installation certificates are met, and that currently required operating and maintenance information (as well as the Certificate of Acceptance) were provided to the building Owner.
2. Testing, evaluation and calibration of lighting controls equipment provided, installed and connected in Division 26.
3. Documentation of test results, completion of "Certificate of Acceptance" and "Certificate of Installation" forms and filing with the enforcement agency for approval.
4. Specific Jobsite Conditions:
  - a. Acceptance testing must be tailored for each specific design, job site, and climactic conditions. While the steps for conducting each test remain consistent, the application of the tests to a particular site may vary. The Contractor shall review the construction documents and include all required time, material, testing equipment, etc. as required to complete the requirements of this section.

B. Related Work:

1. Section 26 05 00, COMMON WORK RESULTS FOR ELECTRICAL.
2. Section 26 51 00, INTERIOR LIGHTING.
3. Section 26 56 00, EXTERIOR LIGHTING.

1.03 REFERENCES

- A. Acceptance Testing Criteria: 2013 Building Energy Efficiency Standards Non-Residential Compliance Manual.

1.04 SYSTEM DESCRIPTION

A. Performance Requirements:

1. All material, equipment, labor and technical supervision to perform tests, calibrations and documentation specified herein.

B. Scope of Testing, Evaluation and Calibration (as applicable):

1. (E) Automatic (master) time switches.
2. Occupancy sensors.
3. Automatic daylighting controls.
4. Daylighting controls.

5. Area controls.

#### 1.05 SUBMITTALS

- A. Test Reports:
  1. Written record of all tests and completion of forms included in this section.
  2. At completion of project, assemble a final test report. Submit report to the enforcement agency and the Owner prior to final occupancy to include:
    - a. Summary of project.
    - b. Description of systems and equipment tested.
    - c. Visual inspection report.
    - d. Description of tests.
    - e. Test results.
    - f. Conclusions and recommendations.
  3. Report shall be bound in booklet form, include on the Contractor's letterhead the title of the report and the systems tested.
- B. Constructability Plan Review
  1. The Contractor shall review the construction drawings and specifications to understand the scope of the acceptance tests and raise critical issues that might affect the success of the acceptance tests prior to starting construction. Any constructability issues associated with the lighting system should be forwarded to the design team for review/modifications prior to equipment procurement and installation. The Contractor shall submit on company letterhead, with the lighting control equipment required by Section 26 05 00, COMMON WORK RESULTS FOR ELECTRICAL, 1.4B, a letter confirming that the constructability review has been completed and their company has reviewed and is prepared to complete the lighting acceptance testing required by this section. The lighting acceptance testing shall be included in this letter at the time of equipment submittals.

#### PART 2 - PRODUCTS

##### 2.01 FORMS

- A. Lighting acceptance testing forms and verification procedures for lighting systems that require acceptance testing can be downloaded from the following website:  
[http://www.energy.ca.gov/title24/2013standards/nonres\\_compliance\\_forms/](http://www.energy.ca.gov/title24/2013standards/nonres_compliance_forms/)
- B. These completed forms will be the deliverable product to the enforcement agency and Owner as described in 1.4 of this section.

#### PART 3 - EXECUTION

##### 3.01 FIELD QUALITY CONTROL

- A. Tests:
  1. Contractor's Responsibilities:
    - a. Perform all required tests required by this section.
    - b. Schedule testing with building Owner.
    - c. Provide window/skylight masking material required to simulate dark conditions of test during evening hours.



- d. Calibration of equipment such as light meters, photo electric controls, etc.
- e. Programming of time switches (interior/exterior lighting) for operations as directed by the Owner.

3.02 ADJUSTING

- A. Final Settings: The Contractor shall be responsible for implementing all final settings and adjustments on controls equipment as required for a complete and operating system.

END OF SECTION

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**SECTION 31 00 00  
EARTHWORK**

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Excavation and scarification.
- B. Rough grading, cutting, and filling.
- C. Compaction of subgrade.

1.02 RELATED WORK DESCRIBED ELSEWHERE

- A. Section 01 10 00 – Special Project Procedures
- B. Section 01 40 00 – Quality Control
- C. Section 02 40 00 – Demolition
- D. Section 32 12 00 – Asphaltic Concrete Paving
- E. Section 32 13 00 – Concrete Paving and Sitework
- F. Section 03 30 00 – Cast-in-Place Concrete

1.03 REFERENCES

- A. "Updated Geotechnical Engineering Report", Meridian Fire Station Apparatus Bay Expansion (File No. SL-17272-SA), April 16, 2014, by Earth Systems Pacific, 4378 Old Santa Fe Road, San Luis Obispo, CA 93401-8116; (805) 544-3276, appended to these Specifications. This report is not a contract document, except for those portions specifically incorporated by reference in this Section.
- B. "Geotechnical Recommendations for New Water Storage Tanks", Meridian Fire Station Apparatus Bay Expansion (File No. SL-17272-SB), October 6, 2014, by Earth Systems Pacific, 4378 Old Santa Fe Road, San Luis Obispo, CA 93401-8116; (805) 544-3276, appended to these Specifications. This report is not a contract document, except for those portions specifically incorporated by reference in this Section.
- C. California Department of Transportation "Standard Specifications," referenced sections, State of California.

1.04 PROJECT/SITE CONDITIONS

- A. Use all means necessary to control dust on or near the site resulting from the performance of the work. Thoroughly moisten all surfaces to prevent dust being a nuisance to the public, adjacent uses, and concurrent work on site. Comply with applicable provisions of Section 01 10 00.
- B. Verify existing grades and dimensions before starting any grading operations. If any discrepancy exists with information shown on the drawings, notify the Architect immediately.
- C. Use all means necessary to protect items designated to remain and all work of this Section.

- D. Protect trunks and root systems of existing trees designated to remain with markers, fencing or barriers before any earthwork equipment is moved onto the site.
- E. All existing benchmarks shall be protected and maintained throughout the course of the work. Monuments or stakes disturbed or destroyed during the course of the work shall be re-established.
- F. Earthwork shall be conducted as to avoid injury to persons and damage to adjacent property. Provide appropriate shoring, bracing and barriers, including light when necessary. Comply with California Building Code Title 24, Chapter 33 and California Civil Code Section 832.
- G. Earthwork operations shall comply with all safety requirements of the California Industrial Accident Commission and Division of Industrial Safety and the Federal Occupational Safety and Health Act (OSHA).

#### 1.05 SUBMITTALS

- A. In the event an alternate method of soil conditioning is proposed to the methods specified herein, submit under the provisions of Section 01 3000, a complete written program for alternative soil conditioning methods. Prior to preparing an alternate proposal, confirm the Owner's willingness to entertain alternative proposals. Alternative proposals will be reviewed by the Owners' Soils Engineer.

#### 1.06 QUALITY ASSURANCE

- A. The Owner will retain and pay a qualified Soils Engineer to take all field samples and do all laboratory testing necessary to insure compliance of the work to these specifications. The Soils Engineer shall submit results of all testing done during the course of the work to the Contractor, the Owner's Representative and Architect.
- B. Should testing indicate work that does not satisfy these Specifications, the Contractor shall pay for all additional tests required to determine the extent of work that is not satisfactory and for all additional tests necessary to demonstrate compliance with these Specifications.
- C. Refer to subsection 3.01.A.1.h below for Inspection and Testing program

### PART 2 - PRODUCTS

#### 2.01 FILL MATERIAL FOR SUB-GRADE PREPARATION

- A. Site Materials: All on-site fill materials shall be non-expansive (Expansion Index of 10 or less, except as allowed under Soils Engineer's direction), free of organic or deleterious products and shall be a soil/soil-rock product containing lumps or rock no greater than 3 inches. Moisture content of existing soils may require adjustment for approval. All on-site fill material shall be subject to approval by the Soils Engineer, and shall be certified where required by the Soils Engineering Report.
- B. Import Materials: All import material shall meet the content requirements of 2.01/A above, be granular in nature with a rock-to-soil ratio not exceeding 50%, readily compacted without excessive voids, have an expansion index not greater than 10 as determined by ASTM D4829-03. Imported material shall have enough binder to allow foundation excavations and utility trenches to stand without caving. All imported fill material shall be subject to approval by the Soils Engineer, and shall be certified where required by the Soils Engineering Report.

#### 2.02 CAST-IN-PLACE CONCRETE PAVING BASE

- A. Class 2 aggregate base conforming to, mixed, spread and compacted to the requirements of Section 26 of the Standard Specifications (Caltrans 2010), placed over approved compacted fill

material per the requirements described in Part 3 below, or an equivalent base material approved by the Soils Engineer.

### PART 3 - EXECUTION

#### 3.01 GEOTECHNICAL RECOMMENDATIONS INCORPORATED INTO THE CONTRACT BY REFERENCE

- A. Reference Document 31 00 00 1.03.A:  
"Updated Geotechnical Engineering Report", Meridian Fire Station Apparatus Bay Expansion (File No. SL-17272-SA), April 16, 2014, by Earth Systems Pacific.
  - 1. Part 7.0 – Incorporate portions listed below:
    - a. Adopt terminology and definitions stated in the report. In addition, the word "should" means "shall", the word "recommended" means "required" and the word "recommendation" mean "requirement".
    - b. Site Preparation (in full)
    - c. Grading (in full)
    - d. Utility Trenches (in full)
    - e. Foundations: Paragraphs 2 and 7
    - f. Pavement: Paragraph 3
    - g. Drainage and Maintenance: Paragraphs 5 and 6
    - h. Construction Observation and Testing: Coordinate, cooperate and participate fully in the procedures described. Refer to Section 01 40 00 1.05.
- B. Reference Document 31 00 00 1.03.B:  
"Geotechnical Recommendations for New Water Storage Tanks", Meridian Fire Station Apparatus Bay Expansion (File No. SL-17272-SB), October 6, 2014, by Earth Systems Pacific
  - 1. Water Tank Building Area: Paragraphs 1 and 2
  - 2.. The requirements in preceding subparagraph 1. also apply to the fire pump enclosure building area.

#### 3.02 FINISH SITE GRADING

- A. Adjust finish grade to elevations shown on the Drawings. Firmly hand tamp or compact by vibra-plate.
- B. Slope grade away from buildings and walls a minimum of 2% inches for 5 feet.
- C. Remove surplus fill materials from site, unless the Owner specifically identifies or approves another means of disposal.

END OF SECTION

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**SECTION 31 22 80  
SOIL TREATMENT**

PART 1 - GENERAL

1.01 WORK INCLUDES

- A. Herbicide treatment of soil beneath concrete paving and concrete slabs to prevent weed and plant growth
- B. Insecticide treatment of soil at building perimeters to prevent termites

1.02 QUALITY ASSURANCE

- A. Soil treatment products shall only be applied by persons familiar with the specified products and manufacturer's directions.
- B. Only products currently approved by the California Environmental Protection Agency shall be used.

1.03 CERTIFICATION

- A. Provide with evidence of soil treatment Contractor's licensure or certification for application of these materials under provisions of Section 01 30 00 if requested by Owner or Architect.
- B. Following application, and as a condition of its acceptance, provide Owner with a soil treatment certificate, identifying materials applied, method of application, and date of treatment, under provisions of Section 01 40 00.

PART 2 - PRODUCTS

2.01 SOIL STERILANT (HERBICIDE)

- A. All sterilant used shall be the product of one manufacturer, and shall be a compound of 1 pound sodium chlorate to 2 pounds sodium borate to 1 gallon of water.
- B. Alternate materials may be used subject to submittal review per section 01 30 00.

2.02 SOIL POISON (INSECTICIDE)

- A. All soil poison used shall be the product of one manufacturer, and shall be Dursban, by Dow Chemical Company.
- B. Alternate materials may be used subject to submittal review per section 01 30 00.

PART 3 - EXECUTION

3.01 SURFACE CONDITION

- A. Inspect and verify that all areas to receive soil treatment are in a proper condition for application to commence. Notify the Architect if discrepancies exist.
- B. Beginning application means acceptance of existing conditions.

3.02 APPLICATION

- A. Apply soil sterilant according to the manufacturer's published recommendations and all applicable safety regulations, spraying sterilant uniformly over all areas to receive concrete at a rate of 1 gallon per 100 square feet, taking special care to avoid contamination of landscape areas or neighboring property.
- B. Apply soil poison at all building perimeters in accordance with manufacturer's directions, in a concentration as recommended for the control of soil borne termites.

3.03 CLEAN-UP

- A. Properly dispose of all containers and trash off-site.

END OF SECTION



**SECTION 32 10 15  
CONCRETE PAVING AND SITEWORK**

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Concrete walks, steps, sidewalks, curbs, gutters, drainage structures, driveway and parking lot paving, and related concrete site improvements as shown on drawings.

1.02 RELATED WORK

- A. Section 31 00 00 - Earthwork
- B. Section 32 10 13 - Asphaltic Concrete Paving
- C. Section 03 30 00 - Cast-in-Place Concrete

1.03 REFERENCES

- A. County of San Luis Obispo Engineering Standards, current edition.
- B. ACI 301 - Specifications for Structural Concrete for Buildings.
- C. ANSI/ASTM A185 - Welded Steel Wire Fabric for Concrete Reinforcement.
- D. ANSI/ASTM A497 - Welded Deformed Steel Wire Fabric for Concrete Reinforcement.
- E. ANSI/ASTM D1751 - Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction.
- F. ASTM A615 - Deformed and Plain Billet-Steel for Concrete Reinforcement.
- G. ASTM C33 - Concrete Aggregates.
- H. ASTM C94 - Ready Mixed Concrete.
- I. ASTM C150 - Portland Cement.
- J. ASTM C979 - Concrete Color Additives.
- K. Referenced portions of "Standard Specifications" of State of California Department of Transportation.

1.04 QUALITY ASSURANCE

- A. Perform work in accordance with ACI 301.
- B. Obtain materials for similar installations from same source throughout.

1.05 REGULATORY REQUIREMENTS

- A. Conform to California Administrative Code Title 24 for slopes and surface treatments of public walk and ramp surfaces.

1.06 TESTS

- A. Concrete slump and strength testing and analysis will be performed under provisions of Section 01 40 00.

PART 2 - PRODUCTS

2.01 CONCRETE MATERIALS

- A. Cement: ASTM C150 Normal-Type I or II.
- B. Fine and Coarse Aggregates: ASTM C33.
- C. Water: Clean and not detrimental to concrete.

2.02 FORM MATERIALS

- A. Conform to ACI 301 and Section 03 30 00 of these specifications.
- B. Joint Filler: per ASTM D1751; Burke No. 236 or approved equivalent, 1/4 inch thick.

2.03 REINFORCEMENT

- A. Reinforcing Steel: Conform to Section 03 30 00.
- B. Welded Steel Wire Fabric: Plain type, ASTM A185, uncoated finish.
- C. Tie Wire: Annealed steel, minimum 16 gage.
- D. Bars and Dowels: ASTM A615; 40 ksi yield grade, plain steel, uncoated finish.

2.04 ACCESSORIES

- A. Curing Compound: Conform to ASTM C309; any Burke product compatible with concrete additives.
- B. Form Release: Burke Release #1 form release agent or equivalent non-oil type form coating.
- C. Preformed Joint: Burke No. 237 Plastic Zip Strip joint former or approved equivalent.

2.05 ADDITIVES

- A. Chemical Admixtures: Admixtures for water reduction, acceleration, retardation, air entrainment, or high early strength shall conform to appropriate ASTM designations and shall be used only if approved in advance by Architect on the basis of submittals under provisions of Section 01 30 00.

2.07. CONCRETE MIX

- A. Mix concrete in accordance with ASTM C94.

- B. Provide concrete mixes according to the following schedule:
  - 1. Walks: 2,000 psi 28-day compressive strength, Class B concrete.
  - 2. Walls, Curbs and Gutters: 2,500 psi 28-day compressive strength, Class B concrete.
  - 3. Vehicle Paving: 3,000 psi 28-day compressive strength, Class B concrete.
- C. Use accelerating admixtures in cold weather, set-retarding admixtures during hot weather, or air entraining agent to concrete mix for concrete work subject to freeze/thaw cycling only when approved by Architect.

#### 2.08 COLOR / REFLECTANCE VALUE

- A. Provide concrete with a Solar Reflectance Value of at least 0.30 as determined in accordance with ASTM Standards E1918 or C-1549. (Cal-Green Tier 1 requirement).

### PART 3 - EXECUTION

#### 3.01 INSPECTION

- A. Verify compacted base is ready to support concrete paving, walks, flatwork and imposed loads.
- B. Verify gradients and elevations of subgrade are correct.
- C. Beginning of installation means acceptance of existing conditions.

#### 3.02 PREPARATION

- A. Moisten substrate to minimize absorption of water from fresh concrete.

#### 3.03 FORMING

- A. Place and secure forms to correct location, dimension, and profile, and in compliance with Section 03 30 00.
- B. Assemble formwork to permit easy stripping and dismantling without damaging concrete.
- C. Place joint fillers vertical in position, in straight lines. Secure to formwork during concrete placement.
- D. Unless otherwise noted on drawings, form walks and plazas at 4 full inches thickness and vehicle paving at 6 full inches thickness.

#### 3.04 REINFORCEMENT

- A. Place reinforcement as indicated in details on drawings, and in compliance with Section 03 30 00.
- B. Interrupt reinforcement at expansion joints.
- C. Provide dowelled joints at interruptions of concrete with one end of dowel treated to allow longitudinal movement.
- D. Concrete vehicle paving shall be reinforced with a minimum of #3 bars at 24" o.c. both directions; cold joints shall be reinforced with #4 smooth dowels at 36" o.c.

- E. Unless noted otherwise, walks and miscellaneous flatwork shall be reinforced with 6" X 6" 10/10 expanded wire mesh.

### 3.05 FORMED JOINTS

- A. Place joints at locations indicated on drawings or as directed by Architect, to correct elevation and profile. Align curb, gutter, and sidewalk joints.
- B. Determine which joints shall be expansion joints and which joints shall be contraction crack control (weakened plane) joints based on referenced standards (Caltrans Standard Specifications, Chapter 40). In no case shall a concrete paving surface extend more than twelve (12) feet unbroken by a joint.
- C. Tool joints with a metal joint tool. Sawcut joints may only be used if approved in advance by the Architect. Sawcut joints in exposed to view locations shall be cut against a straightedge guide to assure a straight line.

### 3.06 PLACING CONCRETE - GENERAL

- A. Place concrete in accordance with ACI 301.
- B. Ensure reinforcement, inserts, embedded parts and formed joints are not disturbed during concrete placement.
- C. Place concrete continuously between predetermined construction joints. Do not break or interrupt successive pours such that unplanned cold joints occur.

### 3.07 FINISHING

- A. Finish concrete paving and related flatwork according to the following schedule:
  - 1. Curbs and Gutters: Smooth Sacked.
  - 2. Sidewalks: Light Broom, conforming to County of San Luis Obispo standards and meeting CBC Section 1133B.7 requirements for slip resistance.
  - 3. Internal Project Walks, Ramps, Steps and Plazas: Light Broom, perpendicular to length, meeting CBC Section 1133B.7 requirements for slip resistance. Provide static coefficient of friction, measured by a means acceptable to the Authority Having Jurisdiction, of 0.6 or better for accessible routes and 0.8 or better for ramps.
  - 4. Vehicle Surfaces: Medium Broom.
- B. Place curing compound on exposed concrete surfaces immediately after finishing. Apply in accordance with manufacturer's instructions.

### 3.09 PROTECTION

- A. Immediately after placement, protect concrete from premature drying, rain pitting, excessive hot or cold temperatures, and mechanical injury.
- B. Do not allow spotting, ponding or uneven accumulation of moisture during cure period.

END OF SECTION

**SECTION 32 12 00  
ASPHALTIC CONCRETE PAVING**

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Asphaltic concrete paving at parking and driveway areas.

1.02 RELATED WORK

- A. Section 31 00 00 - Earthwork
- B. Section 32 10 15 - Concrete Paving and Sitework
- C. Section 32 17 00 - Pavement Marking

1.03 REFERENCES

- A. Referenced portions of "Standard Specifications" of State of California Department of Transportation.
- B. County of San Luis Obispo Engineering Standards.
- C. CCR Title 24 California Accessibility Regulations.

PART 2 - PRODUCTS

2.01 ASPHALTIC CONCRETE

- A. Binder:  
Paving asphalt (as described in Section 92 of referenced standards), with a viscosity grade of AR4000.
- B. Asphaltic Concrete:  
Type B asphaltic concrete (as described in Section 39 of referenced standards), with aggregate type B, 3/4" diameter maximum size, medium graded.

2.03 TACK COAT

- A. For application to all vertical asphaltic concrete or cast-in-place concrete surfaces to be paved against: SS-1h emulsified asphalt (as described in Section 37 of referenced standards)

2.04 SEAL COAT

- A. Fog type, SS-1h emulsified asphalt (as described in Section 37 of referenced standards).

2.05 STRIPING PAINT

- A. White traffic paint complying with Federal Specification TT-P-115E; Dunn-Edwards W801 "Vin-L-Stripe" epoxy modified acrylic latex or equivalent.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Verify that compacted base is dry and ready to support paving and imposed loads.
- B. Verify gradients and elevations of base are correct.
- C. Soils Engineer will review actual R value test results taken in connection with on-site subgrade preparation and make a final determination of required asphaltic concrete thickness.
- D. Beginning of installation means acceptance of existing conditions.

3.02 PLACEMENT OF ASPHALTIC CONCRETE SURFACING

- A. Repair any voids occurring after completion of grading operations.
- B. Place asphaltic concrete in strict accordance with the provisions of Section 39 of the referenced standards.
- C. Roll surface until smooth and dense texture is obtained, using equipment and placement methods allowed by referenced standards.
- D. Asphaltic concrete thickness and compacted base thickness at on-site paving areas shall be no less than indicated in Civil Engineering Drawings.

3.03 PLACEMENT OF SEAL COAT

- A. Apply seal coat a minimum of 7 days after placement of asphaltic concrete, in accordance with Section 37 of the referenced standards.
- B. Apply seal coat at the rate of .07 gallons per square yard over the entire paved area.
- C. Carefully remove all seal coat from concrete and other adjacent surfaces.

3.04 ADJUSTMENTS

- A. Finish all asphaltic concrete surfaces to meet the tolerances described in Section 39, Article 39-6.03 of the referenced standards.
- B. Upon direction of the Architect, cut out and/or rework all surfaces which pond or do not meet these tolerances.

3.05 CLEANUP

- A. Clean up and remove all debris related to paving operations from site.
- B. Clean any asphalt products splattered on adjacent surfaces with an appropriate cleaner.

END OF SECTION

**SECTION 32 17 00  
PAVEMENT MARKING**

PART 1 – GENERAL

1.01 DESCRIPTION

- A. Surface applied detectable/tactile warning surface tiles on concrete paving.
- B. Parking stall striping and related paint markings.

1.02 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Special Conditions and Division 1 Specifications Section, apply to this Section.

1.03 SUBMITTALS

- A. Product Data: Submit manufacturer's literature describing products, installation procedures and routine maintenance.
- B. Samples for Verification Purposes: Submit two (2) tile samples minimum 6"x6" of the kind proposed for use.
- C. Shop drawings are required for products specified showing fabrication details, composite structural system, tile surface profile, fastener locations, sound on cane contact amplification feature, plans of tile placement including joints, and material to be used as well as outlining installation materials and procedure.
- D. Material Test Reports: Submit complete test reports from qualified accredited independent testing laboratory's to qualify that materials proposed for use are in compliance with requirements and meet or exceed the properties indicated on the specifications. All tests shall be conducted on a Surface Applied Detectable/Tactile Warning Surface Tile system as certified by a qualified independent testing laboratory and be current within a 24 month period.
- E. Maintenance Instructions: Submit copies of manufacturer's specified installation and maintenance practices for each type of Detectable Warning Surface Tile and accessory as required.

1.04 QUALITY ASSURANCE

- A. Provide Surface Applied Detectable/Tactile Warning Surface Tiles and accessories as produced by a single manufacturer with a minimum of three (3) years experience in the manufacturing of Surface Applied Detectable/Tactile Warning Surface Tiles.
- B. Installer's Qualifications: Engage an experienced Installer certified in writing by Surface Applied Detectable/Tactile Warning Surface Tile manufacturer as qualified for installation, who has successfully completed installations similar in material, design, and extent to that indicated for Project.
- C. Americans with Disabilities Act (ADA): Provide Surface Applied Detectable/Tactile Warning Surface Tiles which comply with the detectable warnings on walking surfaces section of the Americans with Disabilities Act (Title III Regulations, 28 CFR Part 36 ADA STANDARDS FOR ACCESSIBLE DESIGN, Appendix A, Section 4.29.2 DETECTABLE WARNINGS ON WALKING SURFACES).

- D. California Code of Regulations (CCR): Provide only approved DSAAC detectable warning products as provided in the California Code of Regulations (CCR) Title 24, Part 2, Section 205 definition of "Detectable Warning". Section 1117A.4 and 1127B.5 for "Curb Ramps" and Section 1133B.8.5 for "Detectable Warnings at Hazardous Vehicular Areas".
- E. Vitrified Polymer Composite (VPC) Surface Applied Detectable/Tactile Warning Surface Tiles shall be an epoxy polymer composition with an ultra violet stabilized coating employing aluminum oxide particles in the truncated domes. The tile shall incorporate an in-line pattern of truncated domes measuring nominal 0.2" height, 0.9" base diameter, and 0.45" top diameter, spaced center-to-center 2.35" as measured on a diagonal and 1.67" as measured side by side. For wheelchair safety the field area shall consist of a non-slip surface with a minimum of 40 - 90° raised points 0.045" high, per square inch; "Armor-Tile" as manufactured by Engineered Plastics Inc., Tel: 800-682-2525, or approved equal.
1. Dimensions: Surface Applied Detectable/Tactile Warning Surface Tiles shall be held within the following dimensions and tolerances: Specifiers Note: Edit section below by selecting desired length and width. Delete non-relevant dimensions.  
  
Length and Width: 36" min. width, length as shown in the drawings.  
nominal Depth: 0.1875 (3/16"), (+/-) 5% max.  
Face Thickness: 0.1875 (3/16), (+/-) 5% max.  
Warpage of Edge: 0.5% max.
  2. Water Absorption of Tile when tested by ASTM D 570-98 not to exceed 0.05%.
  3. Slip Resistance of Tile when tested by ASTM C 1028-96 the combined Wet and Dry Static Co-Efficients of Friction not to be less than 0.80 on top of domes and field area.
  4. Compressive Strength of Tile when tested by ASTM D 695-02a not to be less than 28,000 psi.
  5. Tensile Strength of Tile when tested by ASTM D 638-03 not to be less than 19,000 psi.
  6. Flexural Strength of Tile when tested by ASTM D 790-03 not to be less than 25,000 psi.
  7. Chemical Stain Resistance of Tile when tested by ASTM D 543-95 (re approved 2001) to withstand without discoloration or staining - 10% hydrochloric acid, urine, saturated calcium chloride, black stamp pad ink, chewing gum, red aerosol paint, 10% ammonium hydroxide, 1% soap solution, turpentine, Urea 5%, diesel fuel and motor oil.
  8. Abrasive Wear of Tile when tested by BYK - Gardner Tester ASTM D 2486-00 with reciprocating linear motion of  $37 \pm$  cycles per minute over a 10" travel. The abrasive medium, a 40 grit Norton Metallite sand paper, to be fixed and leveled to a holder. The combined mass of the sled, weight and wood block is to be 3.2 lb. Average wear depth shall not exceed 0.060 after 1000 abrasion cycles when measured on the top surface of the dome representing the average of three measurement locations per sample.
  9. Resistance to Wear of Unglazed Ceramic Tile by Taber Abrasion per ASTM C501-84 (re approved 2002) shall not be less than 500.
  10. Fire Resistance of Tile when tested to ASTM E 84-05 flame spread shall be less than 15.
  11. Gardner Impact to Geometry "GE" of the standard when tested by ASTM D 5420-04 to have a mean failure energy expressed as a function of specimen thickness of not less than 550 in. lbf/in. A failure is noted when a crack is visible on either surface or when any brittle splitting is observed on the bottom plaque in the specimen.



12. Accelerated Weathering of Tile when tested by ASTM G 155-05a for 3000 hours shall exhibit the following result –  $\Delta E < 4.5$ , as well as no deterioration, fading or chalking of surface of tile color No 33538
13. Accelerated Aging and Freeze Thaw Test of Tile and Adhesive System when tested to ASTM D 1037-99 shall show no evidence of cracking, delamination, warpage, checking, blistering, color change, loosening of tiles or other detrimental defects.
14. Salt and Spray Performance of Tile and Adhesive System when tested to ASTM B 117-03 not to show any deterioration or other defects after 200 hours of exposure.

#### 1.05 DELIVERY, STORAGE AND HANDLING

- A. Surface Applied Detectable/Tactile Warning Surface Tiles shall be suitably packaged or crated to prevent damage in shipment or handling. Finished surfaces shall be protected by sturdy wrappings and tile type shall be identified by part number.
- B. Surface Applied Detectable/Tactile Warning Surface Tiles shall be delivered to location at building site for storage prior to installation.

#### 1.06 SITE CONDITIONS

- A. Environmental Conditions and Protection: Maintain minimum temperature of 40°F in spaces to receive Surface Applied Detectable/Tactile Warning Surface Tiles for at least 24 hours prior to installation, during installation, and for not less than 24 hours after installation.
- B. The use of water for work, cleaning or dust control, etc. shall be contained and controlled and shall not be allowed to come into contact with the general public. Provide barricades or screens to protect the general public.

#### 1.07 GUARANTEE

- A. Surface Applied Detectable/Tactile Warning Surface Tiles shall be guaranteed in writing for a period of five (5) years from date of final completion. The guarantee includes defective work, breakage, deformation, fading and loosening of tiles.

### PART 2 – PRODUCTS

#### 2.01 MANUFACTURERS

- A. ACCEPTABLE MANUFACTURER: Armor-Tile manufactured by Engineerd Plastics Inc. (800-682-2525).
- B. Equivalent products of other manufacturers will be acceptable on the basis of submittals per Section 01300 and the general conditions of the Contract.
- C. Armor-Tile manufactured by Engineered Plastics Inc. (800-682-2525). Existing engineered and field tested products, which have been in successful service for a period of three (3) years are subject to compliance with requirements, may be incorporated in the work and shall meet or exceed the specified test criteria and characteristics.
- D. Color: Yellow conforming to Federal Color No. 33538. Color shall be homogeneous throughout the tile.

#### 2.02 MATERIALS

- A. Fasteners: Color matched, corrosion resistant, flat head drive anchor: ¼" diameter x 1 ½" long as supplied by Engineered Plastics Inc.
- B. Adhesive: As supplied by the tile manufacturer.
- C. Sealant: As supplied by the tile manufacturer.

## 2.03 PARKING STALL STRIPING AND RELATED PAINT MARKINGS

- A, Furnish materials and apply painted markings in accordance with Caltrans Standard for paint striping.

## PART 3 – EXECUTION

### 3.01 INSTALLATION

- A. During all surface preparation and Surface Applied Detectable/Tactile Warning Surface Tile installation procedures, ensure adequate safety guidelines are in place and that they are in accordance with the applicable industry and government standards.
- B. The application of all tiles, adhesives, mechanical fasteners, and caulking shall be in strict accordance with the guidelines set by their respective manufacturers.
- C. Coordinate with the Architect to ensure that the surfaces being prepared and fabricated to receive the tiles are constructed correctly and adequately for tile installation. Review manufacturer and contract drawings with the Contractor prior to the construction and refer any and all discrepancies to the Architect.
- D. Set the tile true and square to the curb ramp area as detailed in the design drawings, so that its location can be marked on the concrete surface. Remove tile when done marking its location.
- E. The surface to receive the Surface Applied Detectable/Tactile Warning Surface Tile shall be mechanically cleaned with a diamond cup grinder or shot blaster to remove any dirt or foreign material. This cleaning and roughening of the concrete surface shall include at least 4 inches around the perimeter of the area to receive the tile, and also along the cross pattern established by the corresponding areas on the backside of the tile. Clean those same areas with a clean rag soaked in Acetone.
- F. Immediately prior to installing the Surface Applied Detectable/Tactile Warning Surface Tile, inspect to ensure that they are clean, dry, free of voids, curing compounds, projections, loose material, dust, oil, grease, sealers and determined to be structurally sound and cured for a minimum of 30 days.
- G. Using Acetone, wipe the backside of the tile around the perimeter and along the internal cross pattern, to remove any dirt or dust particles from the area to receive the adhesive.
- H. Apply adhesive to the backside of the tile, following the perimeter and internal cross pattern established by the tile manufacturer. Place sufficient adhesive on the prescribed areas to have full coverage across the 2" width of the adhesive locator and apply to within 1/4" continuously around the perimeter edge of the tile. The entire tube of adhesive shall be applied to the back of each tile, sizes 24" x 36" and greater.
- I. Set the tile true and square to the curb ramp area as detailed in the design drawings.

- J. Working from the center of the tile outwards, proceed to drill and install all fasteners in the tile's molded recesses.
- K. Standing with both feet applying pressure around the molded recess provided in the tile, drill a hole true and straight to a depth of 3½" using a 1/4" masonry drill bit. Drill through the tile without hammer option (on the drill) until the tile has been successfully penetrated, then with hammer option (on the drill) to drill into the concrete. Maintaining foot pressure on both sides of the hole while drilling prevents concrete dust from accumulating between the tile and concrete which can affect the tile being installed flush and may compromise installation integrity.
- L. Immediately after drilling each hole, before moving on to the next, and while still applying foot pressure, mechanically fasten tiles to the concrete substrate using a leather bound or hard plastic mallet to set the fasteners. Ensure the fastener has been placed to full depth in the dome, straight, and flush to the top of dome. Drive the pin of the fastener with the mallet, taking care to avoid any inadvertent blows to the truncated dome or tile surface.
- M. Following the installation of the fasteners, the concrete dust should be vacuumed, brushed or blown away from the tile's surface and adjacent concrete. Using Acetone on a rag, wipe the concrete around the tile's perimeter to ensure a clean, dry surface to receive perimeter sealant.
- N. Apply perimeter caulking sealant following the sealant manufacturer's recommendations. Tape all perimeter edges of the tile back 1/16" from the tile's perimeter edge and tape the adjacent concrete back 1/2" from the tile's perimeter edge to maintain a straight and even caulking line. Apply sealant around tile perimeter using care to work sealant into any void between the tile and concrete interface. Tool the perimeter caulking with a rounded plastic applicator or spatula to create a cove profile between the tile and adjacent concrete. Remove tape immediately after tooling perimeter caulking sealant.
- O. Do not allow foot traffic on installed tiles until the perimeter caulking sealant has cured sufficiently to avoid tracking. Curing time is weather dependant (average cure time at 75° F is 30 minutes). Remove adhesive or caulking on the surface of the tiles with Acetone.
- P. If installing adjacent tiles, note the orientation of each tile. Consistent orientation of each Armor-Tile is required in order that the truncated domes on adjacent tiles line up with each other.
- Q. In order to maintain proper spacing between truncated domes on adjacent tiles, trim off the tapered edge using a continuous rim diamond blade in a circular saw or mini-grinder. Use a straightedge to guide the cut. Make all cuts prior to installation of the tiles. If installing adjacent tiles, care should be taken to leave a 1/8 inch gap between each tile to allow for expansion and contraction.
- R. If tiles are custom cut to size, if pre-molded recesses (to receive fasteners) are removed by the cut, or to maintain a tight installation to the substrate then any truncated dome can be center-drilled with a 1/4 inch masonry drill bit to create a through hole, and the through hole must be countersunk with a suitable carbide countersink bit to receive mechanical fasteners. Do not countersink too widely or deeply. Fasteners shall be flush with the top of the truncated dome when countersunk properly.

### 3.02 CLEANING, PROTECTING AND MAINTENANCE

- A. Protect tiles against damage during construction period to comply with Tactile Tile manufacturer's specification.
- B. Protect tiles against damage from rolling loads following installation by covering with plywood or hardwood.

- C. Clean Tactile Tiles not more than four days prior to date scheduled for inspection intended to establish date of substantial completion in each area of project. Clean Tactile Tile by method specified by Tactile Tile manufacturer.
- D. Comply with manufacturers maintenance manual for cleaning and maintaining tile surface and it is recommended to perform annual inspections for safety and tile integrity.

END OF SECTION

**SECTION 32 31 00  
FENCES AND GATES**

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Low-Rise Chain Link Fencing.

1.02 SUBMITTALS

- A. Submit product data under provisions of Section 01 30 00.
- B. Submit shop drawings, describing gate layout, elevations, dimensions, details, and accessories, under provisions of Section 01 30 00.

1.03 REFERENCES

- A. ASTM A 525 – Hot Dip Galvanized Coating
- B. ASTM F 1043 – Cold Formed Steel Fence Components
- C. ASTM A 446 – Cold Rolled Steel Sheet
- D. Underwriters Laboratories – UL325 and UL991

1.04 QUALITY ASSURANCE

- A. Qualifications of installers: established fence installer approved by the manufacturer for installation of the specified products, with a minimum of three years' experience.

1.05 WARRANTIES

- A. Fence and Gate Finishes: 12 years limited for galvanized coatings.

1.07 SYSTEM DESCRIPTION

- A. The Work of this section is to construct fencing and one complete and functional pedestrian gate where shown on the Drawings, including all required footings, hardware, and accessories.

PART 2 - PRODUCTS

2.01 METAL FENCING

- A. Acceptable Manufacturer:
  - 1. Master-Halco (Fresno: 559 264-2144).
  - 2. Alternate products may be used if approved on the basis of submittals made under provisions of Section 01 30 00.
- B. Fence Characteristics:
  - 1. Product: Chain Link

2. Height: 4'-0" minimum above adjacent finish grade.
3. Framework Material: hot dipped, zinc coated steel pipe.
4. Fabric: 1-3/4" mesh, 9 gauge, hot dipped, zinc coated steel.
5. Selvage: knuckle, 2" above average grade at bottom.

## 2.02 OTHER MATERIALS

- A. All other materials, not specifically described but required for a complete and proper fence and gate installation, shall be new, of first quality, and subject to the Architect's approval.

## PART 3 - EXECUTION

### 3.01 INSPECTION

- A. Prior to installation of fence and gates, carefully inspect the area of work, and related work of other trades to verify that such work is complete, accurate, and ready to receive the work of this Section.
- B. Beginning of installation means acceptance of existing conditions.

### 3.02 FABRICATION AND DELIVERY

- A. Fabricate components in accordance with approved shop drawings.
- B. Deliver products of this Section to the jobsite and protection from damage under provisions of Division 1 of these Specifications.

### 3.03 COORDINATION

- A. The contractor shall be responsible for the provision and attachment of all operating hardware and related fittings as required to allow gates to function as intended.

### 3.04 INSTALLATION

- A. Install all fencing plumb and square, with level top rails and equally spaced posts. Anchor securely for long life under hard service.
- B. Install and adjust gate hardware for smooth and accurate movement and secure latching.

3.05 CLEAN-UP

- A. Remove any debris related to the work of this Section from the project site.
- B. Touch up uncoated bolts and nuts and any powder coating, paint, or vinyl coating damaged during installation with manufacturer's recommended touch-up material to the architect's approval.

END OF SECTION

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**SPECIFICATION REFERENCE DOCUMENT**

**31 00 00 1.03.A**

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**UPDATED GEOTECHNICAL ENGINEERING REPORT  
MERIDIAN FIRE STATION  
APPARATUS BAY EXPANSION  
4050 BRANCH ROAD  
PASO ROBLES, CALIFORNIA**

April 16, 2014

Prepared for

Ms. Margaret Ambrosavage  
San Luis Obispo County  
Department of General Services

Prepared by

Earth Systems Pacific

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April 16, 2014

FILE NO.: SL-17272-SA

Ms. Margaret Ambrosavage  
San Luis Obispo County, Department of General Services  
1087 Santa Rosa Street  
San Luis Obispo, CA 93401

PROJECT: MERIDIAN FIRE STATION  
APPARATUS BAY EXPANSION  
4050 BRANCH ROAD  
PASO ROBLES, CALIFORNIA

SUBJECT: Updated Geotechnical Engineering Report

CONTRACT

REF: Proposal for Geotechnical Engineering Report Update and Deep Percolation Testing, Meridian Fire Station, Apparatus Bay Expansion, Paso Robles, California, by Earth Systems Pacific, Doc. No. 1312-149.PRP.REV, revised March 11, 2014

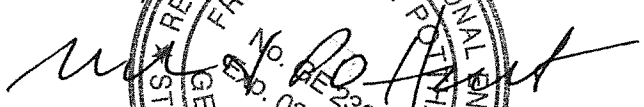
Dear Ms. Ambrosavage:

In accordance with your authorization of the above-referenced proposal, this updated geotechnical engineering report has been prepared for use in the development of plans and specifications for the proposed expansion of the apparatus bay at the Meridian Fire Station in Paso Robles, California. Preliminary geotechnical recommendations for site preparation, grading, utility trenches, foundations, interior slabs-on-grade and exterior pedestrian flatwork, pavement, drainage and maintenance, and construction observation and testing are presented herein. Two paper copies and a digital copy of this report have been provided for your use.

Our report of deep percolation testing has been previously submitted under separate cover.

We appreciate the opportunity to have provided services for this project and look forward to working with you again in the future. If there are any questions concerning this report, please do not hesitate to contact the undersigned.

Sincerely,  
Earth Systems Pacific

  
Fred Potthast  
Principal Engineer



4/16/14

Doc. No. 1404-081.SER/tf



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### Appendices

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- APPENDIX B Geotechnical Engineering Report, ESCNC,  
dated January 2, 1996
- APPENDIX C Typical Detail A: Title 24 – Pipe Placed  
Parallel to Foundations



## 1.0 INTRODUCTION AND SITE SETTING

An expansion of the existing apparatus bay at the Meridian Fire Station in Paso Robles is planned; the expansion area is indicated on the site plan in Appendix A. The front of the apparatus bay will be extended approximately 32 feet to the west, toward Branch Road. The width of the expansion will be approximately 39 feet. The majority of the expansion area is currently covered by the Portland cement concrete (PCC) apron for the existing apparatus bay; the west end is surfaced with hot mix asphalt (HMA) pavement. The majority of the south building line of the expansion lies on the north slope of the site's existing drainage retention basin. The depth of the basin is estimated to be 4 to 5 feet below finish floor of the expansion area. Fill will be added to reconfigure the north side of the basin, to enlarge the building area and provide access around the completed expansion, and to raise grade slightly following removal of the existing pavement improvements.

The expansion will be of wood and steel frame construction, with conventional continuous and spread (pad) foundations. A concrete slab-on-grade will also be utilized, and utility lines may be added or rerouted as part of the project. The project will also entail the addition or reconstruction of flatwork, construction of a new PCC apron at the front of the expansion area, reconfiguration of the ADA parking spaces at the front of the station, and possibly HMA repaving to accommodate changes in slopes. No retaining walls or other improvements are planned.

## 2.0 SCOPE OF SERVICES

The authorized scope of work included a general site reconnaissance, a review of the geotechnical engineering report for the original construction of the fire station (ESCNC 1996), geotechnical analyses of the data, and preparation of this report. A copy of the ESCNC report is included in Appendix B. The analysis and subsequent recommendations were based, in part, upon information and a preliminary site plan provided by the client.

This report and our preliminary geotechnical recommendations are intended to comply with the considerations of Sections 1803A.2 through 1803A.5, 1803A.7 and J104.3 of the 2013 California Building Code (CBSC 2013), and common geotechnical engineering practice in this area under similar conditions at this time.

Preliminary geotechnical recommendations for site preparation, grading, utility trenches, foundations, interior slabs-on-grade and exterior pedestrian flatwork, pavement, drainage and maintenance, and construction observation and testing are presented to guide the



development of project plans and specifications. It is our intent that this report be used exclusively by the client in the preparation of plans and specifications. Application beyond this intent is strictly at the user's risk.

This report does not address issues in the domain of contractors such as, but not limited to, site safety, loss of volume due to stripping of the site, shrinkage of soils during compaction, excavatability, dewatering, shoring, temporary slope angles, construction means and methods, etc. Analyses of geologic hazards and of the soil for corrosivity, asbestos (either naturally-occurring or man-made), radioisotopes, mold or other microbial content, hydrocarbons, lead, or other chemical properties are beyond the scope of this report. Ancillary features such as temporary roads, fences and site work walls; flag and light poles; signage; pavement section thicknesses; and nonstructural fills and slopes are not within our scope and are also not addressed.

As there may be unresolved geotechnical issues with respect to this project, the geotechnical engineer should be retained to provide consultation as the design progresses, and to review project plans as they near completion to assist in verifying that pertinent geotechnical issues have been addressed and to aid in conformance with the intent of this report. In the event that there are any changes in the nature, design, or location of improvements, or if any assumptions used in the preparation of this report prove to be incorrect, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and the conclusions of this report are verified or are modified in writing. The criteria presented in this report are considered preliminary until such time as any peer review or review by any jurisdiction has been completed, conditions are observed by the geotechnical engineer in the field during construction, and the recommendations have been verified as appropriate or modified in writing.

### **3.0 FIELD INVESTIGATION**

On December 20, 1995, four exploratory borings were drilled at the site for the geotechnical engineering report for the original construction of the fire station (ESCNC 1996); please refer to the copy of the ESCNC report in Appendix B for a description of the investigation.



#### **4.0 LABORATORY ANALYSIS**

Geotechnical testing was completed on samples secured during the field investigation for the geotechnical engineering report for the original construction of the fire station (ESCNC 1996); please refer to the copy of the ESCNC report in Appendix B for a description of the laboratory analysis.

#### **5.0 SUBSURFACE SOIL PROFILE**

As noted in the geotechnical engineering report for the original construction of the fire station (ESCNC 1996), the subsurface conditions encountered at the boring locations consisted of 0.5 to 1.5 feet medium dense silty clayey sand. Underlying this material was soft to dense bedrock (clayey sandstone) of the Paso Robles Formation. Free subsurface water was not encountered to the maximum depth explored of 16.5 feet.

#### **6.0 CONCLUSIONS**

It is our opinion that the site is suitable, from a geotechnical engineering standpoint, for the proposed expansion of the apparatus bay, provided the recommendations contained herein are implemented in the design and construction. The primary geotechnical engineering concerns are the potentials for soil disturbance at depth from demolition of the existing improvements, the planned location of the expansion's southern building line on the slope of the existing drainage retention basin, the potential for total and differential settlement, and the soil's erosion potential. The site soils were previously identified as being nonexpansive, therefore no special measures with respect to expansive soils are considered necessary for foundations and other improvements. As bedrock of the Paso Robles formation was found at relatively shallow depths in the exploratory borings, in our opinion, the potential for liquefaction to affect the site is nil.

Disturbance of the upper soils is expected during demolition and removal of the existing PCC and HMA pavement that currently exists in the expansion area. In addition, the planned southern footing line of the expansion area is on the north slope of the site's existing drainage basin, approximately 1 to 2 feet below the top of the slope. The conceptual project plan calls for placement of fill on the north side of the basin, to move the top of slope farther south, thus providing additional building area and access along the south side of the completed expansion. Excavation of a keyway in the existing basin, and benches on the slope, will be needed prior to placement of fill. After the fill is completed, deepening of the footing excavations will be necessary, so that the footings bear in Paso Robles formation bedrock (as recommended in the





following paragraph) that is undisturbed and below the zone affected by the fill placement. To reduce the potential for settlement of the fill below the expansion area and in the reconstructed slope, all fill should be compacted to a minimum of 95 percent relative compaction.

Excessive total and differential settlement can occur when foundations span materials having variable compression and/or moisture/density characteristics. A potential for differential settlement can also occur when an addition is constructed adjacent to an existing structure, especially if the existing structure has been in place for some time; the existing structure may have experienced all of its potential settlement, while the addition is just beginning to settle. These conditions can lead to cracking and/or separations at the existing building/expansion area transitions in slabs-on-grade, walls, and the roof. To reduce the potentials for total and differential settlement to a minimum level, all footings should be extended to bear in the underlying undisturbed bedrock.

The site soils are considered to be erodible. It is essential that all surface drainage be controlled and directed to appropriate discharge points, and that surface soils, particularly those disturbed during construction, are stabilized by vegetation or other means *during and following construction*.

## **7.0 PRELIMINARY GEOTECHNICAL RECOMMENDATIONS**

The following recommendations are for the expansion area and other improvements as described in the "Introduction" section of this report. If locations, elevations, structural loads, etc., change, the recommendations contained herein may require modification.

Three distinct types of PCC flatwork are discussed in the following recommendations. As they will support fire-fighting apparatus, the expansion area's interior slabs are considered "heavy capacity." The PCC apron to be constructed in front of the expansion area is defined as "PCC pavement." Exterior flatwork such as sidewalks is referred to as "exterior pedestrian flatwork."

Unless otherwise noted, the following definitions are used in the recommendations presented below. Where terms are not defined, definitions commonly used in the construction industry are intended.



- **Building Area:** The area within and extending a minimum of 5 feet beyond the perimeter foundation of the expansion, not including the area of the existing structure.
- **Flatwork and Pavement Areas:** The areas within the perimeter of any new or reconstructed PCC or AC pavement.
- **Grading Area:** The entire area to be graded, including the building area, flatwork and pavement areas, and all other areas where fill will be placed or other surface improvements constructed.
- **Pad Grade:** The elevation of the building pad as shown on the grading plan; if no elevation is shown on the grading plan, the elevation to which the grading contractor typically will place compacted fill in the building area. Does not include any sand or gravel layer specified by the architect/engineer for protection of slabs from subsurface moisture.
- **Existing Grade:** The elevation that existed as of the date of this report.
- **Scarified:** Plowed or ripped in two orthogonal directions to a depth of not less than 12 inches.
- **Moisture Conditioned:** Soil moisture content adjusted to optimum moisture content, or just above, prior to application of compactive effort.
- **Compacted / Recomacted:** Soils placed in level lifts not exceeding 8 inches in loose thickness and compacted to a minimum of *95 percent* of maximum dry density. The standard tests used to establish maximum dry density and field density should be ASTM D 1557-12 and ASTM D 6938-10, respectively, or other methods acceptable to the geotechnical engineer and jurisdiction.

### Site Preparation

1. The ground surface in the grading area should be prepared for construction by removing the existing pavement, flatwork, and all vegetation, large roots, debris and other deleterious materials. Existing utility lines that will not remain in service should be either removed or abandoned. The appropriate method of abandonment will depend upon the type and depth of the utility. Recommendations for abandonment can be made as necessary.
2. Voids created by the removal of materials or utilities described above should be called to the attention of the geotechnical engineer. No fill should be placed unless the underlying soil has been observed by the geotechnical engineer.



### Grading

1. Following site preparation, and prior to placement of fill in the drainage retention basin, a keyway should be excavated in the bottom of the basin at the new toe of slope. The keyway should be a minimum of 10 feet wide, angled at 2 to 3 percent into the slope, and should extend through all loose soils in the basin, with a minimum embedment depth of 2 feet into firm Paso Robles formation bedrock. Based on the conditions encountered in the exploratory borings, the basin appears to be excavated well into the bedrock; removal of accumulated debris, silt and a zone of saturated or disturbed bedrock will likely be needed before the firm bedrock can be encountered. The firm bedrock surface exposed in the keyway should be moisture conditioned and compacted to correct any disturbances caused by the excavation process, however it need not be scarified.
2. Benches a minimum of 5 feet wide and a maximum of 3 feet tall should be excavated into the existing slope face, as fill placement proceeds up the slope. The benches should be angled slightly back into the slope, and they should expose firm undisturbed Paso Robles formation bedrock for their full widths and heights. The firm bedrock surface exposed in the benches should be moisture conditioned and compacted to correct any disturbances caused by the excavation process, however it need not be scarified.
3. When the southern line of the building expansion is reached during fill placement operations, the depth of the bench excavation into firm Paso Robles formation bedrock should be noted. To reduce the potential for differential settlement, a final bench should be excavated across the entire building area; the depth of this final bench should be one-half the depth of bench excavation along the southern building line, or 1 foot below bottom of slab elevation, whichever is deeper. Within 5 feet of the existing structure, the excavations for the benches should be completed in segments no more than 8 feet in length, and only every third segment should be processed at any given time. All excavation, backfill and compaction operations within a particular segment should be completed to pad grade before additional excavations are begun. The firm bedrock surfaces exposed in the benches and excavations should be moisture conditioned and compacted to correct any disturbances caused by the excavation process, however it need not be scarified. The depth of the bench excavation along the southern building line will also be used to determine the final depths of the footings in this area, as recommended in the "Foundations" section of this report.



4. The prepared surfaces in all other areas should be scarified, moisture conditioned, and recompacted. Voids created by dislodging rocks and/or debris during scarification should be backfilled and recompacted, and the dislodged materials should be removed from the area of work.
5. Previously removed site soil and other similar imported nonexpansive soils may be used as fill. Nonexpansive soils are defined as falling into the GP, GW, GM, GC, SM, SC, SP, or SW categories (ASTM D 2487-11) and having an expansion index of 10 or less (ASTM D 4829-11). All proposed imported fill should be approved by the geotechnical engineer before being transported to the site.
6. Interior slabs-on-grade for the expansion area and PCC pavement areas should be underlain by a minimum of 6 inches of compacted Class 2 aggregate base (Caltrans 2010) below bottom of slab elevation. Per the "Interior Slabs-on-Grade and Exterior Pedestrian Flatwork" section of this report, slabs underlain by a minimum of 6 inches of Class 2 aggregate base can be designed using a subgrade modulus ( $K_{30}$ ) of 300 pci (psi/in); if a 2 to 4-inch sand cushion is used below the slabs, then the subgrade modulus ( $K_{30}$ ) should be reduced to 200 pci (psi/in).
7. All materials used as fill should be cleaned of all debris and any rocks larger than 3 inches in maximum dimension. When fill material includes rocks, the rocks should be placed in a sufficient soil matrix to ensure that voids caused by nesting of the rocks will not occur and that the fill can be properly compacted.
8. In the event that subsurface water or overly moist conditions are encountered during construction, or if the minimum recommended compaction cannot be readily achieved, drying the soil to near optimum moisture content may be necessary. Placement of gravel layers or geotextiles may also be necessary to help stabilize unstable soils. Additional overexcavation may also be recommended to correct unstable conditions or if soft or loose conditions are encountered during grading. The geotechnical engineer should be contacted if subsurface water or overly moist conditions are encountered during construction.
9. The reconstructed fill slope for the drainage detention basin should not exceed a 2:1 (horizontal to vertical) slope angle.



10. The reconstructed north slope for the drainage retention basin should be compacted and covered with erosion matting (Greenfix America CFO72-RP) or equivalent. Disturbed areas should be seeded and irrigated to maintain the vegetation; however care should be taken to not over-irrigate the slope, so that erosion or surficial instability does not occur.

#### Utility Trenches

1. Utility trenches adjacent to foundations should not be excavated within the zone of foundation influence, as shown in Typical Detail A in Appendix C.
2. Utilities that will pass below a foundation should be placed with properly compacted trench backfill and the foundation should be designed to span the trench.
3. A select, noncorrosive, granular, easily compacted material should be used as bedding and shading immediately around utilities. Additional select material or site soil may be used as backfill above the shading. All trench backfill should be nonexpansive, as defined in the "Grading" section of this report.
4. All trench backfill in the expansion and pavement areas should be compacted a minimum of 95 percent of maximum dry density. A minimum of 85 percent of maximum dry density is considered acceptable for trench backfill in landscape areas or where settlement of the fill would not be detrimental. Prior to applying compactive effort, soils should be moisture conditioned. Trench backfill should be placed in level lifts not exceeding 6 inches in loose thickness and compacted to the minimums recommended above.
5. Jetting or flooding of utility trench backfill to obtain compaction should not be allowed. However, jetting or flooding may be useful to aid in *encasing* utility pipes, particularly for joint trenches with multiple, closely spaced pipes and trenches for corrugated storm drains, where getting proper encasement would otherwise be difficult. Any jetting or flooding operation should be subject to review by the geotechnical engineer.



6. Long-term settlement of properly compacted utility trench backfill should be assumed to be about 1/4 to 1/2 percent of the depth of the backfill. Improvements that are constructed over or adjacent to the backfill should be designed to accommodate this settlement. If this magnitude of settlement cannot be tolerated by the site improvements, special backfill methods (such as slurry or lean concrete) and materials can be utilized.
7. The recommendations of this section are minimums only, and may be superseded by the architect/engineer, or the requirements of pipe manufacturers, utility companies or the governing jurisdiction.

#### **Foundations**

1. Continuous and spread footings may be used to support the expansion. Spread footings should be connected to each other and to perimeter continuous footings by grade beams on at least two sides to allow the foundation to act as an integral unit.
2. Minimum footing depths should be 18 inches below lowest grade within 5 feet of the footing. In addition, all footings should penetrate undisturbed Paso Robles formation bedrock a minimum of 6 inches. Along the south side of the building where fill is placed for the reconfiguration of the drainage retention basin, particular attention should be given to extending the footing excavations through the fill and into the bedrock that was exposed during the benching operation, as recommended in the "Grading" section of this report. All foundation excavations extended to the bedrock should be filled completely with structural concrete; slurry or lean concrete should not be used to partially backfill the excavations to the minimum footing depth.
3. Continuous footings and grade beams should be reinforced, at a minimum, by two No. 4 rebar, one at the top and one at the bottom, or as required by the architect/engineer. Spread footings should be sized and reinforced in accordance with the requirements of the architect/engineer; the minimum size of spread footings should be 2 feet square. Footings for the expansion area should be dowelled to the footings of the existing structure as directed by the architect/engineer.



4. Footings should be designed using maximum allowable bearing capacities of 1,800 psf dead load and 2,500 psf dead plus live loads. Using these criteria, maximum settlement and differential settlement of foundations bearing in firm bedrock are expected to be 1/4-inch or less.
5. Allowable bearing capacities may be increased by one-third when transient loads such as wind or seismicity are included. Foundations may be designed using the following seismic parameters which are based, in part, on American Society of Civil Engineers Standard 7-10 (ASCE 2010), a latitude of 35.6605 degrees north, and a longitude of 120.5785 degrees west, as taken from the Google Earth web site (Europa Technologies 2013). Tools available on the Earthquake Hazards Program website (USGS 2014) were used to calculate the following values:

Site Soil Classification	C
Mapped Spectral Accelerations	
0.2 second period - $S_s$	1.50g
1.0 second period - $S_1$	0.546g
Design Response Spectral Acceleration	
0.2 second period - $S_{DS}$	1.00g
1.0 second period - $S_{D1}$	0.474g

6. Lateral loads may be resisted by friction and by passive resistance of the soil and bedrock acting on foundations. A passive equivalent pressure of 300 pcf and a friction factor of 0.40 may be used together, without reduction for resistance to lateral loads. Lateral capacity is based on the assumption that backfill adjacent to foundations is properly compacted.
7. Foundation excavations should be observed by the geotechnical engineer during excavation and prior to placement of formwork, reinforcing steel or concrete. Soils in foundation excavations should be moisture conditioned, and no desiccation cracks should be present prior to concrete placement.

#### **Interior Slabs-on-Grade and Exterior Pedestrian Flatwork**

1. As they will support fire-fighting apparatus, interior slabs-on-grade for the expansion are considered "heavy capacity", and should have a minimum thickness of 6 full inches. Reinforcement size, placement, and slab dowels should be as directed by the



- architect/engineer; minimum slab reinforcement should consist of No. 4 rebar placed at 18 inches on-center each way. At a minimum, the slabs should be dowelled to footings and grade beams by No. 4 dowels lapped to the slab reinforcement at a maximum 18-inch spacing. Slabs-on-grade for the expansion area should be dowelled to the footings and/or slabs of the existing structure as directed by the architect/engineer.
2. Heavy capacity interior slabs may be designed by the architect/engineer using a subgrade modulus ( $K_{30}$ ) of 300 pci (psi/in). As recommended in the "Grading" section of this report, a minimum 6 inches of compacted Class 2 aggregate base (Caltrans 2010) should be placed immediately beneath slabs designed using this subgrade modulus.
  3. Where specified, vapor retarders should conform to ASTM Standard E 1745-11. This standard specifies properties for three performance classes; Class A, B and C. The appropriate class should be selected based on the sensitivity of floor coverings (if any) to moisture intrusion and the potential for damage to the vapor retarder during placement of slab reinforcement and concrete.
  4. Where moisture vapor transmitted from the underlying soil would be undesirable, the slabs should be protected from subsurface moisture vapor. A number of options for vapor protection are discussed below; however, the means of vapor protection, including the type and thickness of the vapor retarder, if specified, are left to the discretion of the architect/engineer.
  5. Several recent studies including those of ACI Committees 302 (2004) have concluded that excess water above the vapor retarder increases the potential for moisture damage to floor sealers and could increase the potential for mold growth or other microbial contamination. The studies also concluded that it is preferable to eliminate the typical sand layer beneath the slab and place the slab concrete in direct contact with a "Class A" vapor retarder, particularly during wet weather construction. However, placing the concrete directly on the vapor retarder requires special attention to using the proper vapor retarder (see discussion below), a very low water-cement ratio in the concrete mix, appropriate admixtures, and special finishing and curing techniques.





6. Probably the next most effective option would be the use of vapor-inhibiting admixtures in the slab concrete mix and/or application of a sealer to the surface of the slab. This would also require special concrete mixes and placement procedures, depending upon the recommendations of the admixture or sealer manufacturer.
7. Another option that may be a reasonable compromise between effectiveness and cost considerations is the use of a subslab vapor retarder protected by a sand layer. If a "Class A" vapor retarder (see discussion below) is specified, the retarder can be placed directly on the compacted Class 2 aggregate base. The retarder should be covered with a minimum of 2 inches of *clean* sand. If a less durable vapor retarder is specified (i.e. ASTM E 1745-11, Class B or C), a minimum of 4 inches of clean sand should be provided below the compacted Class 2 aggregate base, and the retarder should be placed in the center of the clean sand layer. Clean sand is defined as well or poorly graded sand (ASTM D 2488-09a) of which less than three percent passes the No. 200 sieve. If a 2 to 4-inch sand layer and a vapor retarder are placed under the heavy capacity interior slabs, the design subgrade modulus should be reduced to 200 pci (psi/in).
8. Irrespective of the underslab vapor retarder selected, proper installation of the retarder is critical for optimum performance. All seams must be properly lapped, and all seams and utility penetrations properly sealed in accordance with the vapor retarder manufacturer's recommendations. Installation of the vapor retarder should be per ASTM E 1643-11.
9. Positive drainage away from the expansion area and the existing building should be maintained, see the "Drainage and Maintenance" section for additional discussion of this issue. If water is allowed to pond near foundations, it may seep into the ground and migrate laterally through cracks or utility penetrations, ultimately gaining access above the vapor retarder. The presence of water above the retarder could potentially result in vapor transmission through the slab for months or years. Any sand between the vapor retarder and the slab should be moistened only as necessary to promote concrete curing. Saturation of the sand should be avoided, as the excess moisture could also result in vapor transmission through the slab for months or years.



10. Exterior pedestrian flatwork should have a minimum thickness of 4 full inches. Reinforcement size, placement, and slab dowels should be as directed by the architect/engineer; minimum slab reinforcement should consist of No. 3 rebar placed at 24 inches on-center each way.
11. Flatwork at doorways, and at other areas where maintaining the elevation of the flatwork is desired, should be doweled to the perimeter foundation, at a minimum, by No. 3 dowels lapped to the flatwork rebar at 24 inches on center. In other areas, the flatwork may be doweled to the foundation or the flatwork may be allowed to “float free,” at the discretion of the architect/engineer. Flatwork that is intended to float free should be separated from foundations by a felt joint or other means.
12. Flatwork should be constructed with frequent joints to allow articulation as the flatwork moves in response to seasonal soil moisture variations.
13. To reduce shrinkage cracks in concrete, the concrete aggregates should be of appropriate size and proportion, the water/cement ratio should be low, the concrete should be properly placed and finished, contraction joints should be installed, and the concrete should be properly cured. Concrete materials, placement, and curing specifications should be at the direction of the architect/engineer; ACI 302.1R-04 (ACI 2004) is suggested as a resource for the architect/engineer in preparing such specifications.

#### **Pavement**

1. The PCC apron pavement at the front of the expansion may be designed by the architect/engineer using a subgrade modulus ( $K_{30}$ ) of 300 pci (psi/in), provided that the pavement is underlain by a minimum of 6 inches of compacted Class 2 aggregate base (Caltrans 2010), as described in the “Grading” section of this report. Thickness, reinforcing, and doweling of PCC pavement is left to the discretion of the architect/engineer. At a minimum, PCC pavement should have a thickness of 6 full inches and be reinforced with No. 4 rebar placed at 18 inches on-center each way.
2. Pavement section thicknesses in areas to be paved or repaved with HMA should be determined by the architect/engineer.



3. The upper 12 inches of subgrade and all aggregate base in all pavement areas should be compacted to a minimum of 95 percent of maximum dry density. Subgrade and aggregate base should be firm and unyielding when proofrolled with heavy, rubber-tired grading equipment prior to continuing construction.
4. Paved surfaces should slope toward drainage facilities such that rapid runoff will occur and water is not allowed to stand or pond on or adjacent to the pavement. To reduce migration of surface drainage into the subgrade, maintenance of pavement areas is critical. Any cracks that develop in the pavement should be promptly sealed.
5. To provide stability for curbs, they should be set back a minimum distance equal to one-third the height of any adjacent descending slope, but not less than 5 feet from the tops of slopes. Alternately, curbs may be deepened to provide stability. The geotechnical engineer should review, on an individual basis, any situation where curbs must be deepened to meet this recommendation.

#### **Drainage and Maintenance**

1. As required by the CBC, unpaved ground surfaces should be *graded during construction*, and *finish graded* to direct surface runoff away from foundations, slopes, and other improvements at a minimum 5 percent grade for a minimum distance of 10 feet. If this is not feasible due to the terrain, property lines, or other factors, swales with improved surfaces, area drains, or other drainage features should be provided to divert drainage away from these areas.
2. Finished surfaces should provide positive drainage away from foundations, pavement and other improvements.
3. To reduce the potential for planter drainage gaining access to subslab areas, any raised planter boxes adjacent to foundations should be installed with drains and sealed sides and bottoms. Drains should also be provided for areas adjacent to structures that would not otherwise freely drain.
4. The eaves of the completed structure should be provided with roof gutters. Runoff from roof gutters, downspouts, area drains, weep holes, etc., should discharge to an appropriate outlet in a non-erosive manner away from foundations and other improvements in accordance with the requirements of the governing agencies. Erosion protection should be placed at all discharge points unless the discharge is to a pavement surface.



5. The site soils are erodible. To reduce erosion damage it is essential that the surface soils, particularly those disturbed during construction, be stabilized by vegetation or other means *during and following construction*. Care should be taken to establish and maintain vegetation. The landscaping and exterior flatwork should be installed to maintain the surface drainage recommended above.
6. To reduce the potential for disruption of drainage patterns and undermining of foundations slopes, and other improvements, rodent activity should be aggressively controlled.

#### **Construction Observation and Testing**

1. It must be recognized that the recommendations contained in this report are based on a review of borings completed for a previous investigation of the site, and rely on continuity of the subsurface conditions encountered.
2. It is assumed that the geotechnical engineer will be retained to provide consultation during the design phase, to interpret this report during construction, and to provide construction monitoring in the form of testing and observation.
3. At a minimum, the following should be provided by the geotechnical engineer:
  - Review of final grading, foundation, and retaining wall plans and details
  - Professional observation during grading, foundation excavation, and backfill
  - Oversight of soils special inspection during grading
4. Special inspection of grading should be provided as per Section 1705.6 and Table 1705.6 of the CBC; the special inspector should be under the direction of the geotechnical engineer. In our opinion, none of the grading construction is of a nature that should require continuous special inspection; subject to approval by the Building Official, periodic special inspection should suffice. The following should be inspected by the special inspector:
  - Stripping and clearing of vegetation
  - Overexcavation of the building area
  - Scarification, moisture conditioning, and recompaction
  - Utility trench backfill
  - Fill quality, placement, moisture conditioning, and compaction
  - Foundation excavations
  - Compaction and proofrolling of subgrade and aggregate base in pavement areas



5. A program of quality control should be developed prior to the beginning of the project. The contractor or project manager should determine any additional inspection items required by the architect/engineer or the governing jurisdiction.
6. Locations and frequency of compaction tests should be as per the recommendation of the geotechnical engineer at the time of construction. The recommended test location and frequency may be subject to modification by the geotechnical engineer, based upon soil and moisture conditions encountered, size and type of equipment used by the contractor, the general trend of the results of compaction tests, or other factors.
7. A preconstruction conference among the owner, the governing jurisdiction, the geotechnical engineer, the special inspector, the architect/engineer, and contractors is recommended to discuss planned construction procedures and quality control requirements.
8. The geotechnical engineer should be notified at least 48 hours prior to beginning construction operations. If Earth Systems Pacific is not retained to provide construction observation and testing services, it shall not be responsible for the interpretation of the information by others or any consequences arising there from.

## **8.0 CLOSURE**

Our intent was to perform the investigation in a manner consistent with the level of care and skill ordinarily exercised by members of the profession currently practicing in the locality of this project under similar conditions. No representation, warranty, or guarantee is either expressed or implied. This report is intended for the exclusive use by the client, as discussed in the "Scope of Services" section. Application beyond the stated intent is strictly at the user's risk.

This report is valid for conditions as they exist at this time for the type of project described herein. The conclusions and recommendations contained in this report could be rendered invalid, either in whole or in part, due to changes in building codes, regulations, standards of geotechnical or construction practice, changes in physical conditions, or the broadening of knowledge.



If changes with respect to project type or location become necessary, if items not addressed in this report are incorporated into plans, or if any of the assumptions used in the preparation of this report are not correct, this firm shall be notified for modifications to this report. Any items not specifically addressed in this report should comply with the CBC and the requirements of the governing jurisdiction.

The preliminary recommendations of this soils report are based upon the geotechnical conditions previously encountered at the site, and may be augmented by additional requirements of the architect/ engineer, or by additional recommendations provided by this firm based on peer or jurisdiction reviews, or conditions exposed at the time of construction.

This document, the data, conclusions, and recommendations contained herein are the property of Earth Systems Pacific. This report shall be used in its entirety, with no individual sections reproduced or used out of context. Copies may be made only by Earth Systems Pacific, the client, and the client's authorized agents for use exclusively on the subject project. Any other use is subject to federal copyright laws and the written approval of Earth Systems Pacific.

Thank you for this opportunity to have been of service. If you have any questions, please feel free to contact this office at your convenience.

End of Text.



### TECHNICAL REFERENCES

- ACI (American Concrete Institute). 2004. "Guide for Concrete Floor and Slab Construction." Documents 302.1R04, ACI
- ASCE (American Society of Civil Engineers). 2010. *Minimum Design Loads for Buildings and other Structures (7-10, third printing)*. Standards ASCE/SEI 7-10.
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- CBCS (California Building Standards Commission). 2013. *California Building Code (CBC)*.
- ESCNC (Earth Systems Consultants Northern California). 1996 January. Geotechnical Engineering Report. Proposed Meridian Fire Station. Highway 46 at Branch Road, Paso Robles Area of San Luis Obispo County, California, County Project No. P5325, Doc. No. 9601-022.SER.
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**APPENDIX A**

Site Plan

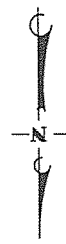
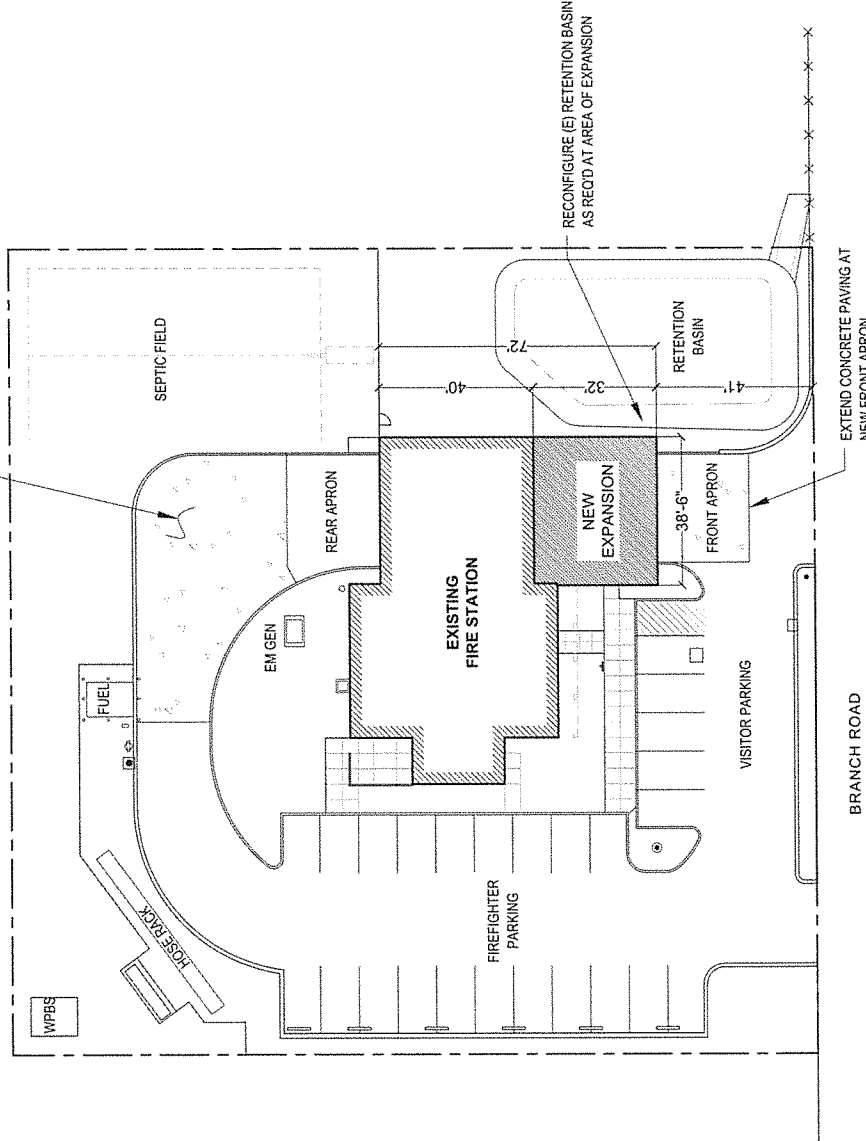


# SITE PLAN

## MERIDIAN FIRE STATION APPARATUS BAY EXPANSION

4050 Branch Road  
Paso Robles, California

REPLACE (E) ASPHALT PAVING  
W/ (N) CONCRETE PAVING AT  
PORTION OF REAR DRIVEWAY



Base Map by County of San Luis Obispo General Services Agency

NOT TO SCALE  
4378 Old Santa Fe Road  
San Luis Obispo, CA 93401-8116  
(805) 544-3276 • FAX (805) 544-1786  
E-mail: esp@earthsys.com  
SL-17272-SA  
MERIDIAN FIRE STATION-041114Extent of Expansion

**Earth Systems Pacific**



April 11, 2014

QF

## **APPENDIX B**

Geotechnical Engineering Report, ESCNC, dated January 2, 1996

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**GEOTECHNICAL ENGINEERING REPORT  
PROPOSED MERIDIAN FIRE STATION  
HIGHWAY 46 AT BRANCH ROAD  
PASO ROBLES AREA OF  
SAN LUIS OBISPO COUNTY, CALIFORNIA  
COUNTY PROJECT NO. P5325**

January 2, 1996

Prepared for  
RRM Design Group

Prepared by  
Earth Systems Consultants Northern California  
4378 Santa Fe Road  
San Luis Obispo, CA 93401

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January 2, 1996

JOB NO.: NGS09940-01

Ms. Mary McGrath  
RRM Design Group  
3026 South Higuera Street  
San Luis Obispo, CA 93401

**PROJECT:** PROPOSED MERIDIAN FIRE STATION  
HIGHWAY 46 AT BRANCH ROAD  
PASO ROBLES AREA OF  
SAN LUIS OBISPO COUNTY, CALIFORNIA  
COUNTY PROJECT NO. P5325

**SUBJECT:** Geotechnical Engineering Report

Dear Ms. McGrath:

This geotechnical engineering report has been prepared for use in the development of plans and specifications for the proposed Meridian Fire Station to be constructed in the Paso Robles area of San Luis Obispo County, California. Preliminary recommendations for site preparation, grading, utility trenches, foundations, slabs-on-grade, retaining walls, pavement sections and site drainage are presented herein. Results of percolation testing are also provided. Six copies of this report have been furnished for your use and transmittal to others.

We appreciate the opportunity to have provided geotechnical services for this project and look forward to working with you again in the future. If there are any questions concerning this report, please do not hesitate to contact the undersigned.

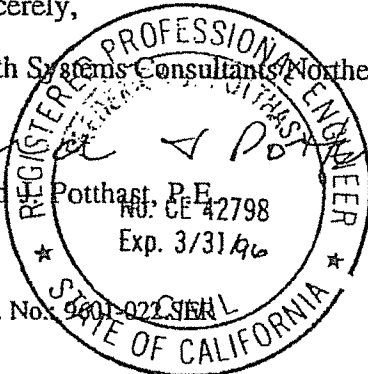
Sincerely,

Earth Systems Consultants Northern California

*Fred Potthast*  
Fred Potthast, P.E.  
No. CE 42798  
Exp. 3/31/96

lb

Doc. No. 9801-021 JEN L



*Dennis C. Shallenberger*  
Dennis C. Shallenberger, P.E.  
No. GE 2158  
Exp. 12/31/97





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## 1.0 INTRODUCTION

The construction of a fire station has been proposed for site on the north side of Highway 46 at Branch Road in the Paso Robles area of San Luis Obispo County, California. The fire station will be single-story, approximately 3,600 square feet in plan, and of wood, steel and/or masonry construction. The structure will contain housing and operational areas, and a drive-thru apparatus bay. Conventional continuous and spread (pad) foundations are planned, with concrete slabs-on-grade. Cuts and fills a minimum of 2 feet are anticipated, and retaining walls up to 3 feet tall may also be utilized for sitework or connected to or forming part of the structure. Maximum continuous loads of 2 kips per linear foot and maximum isolated loads of 30 kips were assumed for this report. Other improvements will include the improvement of the access road (Branch Road) off Highway 46, parking and drive lanes, and landscaping. The facility will be served by an existing water well beyond the immediate building area, and an on-site effluent disposal system.

## 2.0 SCOPE OF SERVICES

The scope of work for the geotechnical engineering investigation included a general site reconnaissance, subsurface exploration, percolation testing, laboratory testing of selected samples, and engineering evaluation of the data collected. The report and subsequent recommendations were based on the Schematic Site Plan Option A by RRM Design Group, dated November 30, 1995.

This report and recommendations are intended to comply with the requirements of Title 24 of the California Code of Regulations, and standard geotechnical engineering practice. It is our intent that this report is to be used by the architect/engineer to form the geotechnical basis of the design of the project, and in the preparation of plans and specifications. In addition, the report may be reviewed and utilized by the contractor *in forming his own conclusions* regarding the geotechnical aspects of the site. This report does not address issues in the domain of the contractor such as, but not limited to, subsidence of the site due to compaction, loss of volume due to stripping of the site, shrinkage of fill soils during compaction, excavatability, shoring, temporary slope angles, construction methods, etc. Analysis of the soil for corrosive potential, radioisotopes, asbestos,



hydrocarbons, or other chemical properties, evaluation of percolation tests, development of disposal criteria, and design of on-site effluent disposal systems are all beyond the scope of this investigation. Ancillary structures such as fences, light poles, signage, and nonstructural fills are also not within our scope and are not addressed. The test procedures were accomplished in general conformance with the standards noted, as modified by standard geotechnical practice in this area. A geologic hazards report for the site has been prepared by this firm, and has been submitted under separate cover.

To verify that pertinent issues have been addressed and to aid in conformance with the intent of this report, it is requested that final plans be submitted to this office for review.

In the event that there are any changes in the nature, design, or location of improvements, or if any assumptions used in the preparation of this report prove to be incorrect, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and the conclusions of this report modified or verified in writing. The criteria presented in this report are considered preliminary until such time as they are modified or verified by the soils engineer in the field during construction.

### **3.0 SITE CONDITIONS**

The site is a 1-acre parcel located approximately 250 feet north of Highway 46 at Branch Road, west of the City of Paso Robles, California. The site is currently vacant of structures, and has been utilized as a storage area for vineyard equipment. An existing water tank to the northeast of the building area is to be utilized for the new development. The proposed structure will be located in the center of the site, with perimeter parking and landscape areas. The site slopes to the west/southwest at 5 percent or less. The surrounding areas to the north, east and south are utilized as vineyards, while the area to the west is rural residential and agricultural.

### **4.0 FIELD AND LABORATORY INVESTIGATION**

On December 20, 1995, eight exploratory borings were drilled on the site with a Mobile B-53 drill rig equipped with 8-inch outside diameter hollow stem augers. Four of the borings were drilled in



the proposed building and parking areas. The other four borings were drilled in the approximate location of the proposed on-site effluent disposal system, as shown on the Site Map in Appendix A. The approximate locations of the borings are shown on the Site Map in Appendix A. Soils encountered in the exploratory borings were categorized and logged in general accordance with the Unified Soil Classification System and ASTM D 2488-84; copies of the logs can also be found in Appendix A. As the borings were drilled, samples were obtained using a 3.5-inch outside diameter ring sampler (ASTM D 3550-84 with shoe similar to ASTM D 1586-84). Standard penetration tests were performed at various intervals in accordance with ASTM D 1586-84. Bulk soil samples were also obtained from the auger cuttings.

The ring samples were tested for unit weight and moisture (ASTM D 2973-83, as modified for ring liners). Maximum density and optimum moisture (ASTM D 1557-91), as well as expansion index (ASTM D 4829-88), were determined for a bulk soil sample. The laboratory data are presented in Appendix B.

## 5.0 PERCOLATION TESTING

The field measurements for the percolation tests were conducted on December 21, 1995. The tests were intended to be conducted in accordance with the requirements of the County of San Luis Obispo and the California Regional Water Quality Control Board. The test results are as follows:

<u>Test Location</u>	<u>Test Depth (ft)</u>	<u>Stabilized Percolation Rate (min/in)</u>
Boring #5	15.0	150
A	4.7	500
B	4.8	500
C	4.6	110

## 6.0 GENERAL SOIL PROFILE

In all five boring locations, the upper 0.5 to 1.5 feet of soils consisted of moist, medium dense silty clayey sand. Underlying this sand was moist to very moist, medium dense to dense rock (clayey sandstone) of the Paso Robles formation. From 1.5 to 2 feet in Boring 2, the sandstone was classified as being soft. The sandstone was generally weathered at the soil/rock transition,





and the weathering decreased with depth. Free subsurface water was not encountered in any of the exploratory borings.

## 7.0 CONCLUSIONS

The site is suitable, from a geotechnical engineering standpoint, for the proposed fire station and site improvements, provided the recommendations contained herein are implemented in the design and construction. The primary concerns at the site are the variable depth to rock and the relatively soft zone of rock found in Boring 2. The result of the expansion index test was 12, which indicates the site soils are classified as being in the "very low" (nonexpansive) per 1994 UBC Table 18-I-B. Therefore, special design to accommodate expansive soils is not considered necessary. The fire station may be supported by conventional continuous and spread (pad) foundations.

The depth to rock in the building area varied from 0.5 to 1.5 feet below the existing ground surface. In addition, a relatively soft zone of the rock was found in Boring 2 from 1.5 to 2 feet. Prior to construction of the building pad, a program of overexcavation and recompaction of the upper soil and rock is recommended to provide more uniform bearing and settlement conditions. The rock immediately underlying the surface soils should be readily excavated with conventional grading equipment, although deeper excavations (approximately 5 feet and deeper) may require specialized equipment and techniques.

## 8.0 RECOMMENDATIONS

### Site Preparation

The existing ground surface should be prepared for grading by removing all vegetation, large roots, debris, and other deleterious material. Any existing utilities that will not be serving the fire station should be removed or properly abandoned. The appropriate method of utility abandonment will depend upon the type and depth of the utility. Recommendations for abandonment can be made as necessary. Voids created by the removal of materials or utilities and extending below the recommended overexcavation depth, should be immediately called to the attention of this firm. No fill should be placed unless the underlying soil has been observed by a representative of this firm.



### Grading

1. Following site preparation, soils and rock in the building area should be removed to a level plane that is 1 foot below the lowest existing elevation within the proposed building area. The resulting surface should be scarified a minimum of 1 foot, moisture conditioned and recompactd.

The building area is defined as the area within and extending a minimum of 5 feet beyond the perimeter foundation of the fire station structure.

2. Following site preparation, any nonbuilding areas to receive fill or other surface improvements, should be scarified to a minimum depth of 1 foot, moisture conditioned and recompactd.
3. Voids created by dislodging cobbles and/or debris during scarification should be backfilled and recompactd, and the dislodged materials should be removed from the subgrade.
4. Previously removed soils, as well as acceptable imported materials, once cleared of vegetation and deleterious materials, may be utilized as fill. Fill should be placed in level lifts not exceeding 8 inches, moisture conditioned and compacted.
5. Any imported soils to be used as fill within the building, parking, and driveway areas should be nonexpansive. Nonexpansive soils are defined as being coarse grained in accordance with ASTM D 2488-84, and having an expansion index of 20 or less when tested in conformance with ASTM D 4829-88. Proposed nonexpansive imported soils should be evaluated by a representative of this firm before being used, and on an intermittent basis during placement on the site.
6. All fill should be cleaned of any rocks, debris, and irreducible material larger than 3 inches in diameter. When fill contains rocks, they should be placed in a sufficient soil matrix to ensure that voids caused by nesting of the rocks do not occur and that the material can be properly compacted.



7. The upper 1 foot of subgrade and all aggregate base in areas to be paved with A.C. or Portland cement concrete should be compacted to a minimum of 95 percent of maximum dry density. Subgrade and aggregate base should be firm and unyielding when proofrolled with heavy, rubber-tired grading equipment prior to continuing construction.

### Utility Trenches

The soils above the rock may be prone to sloughing and caving during installation of utilities. It is expected that excavations for utilities in the soil and rock to a depth of approximately 5 feet can be accomplished using backhoes. Deeper excavations into the rock may require specialized equipment and techniques.

1. Where necessary, and for *all* trench depths below 5 feet, the contractor shall provide either adequate shoring or slope the sidewalls to meet the applicable state and federal safety regulations.
2. A select, noncorrosive, granular, easily compacted material should be used as bedding and shading immediately around utilities. While the material found at the site may be used for trench backfill above the select material, obtaining compaction may be difficult due to its variable silt and clay content. If this is the case, use of a more easily compacted sand may be desirable.
3. Trench backfill in landscaped or other unimproved areas should be compacted to a minimum of 85 percent of maximum dry density. Trench backfill in the upper 1 foot of subgrade beneath asphalt and concrete pavement should be compacted to a minimum of 95 percent of maximum dry density. Trench backfill in all other areas should be compacted to a minimum of 90 percent of maximum dry density. Jetting of utility trench backfill should not be allowed due to the presence of rock.

### Foundations

1. The fire station may be supported by conventional continuous and spread (pad) footings a minimum of 18 inches deep. All footings should be completely supported by recompacted soils. Spread footings should be a minimum of 2 feet square.



2. Continuous and spread footings should be reinforced as determined by the architect/engineer.
3. Continuous and spread footings bearing in recompacted soil should be designed using maximum allowable bearing capacities of 1,800 psf dead load and 2,500 psf dead plus live load. Using these criteria, total and differential settlement of foundations are expected to be 3/4-inch and 1/2-inch in 25 feet, respectively.
4. Allowable bearing capacities may be increased by one-third when transient loads such as wind or seismicity are included. The site coefficient (S) in 1994 UBC Table 16-J should be 1.0. The seismic zone factor (Z) per 1994 U.B.C. Table 16-I should be 0.4.
5. Lateral loads may be resisted by soil friction and by passive resistance of the soils acting on foundations. Lateral capacity is based on the assumption that any backfill adjacent to foundations is properly compacted. Please see the Retaining Walls section of this report for criteria.
6. Foundation excavations should be moistened to at least optimum moisture content and no desiccation cracks should be present prior to concrete placement.
7. The preliminary recommendations of this section may be superseded by the requirements of the architect/engineer, or by additional recommendations provided by this firm based upon the conditions encountered during construction.

#### **Slabs-on-Grade and Exterior Flatwork**

1. Slabs should have a minimum thickness of 4 full inches and should be reinforced as directed by the architect/engineer. The reinforcement should be placed at the midpoint of the concrete unless otherwise directed. A modulus of subgrade reaction ( $K_{30}$ ) of 250 psi/inch may be utilized for design of slabs-on-grade.
2. Slabs and footings should be doweled together as required by the architect/engineer.



3. A minimum of 4 inches of *clean* sand should be provided as a cushion directly beneath all interior slabs and exterior slabs where moisture transmitted from the subgrade would be undesirable. Clean sand is defined as a coarse grained material (ASTM D 2488-84) of which less than 3 percent passes the #200 sieve.
4. A vapor barrier placed at the midsection of the clean sand is recommended to protect floor coverings from infiltration of subsurface moisture or to provide protection where moisture transmitted from the subgrade is undesirable. Care should be taken to properly lap and seal the barrier, particularly around utilities, and to protect it from damage during construction. Specification of the moisture barrier type and placement is left to the architect/engineer. If the moisture barrier is 1 inch above or lower than the surrounding grade, a subslab drainage system should be provided.
5. Assuming that minor movement (i.e., 1/2-inch or more) of exterior flatwork such as driveways, sidewalks, patios, stairways, porches, landings, etc., is acceptable, the flatwork should be designed to be independent of the building foundation. The flatwork should not be doweled to foundations and a felt or other separator should be placed between the two.
6. The flatwork should be cast on a minimum 4-inch layer of compacted, clean sand. Prior to placement of the clean sand, the soil surface in the flatwork area should be at or above optimum moisture and no desiccation cracks should be present.
7. If significant differential movement of flatwork is considered undesirable, the flatwork should be designed and constructed in roughly the same manner as the interior slabs. This should entail casting an 18-inch deep continuous footing under the perimeter of the flatwork and providing reinforcing as determined by the architect/engineer.
8. To reduce shrinkage cracks in concrete slabs and flatwork, contraction joints can be installed. Joint spacing should be at the direction of the structural engineer or architect.



- 9. The preliminary recommendations of this section may be superseded by the requirements of the architect/engineer, or by additional recommendations provided by this firm based on conditions exposed at the time of grading.

**Retaining Walls**

- 1. Sitework retaining walls may be founded in either firm native soils, firm recompacted soils or rock. If a sitework wall will span between two different bearing material types, a construction joint should be placed at the transition. Retaining walls connected to or forming a part of the structure should be founded entirely in recompacted soils. Foundations for retaining walls should have a minimum depth of 18 inches.

- 2. Design of retaining walls should be based on the following parameters:

Active equivalent fluid pressure (native, granular or gravel backfill) ..	35 pcf
At-rest equivalent fluid pressure (native, granular or gravel backfill) ..	50 pcf
Passive equivalent fluid pressure .....	300 pcf
Maximum toe pressure .....	2,500 psf
Coefficient of sliding friction .....	0.40

- 3. No surcharges are taken into consideration in the above values. The maximum toe pressure is an allowable value; all others are ultimate values which will require application of appropriate factors of safety by the architect/engineer.

- 4. The above pressures are applicable to a retained surface that is horizontal at the top of the wall. Walls having a retained surface that slopes upward from the top of the wall should be designed for an additional equivalent fluid pressure of 1 pcf for the active case and 1.5 pcf for the at-rest case, for every degree of slope inclination. It is assumed that wall heights will not exceed 4 feet.

- 5. All retaining walls should be drained with minimum 4-inch diameter *rigid* perforated pipe encased in free draining gravel. The pipe should be placed perforations downward and should discharge in a nonerosive manner away from foundations and other improvements. The gravel zone should have a width of approximately 1 foot and should extend upward to 1 foot from the top of the wall. The upper 1 foot of backfill should consist of native soils



to reduce the flow of surface drainage into the wall drain system. To reduce infiltration of the native soil into the gravel, a permeable synthetic fabric (conforming to Caltrans Section 88-1.03 for edge drains) should be placed between the two. Manufactured synthetic drains such as Miradrain or Enkadrain are acceptable alternatives to the use of gravel provided they are installed in accordance with the manufacturer's recommendations.

6. The architect/engineer should bear in mind that retaining walls by their nature are flexible structures which often cause cracking in surface coatings. Where walls are to be plastered or will otherwise have a finish surface applied, this flexibility should be considered in determining the suitability of the surfacing material, spacing of horizontal and vertical joints, connections to structures, etc.

#### Pavement Sections

The following pavement sections are based on an assumed R-value of 15 for the upper materials at the site. The asphalt concrete (A.C.) sections were calculated in accordance with the Caltrans Highway Design Method for assumed Traffic Indices (T.I.s) of 4.0, 5.0, 6.0 and 7.0. Determination of the appropriate T.I. is the province of the civil engineer. The calculated base and A.C. thicknesses are for compacted material. Normal Caltrans construction tolerances should apply.

R-value	T. I.	A. C.	Class 2 Base
16	4.0	2.25"	6.50"
16	5.0	2.75"	8.50"
16	6.0	3.25"	11.00"
16	7.0	4.00"	13.00"

1. The upper 12 inches of subgrade and all aggregate base should be compacted to a minimum of 95 percent of maximum dry density.
2. Aggregate base and subgrade should be firm and unyielding when proofrolled with heavy rubber-tired equipment prior to paving.



3. Pavement longevity will be enhanced if the surface grade drains away from the edges of the pavement. Ponding of surface water against the upslope sides of curbs or pavement is undesirable and should be avoided.

#### Site Drainage

1. Unpaved ground surfaces should be finish graded to direct surface runoff away from foundations at a minimum 2 percent grade for a minimum distance of 5 feet. If this is not possible due to the terrain, improved-surface swales should be provided to divert drainage away from these areas. Paved surfaces should slope away from foundations.
2. All eaves on the fire station should be provided with roof gutters. Runoff from roof gutters, downspouts, area drains, weep holes, etc., should discharge to an appropriate outlet in a nonerosive manner away from foundations in accordance with the requirements of the governing agencies.
3. Stabilization of surface soils, particularly those disturbed during construction, by vegetation or other means *during and following construction* is essential to protect the site from erosion damage. Care should be taken to establish and maintain vegetation. The site should be finish graded and landscaping should be installed to maintain the surface drainage recommended above.
4. Planter beds adjacent to foundations should be provided with sealed sides and bottoms so that irrigation water is not allowed to penetrate the subsurface beneath foundations. Outlets should be provided in the planters to direct drainage away from foundations.
5. Irrigation systems adjacent to foundations should be controlled to provide uniform moisture conditions throughout the year.

#### 9.0 OBSERVATION AND TESTING

It must be recognized that the recommendations contained in this report are based on a limited number of borings and rely on continuity of the subsurface conditions encountered. It is assumed





Meridian Fire Station

January 2, 1996

that this firm will be retained to review final plans once they are available, to provide consultation prior to and during construction, to interpret this report during construction, and to provide construction monitoring in the form of testing and observation.

Unless otherwise stated, the term "compacted" or "recompacted" refers to soils (fill or native soils) placed in level lifts not exceeding 8 inches and compacted to a minimum of 90 percent of maximum dry density. The standard test used to define maximum dry density and field density should be ASTM D 1557-91, ASTM D 2922-81, respectively, or other methods acceptable to the soils engineer and jurisdiction. Unless otherwise stated, "moisture conditioning" refers to the moistening or drying of soils to a level that will facilitate compaction prior to application of compactive effort. At a minimum, the following items should be observed by this firm:

- Stripping and clearing of vegetation and deleterious materials
- Overexcavation to the recommended depth
- Recompaction of scarified soils
- Fill placement and compaction
- Nonexpansive imported material quality and compaction (if utilized)
- Footing excavations

It will be necessary to develop a program of quality control prior to beginning grading. It is the responsibility of the owner, contractor, or project manager to determine any additional inspection items required by other design professionals or the governing jurisdiction. A preconstruction conference between a representative of the owner, this firm, the grading engineer, the general contractor and the grading contractor is recommended to discuss planned construction procedures and quality control requirements. This firm should be notified at least 48 hours prior to beginning grading operations.

If Earth Systems Consultants Northern California is not retained to provide construction observation and testing services, it shall not be responsible for the interpretation of the information by others or any consequences arising therefrom.



Meridian Fire Station

January 2, 1996

## 10.0 CLOSURE

This report is valid for conditions as they exist at this time for the type of development described herein. Our intent was to perform the investigation in a manner consistent with the level of care and skill ordinarily exercised by members of the profession currently practicing in the locality of this project under similar conditions. No other representation, warranty, or guarantee is either expressed or implied. This report is intended for use by the design architect/engineer in the preparation of plans and specifications. It may also be used by contractors in forming *their own conclusions* regarding the geotechnical aspects of the site. Application beyond the this intent is strictly at the user's risk.

If changes with respect to development type or location become necessary, if items not addressed in this report are incorporated into plans, or if any of the assumptions stated in this report are not correct, this firm shall be notified for modifications to this report. Any items not specifically addressed in this report shall comply to the Uniform Building Code as modified by pertinent sections of Title 24 of the California Code of Regulations and the requirements of the governing jurisdiction.

This document, the data, conclusions, and recommendations contained herein are the property of Earth Systems Consultants Northern California. This report shall be used in its entirety, with no individual sections reproduced or used out of context. Copies may be made only by Earth Systems Consultants Northern California, the client, and his authorized agents for use exclusively on the subject project. All other rights are retained by Earth Systems Consultants and any other use is subject to federal copyright laws and the written approval of Earth Systems Consultants Northern California.

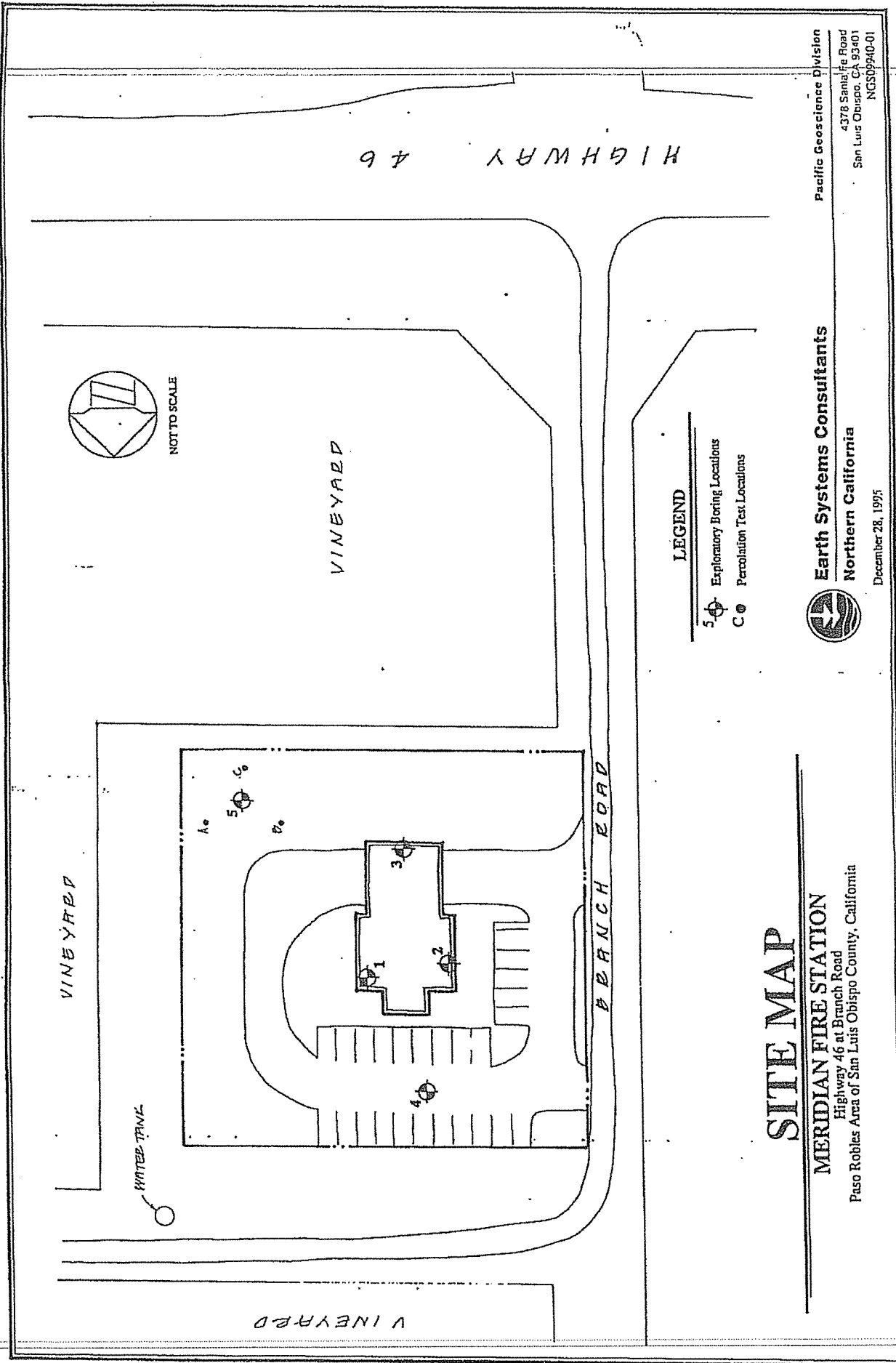
Thank you for this opportunity to have been of service. If you have any questions, please feel free to contact this office at your convenience.

End of Text

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Site Map  
Boring Logs

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HIGHWAY 46

VINEYARD

VINEYARD

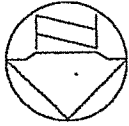
BRANCH ROAD

VINEYARD

WATER TANK

**LEGEND**

- ⊕ Exploratory Boring Locations
- Percolation Test Locations



NOT TO SCALE

**SITE MAP**

**MERIDIAN FIRE STATION**

Highway 46 at Branch Road  
 Paso Robles Area of San Luis Obispo County, California



**Earth Systems Consultants**  
 Northern California

December 28, 1995

Pacific Geoscience Division  
 4378 Santa Fe Road  
 San Luis Obispo, CA 93401  
 NGS09940-01



# EARTH SYSTEMS CONSULTANTS

Northern California, Pacific Geoscience Division

Boring No. 1

LOGGED BY: D. Burns  
 DRILL RIG: Mobile B-53  
 AUGER TYPE: 8" Hollow Stem

PAGE 1 of 1  
 JOB NO.: NGS09940-01  
 DATE: 12/20/95

DEPTH (in feet)	USCS CLASS	SYMBOL	SAMPLE DATA					
			INTERVAL	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.	
<b>Meridian Fire Station            Highway 46 at Branch Road            Paso Robles area of            San Luis Obispo County, California</b> <b>SOIL DESCRIPTION</b>								
0	SC SM	[Symbol: Dotted pattern]	Moist, medium dense, brown, Silty Clayey SAND	0.0-1.5	○	97.5	4.1	18/27/ 50-4"
1			1.0-2.5	[Symbol: Horizontal lines]				
2	[Symbol: Stippled pattern]	[Symbol: Stippled pattern]	Moist, dense, light brown, Clayey SANDSTONE	2.0-4.0	○	111.0	12.2	50-5.5"
3			3.0-3.5	[Symbol: Horizontal lines]				
4			5.0-6.5	[Symbol: Circle with dot]				
5			with gravel					
6			Medium dense, light yellow brown, gravel ends					
7	[Symbol: Stippled pattern]	[Symbol: Stippled pattern]		10.0-11.5	●			8/14/17
8								
9			Very moist					
10	[Symbol: Stippled pattern]	[Symbol: Stippled pattern]		15.0-16.5	●			14/19/23
11								
12	END OF BORING @ 16.5'. No subsurface water encountered.							
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								

LEGEND: [Symbol: Stippled pattern] Ring Sample    [Symbol: Circle with dot] Grab Sample    [Symbol: Horizontal lines] Shelby Tube Sample    [Symbol: Circle with dot] SPT

Note: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.



# EARTH SYSTEMS CONSULTANTS

Northern California, Pacific Geoscience Division

## Boring No. 2

LOGGED BY: D. Burns  
 DRILL RIG: Mobile B-53  
 AUGER TYPE: 8" Hollow Stem

PAGE 1 of 1  
 JOB NO.: NGS09940-01  
 DATE: 12/20/95

DEPTH (in feet)	USCS CLASS	SYMBOL	Meridian Fire Station Highway 46 at Branch Road Paso Robles area of San Luis Obispo County, California				
			SAMPLE DATA				
SOIL DESCRIPTION			INTERVAL	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SC SM	Moist, medium dense, brown, Silty Clayey SAND					
1			1.0-2.5	■	103.4	14.7	5/7/8
2	SM	Very moist, soft, light brown, Clayey SANDSTONE, very weathered Medium dense					
3			3.0-4.0	■	112.6	13.3	32/42
4			5.0-6.5	●			17/20/18
5	SM	Moist, dense, light yellow brown, occasional gravel, unweathered Medium dense, light brown Light yellow brown, gravel ends					
10			10.0-11.5	●			10/14/26
15			15.0-16.5	●			16/28/24
17		END OF BORING @ 16.5'. No subsurface water encountered.					

LEGEND: ■ Ring Sample    ● Grab Sample    □ Shelby Tube Sample    ● SPT

Note: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.



LOGGED BY: D. Burns  
DRILL RIG: Mobile B-53  
AUGER TYPE: 8" Hollow Stem

PAGE 1 of 1  
JOB NO.: NGS09940-01  
DATE: 12/20/95

DEPTH (in feet)	USCS CLASS	SYMBOL	SAMPLE DATA				
			INTERVAL	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
<b>Meridian Fire Station Highway 46 at Branch Road Paso Robles area of San Luis Obispo County, California</b>							
<b>SOIL DESCRIPTION</b>							
0	SC SM	Moist, medium dense, brown, Silty Clayey SAND					
1		Very moist, medium dense, light brown, Clayey SANDSTONE, very weathered	1.0-2.5	■	104.6	12.2	13/11/18
2							
3		Moist, dense, light yellow brown, occasional gravel, unweathered	3.0-4.5	■	118.3	10.9	28/34/ 50-4"
4							
5			5.0-6.5	●			12/19/23
6		Gravel ends					
7							
8							
9							
10							
11			10.0-11.5	●			24/27/38
12							
13							
14							
15							
16			15.0-16.5	●			12/16/24
17		END OF BORING @ 16.5'. No subsurface water encountered.					
18							
19							
20							
21							
22							
23							
24							
25							

LEGEND: ■ Ring Sample    ● Grab Sample    □ Shelby Tube Sample    ● SPT

Note: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.



# EARTH SYSTEMS CONSULTANTS

Northern California, Pacific Geoscience Division

Boring No. 4

LOGGED BY: D. Burns  
 DRILL RIG: Mobile B-53  
 AUGER TYPE: 8" Hollow Stem

PAGE 1 of 1  
 JOB NO.: NGS09940-01  
 DATE: 12/20/95

DEPTH (in feet)	USCS CLASS	SYMBOL	SAMPLE DATA				
			INTERVAL	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
<b>Meridian Fire Station            Highway 46 at Branch Road            Paso Robles area of            San Luis Obispo County, California</b>							
<b>SOIL DESCRIPTION</b>							
0	SC SM		Moist, medium dense, brown, Silty Clayey SAND				
1			Very moist, medium dense, light brown, Clayey SANDSTONE, weathered				
2							
3	Dense, light yellow brown, unweathered						
4	END OF BORING @ 5.0'. No subsurface water encountered.						
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

**LEGEND:** Ring Sample Grab Sample Shelby Tube Sample SPT

Note: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.





# EARTH SYSTEMS CONSULTANTS

Northern California, Pacific Geoscience Division

Boring No. 5

LOGGED BY: D. Burns  
 DRILL RIG: Mobile B-53  
 AUGER TYPE: 8" Hollow Stem

PAGE 1 of 1  
 JOB NO.: NGS09940-01  
 DATE: 12/20/95

DEPTH (in feet)	USCS CLASS	SYMBOL	SAMPLE DATA				
			INTERVAL	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
<b>Meridian Fire Station            Highway 46 at Branch Road            Paso Robles area of            San Luis Obispo County, California</b>							
<b>SOIL DESCRIPTION</b>							
0	SC SM	[Symbol]	Moist, medium dense, brown, Silty Clayey SAND				
1							
2			Moist, medium dense, light brown, Clayey SANDSTONE				
3			Very moist				
4			Moist, dense, light yellow brown				
5							
6							
7							
8			Very moist				
9							
10							
11							
12							
13							
14							
15							
16			END OF BORING @ 15.0'. No subsurface water encountered.				
17							
18							
19							
20							
21							
22							
23							
24							
25							

LEGEND: [Symbol] Ring Sample [Symbol] Grab Sample [Symbol] Shelby Tube Sample [Symbol] SPT

Note: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

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**Laboratory Test Data**

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MERIDIAN FIRE STATION

December 29, 1995  
NGS09940-01

**BULK DENSITY TEST RESULTS**

ASTM D2937-83

<u>BORING NO.</u>	<u>DEPTH feet</u>	<u>MOISTURE CONTENT, %</u>	<u>WET DENSITY, pcf</u>	<u>DRY DENSITY, pcf</u>
1	1.5-2	4.1	101.5	97.5
1	3-3.5	12.2	124.6	111.0
2	1.5-2	14.7	118.6	103.4
2	3.5-4	13.3	127.6	112.6
3	1.5-2	12.2	117.4	104.6
3	4-4.5	10.9	131.1	118.3

**EXPANSION INDEX TEST RESULTS**

ASTM D4829-88

<u>BORING NO.</u>	<u>DEPTH feet</u>	<u>EXPANSION INDEX</u>
1	0-1.5	12



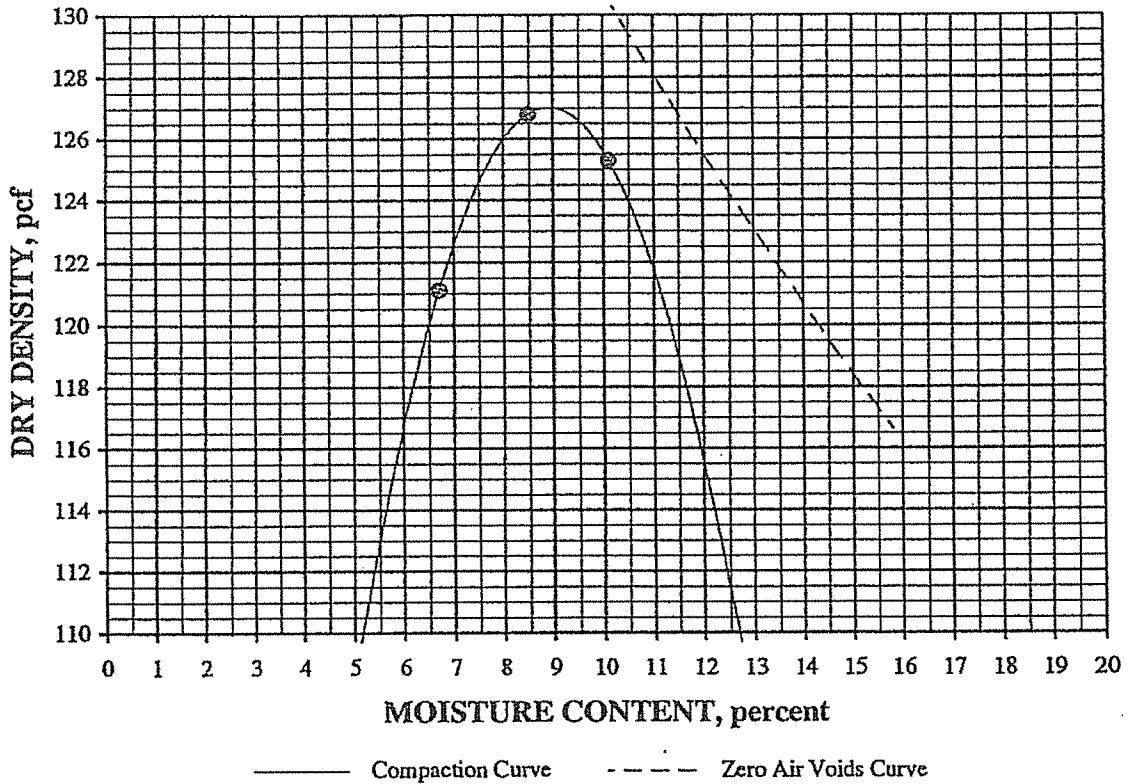
MERIDIAN FIRE STATION

December 29, 1995

NGS09940-01

### MAXIMUM DENSITY/OPTIMUM MOISTURE CURVE

ASTM D1557-91 (Modified)



SAMPLE I.D.: Boring #1 @ 0-1.5'  
SOIL DESCRIPTION: Brown Silty Clayey Sand (SC-SM)  
MAXIMUM DENSITY: 127.0 pcf  
OPTIMUM MOISTURE: 9.0%  
SIEVE DATA:

Sieve Size	% Retained
3/4"	0
3/8"	0
#4	0

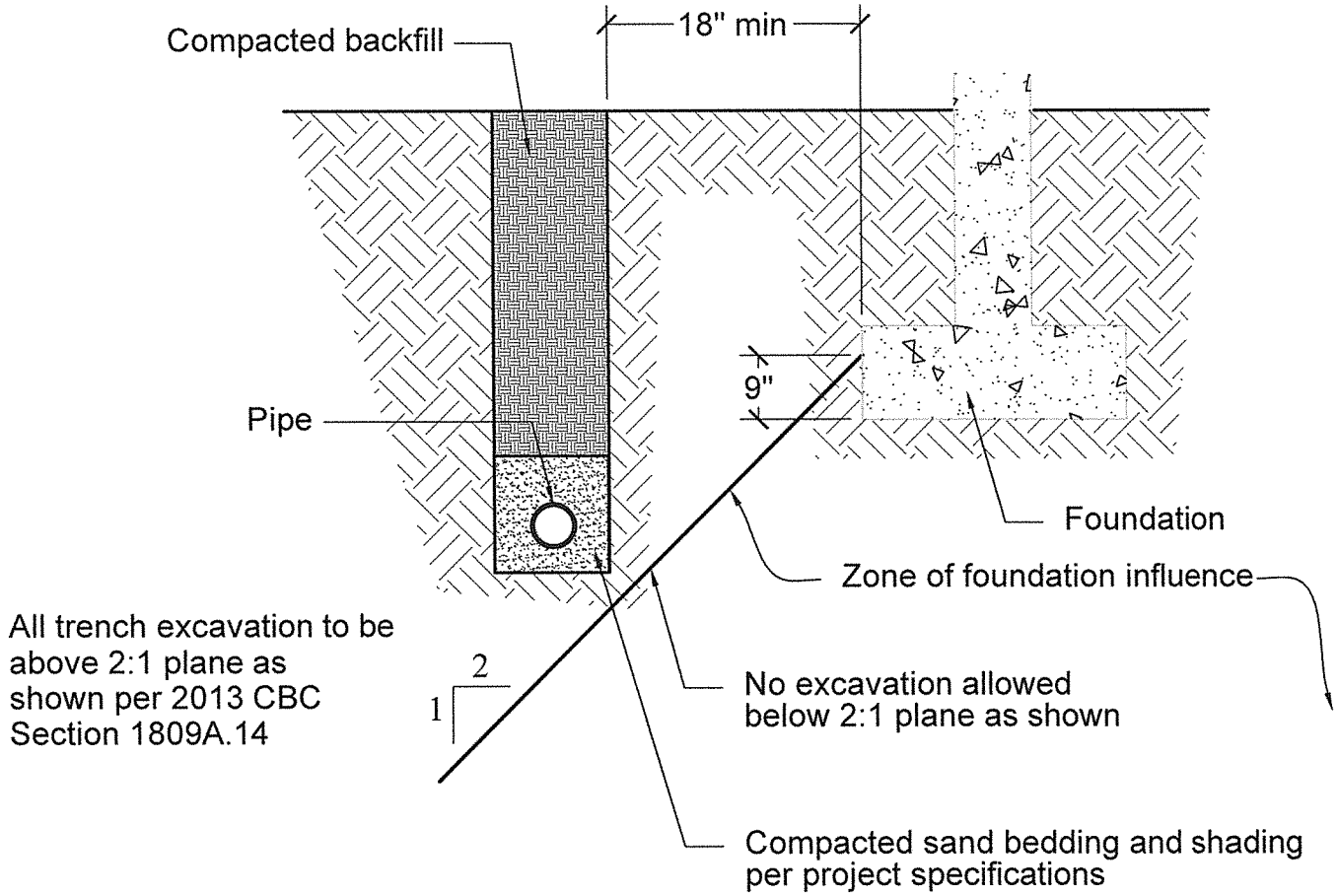
PROCEDURE USED: A  
PREPARATION METHOD: Moist  
RAMMER TYPE: Mechanical  
SPECIFIC GRAVITY: 2.65 (assumed)

## **APPENDIX C**

Typical Detail A: Title 24 – Pipe Placed Parallel to Foundations

**TYPICAL DETAIL A:  
TITLE 24  
PIPE PLACED PARALLEL TO FOUNDATIONS**

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**SCHEMATIC ONLY**  
**NOT TO SCALE**



**Earth Systems Pacific**

4378 Old Santa Fe Road  
San Luis Obispo, CA 93401-8116

(805) 544-3276 • FAX (805) 544-1786  
E-mail: esp@earthsys.com

TYPICAL DETAIL A - TITLE 24.dwg

**SPECIFICATION REFERENCE DOCUMENT**

**31 00 00 1.03.B**

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October 6, 2014

FILE NO.: SL-17272-SB

Ms. Margaret Ambrosavage  
San Luis Obispo County, Department of General Services  
1087 Santa Rosa Street  
San Luis Obispo, CA 93401

PROJECT: MERIDIAN FIRE STATION  
APPARATUS BAY EXPANSION  
4050 BRANCH ROAD  
PASO ROBLES, CALIFORNIA

SUBJECT: Geotechnical Recommendations for New Water Storage Tanks

REF: Updated Geotechnical Engineering Report, Meridian Fire Station,  
Apparatus Bay Expansion, 4050 Branch Road, Paso Robles, California, by  
Earth Systems Pacific, Doc. No. 1404-081.SER, dated April 16, 2014

Dear Ms. Ambrosavage:

As authorized, we have prepared this letter with geotechnical recommendations specifically for the water storage tanks to be constructed at the site. Please see the referenced Updated Geotechnical Engineering Report for all other geotechnical considerations not specifically noted in this letter. This letter is based on a Site Plan by Fraser Seiple Architects dated September 16, 2014 provided by the client, and on a telephone conversation with Frank Seiple of Fraser Seiple Architects.

Two new steel water tanks, with capacities of approximately 15,000 gallons each, are to be constructed near the northeast corner of the site. The tanks will be approximately 15 feet tall, and will be constructed on a single concrete slab, with little or no embedment below grade. The area where the tank slab will be constructed is beyond the perimeter pavement curb, on the east side of the main parking area. There is little if any vegetation in this area; mature trees are on the property line to the northeast, and adjacent to the existing water tank on the east property line. Cuts and fills less than 1 foot are anticipated to create the building area for the tank slab.

In our opinion, the building area indicated on the Site Plan by Fraser Seiple Architect dated September 16, 2014, is suitable from a geotechnical standpoint for construction of a slab foundation to support the proposed water tanks. The primary geotechnical concern will be the need to create uniform bearing conditions for support of the slab foundation. The site soils were previously identified as being nonexpansive, therefore no special measures or minimum



depths with respect to expansive soils are considered necessary for the tank slab foundation. As bedrock of the Paso Robles formation was found at relatively shallow depths in the exploratory borings drilled for previous projects at this site, in our opinion, the potential for liquefaction to affect the site is nil.

#### **Geotechnical Recommendations for New Water Storage Tanks**

The following recommendations are specifically for the area proposed to support the new water tanks. Please see the referenced report for all other geotechnical recommendations regarding site preparation, site seismicity, drainage and maintenance, observation and testing, etc.

**Water Tank Building Area:** The area within and extending a minimum of 1 foot beyond the perimeter of the slab foundation planned to support the tanks.

1. Following site preparation, the water tank building area should be excavated to a level plane at the lowest existing elevation within the building area.

If firm sandstone bedrock of the Paso Robles formation is exposed throughout the excavated area, it need not be scarified. However, the exposed surface should be moisture conditioned and compacted to correct any disturbances caused by the excavation process.

If firm sandstone bedrock of the Paso Robles formation is not exposed, the excavated surface should be scarified, moisture conditioned and recompacted. Voids created by dislodging rocks and/or debris during scarification should be backfilled and recompacted, and the dislodged materials should be removed from the area of work.

2. Previously removed site soils, or imported nonexpansive soils may then be placed in thin, moisture-conditioned lifts and compacted to bottom of foundation elevation. Nonexpansive soils are defined as falling into the GP, GW, GM, GC, SM, SC, SP, or SW categories (ASTM D 2487-11) and having an expansion index of 10 or less (ASTM D 4829-11). All proposed imported fill should be approved by the geotechnical engineer before being transported to the site.
3. The tank slab foundation may be designed using an allowable bearing capacity of 1,000 psf dead plus live loads, assuming little or no embedment of the foundation. Using this value, maximum settlement and differential settlement of the foundation bearing in recompacted site or imported soils are expected to be 1/2-inch or less. If firm Paso Robles formation sandstone is exposed at or near the bottom of the tank slab foundation, maximum settlement and differential settlement of the foundation are expected to be 1/4-inch or less.



4. If desired, the tank slab foundation may be designed using a modulus of subgrade reaction, rather than a bearing value. If the tank foundation bears on recompacted site soils, a subgrade modulus ( $K_{30}$ ) of 200 pci (psi/in) can be utilized. If firm Paso Robles formation sandstone is exposed at or near the bottom of the tank slab foundation, the subgrade modulus ( $K_{30}$ ) can be increased to 250 pci (psi/in) can be utilized. If a minimum of 6 inches of compacted Class 2 aggregate base (Caltrans 2010) or decomposed granite (locally termed "DG") is placed below the tank slab foundation, the subgrade modulus ( $K_{30}$ ) can be increased to 300 pci.
5. The allowable bearing capacity and the modulus of subgrade reaction values may be increased by one-third when transient loads such as wind or seismicity are included.
6. As the tank slab foundation will have little or no embedment, lateral loads may be resisted by friction of the underlying soil or bedrock acting on the slab foundation only. A friction factor of 0.40 (concrete or recompacted Paso Robles formation or granular fill) may be used together.
7. If additional bearing and/or lateral capacity is needed, the tank slab foundation may be deepened uniformly throughout its full area, or a perimeter footing can be provided. If the entire tank slab is deepened, an additional 1,000 psf of allowable bearing capacity can be utilized for each 6-inch embedment of the entire tank foundation below lowest adjacent grade. If a minimum 1 foot wide perimeter footing only is used, it should extend to at least 12 inches below lowest adjacent grade; the deepened perimeter footing portion (only) of the tank foundation can provide an allowable bearing capacity of 1,500 psf. The deepened foundations can also be utilized to provide a passive equivalent pressure of 300 pcf for additional resistance to lateral loads, without any reduction if used together with the friction factor. Lateral capacity is based on the assumption that all backfill adjacent to foundations is properly compacted.
8. The tank slab foundation should have a minimum thickness of 5 full inches, and should be reinforced per the architect/engineer; minimum reinforcement should consist of #4 rebars at 18 inches on center each way. If a deepened perimeter foundation is utilized, it should be reinforced per the architect/engineer, with minimum reinforcement of one #4 rebar top and bottom.
9. If desired by the architect/engineer, the steel tank bottoms can be protected from moisture vapor transmitted from the underlying soil and through the slab foundation, per the recommendations provided in the "Interior Slabs-on-Grade and Exterior Pedestrian Flatwork" section of the referenced report. However, it should be noted that, because the slab foundation will be exposed to the elements, there is a greater



Meridian Fire Station  
Apparatus Bay Expansion

October 6, 2014

likelihood that any precautions (i.e., vapor retarders) taken to protect the foundation from the underlying soil moisture from soil will trap more moisture on top of the retarder, raising the moisture content of the exposed concrete. The steel tank manufacturer should be contacted for recommendations, if needed, regarding protection of the steel tank bottoms from corrosion at the steel/concrete slab foundation interface.

END OF RECOMMENDATIONS

If there are any questions concerning this letter, please do not hesitate to contact the undersigned.

Sincerely,  
Earth Systems Pacific

*Fred Potthast*  
Fred Potthast, GE  
Principal Engineer

Doc. No.: 1410-017.RPT/sr



# NOTICE OF EXEMPTION

SAN LUIS OBISPO COUNTY DEPARTMENT OF PLANNING AND BUILDING  
976 OSOS STREET • ROOM 200 • SAN LUIS OBISPO • CALIFORNIA 93408 • (805) 781-5600

*Promoting the Wise Use of Land • Helping to Build Great Communities*

County General Services Agency / Addition to CAL FIRE - Meridian Fire Station for bay storage / ED13-125

**Project Title**

4050 Branch Rd., Paso Robles, APN: 015-031-052

**Project Location - Specific**

San Luis Obispo County

**Project Location - County**

The proposed project the construction of an addition to the existing Meridain Fire Station apparatus bay to allow for the storage of additional public safety vehicles on site. The expansion will occur

**Description of Nature and Purpose of Project**

County of San Luis Obispo

**Name of Public Agency Approving Project**

County General Services Agency

**Name of Person or Agency Carrying Out Project/Beneficiaries of Project**

**Exempt Status: (Check One)**

- Ministerial {Sec. 21080(b)(1); 15268}
  - Declared Emergency {Sec. 21080(b)(3); 15269(a)}
- Emergency Project {Sec. 21080(b)(4); 15269(b)(c)}
- Categorical Exemption {Sec. 15301(e)(1) and Sec. 15304(a)}
- Statutory Exemption {Sec. \_\_\_\_}

**Reasons why project is exempt:** The proposed project includes an approximate 1,216 sf expansion to an existing building. The proposed minor expansion to the fire station facility will have less than a significant effect on the environment because the expansion will occur in an area that has been previously disturbed (paved).

Holly Phipps

781-1162

**Contact Person**

**Telephone**

**If filed by applicant:**

- Attach certified document of exemption finding
- Has a notice of exemption been filed by the public agency approving the project?  
Yes  No

Signature Holly Phipps Date 1/9/14  
 Name (Print) Holly Phipps Title Planner

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# NOTICE OF EXEMPTION

SAN LUIS OBISPO COUNTY DEPARTMENT OF PLANNING AND BUILDING  
976 OSOS STREET • ROOM 200 • SAN LUIS OBISPO • CALIFORNIA 93408 • (805) 781-5600

*Promoting the Wise Use of Land • Helping to Build Great Communities*

County General Services Agency / Water Storage Tanks / CAL FIRE - Meridian Fire Station  
ED13-211

**Project Title**

4050 Branch Rd., Paso Robles, APN: 015-031-052

**Project Location - Specific**

San Luis Obispo County

**Project Location - County**

The proposed project includes the replacement of an existing 10,000 gallon water tank on site with two 15,000 gallon water tanks.

**Description of Nature and Purpose of Project**

County of San Luis Obispo

**Name of Public Agency Approving Project**

County General Services Agency

**Name of Person or Agency Carrying Out Project/Beneficiaries of Project****Exempt Status: (Check One)**

- |                                     |                       |   |                              |
|-------------------------------------|-----------------------|---|------------------------------|
| <input type="checkbox"/>            | Ministerial           | {Sec. 21080(b)(1); 15268}                   |                              |
|                                     |                       | <input type="checkbox"/> Declared Emergency | {Sec. 21080(b)(3); 15269(a)} |
| <input type="checkbox"/>            | Emergency Project     | {Sec. 21080(b)(4); 15269(b)(c)}             |                              |
| <input checked="" type="checkbox"/> | Categorical Exemption | {Sec. 15302}                                |                              |
| <input type="checkbox"/>            | Statutory Exemption   | {Sec. _____}                                |                              |

**Reasons why project is exempt:** The proposed project includes the replacement of an existing 10,000 gallon water tank on site with two 15,000 gallon water tanks. The proposed replacement and expansion of water tanks to the existing fire station facility will have less than a significant effect on the environment because the tank replacement/expansion will occur in an area that has been previously disturbed.

Holly Phipps

781-1162

**Contact Person****Telephone**

<b>If filed by applicant:</b>	
1.	Attach certified document of exemption finding
2.	Has a notice of exemption been filed by the public agency approving the project?
	Yes <input type="checkbox"/> No <input type="checkbox"/>

Signature Holly Phipps Date 4/17/14  
 Name (Print) Holly Phipps Title Planner