

# VICTOR ELEMENTARY SCHOOL PORTABLE CLASSROOM PORTABLE RESTROOM AND LUNCH SHELTER PROJECT MANUAL

## **CONTRACT NUMBER: 8150-5830-4**

## LODI UNIFIED SCHOOL DISTRICT

November 4, 2023

## DOCUMENT 00 01 10

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## LIST OF SCHEDULES

The following schedule summarizes the major activity dates (Dates are approximate and actual start dates are subject to change):

#### a. Bid Dates

- 1) Advertise to Bid (first) November 4, 2023
- 2) Advertise to Bid (second) November 11, 2023
- 3) Pre-Bid Conference Tuesday, November 14, 2023, at 10:00 a.m.
- 4) RFI Due Tuesday, November 21, 2023, by 4:00 p.m.
- 5) Addendum (last) Tuesday, November 28, 2023 by 4:00 p.m.
- 6) Bids Due Tuesday, December 5, 2023, at 1:00 p.m.
- 7) Board Award Tuesday, December 12, 2023
- b. Contracts
  - 1) Bond Preparation December 13-20, 2023
  - 2) Contract Execution December 21, 2023
- c. Pre-Construction Activities
  - 1) Start Date January 2, 2024
  - 2) Submittals and Approvals January 2, 2024 March 2, 2024
  - 3) Materials Ordering/Stockpiling December 2023 May 2024
  - 4) School Concludes for Summer May 31, 2024
- d. Construction
  - 1) Date of facility availability January 2024 (With Temp Fencing)
  - 2) Construction, All Units January 2, 2024 July 23, 2024
  - 3) Begin turning over spaces to District July 17, 2024
- e. Occupancy: In order to accommodate a phased occupancy by the Owner, the Contractor will turn the buildings over for occupancy as follows:
  - 1) Occupancy Staff July 24, 2024
  - 2) Occupancy Students August 1, 2024
- f. Completion/Close-out
  - 1) Substantial Completion Date July 17, 2024
  - 2) Complete Minor Finish Work July 31, 2024
  - 3) Complete Punch List Work July 31, 2024
  - 4) Closeout/Completion August 31, 2024

END OF DOCUMENT

## DOCUMENT 00 11 16

## **NOTICE TO BIDDERS**

 Notice is hereby given that the governing board ("Board") of the Lodi Unified School District ("District") will receive sealed bids for the following project, Victor Elementary School Portable Classroom, Portable Restroom and Lunch Shelter Project, Bid No. 8150-5830-4 ("Project" or "Contract"):

The Project consists of:

Under a single contract **construct** the **Victor Elementary School Portable Buildings and Lunch/Shade Structure** project for **Lodi Unified** School District located in **Victor**, CA. Work includes: Relocation of two portable classrooms from District stockpile; Construction of portable toilet building. Construction of PC shade structure. Construction of bus drop-off. Modification of student drop-off. Path of travel upgrades. Other work as shown in the documents and as required for a complete an operational project.

2. To bid on this Project, the Bidder is required to possess one or more of the following State of California contractors' license(s):

A, and/or B

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

- 3. To bid on this Project, the Bidder is required to be registered as a public works contractor with the Department of Industrial Relations pursuant to the Labor Code.
- 4. Contract Documents will be available on or after November 3, 2034, for review at the District Facilities Office, 880 N Guild Ave., Lodi, CA 95240 and may be downloaded from the District's website, <u>https://www.lodiusd.net/about/bonds#facilities</u>, under the "Facilities and Planning (F&P) Projects. In addition, Contract Documents are available for bidders' review at the following builders' exchanges:
  - A. Builder's Exchange of Stockton: (209) 478-1000
  - B. Builder's Exchange of Sacramento: (916) 442-8991
  - C. Valley Builders Exchange: (209) 522-9031
- 5. Sealed bids will be received until 1:00 p.m., Tuesday, December 5, at the District Facilities Office, 880 N. Guild Ave., Lodi California 95240 at or after which time the bids will be opened and publicly read aloud. Any bid that is submitted after this time shall be nonresponsive and returned to the bidder. Any claim by a bidder of error in

its bid must be made in compliance with section 5100 et seq. of the Public Contract Code.

Pursuant to Public Contract Code section 20111.6, only prequalified bidders will be eligible to submit a bid for contracts \$1 million or more using or planning to use state bond funds. Any bid submitted by a bidder who is not prequalified shall be non-responsive and returned unopened to the bidder.

All bids shall be on the form provided by the District. Each bid must conform and be responsive to all pertinent Contract Documents, including, but not limited to, the Instructions to Bidders.

- 6. A bid bond by an admitted surety insurer on the form provided by the District a cashier's check or a certified check, drawn to the order of the Lodi Unified School District, in the amount of ten percent (10%) of the total bid price, shall accompany the Bid Form and Proposal, as a guarantee that the Bidder will, within seven (7) calendar days after the date of the Notice of Award, enter into a contract with the District for the performance of the services as stipulated in the bid.
- 7. A mandatory pre-bid conference and site visit will be held on Tuesday, November 14, 2023, at 10 a.m. at Victor Elementary School, 17670 N. Bruella Road, Victor, California. All participants are required to meet and sign-in at the Flag Pole. The site visit is expected to take approximately One (1) Hour. Failure to attend or tardiness will render bid ineligible.
- 8. The successful Bidder shall be required to furnish a 100% Performance Bond and a 100% Payment Bond if it is awarded the Contract for the Work.
- 9. The successful Bidder may substitute securities for any monies withheld by the District to ensure performance under the Contract, in accordance with the provisions of section 22300 of the Public Contract Code.
- 10. The successful bidder will be required to certify that it either meets the Disabled Veteran Business Enterprise ("DVBE") goal of three percent (3%) participation or made a good faith effort to solicit DVBE participation in this Contract if it is awarded the Contract for the Work.
- 11. The Contractor and all Subcontractors under the Contractor shall pay all workers on all Work performed pursuant to this Contract not less than the general prevailing rate of per diem wages and the general prevailing rate for holiday and overtime work as determined by the Director of the Department of Industrial Relations, State of California, for the type of work performed and the locality in which the work is to be performed within the boundaries of the District, pursuant to section 1770 et seq. of the California Labor Code. Prevailing wage rates are also available from the District or on the Internet at: <a href="http://www.dir.ca.gov">http://www.dir.ca.gov</a>.
- 12. This Project is subject to labor compliance monitoring and enforcement by the Department of Industrial Relations pursuant to Labor Code section 1771.4 and subject to the requirements of Title 8 of the California Code of Regulations. The successful Bidder shall comply with all requirements of Division 2, Part 7, Chapter 1, Articles 1-5 of the Labor Code.
- 13. The Project is funded in whole or in part with federal funds, and therefore the

Contractor shall comply with the Davis-Bacon Act, applicable reporting requirements, and any other applicable requirements for federal funding. This Project is also subject to Buy American requirements.

- 14. The District shall award the Contract, if it awards it at all, to the lowest responsive responsible bidder based on:
  - A. The base bid amount only.
- 15. The Board reserves the right to reject any and all bids and/or waive any irregularity in any bid received. If the District awards the Contract, the security of unsuccessful bidder(s) shall be returned within sixty (60) days from the time the award is made. Unless otherwise required by law, no bidder may withdraw its bid for ninety (90) days after the date of the bid opening.

END OF DOCUMENT

#### DOCUMENT 00 21 13

## **INSTRUCTIONS TO BIDDERS**

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

Lodi Unified School District ("District") will evaluate information submitted by the apparent low Bidder and, if incomplete or unsatisfactory to District, Bidder's bid may be rejected at the sole discretion of District.

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

#### Victor Elementary School Portable Buildings and Lunch/Shade Structure

- 2. A Bidder and its subcontractors must possess the appropriate State of California contractors' license and must maintain the license throughout the duration of the project. Bidders must also be registered as a public works contractor with the Department of Industrial Relations pursuant to the Labor Code. Bids submitted by a contractor who is not properly licensed or registered shall be deemed nonresponsive and will not be considered.
- 3. Pursuant to Public Contract Code §20111.6, effective January 1, 2014, school districts are required to conduct a prequalification process for General Contractors, and Mechanical, Electrical and Plumbing Subcontractors for **projects over \$1,000,000**. Only those contractors who submitted a prequalification application in 2023 and were notified that they qualified may submit bids on this project. Prequalification can be completed on the PQBids website using https://pqbids.com/lodi/. Only prequalified bidders will be eligible to submit a bid for this Project. Any bid submitted by a bidder who is not prequalified shall be deemed nonresponsive and will not be considered.
- 4. District will receive sealed bids from bidders as stipulated in the Notice to Bidders.
  - a. All bids must be sealed in an envelope, marked with the name and address of the Bidder, name of the Project, the Project Number and/or bid number, and time of bid opening.
  - Bids must be submitted to the District *Facilities and Planning Office, 880 N. Guild Avenue, Lodi California 95240* by date and time shown in the Notice to Bidders.
  - c. Bids must contain all documents as required herein.
- 5. Bidders are advised that on the date that bids are opened, telephones will not be available at the District Offices for use by bidders or their representatives.
- 6. Bids will be opened at or after the time indicated for receipt of bids.
- 7. Bidders must submit bids on the documents titled Bid Form and Proposal and must submit all other required District forms. Bids not submitted on the District's required

forms shall be deemed nonresponsive and shall not be considered. Additional sheets required to fully respond to requested information are permissible.

- 8. Bidders shall not modify the Bid Form and Proposal or qualify their bids. Bidders shall not submit to the District a re-formatted, re-typed, altered, modified, or otherwise recreated version of the Bid Form and Proposal or other District-provided document.
- 9. Bids shall be clearly written and without erasure or deletions. District reserves the right to reject any bid containing erasures, deletions, or illegible contents.
- 10. Bidders must supply all information required by each Bid Document. Bids must be full and complete. District reserves the right in its sole discretion to reject any bid as nonresponsive as a result of any error or omission in the bid. Bidders must complete and submit all of the following documents with the Bid Form and Proposal:
  - a. Bid Bond on the District's form, or other security.
  - b. Designated Subcontractors List.
  - c. Site Visit Certification, if a site visit was required.
  - d. Non-Collusion Declaration.
  - e. Iran Contracting Act Certification, if contract value is \$1,000,000 or more.
- 11. Bidders must submit with their bids cash, a cashier's check or a certified check payable to District, or a bid bond by an admitted surety insurer of not less than ten percent (10%) of amount of Base Bid, plus all additive alternates ("Bid Bond"). If Bidder chooses to provide a Bid Bond as security, Bidder must use the required form of corporate surety provided by District. The Surety on Bidder's Bid Bond must be an insurer admitted in the State of California and authorized to issue surety bonds in the State of California. Bids submitted without necessary bid security will be deemed nonresponsive and will not be considered.
- 12. If Bidder to whom the Contract is awarded fails or neglects to enter into the Contract and submit required bonds, insurance certificates, and all other required documents, within **SEVEN** (7) calendar days after the date of the Notice of Award, District may deposit Bid Bond, cash, cashier's check, or certified check for collection, and proceeds thereof may be retained by District as liquidated damages for failure of Bidder to enter into Contract, in the sole discretion of District. It is agreed that calculation of damages District may suffer as a result of Bidder's failure to enter into the Contract would be extremely difficult and impractical to determine and that the amount of the Bidder's required bid security shall be the agreed and conclusively presumed amount of damages.
- 13. Bidders must submit with the bid the Designated Subcontractors List for those subcontractors who will perform any portion of Work, including labor, rendering of service, or specially fabricating and installing a portion of the Work or improvement according to detailed drawings contained in the plans and specifications, in excess of one half of one percent (0.5%) of total bid. Failure to submit this list when required by law shall result in bid being deemed nonresponsive and the bid will not be considered.

- 14. All of the listed subcontractors are required to be registered as a public works contractor with the Department of Industrial Relations pursuant to the Labor Code.
  - a. An inadvertent error in listing the California contractor license number on the Designated Subcontractors List shall not be grounds for filing a bid protest or grounds for considering the bid nonresponsive if the correct contractor's license number is submitted to the District within 24 hours after the bid opening and the corrected number corresponds with the submitted name and location for that subcontractor.
  - b. An inadvertent error listing an unregistered subcontractor shall not be grounds for filing a bid protest or grounds for considering the bid nonresponsive provided that any of the following apply:
    - (1) The subcontractor is registered prior to the bid opening.
    - (2) The subcontractor is registered and has paid the penalty registration fee within 24 hours after the bid opening.
    - (3) The subcontractor is replaced by another registered subcontractor pursuant to Public Contract Code section 4107.
- 15. If a mandatory pre-bid conference and site visit ("Site Visit") is required as referenced in the Notice to Bidders, then Bidders must submit the Site Visit Certification with their Bid. District will transmit to all prospective Bidders of record such Addenda as District in its discretion considers necessary in response to questions arising at the Site Visit. Oral statements shall not be relied upon and will not be binding or legally effective. Addenda issued by the District as a result of the Site Visit, if any, shall constitute the sole and exclusive record and statement of the results of the Site Visit.
- 16. Bidders shall submit the Non-Collusion Declaration with their bids. Bids submitted without the Non-Collusion Declaration shall be deemed nonresponsive and will not be considered.
- 17. The Contractor and all Subcontractors under the Contractor shall pay all workers on all work performed pursuant to the Contract not less than the general prevailing rate of per diem wages and the general prevailing rate for holiday and overtime work as determined by the Director of the Department of Industrial Relations, State of California, for the type of work performed and the locality in which the work is to be performed within the boundaries of the District, pursuant to sections 1770 et seq. of the California Labor Code. Copies of the general prevailing rates of per diem wages for each craft, classification, or type of worker needed to execute the Contract, as determined by Director of the Department of Industrial Relations, are available upon request at the District's principal office. Prevailing wage rates are also available on the internet at http://www.dir.ca.gov.
- 18. Submission of bid signifies careful examination of Contract Documents and complete understanding of the nature, extent, and location of Work to be performed. Bidders must complete the tasks listed below as a condition to bidding, and submission of a bid shall constitute the Bidder's express representation to District that Bidder has fully completed the following:

- a. Bidder has visited the Site, if required, and has examined thoroughly and understood the nature and extent of the Contract Documents, Work, Site, locality, actual conditions, as-built conditions, and all local conditions and federal, state and local laws, and regulations that in any manner may affect cost, progress, performance, or furnishing of Work or that relate to any aspect of the means, methods, techniques, sequences, or procedures of construction to be employed by Bidder and safety precautions and programs incident thereto;
- b. Bidder has conducted or obtained and has understood all examinations, investigations, explorations, tests, reports, and studies that pertain to the subsurface conditions, as-built conditions, underground facilities, and all other physical conditions at or contiguous to the Site or otherwise that may affect the cost, progress, performance, or furnishing of Work, as Bidder considers necessary for the performance or furnishing of Work at the Contract Sum, within the Contract Time, and in accordance with the other terms and conditions of Contract Documents, including specifically the provisions of the General Conditions; and no additional examinations, investigations, explorations, tests, reports, studies, or similar information or data are or will be required by Bidder for such purposes;
- c. Bidder has correlated its knowledge and the results of all such observations, examinations, investigations, explorations, tests, reports, and studies with the terms and conditions of the Contract Documents;
- d. Bidder has given the District prompt written notice of all conflicts, errors, ambiguities, or discrepancies that it has discovered in or among the Contract Documents and the actual conditions, and the written resolution(s) thereof by the District is/are acceptable to Bidder;
- e. Bidder has made a complete disclosure in writing to the District of all facts bearing upon any possible interest, direct or indirect, that Bidder believes any representative of the District or other officer or employee of the District presently has or will have in this Contract or in the performance thereof or in any portion of the profits thereof;
- f. Bidder must, prior to bidding, perform the work, investigations, research, and analysis required by this document and that Bidder represented in its Bid Form and Proposal and the Agreement that it performed prior to bidding. Contractor under this Contract is charged with all information and knowledge that a reasonable bidder would ascertain from having performed this required work, investigation, research, and analysis. Bid prices must include entire cost of all work "incidental" to completion of the Work.
- g. Conditions Shown on the Contract Documents: Information as to underground conditions, as-built conditions, or other conditions or obstructions, indicated in the Contract Documents, e.g., on Drawings or in Specifications, has been obtained with reasonable care, and has been recorded in good faith. However, District only warrants, and Bidder may only rely, on the accuracy of limited types of information.
  - (1) As to above-ground conditions or as-built conditions shown or indicated in the Contract Documents, there is no warranty, express or

implied, or any representation express or implied, that such information is correctly shown or indicated. This information is verifiable by independent investigation and Bidder is required to make such verification as a condition to bidding. In submitting its Bid, Bidder shall rely on the results of its own independent investigation. In submitting its Bid, Bidder shall not rely on District-supplied information regarding above-ground conditions or as-built conditions.

- (2) As to any subsurface condition shown or indicated in the Contract Documents, Bidder may rely only upon the general accuracy of actual reported depths, actual reported character of materials, actual reported soil types, actual reported water conditions, or actual obstructions shown or indicated. District is not responsible for the completeness of such information for bidding or construction; nor is District responsible in any way for any conclusions or opinions that the Bidder has drawn from such information; nor is the District responsible for subsurface conditions that are not specifically shown (for example, District is not responsible for soil conditions in areas contiguous to areas where a subsurface condition is shown).
- h. Conditions Shown in Reports and Drawings Supplied for Informational Purposes: Reference is made to the document entitled Geotechnical Data, and the document entitled Existing Conditions, for identification of:
  - (1) Subsurface Conditions: Those reports of explorations and tests of subsurface conditions at or contiguous to the Site that have been utilized by Architect in preparing the Contract Documents; and
  - (2) Physical Conditions: Those drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site that has been utilized by Architect in preparing the Contract Documents.
  - (3) These reports and drawings are **not** Contract Documents and, except for any "technical" data regarding subsurface conditions specifically identified in Geotechnical Data and Existing Conditions, and underground facilities data, Bidder may not in any manner rely on the information in these reports and drawings. Subject to the foregoing, Bidder must make its own independent investigation of all conditions affecting the Work and must not rely on information provided by District.
- 19. Bids shall be based on products and systems specified in Contract Documents or listed by name in Addenda. Whenever in the Specifications any materials, process, or article is indicated or specified by grade, patent, or proprietary name, or by name of manufacturer, that Specification shall be deemed to be followed by the words "or equal." Bidder may, unless otherwise stated, offer any material, process, or article that shall be substantially equal or better in every respect to that so indicated or specified. The District is not responsible and/or liable in any way for a Contractor's damages and/or claims related, in any way, to that Contractor's basing its bid on any requested substitution that the District has not approved in advance and in writing. Contractors and materials suppliers who submit requests for substitutions prior to

the award of the Contract must do so in writing and in compliance with Public Contract Code section 3400. All requests must comply with the following:

- a. District must receive any notice of request for substitution of a specified item a minimum of <u>TEN</u> (10) calendar days prior to bid opening. The Successful Bidder will not be allowed to substitute specified items unless properly noticed.
- b. Within 35 days after the date of the Notice of Award, the Successful Bidder shall submit data substantiating the request(s) for all substitution(s) containing sufficient information to assess acceptability of product or system and impact on Project, including, without limitation, the requirements specified in the Special Conditions and the Specifications. Insufficient information shall be grounds for rejection of substitution.
- c. Approved substitutions, if any, shall be listed in Addenda. District reserves the right not to act upon submittals of substitutions until after bid opening.
- d. Substitutions may be requested after Contract has been awarded only if indicated in and in accordance with requirements specified in the Special Conditions and the Specifications.
- 20. Bidders may examine any available "as-built" drawings of previous work by giving District reasonable advance notice. District will not be responsible for accuracy of "as-built" drawings. The document entitled Existing Conditions applies to all supplied "as-built" drawings.
- All questions about the meaning or intent of the Contract Documents are to be directed via email to the District to vbrum@lodiusd.net. Interpretations or clarifications considered necessary by the District in response to such questions will be issued in writing by Addenda and emailed, faxed, mailed, or delivered to all parties recorded by the District as having received the Contract Documents or posted on the District's website at https://www.lodiusd.net/district/departments/business-services/facilities-and-planning/fp-projects. Questions received less than <u>SEVEN</u> (7) calendar days prior to the date for opening bids may not be answered. Only questions answered by formal written Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.
- 22. Addenda may also be issued to modify other parts of the Contract Documents as deemed advisable by the District.
- 23. Each Bidder must acknowledge each Addendum in its Bid Form and Proposal by number or its Bid shall be considered non-responsive. Each Addendum shall be part of the Contract Documents. A complete listing of Addenda may be secured from the District.
- 24. This Contract may include alternates. Alternates are defined as alternate products, materials, equipment, systems, methods, or major elements of the construction that may, at the District's option and under terms established in the Contract and pursuant to section 20103.8 of the Public Contract Code, be selected for the Work.
- 25. The District shall award the Contract, if it awards it at all, to the lowest responsive responsible bidder based on the criteria as indicated in the Notice to Bidders. In the

event two or more responsible bidders submit identical bids, the District shall select the Bidder to whom to award the Contract by lot.

- 26. Discrepancies between written words and figures, or words and numerals, will be resolved in favor of figures or numerals.
- 27. Bidders in contention for contract awards shall be required to attend a Post-Bid interview, which will be set within three (3) calendar days following bid opening. A duly authorized representative of the apparent low bidder is required to attend the Post Bid Interview, in person. The apparent low bidder's authorized representative(s) must have (1) knowledge of how the bid submitted was prepared, (2) the person responsible for supervising performance of the Work, and (3) the authority to bind the apparent low bidder. Failure to attend the Post Bid Interview as scheduled will be considered just cause for the District to reject the Bid as nonresponsive.
- 28. Any bid protest by any Bidder regarding any other bid must be submitted in writing to the District, before 5:00 p.m. of the **<u>THIRD</u> (3rd)** business day following bid opening.
  - a. Only a Bidder who has actually submitted a bid, and who could be awarded the Contract if the bid protest is upheld, is eligible to submit a bid protest. Subcontractors are not eligible to submit bid protests. A Bidder may not rely on the bid protest submitted by another Bidder.
  - b. A bid protest must contain a complete statement of any and all bases for the protest and all supporting documentation. Materials submitted after the bid protest deadline will not be considered.
  - c. The protest must refer to the specific portions of all documents that form the basis for the protest.
    - (1) Without limitation to any other basis for protest, an inadvertent error in listing the California contractor's license number on the Designated Subcontractors List shall not be grounds for filing a bid protest or grounds for considering the bid nonresponsive if the correct contractor's license number is submitted to the District within 24 hours after the bid opening and the corrected number corresponds with the submitted name and location for that subcontractor.
    - (2) Without limitation to any other basis for protest, an inadvertent error listing an unregistered subcontractor shall not be grounds for filing a bid protest or grounds for considering the bid nonresponsive provided that any of the following apply:
      - (i) The subcontractor is registered prior to the bid opening.
      - (ii) The subcontractor is registered and has paid the penalty registration fee within 24 hours after the bid opening.
      - (iii) The subcontractor is replaced by another registered subcontractor pursuant to Public Contract Code section 4107.

- d. The protest must include the name, address and telephone number of the person representing the protesting party.
- e. The party filing the protest must concurrently transmit a copy of the protest and any attached documentation to all other parties with a direct financial interest that may be adversely affected by the outcome of the protest. Such parties shall include all other bidders or proposers who appear to have a reasonable prospect of receiving an award depending upon the outcome of the protest.
- f. The procedure and time limits set forth in this paragraph are mandatory and are each bidder's sole and exclusive remedy in the event of bid protest. Failure to comply with these procedures shall constitute a waiver of any right to further pursue the bid protest, including filing a Government Code Claim or legal proceedings.
- 29. The Bidder to whom Contract is awarded shall execute and submit the following documents by 5:00 p.m. of the **SEVENTH** (7th) calendar day following the date of the Notice of Award. Failure to properly and timely submit these documents entitles District to reject the bid as nonresponsive.
  - a. Agreement: To be executed by successful Bidder. Submit four (4) copies, each bearing an original signature.
  - b. Escrow of Bid Documentation: This must include all required documentation. See the document titled Escrow Bid Documentation for more information.
  - c. Performance Bond (100%): On the form provided in the Contract Documents and fully executed as indicated on the form.
  - d. Payment Bond (Contractor's Labor and Material Bond) (100%): On the form provided in the Contract Documents and fully executed as indicated on the form.
  - e. Insurance Certificates and Endorsements as required.
  - f. Workers' Compensation Certification.
  - g. Prevailing Wage and Related Labor Requirements Certification.
  - h. Disabled Veteran Business Enterprise Participation Certification.
  - i. Drug-Free Workplace Certification.
  - j. Tobacco-Free Environment Certification.
  - k. Hazardous Materials Certification.
  - I. Lead-Based Materials Certification.
  - m. Imported Materials Certification.
  - n. Criminal Background Investigation/Fingerprinting Certification.

- o. Buy American Certification.
- p. Registered Subcontractors List: Must include Department of Industrial Relations (DIR) registration number of each subcontractor for all tiers.
- 30. Time for Completion: District may issue a Notice to Proceed within **<u>NINETY</u> (90)** days from the date of the Notice of Award. Once Contractor has received the Notice to Proceed, Contractor shall complete the Work within the period of time indicated in the Contract Documents.
  - a. In the event that the District desires to postpone issuing the Notice to Proceed beyond this 90-day period, it is expressly understood that with reasonable notice to the Contractor, the District may postpone issuing the Notice to Proceed.
  - b. It is further expressly understood by Contractor that Contractor shall not be entitled to any claim of additional compensation as a result of the postponement of the issuance of the Notice to Proceed beyond a 90-day period. If the Contractor believes that a postponement of issuance of the Notice to Proceed will cause a hardship to the Contractor, the Contractor may terminate the Contract. Contractor's termination due to a postponement beyond this 90-day period shall be by written notice to District within <u>TEN</u> (10) calendar days after receipt by Contractor of District's notice of postponement.
  - c. It is further understood by the Contractor that in the event that Contractor terminates the Contract as a result of postponement by the District, the District shall only be obligated to pay Contractor for the Work that Contractor had performed at the time of notification of postponement and which the District had in writing authorized Contractor to perform prior to issuing a Notice to Proceed.
  - d. Should the Contractor terminate the Contract as a result of a notice of postponement, District shall have the authority to award the Contract to the next lowest responsive responsible bidder.
- 31. District reserves the right to reject any or all bids, including without limitation the right to reject any or all nonconforming, nonresponsive, unbalanced, or conditional bids, to re-bid, and to reject the bid of any bidder if District believes that it would not be in the best interest of the District to make an award to that bidder, whether because the bid is not responsive or the bidder is unqualified or of doubtful financial ability or fails to meet any other pertinent standard or criteria established by District. District also reserves the right to waive any inconsequential deviations or irregularities in any bid. For purposes of this paragraph, an "unbalanced bid" is one having nominal prices for some work items and/or enhanced prices for other work items.
- 32. It is the policy of the District that no qualified person shall be excluded from participating in, be denied the benefits of, or otherwise be subjected to discrimination in any consideration leading to the award of contract, based on race, color, gender, sexual orientation, political affiliation, age, ancestry, religion, marital status, national origin, medical condition or disability. The Successful Bidder and its subcontractors shall comply with applicable federal and state laws, including, but not

limited to the California Fair Employment and Housing Act, beginning with Government Code section 12900, and Labor Code section 1735.

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

## END OF DOCUMENT

### DOCUMENT 00 21 13.1

#### **BIDDER INFORMATION AND FORMS**

Pursuant to Public Contract Code §20111.6, effective January 1, 2014, school districts are required to conduct a prequalification process for General Contractors, and Mechanical, Electrical and Plumbing Subcontractors for **projects over \$1,000,000**. Only those contractors who submitted a prequalification application and were notified that they qualified may submit bids on this project. Prequalification can be completed on the PQBids website using https://pqbids.com/lodi/. The District must receive applications at least ten (10) business days prior to the scheduled proposal submission deadline on this advertised project.

END OF DOCUMENT

#### DOCUMENT 00 31 19

#### **EXISTING CONDITIONS**

#### 34. Summary

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

#### 35. Reports and Information on Existing Conditions

- a. Documents providing a general description of the Site and conditions of the Work may have been collected by the Lodi Unified School District ("District"), its consultants, contractors, and tenants. These documents may, but are not required to, include previous contracts, contract specifications, tenant improvement contracts, as-built drawings, utility drawings, and information regarding underground facilities.
- Information regarding existing conditions may be inspected at the District offices or the Construction Manager's offices, if any, and copies may be obtained at cost of reproduction and handling upon Bidder's agreement to pay for such copies. These reports, documents, and other information are <u>not</u> part of the Contract Documents. These reports, documents, and other information do <u>not</u> excuse Contractor from fulfilling Contractor's obligation to independently investigate any or all existing conditions or from using reasonable prudent measures to avoid damaging existing improvements.
- c. Information regarding existing conditions may also be included in the Project Manual, but shall **not** be considered part of the Contract Documents.
- d. Prior to commencing this Work, Contractor and the District's representative shall survey the Site to document the condition of the Site. Contractor will record the survey in digital videotape format and provide an electronic copy to the District within fourteen (14) days of the survey.
- e. Contractor may also document any pre-existing conditions in writing, provided that both the Contractor and the District's representative agree on said conditions and sign a memorandum documenting the same.
- f. The reports and other data or information regarding existing conditions and underground facilities at or contiguous to the Project are the following:
  - (1) Original Construction Drawings. (If requested)
  - (2) Survey of Site.
  - (3) Geotechnical Report(s).
  - (4) Hazardous Material Report(s).

#### 36. Use of Information

- a. Information regarding existing conditions was obtained only for use of District and its consultants, contractors, and tenants for planning and design and is **not** part of the Contract Documents.
- b. District does not warrant, and makes no representation regarding, the accuracy or thoroughness of any information regarding existing conditions.
  Bidder represents and agrees that in submitting a bid it is not relying on any information regarding existing conditions supplied by District.
- c. Under no circumstances shall District be deemed to warrant or represent existing above-ground conditions, as-built conditions, or other actual conditions, verifiable by independent investigation. These conditions are verifiable by Bidder by the performance of its own independent investigation that Bidder must perform as a condition to bidding and Bidder should not and shall not rely on this information or any other information supplied by District regarding existing conditions.
- d. Any information shown or indicated in the reports and other data supplied herein with respect to existing underground facilities at or contiguous to the Project may be based upon information and data furnished to District by the District's employees and/or consultants or builders of such underground facilities or others. District does not assume responsibility for the completeness of this information, and Bidder is solely responsible for any interpretation or conclusion drawn from this information.
- e. District shall be responsible only for the general accuracy of information regarding underground facilities, and only for those underground facilities that are owned by District, and only where Bidder has conducted the independent investigation required of it pursuant to the Instructions to Bidders, and discrepancies are not apparent.

#### 37. Investigations/Site Examinations

- a. Before submitting a bid, each Bidder is responsible for conducting or obtaining any additional or supplementary examinations, investigations, explorations, tests, studies, and data concerning conditions (surface, subsurface, and underground facilities) at or contiguous to the Site or otherwise, that may affect cost, progress, performance, or furnishing of Work or that relate to any aspect of the means, methods, techniques, sequences, or procedures of construction to be employed by Bidder and safety precautions and programs incident thereto or that Bidder deems necessary to determine its Bid for performing and furnishing the Work in accordance with the time, price, and other terms and conditions of Contract Documents.
- b. On request, District will provide each Bidder access to the Site to conduct such examinations, investigations, explorations, tests, and studies, as each Bidder deems necessary for submission of a bid. Bidders must fill all holes and clean up and restore the Site to its former condition upon completion of its explorations, investigations, tests, and studies. Such investigations and Site examinations may be performed during any and all Site visits indicated in the Notice to Bidders and only under the provisions of the Contract

Documents, including, but not limited to, proof of insurance and obligation to indemnify against claims arising from such work, and District's prior approval.

END OF DOCUMENT

#### DOCUMENT 00 31 32

#### **GEOTECHNICAL DATA**

#### 38. Summary

This document describes geotechnical data at or near the Project that is in the District's possession available for Contractor's review, and use of data resulting from various investigations. This document is **not** part of the Contract Documents. See General Conditions for definition(s) of terms used herein.

#### 39. Geotechnical Reports

- a. Geotechnical reports may have been prepared for and around the Site and/or in connection with the Work by soil investigation engineers hired by Lodi Unified School District ("District"), and its consultants, contractors, and tenants.
- Geotechnical reports may be inspected at the District offices or the Construction Manager's offices, if any, and copies may be obtained at cost of reproduction and handling upon Bidder's agreement to pay for such copies. These reports are **not** part of the Contract Documents.
- c. The reports and drawings of physical conditions that may relate to the Project are the following:

#### N/A

## 40. Use of Data

- Geotechnical data were obtained only for use of District and its consultants, contractors, and tenants for planning and design and are <u>not</u> a part of Contract Documents.
- b. Except as expressly set forth below, District does not warrant, and makes no representation regarding, the accuracy or thoroughness of any geotechnical data. Bidder represents and agrees that in submitting a bid it is not relying on any geotechnical data supplied by District, except as specifically allowed below.
- c. Under no circumstances shall District be deemed to make a warranty or representation of existing above ground conditions, as-built conditions, geotechnical conditions, or other actual conditions verifiable by independent investigation. These conditions are verifiable by Bidder by the performance of its own independent investigation that Bidder should perform as a condition to bidding and Bidder must not and shall not rely on information supplied by District.

- 41. Limited Reliance Permitted on Certain Information
  - a. Reference is made herein for identification of:

Reports of explorations and tests of subsurface conditions at or contiguous to the Site that have been utilized by District in preparation of the Contract Documents.

Drawings of physical conditions in or relating to existing subsurface structures (except underground facilities) that are at or contiguous to the Site and have been utilized by District in preparation of the Contract Documents.

- b. Bidder may rely upon the general accuracy of the "technical data" contained in the reports and drawings identified above, but only insofar as it relates to subsurface conditions, provided Bidder has conducted the independent investigation required pursuant to Instructions to Bidders, and discrepancies are not apparent. The term "technical data" in the referenced reports and drawings shall be limited as follows:
  - (1) The term "technical data" shall include actual reported depths, reported quantities, reported soil types, reported soil conditions, and reported material, equipment or structures that were encountered during subsurface exploration. The term "technical data" does not include, and Bidder may not rely upon, any other data, interpretations, opinions or information shown or indicated in such drawings or reports that otherwise relate to subsurface conditions or described structures.
  - (2) The term "technical data" shall not include the location of underground facilities.
  - (3) Bidder may not rely on the completeness of reports and drawings for the purposes of bidding or construction. Bidder may rely upon the general accuracy of the "technical data" contained in such reports or drawings.
  - (4) Bidder is solely responsible for any interpretation or conclusion drawn from any "technical data" or any other data, interpretations, opinions, or information provided in the identified reports and drawings.
- 42. Investigations/Site Examinations
  - a. Before submitting a bid, each Bidder is responsible for conducting or obtaining any additional or supplementary examinations, investigations, explorations, tests, studies, and data concerning conditions (surface, subsurface, and underground facilities) at or contiguous to the Site or otherwise, that may affect cost, progress, performance, or furnishing of Work or that relate to any aspect of the means, methods, techniques, sequences, or procedures of construction to be employed by Bidder and safety precautions and programs incident thereto or that Bidder deems necessary to determine its Bid for performing and furnishing the Work in accordance with the time, price, and other terms and conditions of Contract Documents.

b. On request, District will provide each Bidder access to the Site to conduct such examinations, investigations, explorations, tests, and studies, as each Bidder deems necessary for submission of a bid. Bidders must fill all holes and clean up and restore the Site to its former condition upon completion of its explorations, investigations, tests, and studies. Such investigations and Site examinations may be performed during any and all Site visits indicated in the Notice to Bidders and only under the provisions of the Contract Documents, including, but not limited to, proof of insurance and obligation to indemnify against claims arising from such work, and District's prior approval.

END OF DOCUMENT

### DOCUMENT 00 41 13

## **BID FORM AND PROPOSAL**

To: Governing Board of the Lodi Unified School District ("District" or "Owner")

From:

(Proper Name of Bidder)

The undersigned declares that Bidder has read and understands the Contract Documents, including, without limitation, the Notice to Bidders and the Instructions to Bidders, and agrees and proposes to furnish all necessary labor, materials, and equipment to perform and furnish all work in accordance with the terms and conditions of the Contract Documents, including, without limitation, the Drawings and Specifications of Bid No. <u>8150-5830-4</u> for the following project known as:

## Victor Elementary School Portable Buildings and Lunch/Shade Structure

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

	dollars	\$
BASE BID		
Allowance 10%:		
	dollars	¢
Allowance 10%	uullars	÷
TOTAL BID		
TOTAL BID	dollars	\$

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

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK]

## Additional Detail Regarding Calculation of Base Bid

43. **Unit Prices**. The Bidder's Base Bid includes the following unit prices, which the Bidder must provide and the District may, at its discretion, utilize in valuing additive and/or deductive change orders (Unit Prices shall include all labor, materials, services, profit, overhead, insurance, bonds, taxes, and all other incidental costs of Contractor, subcontractors, and suppliers):

## SCHEDULE OF UNIT PRICES

<u>Item</u> <u>No.</u>	<u>Description</u>	<u>Unit of</u> <u>Measure</u>	<u>Estimated</u> <u>Quantity</u>	<u>Unit Price</u>	Total Cost = Unit Price x Estimated Quantity (Included in Base Bid)
				\$	\$
				\$	\$

Where scope of Work is decreased, all Work pertaining to the item, whether specifically stated or not, shall be omitted, and where scope of Work is increased, all work pertaining to that item required to render same ready for use on the Project in accordance with intentions of the Drawings and Specifications shall be included in the above agreed-upon price amount.

44. <u>Allowance</u>. The Bidder's Base Bid and each alternate shall include a ten percent (10%) allowance for unforeseen items.

The above allowance shall only be allocated for unforeseen items relating to the Work. Contractor shall not bill for or be due any portion of this allowance unless the District has identified specific work, Contractor has submitted a price for that work or the District has proposed a price for that work, the District has accepted the cost for that work, and the District has prepared an Allowance Expenditure Directive incorporating that work. Contractor hereby authorizes the District to execute a unilateral deductive change order at or near the end of the Project for all or any portion of the allowance not allocated.

## 45. OCIP. (NOT USED)

- 46. The undersigned has reviewed the Work outlined in the Contract Documents and fully understands the scope of Work required in this Proposal, understands the construction and project management function(s) is described in the Contract Documents, and that each Bidder who is awarded a contract shall be in fact a prime contractor, not a subcontractor, to the District, and agrees that its Proposal, if accepted by the District, will be the basis for the Bidder to enter into a contract with the District in accordance with the intent of the Contract Documents.
- 47. The undersigned has notified the District in writing of any discrepancies or omissions or of any doubt, questions, or ambiguities about the meaning of any of the Contract

Documents, and has contacted the Construction Manager before bid date to verify the issuance of any clarifying Addenda.

- 48. The undersigned agrees to commence work under this Contract on the date established in the Contract Documents and to complete all work within the time specified in the Contract Documents.
- 49. The liquidated damages clause of the General Conditions and Agreement is hereby acknowledged.
- 50. It is understood that the District reserves the right to reject this bid and that the bid shall remain open to acceptance and is irrevocable for a period of ninety (90) days.
- 51. The following documents are attached hereto:
  - Bid Bond on the District's form or other security
  - Designated Subcontractors List
  - Site Visit Certification
  - Non-Collusion Declaration
  - Iran Contracting Act Certification

#### 52. Receipt and acceptance of the following Addenda is hereby acknowledged:

No, Dated	No, Dated
No, Dated	No, Dated
No, Dated	No, Dated

- 53. Bidder acknowledges that the license required for performance of the Work is a \_\_\_\_\_\_ license.
- 54. Bidder hereby certifies that Bidder is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the Work.
- 55. Bidder specifically acknowledges and understands that if it is awarded the Contract, that it shall perform the Work of the Project while complying with all requirements of the Department of Industrial Relations.
- 56. Bidder hereby certifies that its bid includes sufficient funds to permit Bidder to comply with all local, state or federal labor laws or regulations during the Project, including payment of prevailing wage, and that Bidder will comply with the provisions of Labor Code section 2810(d) if awarded the Contract
- 57. Bidder represents that it is competent, knowledgeable, and has special skills with respect to the nature, extent, and inherent conditions of the Work to be performed. Bidder further acknowledges that there are certain peculiar and inherent conditions

existent in the construction of the Work that may create, during the Work, unusual or peculiar unsafe conditions hazardous to persons and property.

- 58. Bidder expressly acknowledges that it is aware of such peculiar risks and that it has the skill and experience to foresee and to adopt protective measures to adequately and safely perform the Work with respect to such hazards.
- 59. Bidder expressly acknowledges that it is aware that if a false claim is knowingly submitted (as the terms "claim" and "knowingly" are defined in the California False Claims Act, Gov. Code, § 12650 et seq.), the District will be entitled to civil remedies set forth in the California False Claim Act. It may also be considered fraud and the Contractor may be subject to criminal prosecution.
- 60. The undersigned Bidder certifies that it is, at the time of bidding, and shall be throughout the period of the Contract, licensed by the State of California to do the type of work required under the terms of the Contract Documents and registered as a public works contractor with the Department of Industrial Relations. Bidder further certifies that it is regularly engaged in the general class and type of work called for in the Contract Documents.

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

Dated thisd	lay of			20
Name of Bidder:				
Type of Organization:				
Signed by:				
Title of Signer:				
Address of Bidder:				
Taxpayer Identification No.	of Bidder:			
Telephone Number:				
Fax Number:				
E-mail:		Web Page:		
Contractor's License No(s):	No.:	_ Class:	_ Expiration Date:	
	No.:	Class:	Expiration Date:	
	No.:	Class:	_ Expiration Date:	
Public Works Contractor Reg	gistration No.:			
	END OF D	OCUMENT		

#### DOCUMENT 00 43 13

## **BID BOND**

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

KNOW ALL PERSONS BY THESE PRESENTS:

That the undersigned,\_\_\_\_\_\_, as Principal ("Principal"),

and

Surety ("Surety"), a corporation organized and existing under and by virtue of the laws of the State of California and authorized to do business as a surety in the State of California, are held and firmly bound unto the Lodi Unified School District ("District") of San Joaquin County, State of California, as Obligee, in an amount equal to ten percent (10%) of the Base Bid plus alternates, in the sum of

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

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

THE CONDITION OF THIS OBLIGATION IS SUCH that whereas the Principal has submitted a bid to the District for all Work specifically described in the accompanying bid for the following project:

VICTOR ELEMENTARY SCHOOL -PORTABLE BLDGS AND SHELTER ("Project" or "Contract").

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

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

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

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

IN WITNESS WHEREOF, this instrument has been duty executed by the Principal and Surety above named, on the \_\_\_\_\_\_ day of \_\_\_\_\_\_, 20\_\_\_\_.

Principal
Ву
Surety
Ву
Name of California Agent of Surety
Address of California Agent of Surety

Telephone Number of California Agent of Surety

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

END OF DOCUMENT

#### DOCUMENT 00 43 36

#### DESIGNATED SUBCONTRACTORS LIST (Public Contact Code Sections 4100-4114)

## **PROJECT: VICTOR ELEMENTARY SCHOOL PORTABLE BLDGS AND SHELTER**

Bidder acknowledges and agrees that it must clearly set forth below the name, location and California contractor license number of each subcontractor who will perform work or labor or render service to the Bidder in or about the construction of the Work or who will specially fabricate and install a portion of the Work according to detailed drawings contained in the plans and specifications in an amount in excess of one-half of one percent (0.5%) of Bidder's total Base Bid and the kind of Work that each will perform. Vendors or suppliers of materials only do not need to be listed.

Bidder acknowledges and agrees that, if Bidder fails to list as to any portion of Work, or if Bidder lists more than one subcontractor to perform the same portion of Work, Bidder must perform that portion itself or be subjected to penalty under applicable law. In case more than one subcontractor is named for the same kind of Work, state the portion of the kind of Work that each subcontractor will perform.

If alternate bid(s) is/are called for and Bidder intends to use subcontractors different from or in addition to those subcontractors listed for work under the Base Bid, Bidder must list subcontractors that will perform Work in an amount in excess of one half of one percent (0.5%) of Bidder's total Base Bid plus alternate(s).

If further space is required for the list of proposed subcontractors, attach additional copies of page 2 showing the required information, as indicated below.

#### Subcontractor Name: \_\_\_\_\_

CA Cont. Lic. #:	Location:
Portion of Work:	
rondon of work.	
Subcontractor Name: _	
CA Cont. Lic. #:	Location:
Portion of Work:	
Subcontractor Name: _	
CA Cont. Lic. #:	Location:
Portion of Work:	

Subcontractor Name:	
CA Cont. Lic. #:	Location:
Portion of Work:	
Subcontractor Name:	
CA Cont. Lic. #:	Location:
Portion of Work:	
Subcontractor Name:	
CA Cont. Lic. #:	Location:
Portion of Work:	
Subcontractor Name:	
CA Cont. Lic. #:	Location:
Portion of Work:	
Subcontractor Name:	
CA Cont. Lic. #:	Location:
Portion of Work:	
Subcontractor Name:	
CA Cont. Lic. #:	Location:
Portion of Work:	
Subcontractor Name:	
CA Cont. Lic. #:	Location:
Portion of Work:	
Date:	
Proper Name of Bidder:	
Signature:	
Print Name:	
Title:	
	END OF DOCUMENT
### DOCUMENT 00 45 01

### SITE VISIT CERTIFICATION

### TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID IF SITE VISIT WAS MANDATORY

### **PROJECT: VICTOR ELEMENTARY SCHOOL PORTABLE BLDGS AND SHELTER**

Check option that applies:

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

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

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

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

### ATTACHMENTS:

- 1.
- 2.
- 3.

### DOCUMENT 00 45 19

### NON-COLLUSION DECLARATION (Public Contract Code Section 7106)

The undersigned declares:

I am the _		of		, the part	y making	the	foregoing	bid.
	[Title]		[Name of Firm]	•				

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

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

at	,	[ · · · · ]
[City]	[State]	
Date:		
Proper Name of Bidder:		
Signature:		
Print Name:		
Title:		

### DOCUMENT 00 45 19.01

### IRAN CONTRACTING ACT CERTIFICATION (Public Contract Code Sections 2202-2208)

PROJECT/CONTRACT NO.: <u>VICTOR ELEMENTARY SCHOOL PORTABLE BLDGS AND</u> <u>SHELTER/8150-5830-4</u> between the Lodi Unified School District ("District") and \_\_\_\_\_\_ ("Contractor" or "Bidder")

("Contract" or "Project").

Prior to bidding on or submitting a proposal for a contract for goods or services of **\$1,000,000 or more,** the bidder/proposer must submit this certification pursuant to Public Contract Code section 2204.

The bidder/proposer must complete **ONLY ONE** of the following two options. To complete OPTION 1, check the corresponding box **and** complete the certification below. To complete OPTION 2, check the corresponding box, complete the certification below, and attach documentation demonstrating the exemption approval.

- OPTION 1. Bidder/Proposer is not on the current list of persons engaged in investment activities in Iran created by the California Department of General Services ("DGS") pursuant to Public Contract Code section 2203(b), and we are not a financial institution extending twenty million dollars (\$20,000,000) or more in credit to another person, for 45 days or more, if that other person will use the credit to provide goods or services in the energy sector in Iran and is identified on the current list of persons engaged in investment activities in Iran created by DGS.
- OPTION 2. Bidder/Proposer has received a written exemption from the certification requirement pursuant to Public Contract Code sections 2203(c) and (d). A copy of the written documentation demonstrating the exemption approval is included with our bid/proposal.

### **CERTIFICATION:**

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

Vendor Name/Financial Institution (Printed)	Federal ID Number (or n/a)
By (Authorized Signature)	
Printed Name and Title of Person Signing	Date Executed

### DOCUMENT 00 45 26

### WORKERS' COMPENSATION CERTIFICATION

PROJECT/CONTRACT NO.: <u>VICTOR ELEMENTARY SCHOOL PORTABLE BLDGS AND</u> <u>SHELTER/8150-5830-4</u> between the Lodi Unified School District ("District") and ("Contractor" or "Bidder") ("Contract" or

"Project").

Labor Code section 3700, in relevant part, provides:

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

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

I am aware of the provisions of section 3700 of the Labor Code which require every employer to be insured against liability for workers' compensation or to undertake selfinsurance in accordance with the provisions of that code, and I will comply with such provisions before commencing the performance of the Work of this Contract.

Date:	
Proper Name of Contractor:	
Signature:	
Print Name:	
Title:	

(In accordance with Labor Code sections 1860 and 1861, the above certificate must be signed and filed with the awarding body prior to performing any Work under this Contract.)

### PREVAILING WAGE AND RELATED LABOR REQUIREMENTS CERTIFICATION

### PROJECT/CONTRACT NO.: **VICTOR ELEMENTARY SCHOOL PORTABLE BLDGS AND SHELTER/8150-5830-4** between the Lodi Unified School District ("District") and

\_\_\_\_\_ (``Contractor'' or ``Bidder'')

("Contract" or "Project").

I hereby certify that I will conform to the State of California Public Works Contract requirements regarding prevailing wages, benefits, on-site audits with 48-hours' notice, payroll records, and apprentice and trainee employment requirements, for all Work on the above Project including, without limitation, labor compliance monitoring and enforcement by the Department of Industrial Relations.

### [IF THIS PROJECT USES FEDERAL FUNDS, DISTRICT SHOULD INCLUDE THE

**FOLLOWING]** I hereby certify that I will also conform to the Federal Labor Standards Provisions regarding minimum wages, withholding, payrolls and basic records, apprentice and trainee employment requirements, equal employment opportunity requirements, Copeland Act requirements, Davis-Bacon and Related Act requirements, Contract Work Hours and Safety Standards Act requirements, and any and all other applicable requirements for federal funding for all Work on the above Project.

Date:	
Proper Name of Contractor:	
Signature:	
Print Name:	
Title:	

### DISABLED VETERAN BUSINESS ENTERPRISE PARTICIPATION CERTIFICATION

PROJECT/CONTRACT NO.: VICTOR ELEMENTARY SCHOOL PORTABLE BLDGS AND SHELTER/8150-5830-4 between the Lodi Unified School District ("District") and ("Contractor" or "Bidder")

("Contract" or "Project").

### **GENERAL INSTRUCTIONS**

Section 17076.11 of the Education Code requires school districts using, or planning to use, funds allocated pursuant to the State of California School Facility Program ("Program") for the construction and/or modernization of school buildings to have a participation goal for disabled veteran business enterprises ("DVBE") of at least three percent (3%) per year of the overall dollar amount expended each year by the school district on projects that receive state funding. Therefore, the lowest responsive responsible Bidder awarded the Contract must submit this document to the District with its executed Agreement, identifying the steps contractor took to solicit DVBE participation in conjunction with this Contract. **Do not submit this form with your bids.** 

YOUR BUSINESS ENTERPRISE	AND YOU WILL	AND YOU WILL
1S:		
1.01 □ Disabled veteran owned and your forces will perform at least 3% of this Contract	Include a copy of your DVBE letter from Office of Small Business and Disabled Veterans Business Enterprise Services ("OSDS")*	Complete Part 1 of this form and the Certification
<ul> <li>1.02 □ Disabled veteran owned but is unable to perform 3% of this Contract with your forces</li> </ul>	Use DVBE subcontractors /suppliers to bring the Contract participation to at least 3%	Include a copy of each DVBE's letter from OSDS (including yours, if applicable), and complete Part 1 of this
1.03 🗆 NOT disabled veteran owned	Use DVBE subcontractors /suppliers for at least 3% of this Contract	form and the Certification
1.04 Unable to meet the required participation goals	Complete all of this form and the Certification	

**PART I – Method of Compliance with DVBE Participation Goals.** Check the appropriate box to indicate your method of committing the contract dollar amount.

\* A DVBE letter from OSDS is obtained from the participating DVBE.

You must complete the following table to show the dollar amount of DVBE participation:

		TOTAL CONTRACT PRICE
1.01	Prime Bidder, if DVBE (own participation)	\$
1.02	DVBE Subcontractor or Supplier	
	Α.	
	В.	
	С.	
	D.	
1.03	Subtotal (A & B)	
1.04	Non-DVBE	
1.05	Total Bid	

**PART II – Contacts.** To identify DVBE subcontractors/suppliers for participation in your contract, you must contact each of the following categories. You should contact several DVBE organizations.

CATEGORY	TELEPHONE NUMBER	DATE CONTACTED	PERSON CONTACTED
A. The District, if any			*
<ul> <li>B. OSDS, provides assistance locating DVBEs at https://caleprocure.ca.gov/pages/PublicS earch/supplier-search.aspx</li> </ul>	(916) 375- 4940		*
C. DVBE Organization (List)			*

\*Write "recorded message" in this column, if applicable.

**PART III – Advertisement.** You must advertise for DVBE participation in both a trade and focus paper. List the advertisement you place to solicit DVBE participation. Advertisements should be published at least fourteen (14) days prior to bid/proposal opening; if you cannot advertise fourteen (14) days prior, advertisements should be published as soon as possible. Advertisements must include that your firm is seeking DVBE participation, the project name and location, and your firm's name, your contact person, and telephone number. Attach copies of advertisements to this form.

FOCUS/TRADE PAPER NAME	CHECK ONE		DATE OF ADVERTISEMENT
	TRADE	FOCUS	

**PART IV – DVBE Solicitations.** List DVBE subcontractors/suppliers that were invited to bid. Use the following instructions to complete the remainder of this section (read the three columns as a sentence from left to right). If you need additional space to list DVBE solicitations, please use a separate page and attach to this form.

IF THE DVBE THEN				AND	
was selected to participate Check "YES" i		n the		include a copy of their DVBE	
	"SELECTED" co	olumn		letter(s) from OSDS	
was <b>NOT</b> selected to	Check "NO" in	the		state why in the "REASON	
participate	"SELECTED" co	olumn		NOT SELECTEI	D" column
did not respond to your	Check the "NO	RESPO	NSE"		
solicitation	column.				
DVBE CONTACTED		SELEC	TED	REASON NOT SELECTED	NO RESPONSE
		YES	NO		

A copy of this form must be retained by you and may be subject to a future audit.

### **CERTIFICATION**

I,	, certify that I am the bidder's				
ind that I have made a diligent effort to ascertain the facts with regard to the epresentations made herein. In making this certification, I am aware of section 12650 et eq. of the Government Code providing for the imposition of treble damages for making alse claims.					
Date:					
Proper Name of Contractor:					
Signature:					
Print Name:					
Title:					
	END OF DOCUMENT				

### **DRUG-FREE WORKPLACE CERTIFICATION**

PROJECT/CONTRACT NO.: <u>VICTOR ELEMENTARY SCHOOL PORTABLE BLDGS AND</u> <u>SHELTER/8150-5830-4</u> between the Lodi Unified School District ("District") and ("Contractor" or "Bidder")

### ("Contract" or "Project").

This Drug-Free Workplace Certification form is required from the successful Bidder pursuant to Government Code section 8350 et seq., the Drug-Free Workplace Act of 1990. The Drug-Free Workplace Act of 1990 requires that every person or organization awarded a contract or grant for the procurement of any property or service from any state agency must certify that it will provide a drug-free workplace by doing certain specified acts. In addition, the Act provides that each contract or grant awarded by a state agency may be subject to suspension of payments or termination of the contract or grant, and the contractor or grantee may be subject to debarment from future contracting, if the contracting agency determines that specified acts have occurred.

The District is not a "state agency" as defined in the applicable section(s) of the Government Code, but the District is a local agency and public school district under California law and requires all contractors on District projects to comply with the provisions and requirements of the Drug-Free Workplace Act of 1990.

Contractor must also comply with the provisions of Health & Safety Code section 11362.3 which prohibits the consumption or possession of cannabis or cannabis products in any public place, including school grounds, and specifically on school grounds while children are present.

Contractor shall certify that it will provide a drug-free workplace by doing all of the following:

- c. Publishing a statement notifying employees that the unlawful manufacture, distribution, dispensation, possession, or use of a controlled substance is prohibited in the person's or organization's workplace and specifying actions which will be taken against employees for violations of the prohibition.
- d. Establishing a drug-free awareness program to inform employees about all of the following:
  - (1) The dangers of drug abuse in the workplace.
  - (2) The person's or organization's policy of maintaining a drug-free workplace.
  - (3) The availability of drug counseling, rehabilitation, and employeeassistance programs.
  - (4) The penalties that may be imposed upon employees for drug abuse violations.

e. Requiring that each employee engaged in the performance of the contract or grant be given a copy of the statement required above, and that, as a condition of employment on the contract or grant, the employee agrees to abide by the terms of the statement.

I, the undersigned, agree to fulfill the terms and requirements of Government Code section 8355 listed above and will publish a statement notifying employees concerning (a) the prohibition of controlled substance at the workplace, (b) establishing a drug-free awareness program, and (c) requiring that each employee engaged in the performance of the Contract be given a copy of the statement required by section 8355(a), and requiring that the employee agree to abide by the terms of that statement.

I also understand that if the District determines that I have either (a) made a false certification herein, or (b) violated this certification by failing to carry out the requirements of section 8355, that the Contract awarded herein is subject to termination, suspension of payments, or both. I further understand that, should I violate the terms of the Drug-Free Workplace Act of 1990, I may be subject to debarment in accordance with the requirements of the aforementioned Act.

I acknowledge that I am aware of the provisions of and hereby certify that I will adhere to the requirements of the Drug-Free Workplace Act of 1990 and Health and Safety Code section 11362.3.

Date:	
Proper Name of Contractor:	
Signature:	
Print Name:	
Title:	

### **TOBACCO-FREE ENVIRONMENT CERTIFICATION**

PROJECT/CONTRACT NO.: <u>VICTOR ELEMENTARY SCHOOL PORTABLE BLDGS AND</u> <u>SHELTER/8150-5830-4</u> between the Lodi Unified School District ("District") and ("Contractor" or "Bidder")

("Contract" or "Project").

This Tobacco-Free Environment Certification form is required from the successful Bidder.

Pursuant to, without limitation, 20 U.S.C. section 6083, Labor Code section 6400 et seq., Health & Safety Code section 104350 et seq., Business and Professions Code section 22950 et seq., and District Board policies, all District sites, including the Project site, are tobaccofree environments. Smoking and the use of tobacco products by all persons is prohibited on or in District property. District property includes school buildings, school grounds, schoolowned vehicles and vehicles owned by others while on District property. The prohibition on smoking includes the use of any electronic smoking device that creates an aerosol or vapor, in any manner or in any form, and the use of any oral smoking device for the purpose of circumventing the prohibition of tobacco smoking. Further, Health & Safety Code section 11362.3 prohibits the smoking or use of cannabis or cannabis products in any place where smoking tobacco is prohibited.

I acknowledge that I am aware of the District's policy regarding tobacco-free environments at District sites, including the Project site and hereby certify that I will adhere to the requirements of that policy and not permit any of my firm's employees, agents, subcontractors, or my firm's subcontractors' employees or agents, to use tobacco and/or smoke on the Project site.

Date:

Proper Name of Contractor:

Signature:

Print Name:

Title:

END OF DOCUMENT

### **HAZARDOUS MATERIALS CERTIFICATION**

### PROJECT/CONTRACT NO.: VICTOR ELEMENTARY SCHOOL PORTABLE BLDGS AND SHELTER/8150-5830-4 between Lodi Unified School District ("District") and

("Contractor" or "Bidder")

("Contract" or "Project").

- 61. Contractor hereby certifies that no asbestos, or asbestos-containing materials, polychlorinated biphenyl (PCB), or any material listed by the federal or state Environmental Protection Agency or federal or state health agencies as a hazardous material, or any other material defined as being hazardous under federal or state laws, rules, or regulations, ("New Hazardous Material"), shall be furnished, installed, or incorporated in any way into the Project or in any tools, devices, clothing, or equipment used to affect any portion of Contractor's work on the Project for District.
- 62. Contractor further certifies that it has instructed its employees with respect to the above-mentioned standards, hazards, risks, and liabilities.
- 63. Asbestos and/or asbestos-containing material shall be defined as all items containing but not limited to chrysotile, crocidolite, amosite, anthophyllite, tremolite, and actinolite. Any or all material containing greater than one-tenth of one percent (0.1%) asbestos shall be defined as asbestos-containing material.
- 64. Any disputes involving the question of whether or not material is New Hazardous Material shall be settled by electron microscopy or other appropriate and recognized testing procedure, at the District's determination. The costs of any such tests shall be paid by Contractor if the material is found to be New Hazardous Material.
- 65. All Work or materials found to be New Hazardous Material or Work or material installed with equipment containing New Hazardous Material will be immediately rejected and this Work will be removed at Contractor's expense at no additional cost to the District.
- 66. Contractor has read and understood the document titled Hazardous Materials Procedures & Requirements and shall comply with all the provisions outlined therein.

Date:	
Proper Name of Contractor:	
Signature:	
Print Name:	
Title:	

### LEAD-BASED MATERIALS CERTIFICATION

PROJECT/CONTRACT NO.: <u>VICTOR ELEMENTARY SCHOOL PORTABLE BLDGS AND</u> <u>SHELTER/8150-5830-4</u> between the Lodi Unified School District ("District") and ("Contractor" or "Bidder")

("Contract" or "Project").

This certification provides notice to the Contractor that:

- (1) Contractor's work may disturb lead-containing building materials.
- (2) Contractor shall notify the District if any work may result in the disturbance of lead-containing building materials.
- (3) Contractor shall comply with the Renovation, Repair and Painting Rule, if lead-based paint is disturbed in a six-square-foot or greater area indoors or a 20-square-foot or greater area outdoors.
- **1.** Lead as a Health Hazard

Lead poisoning is recognized as a serious environmental health hazard facing children today. Even at low levels of exposure, much lower than previously believed, lead can impair the development of a child's central nervous system, causing learning disabilities, and leading to serious behavioral problems. Lead enters the environment as tiny lead particles and lead dust disburses when paint chips, chalks, peels, wears away over time, or is otherwise disturbed. Ingestion of lead dust is the most common pathway of childhood poisoning; lead dust gets on a child's hands and toys and then into a child's mouth through common hand-to-mouth activity. Exposures may result from construction or remodeling activities that disturb lead paint, from ordinary wear and tear of windows and doors, or from friction on other surfaces.

Ordinary construction and renovation or repainting activities carried out without lead-safe work practices can disturb lead-based paint and create significant hazards. Improper removal practices, such as dry scraping, sanding, or water blasting painted surfaces, are likely to generate high volumes of lead dust.

Because the Contractor and its employees will be providing services for the District, and because the Contractor's work may disturb lead-containing building materials, CONTRACTOR IS HEREBY NOTIFIED of the potential presence of lead-containing materials located within certain buildings utilized by the District. All school buildings built prior to 1978 are presumed to contain some lead-based paint until sampling proves otherwise.

2. Overview of California Law

Education Code section 32240 et seq. is known as the Lead-Safe Schools Protection Act. Under this act, the Department of Health Services is to conduct a sample survey of schools in the State of California for the purpose of developing risk factors to predict lead contamination in public schools. (Ed. Code, § 32241.)

Any school that undertakes any action to abate existing risk factors for lead is required to utilize trained and state-certified contractors, inspectors, and workers. (Ed. Code, § 32243, subd. (b).) Moreover, lead-based paint, lead plumbing, and solders, or other potential sources of lead contamination, shall not be utilized in the construction of any new school facility or the modernization or renovation of any existing school facility. (Ed. Code, § 32244.)

Both the Federal Occupational Safety and Health Administration ("Fed/OSHA") and the California Division of Occupational Safety and Health ("Cal/OSHA") have implemented safety orders applicable to all construction work where a contractor's employee may be occupationally exposed to lead.

The OSHA Regulations apply to all construction work where a contractor's employee may be occupationally exposed to lead. The OSHA Regulations contain specific and detailed requirements imposed on contractors subject to those regulations. The OSHA Regulations define construction work as work for construction, alteration, and/or repair, including painting and decorating. Regulated work includes, but is not limited to, the following:

- a. Demolition or salvage of structures where lead or materials containing lead are present;
- b. Removal or encapsulation of materials containing lead;
- c. New construction, alteration, repair, or renovation of structures, substrates, or portions thereof, that contain lead, or materials containing lead;
- d. Installation of products containing lead;
- e. Lead contamination/emergency cleanup;
- f. Transportation, disposal, storage, or containment of lead or materials containing lead on the site or location at which construction activities are performed; and
- g. Maintenance operations associated with the construction activities described in the subsection.

Because it is assumed by the District that all painted surfaces (interior as well as exterior) within the District contain some level of lead, it is imperative that the Contractor, its workers and subcontractors fully and adequately comply with all applicable laws, rules and regulations governing lead-based materials (including title 8, California Code of Regulations, section 1532.1).

Contractor shall notify the District if any Work may result in the disturbance of lead-containing building materials. Any and all Work that may result in the disturbance of lead-containing building materials shall be coordinated through the District. A signed copy of this Certification shall be on file prior to beginning Work on the Project, along with all current insurance certificates. 3. Renovation, Repair and Painting Rule, Section 402(c)(3) of the Toxic Substances Control Act

The EPA requires lead safe work practices to reduce exposure to lead hazards created by renovation, repair and painting activities that disturb lead-based paint. Pursuant to the Renovation, Repair and Painting Rule (RRP), renovations in homes, childcare facilities, and schools built prior to 1978 must be conducted by certified renovations firms, using renovators with training by a EPA-accredited training provider, and fully and adequately complying with all applicable laws, rules and regulations governing lead-based materials, including those rules and regulations appearing within title 40 of the Code of Federal Regulations as part 745 (40 CFR 745).

The RRP requirements apply to all contractors who disturb lead-based paint in a sixsquare-foot or greater area indoors or a 20-square-foot or greater area outdoors. If a DPH-certified inspector or risk assessor determines that a home constructed before 1978 is lead-free, the federal certification is not required for anyone working on that particular building.

### 4. Contractor's Liability

If the Contractor fails to comply with any applicable laws, rules, or regulations, and that failure results in a site or worker contamination, the Contractor will be held solely responsible for all costs involved in any required corrective actions, and shall defend, indemnify, and hold harmless the District, pursuant to the indemnification provisions of the Contract, for all damages and other claims arising therefrom.

If lead disturbance is anticipated in the Work, only persons with appropriate accreditation, registrations, licenses, and training shall conduct this Work.

It shall be the responsibility of the Contractor to properly dispose of any and all waste products, including, but not limited to, paint chips, any collected residue, or any other visual material that may occur from the prepping of any painted surface. It will be the responsibility of the Contractor to provide the proper disposal of any hazardous waste by a certified hazardous waste hauler. This company shall be registered with the Department of Transportation (DOT) and shall be able to issue a current manifest number upon transporting any hazardous material from any school site within the District.

The Contractor shall provide the District with any sample results prior to beginning Work, during the Work, and after the completion of the Work. The District may request to examine, prior to the commencement of the Work, the lead training records of each employee of the Contractor.

THE CONTRACTOR HEREBY ACKNOWLEDGES, UNDER PENALTY OF PERJURY, THAT IT:

- **1.** HAS RECEIVED NOTIFICATION OF POTENTIAL LEAD-BASED MATERIALS ON THE OWNER'S PROPERTY;
- 2. IS KNOWLEDGEABLE REGARDING AND WILL COMPLY WITH ALL APPLICABLE LAWS, RULES, AND REGULATIONS GOVERNING WORK WITH, AND DISPOSAL, OF LEAD.

THE UNDERSIGNED WARRANTS THAT HE/SHE HAS THE AUTHORITY TO SIGN ON BEHALF OF AND BIND THE CONTRACTOR. THE DISTRICT MAY REQUIRE PROOF OF SUCH AUTHORITY.

### **IMPORTED MATERIALS CERTIFICATION**

### PROJECT/CONTRACT NO.: VICTOR ELEMENTARY SCHOOL PORTABLE BLDGS AND SHELTER/8150-5830-4 between the Lodi Unified School District ("District") and

### \_\_\_\_\_\_("Contractor" or "Bidder")

### ("Contract" or "Project").

This form shall be executed by all entities that, in any way, provide or deliver and/or supply any soils, aggregate, or related materials ("Fill") to the Project Site and shall be provided to the District at least ten (10) days before delivery. All Fill shall satisfy all requirements of any environmental review of the Project performed pursuant to the statutes and guidelines of the California Environmental Quality Act, section 21000 et seq. of the Public Resources Code ("CEQA"), and all requirements of section 17210 et seq. of the Education Code, including requirements for a Phase I environmental assessment acceptable to the State of California Department of Education and Department of Toxic Substances Control.

Certification of:	<ul> <li>Delivery Firm/Transporter</li> <li>Wholesaler</li> <li>Distributor</li> </ul>	<ul> <li>Supplier</li> <li>Broker</li> <li>Other</li> </ul>	<ul> <li>Manufacturer</li> <li>Retailer</li> </ul>	
Type of Entity	<ul> <li>Corporation</li> <li>Limited Partnership</li> <li>Sole Proprietorship</li> </ul>	<ul> <li>General Partnership</li> <li>Limited Liability Com</li> <li>Other</li> </ul>	pany	
Name of firm ("Fir	m"):			
Mailing address:				
Addresses of branch office used for this Project:				
If subsidiary, name and address of parent company:				

By my signature below, I hereby certify that I am aware of section 25260 of the Health and Safety Code and the sections referenced therein regarding the definition of hazardous material. I further certify on behalf of the Firm that all soils, aggregates, or related materials provided, delivered, and/or supplied or that will be provided, delivered, and/or supplied by this Firm to the Project Site are free of any and all hazardous material as defined in section 25260 of the Health and Safety Code. I further certify that I am authorized to make this certification on behalf of the Firm.

Date:	
Proper Name of Firm:	
Signature:	
Print Name:	
Title:	

### <u>CRIMINAL BACKGROUND INVESTIGATION</u> /FINGERPRINTING CERTIFICATION

PROJECT/CONTRACT NO.: <u>VICTOR ELEMENTARY SCHOOL PORTABLE BLDGS AND</u> <u>SHELTER/8150-5830-4</u> between the Lodi Unified School District ("District") and ("Contractor" or "Bidder")

("Contract" or "Project").

The undersigned does hereby certify to the governing board of the District as follows:

That I am a representative of the Contractor currently under contract with the District; that I am familiar with the facts herein certified; and that I am authorized and qualified to execute this certificate on behalf of Contractor.

Contractor certifies that it has taken at least one of the following actions with respect to the construction Project that is the subject of the Contract (check all that apply):

□ The Contractor is a sole proprietor and intends to comply with the fingerprinting requirements of Education Code section 45125.1(k) with respect to all Contractor's employees who may have contact with District pupils in the course of providing services pursuant to the Contract, and hereby agrees to the District's preparation and submission of fingerprints such that the California Department of Justice may determine that none of those employees has been convicted of a felony, as that term is defined in Education Code section 45122.1. No work shall commence until such determination by DOJ has been made.

As an authorized District official, I am familiar with the facts herein certified, and am authorized to execute this certificate on behalf of the District and undertake to prepare and submit Contractor's fingerprints as if he or she was an employee of the District.

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

District Representative's Name and Title:

District Representative's Signature: \_\_\_\_\_

- □ The Contractor, who is not a sole proprietor, has complied with the fingerprinting requirements of Education Code section 45125.1 with respect to all Contractor's employees and all of its Subcontractors' employees who may have contact with District pupils in the course of providing services pursuant to the Contract, and the California Department of Justice has determined that none of those employees has been convicted of a felony, as that term is defined in Education Code section 45122.1. A complete and accurate list of Contractor's employees and of all of its subcontractors' employees who may come in contact with District pupils during the course and scope of the Contract is attached hereto; and/or
- Pursuant to Education Code section 45125.2, Contractor has installed or will install, prior to commencement of Work, a physical barrier at the Work Site, that will limit contact between Contractor's employees and District pupils at all times; and/or

Pursuant to Education Code section 45125.2, Contractor certifies that all employees will be under the continual supervision of, and monitored by, an employee of the Contractor who the California Department of Justice has ascertained, or as described below, will ascertain, has not been convicted of a violent or serious felony. The name and title of the employee who will be supervising Contractor's and its subcontractors' employees is:

Name: \_\_\_\_\_\_\_

**NOTE**: If the Contractor is a sole proprietor, and elects the above option, Contractor must have the above-named employee's fingerprints prepared and submitted by the District, in accordance with Education Code section 45125.1(k). No work shall commence until such determination by DOJ has been made.

As an authorized District official, I am familiar with the facts herein certified, and am authorized to execute this certificate on behalf of the District and undertake to prepare and submit Contractor's fingerprints as if he or she was an employee of the District.

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

District Representative's Name and Title:

District Representative's Signature:

□ The Work on the Contract is either (i) at an unoccupied school site and no employee and/or subcontractor or supplier of any tier of the Contract shall come in contact with the District pupils or (ii) Contractor's employees or any subcontractor or supplier of any tier of the Contract will have only limited contact, if any, with District pupils and the District will take appropriate steps to protect the safety of any pupils that may come in contact with Consultant's employees, subcontractors or suppliers so that the fingerprinting and criminal background investigation requirements of Education Code section 45125.1 shall not apply to Contractor under the Contract.

As an authorized District official, I am familiar with the facts herein certified, and am authorized to execute this certificate on behalf of the District.

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

Data

District Representative's Name and Title: \_\_\_\_\_\_

District Representative's Signature:

Contractor's responsibility for background clearance extends to all of its employees, Subcontractors, and employees of Subcontractors coming into contact with District pupils regardless of whether they are designated as employees or acting as independent contractors of the Contractor.

Date:	
Proper Name of Contractor:	
Signature:	
Print Name:	
Title:	

### **BUY AMERICAN CERTIFICATION**

PROJECT/CONTRACT NO.: <u>VICTOR ELEMENTARY SCHOOL PORTABLE BLDGS AND</u> <u>SHELTER/8150-5830-4</u> between the Lodi Unified School District ("District") and ("Contractor" or "Bidder")

## ("Contract" or "Project").

Federal regulations require that all of the iron, steel, and manufactured goods used in projects for the construction, installation, repairs, renovation, modernization, or maintenance of a public building or public work funded in part or in whole by federal stimulus funds, with the exception of projects funded by Qualified School Construction Bonds, be produced in the United States of America, unless a federal department waives this requirement because (1) it is inconsistent with the public interest, (2) the goods are not produced in sufficient quantities or of satisfactory quality in the United States, or (3) the requirement would increase the cost of the Project overall by more than twenty-five percent (25%) ("Buy American").

Contractor shall submit this Certification with its executed agreement, identifying the steps Contractor will take to use goods produced in the United States of America in carrying out this Contract. Bidder should not submit this form with its bid.

Contractor shall retain a copy of this form and may be subject to a future audit.

### CERTIFICATION

On behalf of Contractor, I represent and covenant that Contractor will use on the Project only iron, steel and manufactured goods produced in the United States of America except goods for which a federal department has waived this requirement.

I, \_\_\_\_\_\_, certify that I am the Contractor's \_\_\_\_\_\_ and that the representations and covenants made herein are true and correct. In making this certification, I am aware of section 12650 et seq. of the Government Code providing for the imposition of treble damages for making false claims.

Date:	
Proper Name of Contractor:	
Signature:	
Print Name:	
Title:	

END OF DOCUMENT

### **ROOFING PROJECT CERTIFICATION**

PROJECT/CONTRACT NO.: VICTOR ELEMENTARY SCHOOL PORTABLE BLDGS AND SHELTER/8150-5830-4 between the Lodi Unified School District ("District") and \_\_\_\_\_ ("Contractor" or "Bidder") ("Contract" or "Project"). This form shall be executed by all contractors, materials manufacturers, or vendors involved in a bid or proposal for the repair or replacement of a roof of a public school building where the project is either for repair of more than 25% of the roof or that has a total cost more than \$21,000 ("roofing project") and submitted to the District when the award is made. Certification of: 
□ Contractor Materials Manufacturer
 Other \_\_\_\_\_\_ Vendor \_\_\_\_\_, \_\_\_\_, certify that I have not e] [Name of Firm] I, \_\_\_\_\_ [Name] offered, given, or agreed to give, received, accepted, or agreed to accept, any gift, contribution, or any financial incentive whatsoever to or from any person in connection with the roofing project contract. As used in this certification, "person" means any natural person, business, partnership, corporation, union, committee, club, or other organization, entity, or group of individuals. [Name] \_\_\_\_\_, \_\_\_\_\_, certify that Furthermore, I, \_\_\_\_\_ I do not have, and throughout the duration of the contract, I will not have, any financial relationship in connection with the performance of this contract with any architect, engineer, roofing consultant, materials manufacturer, distributor, or vendor that is not disclosed below. \_\_\_\_\_, have the following [Name of Firm] I, \_\_\_\_ [Name] financial relationships with an architect, engineer, roofing consultant, materials manufacturer, distributor, or vendor, or other person in connection with the following roofing project contract (provide Name and Address of Building, and Contract Date and Number):

By my signature below, I hereby certify that, to the best of my knowledge, the contents of this disclosure are true, or are believed to be true. I further certify on behalf of the Firm that I am aware of section 3000 et seq. of the California Public Contract Code, and the sections referenced therein regarding the penalties for providing false information or failing to disclose a financial relationship in this disclosure. I further certify that I am authorized to make this certification on behalf of the Firm.

Date:	
Proper Name of Firm:	
Signature:	
Print Name:	
Title:	
	END OF DOCUMENT

# BID SET CONSTRUCTION DOCUMENTS

### VICTOR ELEMENTARY SCHOOL -PORTABLE BLDGS AND SHELTER

17670 N. Bruella Rd., Victor, CA 95253

22-1551.01

Lodi Unified School District 1305 E. Vine St., Lodi, CA 95240



# **HMC** Architects

October 26, 2023

Victor Elementary School - Portable Bldgs and Shelter 22-1551.01 Page 2

Architect HMC Architects 2101 Capitol Avenue, Suite 100 Sacramento, CA 95816 916.368.7990



**Civil Engineer** Warren Consulting Engineers 1117 Windfield Way, Suite 110 El Dorado Hills, CA 95762 (916) 985-1870 Fax (916) 985-1877



**Electrical Engineer** Capital Engineering Consultants, Inc. 11020 Sun Center Drive, Suite 100 Rancho Cordova, CA 95670 (916) 851-3500 Fax (916) 631-4424



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# "All rights reserved. This Project Manual or any part hereof may not be duplicated without the written consent of Rainforth Grau Architects except in the form of excerpts or quotations for the purpose of review."

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### PART 1 - GENERAL

### 1.1 SUMMARY

- A. Section Includes:
  - 1. Work included.
  - 2. Work by others.
  - 3. Dimensional tolerances for accessibility.
  - 4. Contractor's use of premises.
  - 5. Work sequence.
  - 6. Extended liquidated damages.
  - 7. Owner occupancy.
  - 8. Existing utilities.
  - 9. Asbestos.

### 1.2 WORK INCLUDED

- A. Under a single contract **construct** the **Victor Elementary School Portable Buildings and Shade Structure** project for **Lodi Unified** School District located in **Victor**, CA. Work includes:
  - 1. Relocation of two portable classrooms from District stockpile;
  - 2. Construction of portable toilet building;
  - 3. Construction of PC shade structure;
  - 4. Construction of bus drop-off;
  - 5. Modification of student drop-off;
  - 6. Path of travel upgrades;
  - 7. Other work as shown in the documents and as required for a complete an operational project.

### 1.3 WORK BY OTHERS

- A. Work on the Project which will be executed prior to start of Work of this Contract, and which is excluded from this Contract, is as follows:
  - 1. None
  - 2. Owner will remove furniture, supplies, drapes and salvageable items. Owner will not remove finishes or expose structure in support of Contractor's work.
- B. Work in the Project which will be executed after completion of Work of this Contract, and which is excluded from this Contract, as follows:
  - 1. None

### SUMMARY OF WORK SECTION 01 1100 22.1551.01

- C. Work on this Project which will be executed during the Work of this Contract which the Contractor shall coordinate with and facilitate:
  - 1. None

### 1.4 DIMENSIONAL TOLERANCES FOR ACCESSIBILITY

A. While it is recognized that construction practices generally permit a level of reasonable dimensional tolerance, the installation of any items subject to compliance with the Americans with Disabilities Act Accessibility Guidelines and Chapter 11B of the California Building Code (CBC), which are not shown with dimensional tolerances, on the drawings or in the CBC, shall be considered absolute. These dimensions will be strictly enforced. Items found to be out of tolerance may require modification and/or replacement at contractor's expense.

### 1.5 CONTRACTOR'S USE OF PREMISES

- A. Specific roads for access to and from building sites will be agreed on with the Owner. All traffic and materials delivery shall be confined to these roads.
- B. Specific areas for storage of materials and site fabrication will be agreed upon. Contractor's activities shall be confined to these areas.
- C. Work shall proceed in such manner as to not interfere with Owner's activities in and about nearby facilities. Exceptions will be made only after previous agreement between Owner, Architect and Contractor.
- D. Fire alarm, intercom, intrusion alarm and other such tests shall be conducted outside of school hours and shall be coordinated with site personnel, if such tests occur after occupancy.

### 1.6 WORK SEQUENCE

- A. Schedule and construct work in stages to accommodate Owner's use of the premises before and after the primary construction period. Coordinate the construction schedule and operations with the Owner's representative. The three stages of the construction process following the bid award shall be:
  - 1. Pre-construction Stage: Pre-construction activities shall occur from the start date, to the first day of availability. Activities shall include, but are not limited to:
    - a. Project scheduling/subcontractor coordination
    - b. Identification of long lead materials and equipment
    - c. Temporary facilities and controls
    - d. Action submittals as specified, including:
      - 1) Shop drawing submittals
      - 2) Color and sample submittals
    - e. Deferred approval submittals
    - f. Material ordering (particularly long lead items)
    - g. Material stock piling

- h. Field measuring
- i. Activities to be performed by the Owner shall include:
  - 1) Removal of equipment and personal items from the buildings (although this may not fully occur by the first day).
- j. The architect and engineers will expedite all long lead item submittals as quickly as possible. Such items must be indicated as "critical" when submitted. Substitutions of finishes, materials and equipment will not be permitted due to the lack of availability unless submittals are made early and completely.
- 2. Construction Stage: Primary construction activities shall occur from the date of availability, through the Date of Substantial Completion. Activities shall include work as described by the construction documents.
  - a. It is the intention of the owner to make these facilities available on the dates indicated below. Certain units also may be available earlier than the dates shown.
  - b. Due to the nature of the work and the type of facilities, the schedule is fixed and cannot be altered. The premises will not be available prior to date of availability. All primary work must be completed prior to Date of Substantial Completion. Critical work, includes life safety, HVAC, plumbing, electrical service, security and general construction. Temporary measures will be required if primary work is uncompleted at start of school date.
  - c. As the Owner needs time for preparing classrooms for the new school session, the Contractor shall turn over spaces in an orderly sequence to allow occupancy and use of the spaces over the final 2 weeks of the construction period. This schedule must be prepared with the Owner's input.
- 3. Completion/Close-out Stage: Completion and close-out activities shall occur from Date of Substantial Completion to Final Completion. Activities shall include:
  - a. Completion of minor finish work. Minor work shall be considered completion or installation of items which will not interfere or hinder the Owner from utilizing the facility, such as touch-up painting, hardware adjustment, etc.
  - b. Punch list work.
  - c. Project close-out.
  - d. All work performed during this period must occur outside of normal school hours. Arrangements must be made with the owner representative and work schedules approved.
- B. Delays:
  - 1. Minor delays: Minor delays caused by parties other than the Contractor, such as the Owner, or Architect, will not be considered critical path delays and will not result in a time extension to the project schedule. Minor delays shall be defined as delays due to the need for review, clarifications, consideration, detailing, etc. which typically do not last more than 48 hours, are addressed promptly and solved without significant changes to the work, as determined solely by the Architect. Such items which may cause delay must be identified by the Contractor at the time of origin.

### SUMMARY OF WORK SECTION 01 1100 22.1551.01

- 2. Other delays: Other delays caused by unknown or unforeseen conditions or significant changes or modifications requested by or required by the Owner, Architect or DSA, will be permitted only if promptly submitted, reviewed and approved by the Architect and Owner. Such delays may result in time extensions to specific work or areas of work only, and not to other unaffected portions of the project. Such delays must directly affect the critical path of the work, be shown as unavoidable and be unable to be made up through rescheduling.
- C. Occupancy: The project will be occupied by the School Staff as shown below. Dates are fixed and cannot be changed. The premises will be occupied whether or not the work is completed regardless of time extensions (if any). Any work performed after this date will need to be fully coordinated with the Owner and will be limited to after school hours or weekends.
- D. Project Schedule:
  - 1. The following schedule summarizes the major activity dates (Dates are approximate and actual start dates are subject to change):
    - a. Bid

Dates

- 1) Advertise to Bid (first)
- 2) Advertise to Bid (second)
- 3) Pre-Bid Conference
- 4) Addendum (last)
- 5) Bids Due
- 6) Board Award
- b. Contracts
  - 1) Bond Preparation
  - 2) Contract Execution
- c. Pre-Construction Activities
  - 1) Start Date
  - 2) Submittals and Approvals
  - 3) Materials Ordering/Stockpiling
  - 4) School Concludes for Summer
- d. Construction
  - 1) Date of facility availability
  - 2) Construction, All Units
  - 3) Begin turning over spaces to District
  - 4) Owner Slack Period
- e. Occupancy: In order to accommodate a phased occupancy by the Owner, the Contractor will turn the buildings over for occupancy as follows:
  - 1) Occupancy Staff
  - 2) Occupancy Students
- f. Completion/Close-out
  - 1) Substantial Completion Date

- 2) Complete Minor Finish Work
- 3) Complete Punch List Work
- 4) Final Completion
- 5) Closeout

### 1.7 EXTENDED LIQUIDATED DAMAGES

A. At the conclusion of the Punch List Work Completion date, all items are to be 100% finalized. Should work remain uncompleted beyond this date, the Owner may re-instate liquidated damages until all such work has been accepted. In addition, work uncompleted may, at the Owner's option, be completed by others and charged against the contract amount.

### 1.8 OWNER OCCUPANCY

- A. Owner will occupy nearby premises during construction.
- B. Refer to General Conditions for requirements for partial occupancy by Owner.
- C. Owner will not occupy buildings included in this scope of work during the primary construction period. However, occupancy will occur as shown above.
- D. Owner may occupy other buildings on premises during construction and may be present on site during summer construction period.

### 1.9 EXISTING UTILITIES

- A. It is recognized by the District and the Contractor that the location of existing utility facilities as shown on contract drawings and specifications are approximate; their exact location is unknown.
- B. Recognition is given to the fact there may be additional utilities existing on the property unknown to either party to the Contract. Location of utilities as shown on drawings and specifications represent the best information obtainable from utility maps and other information furnished by the various agencies involved. The Owner warrants neither the accuracy nor the extent of actual installations as shown on the drawings and specifications.
- C. Because of this uncertainty, it may become necessary for the Architect to make adjustments in the line or grade of sewers or storm drains. Installation of such adjusted lines shall be made at the regular unit price bid for the work, and no additional compensation will be paid therefore, unless the scope and character of the work has been changed.
- D. The Contractor agrees and is required to coordinate and fully cooperate with the Owner and utility owners for the location, relocation, and protection of utilities. The Contractor's attention is directed to the existence of utilities, underground and overhead, necessary for all buildings within the area of work. Prior to start of trenching operations, the Contractor shall meet with Owner Representative(s) to fully review known utility locations which may affect the work.

### SUMMARY OF WORK SECTION 01 1100 22.1551.01

- E. In accordance with Section 4215 of the Government Code of the State of California, the Owner shall make provisions to compensate the Contractor for the costs of locating, repairing damage not due to the failure of the Contractor to exercise reasonable care, and removing or relocating such main and trunk line utility facilities not indicated in the plans and specifications with reasonable accuracy, and for equipment on the project necessarily idled during such work. Compensation will be in accordance with the provisions of these specifications providing for change orders. Nor shall the Contractor be assessed liquidated damages for delay in completion of the project, when such delay was caused by the failure of the Owner or owner of the utility to provide for removal or relocation of such utility facilities.
- F. Nothing herein shall be deemed to require compensation to the Contractor or to relieve him from being assessed liquidated damages for such delay when the presence of unidentifiable utilities can be inferred from the presence of other visible facilities, such as buildings, meter and junction boxes, on or adjacent to the site of construction, and the damage to existing utilities or delay was caused in whole or in part by a failure of the Owner to indicate the presence of such service laterals or appurtenances.
- G. In the event the Contractor discovers utilities not identified in the Contract plans or specifications, the Contractor shall immediately notify the Architect and the utility owner by the most expeditious means available and later confirm in writing.
- H. Existing building utilities shall not be interrupted during normal operating hours.

### 1.10 HAZARDOUS MATERIALS

- A. Prior to start of work, the Contractor shall obtain and review the Owner's hazardous materials reports on any existing facilities to become familiar with existing conditions.
- B. If asbestos or hazardous materials identified in the report are not fully addressed in the contract documents, the contractor shall bring this to the attention of the Architect prior to start of construction for clarification.
- C. Should asbestos or hazardous materials outside of the scope of work be discovered during construction operations, the contractor shall immediately notify the Project Inspector and Architect and shall suspend work in the area until necessary identification, testing and abatement (if required) is completed.

### END OF SECTION

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### PART 1 - GENERAL

### 1.1 SUMMARY

- A. Section Includes:
  - 1. Pre-construction Meeting.
  - 2. Regular project meetings.
  - 3. Pre-installation meetings.

### 1.2 GENERAL

- A. The Architect shall make arrangements for meetings, prepare agenda with copies for participants, preside at meetings, record minutes, and distribute copies to the Owner, Project Inspector, Contractor, participants, and others affected by the decisions made.
- B. Attendance required: Project Superintendent, Project Manager (if any), major Subcontractors (as requested), Architect, Project Inspector, and others as appropriate to the meeting topics.

### 1.3 PRE-CONSTRUCTION MEETING

- A. Upon issuing a notice of intent to award the contract, the Architect will schedule a preconstruction meeting.
- B. Agenda: Architect and Contractor shall prepare an agenda and distribute copies at least one week in advance of the Pre-Construction meeting.
- C. Architect's agenda may include, but not limited to, discussion of the following items:
  - 1. Project description and scope of work.
  - 2. Accepted alternates.
  - 3. Temporary facilities and use of the site.
  - 4. Environmental procedures.
  - 5. Legal and code requirements.
  - 6. Designation of personnel representing the parties to the contract; lines of communication.
  - 7. Communication and responsibilities.
  - 8. Submittal procedures in accordance with Section 01 3300.
  - 9. Construction schedule and critical path.
  - 10. Schedule of values.
  - 11. Record drawings.
  - 12. Progress payments.
  - 13. Change orders and time extensions (related to critical path).
  - 14. Inspection and testing.
  - 15. Project closeout.

### PROJECT MEETINGS SECTION 01 3119 22.1551.01

### 1.4 **PROJECT MEETINGS**

A. The Architect will schedule and run weekly or bi-weekly project meetings throughout the project to review the short-term project schedule and to discuss issues requiring resolution. It is the duty of the Contractor to attend, participate in, and comply with the agreements reached and direction set at these meetings.

### 1.5 PRE-INSTALLATION MEETINGS

A. The Contractor shall schedule and run pre-installation meetings in accordance with the product specifications.

### 1.6 SPECIAL MEETINGS

A. The Architect may occasionally schedule special meetings for the purpose of discussing work requiring a significant coordination effort or for resolving issues which require more attention than they can be given in the regularly scheduled meetings. The Contractor shall attend these meetings along with representatives of subcontractors, suppliers, and/or manufacturers when appropriate for the subject matter to be discussed.

### **END OF SECTION**

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#### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section Includes:
  - 1. Requirements for the following:
    - a. Electronic Data Transfer.
    - b. Substitutions: Specific procedures for submission and approval of products other than those specified or noted on the Drawings.
    - c. Procedures for processing of Contractors "Requests for Interpretation" (RFI) questions.
  - 2. Procedures to be followed in preparing and submitting the following:
    - a. Subcontractor List.
    - b. Progress Schedule.
    - c. Schedule of Values.
    - d. Shop Drawings.
    - e. Product Data/Material Lists.
    - f. Samples.
    - g. Requests for Information (RFI).
    - h. Deferred Approvals.
    - i. Record Drawings.
    - j. Certifications including those required for material VOC content.
    - k. Maintenance/Operating Manuals.
    - I. Warranties and Extended Guarantees.
    - m. Extra Stock.
  - 3. Substitution Procedures: Specific requirements for submission and approval of products other than those specified or noted on the Drawings.
  - 4. Procedures for processing of Contractors "Requests for Interpretation" (RFI) questions.
  - 5. Electronic Data Transfer.

#### 1.2 RELATED REQUIREMENTS

- A. Section 01 6116, Volatile Organic Compound (VOC) Restrictions; "Accessory Material VOC Content Certification Form."
- B. Section 01 7700, Closeout Procedures.
- C. Section 01 7836, Warranties; guarantee/warranty forms.
- D. Section 01 8113, Sustainable Design Requirements, for CAL-Green general requirements and procedures.

#### SUBMITTAL PROCEDURES SECTION 01 3300 22-1551.01

- E. Test reports: Pertinent Specification Sections (by testing lab).
- F. Individual requirements for submittals also are described in other Sections of these Specifications.

#### 1.3 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require Architect'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 indicated in individual Specification Sections as informational submittals that do not require Architect's responsive action.
- C. Portable Document Format (PDF): An open standard file format licensed by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.

#### 1.4 ADMINISTRATIVE REQUIREMENTS

- A. General;
  - 1. Shop drawings, product data, and samples are in no case to be considered Contract Documents but are to be treated only as instruments of convenience and facility to further the progress of the Work.
  - 2. Miscellaneous systems not specifically specified but installed to meet code requirements or for other reasons are subject to Architect's review prior to installation.
- B. Shop drawings, product data, samples and supporting data shall be prepared by Contractor or its suppliers but shall be submitted to Architect by Contractor as the instruments of the Contractor.
- C. Coordination of Submittals:
  - 1. Before submitting a shop drawing or any related material to Architect, Contractor shall: review each such submission for conformance with the means, methods, techniques, sequences, and operations of construction, and safety precautions and programs incidental thereto, which are the sole responsibility of the Contractor; approve each such submission before submitting it; and so stamp each such submission before submitting the Contractor's signature to each submittal, the Contractor certifies that this coordination has been performed.
  - 2. Architect shall assume that no shop drawing or related submittal comprises a variation unless the Contractor advises the Architect otherwise via a written instrument which is acknowledged by the Architect in writing.
- D. Grouping of Submittals:

- 1. Unless otherwise specified, make submittals in groups containing all associated items to assure that information is available for checking each item when it is received.
- 2. Partial submittals may be rejected as not complying with the provisions of the Contract. The Contractor may be held liable for delays so occasioned.
- E. Architect will check submittals for conformance with design concepts of project. Approval by Architect covers only such conformance. Effort will be made by Architect to discover any errors, but responsibility for accuracy and correctness of submittals shall be with the Contractor.
- F. Approval of submittals will be on a general basis only and shall not relieve the Contractor from their responsibility for proper fitting and construction of the Work, nor from furnishing materials and labor required by the Contract which may not be indicated on the submittals when approved.
- G. No portion of the work requiring submittals shall be commenced until the submittal for that portion of the work has been approved by Architect. All such portions of work shall be in accordance with the approved submittals. Any work performed without approved submittals will be done so at the Contractor's own risk. Work found not to be in compliance with the approved submittals shall be removed and corrected at the Contractor's own expense.
- H. The Contractor shall make corrections required by Architect and shall resubmit as required by Architect the required number of corrected copies of shop drawings, product date, or new samples until approved. Contractor shall direct specific attention in writing or on resubmittals to revisions other than the corrections required by the Architect on previous submissions. Professional services required for more than two (2) re-reviews of required submittals of shop drawings, product data, or samples are subject to charge to the Contractor.

#### 1.5 ELECTRONIC DATA TRANSFER

- A. Requests for Electronic Data will be considered upon receipt of written request by the Contractor accompanied by a signed copy of the Electronic Data Request Form (included with this section). Request should clearly outline specific Drawings desired and the intent of the request.
  - 1. Submit Electronic Data Request Form on standard form.
  - 2. Allow 72 hours minimum for review and consideration by Architect.
- B. Electronic data files are not a part of the contract documents, but rather a convenience for the Contractor in preparation of his required submittals and layout efforts. Electronic files do not alter the content or meaning of the hard copy documents which may be a part of the Contract Documents.
- C. The electronic data files will remain the property of the Architect, shall not be used for any other purpose than that purpose stated in the Electronic Data Request Form, and shall not be released by the Contractor or any subcontractor to any other party without written consent from the Architect.

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- D. The electronic data files are distributed for reference only. Transferring such files can alter, delete or change original information. Accuracy of the data cannot be guaranteed as correct or complete and the Contractor accepts full responsibility for inaccuracies, regardless of cause.
- E. The hard copy documents, including addenda and subsequent written changes to the documents, represent the complete work of the Contract. Electronic files should be cross-referenced to the Contract Documents by the user and verified from that the information included contains the necessary Contract information. It is the Contractor's responsibility to make any changes or revisions to the electronic data files as necessary.
- F. Architect may, at his complete discretion and without explanation, approve or deny requests for electronic data.

#### 1.6 SUBSTITUTIONS

- A. Architect's Approval Required:
  - 1. Contract is based on materials, equipment and methods described in Contract Documents. Substitutions will not be reviewed and approved prior to the award of the contract.
  - 2. Architect will consider proposals during the submittal process for substitution of materials, equipment and methods only when such proposals are accompanied by full and complete technical data and other information required by Architect to evaluate proposed substitution. Substitution shall be submitted with completed Substitution Request Form, included with this section.
  - 3. Do not substitute materials, equipment or methods unless such substitution has been specifically approved for this work by Architect.
- B. "Or Equal": Whenever, in Contract Documents, any material, process or specified patent or proprietary name and/or by name of manufacturer is indicated, such name shall be deemed to be used for purpose of facilitating description of material and/or process desired, and shall be deemed to be followed by the words "or equal" and Contractor may offer any material or process which shall be equal in every respect to that so indicated or specified; provided, however, that if material, process or article offered by Contractor is not, in opinion of Architect, equal in every respect to that specified, then Contractor shall furnish material, process or article specified or one that in opinion of Architect is equal thereof in every respect.
- C. "No Substitutions": Items indicated as "No Substitutions" shall be provided as specified and no alternates will be allowed. These items are required either due to standards implemented by the Owner or to match materials recently installed by others.
- D. Coordination: Approval of substitution shall not relieve Contractor from responsibility for compliance with requirements of Drawings and Project Manual, and Contractor shall be responsible at his own expense for any changes in other parts of its own work or work of others which may be caused by approved substitution.
- E. DSA Approval: Substitutions of certain items may cause such items to require a Deferred Approval by DSA. Should a DSA Deferred Approval be required, the Contractor shall provide information and documents necessary to complete the Deferred Approval

process without any additional costs to the Owner, including engineering, calculation and modification of substitute products.

#### PART 2 - SUBMITTALS

#### 2.1 SUBCONTRACTOR LIST

A. Provide a typed list of Subcontractors within 5 days of notice of the award of contract. Include Subcontractor name, address, phone number, license number and trade.

#### 2.2 PROGRESS SCHEDULE

- A. Prepare and submit estimated progress schedule for work within 10 calendar days after issuance of Notice to Proceed. Submit up-dated schedules:
  - 1. At mid-point of construction.
  - 2. When time extensions of more than two weeks are necessary.
- B. Relate progress Schedule to entire Project. Indicate following:
  - 1. Dates for starting and completion of various sub-contracts.
  - 2. Dates for submission of required submittals.

#### 2.3 SCHEDULE OF VALUES

- A. Before first Application for Payment, submit for Architect's approval a Schedule of Values of various portions of work, aggregating total Contract sum, divided so as to facilitate payment to subcontractors, prepared in such form as Architect and Contractor may agree upon, and supported by such data to substantiate its correctness as Architect may require.
  - 1. Breakdown shall include separation of sitework from building work for main categories including electrical, plumbing, concrete, etc. Separations shall also be provided for each building of a multiple building contract. Include proper share of overhead and profit with each item in Schedule of Values.
  - 2. This Schedule, when approved by Architect, shall be used as basis for Contractor's applications for payment. Payment will not be released until a Schedule of Values is accepted.
- B. Schedule of Values shall appear similar to the following list and generally following the Table of Contents of this Project Manual as the format for listing component items. It shall be detailed at least as shown and portions shall not be more largely grouped so as to reduce its length unless appropriate to the scope of the Work. Mobilization/Start-up is limited to 2 percent on contracts greater than \$1,000,000 and 4 percent on contracts less than \$1,000,000. Contract closeout to be a minimum of 2 percent.
  - 1. Mobilization/Start-up.
  - 2. Temporary Facilities.
  - 3. Concrete Reinforcement.

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- 4. Caulking and Sealants.
- 5. Painting and Wall Coverings.
- 6. Signage.
- 7. Toilet Compartments.
- 8. Toilet Accessories.
- 9. Fire Extinguishers and Cabinets.
- 10. Relocatable Building.
- 11. Plumbing Building.
- 12. Electrical Building.
- 13. Grading.
- 14. Paving.
- 15. Asphalt Striping.
- 16. Chain Link Fencing.
- 17. Site Concrete.
- 18. Landscaping Irrigation.
- 19. Landscaping Planting.
- 20. Electrical Site.
- 21. Plumbing Site.
- 22. Labor/Supervision.
- 23. Cleanup.
- 24. Contract Closeout.

#### 2.4 SUBMITTAL SCHEDULE

- A. Contractor shall prepare and submit to Architect a "Submittal Schedule" when required by the General Conditions showing scheduled dates of submittals and date required for return of submittals to Contractor.
- B. Contractor shall provide in Schedule the minimum specified working days for Architect to review and check submittals provided it is not a deferred approval item. Based on the number and complexity of submittals at any one time, Architect's review period may be longer than the days specified.
- C. Dates on "Submittal Schedule" shall be agreed upon by both Architect and Contractor.

#### 2.5 PROJECT DIRECTORY

A. After execution of the Contract but prior to commencement of Work, Contractor shall submit to Architect a Project Directory listing subcontractors and vendors on the Project and giving a brief description of their scope of work, firm name, contact person, address, phone number, e-mail address, and fax number if used.

#### 2.6 SHOP DRAWINGS

A. Submit shop drawings as a copy of the original set maintained by the Contractor. Shop drawings are to include the name of the project, the name of Contractor and are to be

numbered consecutively. Provide legible and complete copies in every respect. Provide quantity as described below. Do not reproduce the Contract Drawings in lieu of Contractor or subcontractor produced shop drawings.

B. If shop drawings show variations from Contract requirements because of standard shop practice or other reason, make specific mention of such variations in letter of transmittal, as well as on Drawings, in order that (if acceptable) suitable action may be taken for proper adjustment of the Contract Documents. Unless specific changes have been noted and approved, no deviations from Contract Documents will be accepted.

#### 2.7 PRODUCT DATA / MATERIAL LISTS

- A. Manufacturer's Standard Schematic Drawings:
  - 1. Modify Manufacturer's drawings to delete information which is not applicable to the Project.
  - 2. Supplement standard information to provide additional information which is applicable to the Project.
- B. Manufacturer's catalog sheets, brochures, diagrams, schedules, performance charts, illustrations and other standard descriptive data.
  - 1. Clearly mark each copy to identify pertinent materials, products or models. Mark out or remove extraneous information.
  - 2. Show dimensions and clearances required.
  - 3. Show performance characteristics and capacities.
  - 4. Show wiring diagrams and controls.

#### 2.8 SAMPLES

- A. Samples: Physical examples to illustrate materials, equipment or workmanship, and to establish standards by which completed work is judged.
  - 1. Include identification on samples including product and material and location of proposed work.
- B. Samples shall be of sufficient size and quantity to clearly illustrate:
  - 1. Functional characteristics of product or material, with integrally related parts and attachment devices.
  - 2. After review, samples may be used in construction of project.
- C. Field samples and mockups:
  - 1. Erect at project site at location acceptable to Architect.
  - 2. Construct each sample or mockup complete, including work of trades required in finished work.

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#### 2.9 REQUESTS FOR INFORMATION (RFI)

- A. Requests for additional information (RFI's) beyond that set-forth in the Contract Documents will be considered when the request is in writing and fully documented. Requests shall state the source and reason for the request; identify specific references within the Contract Documents pertinent to the request; and supply supporting information to assist the Architect in his/her response. Verbal responses to such requests are to be considered informational; official response will only be given in writing.
  - 1. Submit RFI's on standard form, included with this Section, and numbered consecutively.
  - 2. Allow a minimum of 72-hours for review by Architect. Additional time may be required for more complex issues.
  - 3. Provide suggested solution on standard RFI form where indicated.
  - 4. Provide detailed cost estimate for RFI's that are anticipated to exceed \$500 in extra costs to the Owner.
- B. Because RFI's are used for clarification or Construction Document interpretation purposes, the response will be issued back to the Contractor in the space provided on the standard RFI form. More complex issues requiring Contract Document revisions and/or which may result in a change in cost to the Contract will be handled using a Construction Change Document (CCD). RFI's and CCD's will not be used to address simple or minor coordination or construction issues which can normally be addressed quickly and easily by the Contractor or in conjunction with the Contractor and Architect. RFI's deemed unnecessary or frivolous by the Architect will be returned to the Contractor for reconsideration or will be rejected. RFI's so returned shall be removed from the RFI log and noted as unnecessary.

#### 2.10 APPROVAL OF PREVIOUSLY CHECKED ITEMS

- A. Certain specified products require the specified manufacturer to design the product or system after the Owner-Contractor agreement has been signed. Because the selection of the manufacturer of these products resides with the Contractor, it is not possible to anticipate the actual product or system which will be supplied for the Project prior to bidding. However, since no Contract can be executed between the Owner and the Contractor without prior approval of the Contract Documents by DSA, approval of these products shall be obtained after the contract is executed. This requires complete design documents and calculations be submitted by the Contractor to DSA through the Architect and the Architect's consultants. The manufacturer and Contractor are responsible for prompt submission of these submittals to the Architect, and for making any changes required by DSA, at no cost to the Owner, and prior to incorporation of the product or system into the work. The items requiring this process are where previously checked ("PC") drawings were included in the bid set, but an alternate manufacturer was included in the bid.
- B. Submit to the Architect for processing items identified per the above on the Drawings or within the Specifications. Approval of these items is contingent upon approval of the submittal by DSA via the CCD process.

- C. Submit submittals as specified for shop drawings and the additional requirements of this Article.
- D. Submit complete drawings, details, specifications, calculations and other information necessary to fully describe and substantiate the submittal, signed and stamped by a Structural Engineer licensed in the State of California.
- E. Items will be checked for general design concept conformance only and will be submitted to the Division of the State Architect for review. If necessary, submittals will be returned to the Contractor for corrections and/or additional information, as required by DSA. The Contractor shall make necessary changes and resubmit for additional review.
- F. The Architect will review the submittal one time only and will not perform extensive calculations nor prepare drawings required for DSA. If the Contractor fails to provide proper information for approval or the Architect is required to perform additional duties, such services will be reimbursed by the Owner and back-charged to the Contractor.
- G. Do not proceed with fabrication until documents have been approved by DSA.

#### 2.11 CERTIFICATIONS

- A. Where specifically indicated by pertinent Specification Sections, submit proper certification of recognized producer or association in lieu of or in addition to testing. Certification shall attest to product's compliance with requirements of Contract Documents.
- B. Certifications for this project shall also include:
  - 1. Fire Alarm System Certification:
    - a. As specified in Division 28.
  - 2. Megger Grounding Test Certificate:
    - a. Submit completed Megger Grounding Test Certificate (included with this section) with Testing Agency reports attached, as specified in Division 26.
  - 3. Certificate of Chlorination and Sterilization:
    - a. Submit completed Certificate of Chlorination and Sterilization (included with this Section) with Local Jurisdiction approvals and Testing Agency reports attached, as specified in Divisions 22 and 33.
  - 4. Certificate of Compliance for Building Materials:
    - a. Submit completed Certification of Compliance for Building Materials (included with this section).
  - 5. Roofing Certificate:
    - a. Submit fully completed Roofing Certification (included with this Section).

#### 2.12 MAINTENANCE / OPERATION MANUALS

A. General: Contractor shall incorporate in Maintenance/Operation Manual(s) brochures, manufacturer's catalogs and written instructions for equipment and materials needing regular care or maintenance. These items include carpets, resilient flooring, architectural finishes, mechanical and electrical equipment and other items as required elsewhere in Contract Documents. Prepare manuals in durable plastic loose leaf binders sized to accommodate 8-1/2 x 11 sheets with following minimum information:

- 1. Identification on or readable through, front cover stating general nature of manual.
- 2. Neatly typewritten index of contents.
- 3. Site plan and building plans indicating location of equipment referenced (reduced scale).
- 4. Complete instructions regarding operation and maintenance of equipment involved.
- 5. Complete nomenclature of replaceable parts, their part numbers, current cost and name and address of nearest vendor of parts.
- 6. Copy of warranties issued, in a separate binder as specified in this Section.
- 7. Copy of approved shop drawings (reduced scale) with data concerning changes made during construction.
- B. Extraneous Data:
  - 1. Where contents of manuals include manufacturer's catalog pages, clearly indicate precise items included in the Project installation and delete, or otherwise clearly indicate, manufacturer's data with which the Project installation is not concerned.
- C. Materials shall be organized in a logical and consistent manner, by Specification Section number, with separating tabs clearly marked.
- D. When submitting electronic file via Newforma, materials shall be organized in order ascending by Specification Section number and including clear separation within one pdf file, following format prescribed in paragraphs A and B of this Article.

#### 2.13 WARRANTIES AND GUARANTEES

- A. Contractor Standard Guarantee:
  - 1. Furnish Owner with its Standard Guarantee for work executed under this Contract, including approved extra work, to be absolutely free of defects of workmanship and materials for a period of two (2) years from the date of filing of the Notice of Completion.
  - 2. Under the terms of its warranty, Contractor shall guarantee to repair and make good defects and repair damage to other work caused thereby which may occur during the Warranty period at no cost to the Owner.
  - 3. Guarantees and warranties between Contractor and manufacturers and between Contractor and suppliers shall not affect the Guarantee and Warranty between Contractor and Owner.
  - 4. Contractor's Standard Guarantee shall be submitted on the Guarantee/Warranty form included in Section 01 7836, Warranties.
- B. Subcontractor Standard Guarantee:
  - 1. Contractor shall countersign and furnish Owner with a Subcontractor Standard Guarantee from each Subcontractor for their work executed under this Contract,

and approved extra work, to be free of defects of workmanship and materials for a period equal to the Contactor Standard Guarantee.

- 2. Under the terms of its warranty, Subcontractor shall guarantee to repair and make good defects and repair damage to other work caused thereby which may occur during the Warranty period at no cost to the Owner.
- 3. Subcontractors individual Standard Guarantee shall be submitted on Guarantee/Warranty form included in Section 01 7836, Warranties.
- C. Special or Extended Guarantee/Warranty:
  - 1. In addition to the Contractor's and Subcontractor's Standard Guarantees, furnish Owner with special or extended warranties in excess of the Standard Warranty term of the Contract where specified in the respective Sections of the Specifications.
  - 2. Where special or extended guarantees are related to work of a Subcontractor, the written Guarantee/Warranty form prepared by the Contractor shall be co-signed by the respective responsible subcontractor and a separate and addition Guarantee/Warranty form shall be prepared by the Subcontractor and co-signed by the Contractor.
  - 3. Each Special or Extended Guarantee/Warranty shall be submitted on the forms included in Section 01 7836, Warranties.
- D. Provide a binder with the executed Guarantee/Warranty forms placed in the order in which they occur in the Project Manual. Include an Index listing each Specification Section, specific items covered and length of warranty for each item.
- E. When submitting electronic file via Newforma, materials shall be organized in order ascending by Specification Section number and including clear separation within one pdf file.

## 2.14 RECORD DRAWINGS AND SPECIFICATIONS

- A. The Contractor shall prepare and maintain on a current basis an accurate and complete set of Record Drawings and Annotated Specifications showing clearly the following:
  - 1. Changes, revisions, and substitutions during construction, including, without limitation, field changes.
  - 2. Addenda, Construction Change Documents and Clarifications issued by the Architect.
  - 3. The final location of mechanical equipment, ducts, outlets, structural members, walls, partitions, and other significant features. Note both vertical and horizontal dimensions of concealed installations.
  - 4. Installed locations of underground work and utilities, including storm drain piping, plumbing, electrical and stubs for future connections. Note both vertical and horizontal locations of underground facilities from permanent monuments such as building corners or other permanent structures, and finish grades.
  - 5. In the event of a specification that allows Contractor to elect one of several brands, makes, or types of material or equipment, the annotations shall show which of the allowable items the Contractor has furnished.

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- B. The Contractor shall update the Record Drawings and Specifications as often as necessary to keep them current but no less often than weekly, and up-dated monthly, prior to and pursuant to approval of the progress payment application.
  - 1. Record drawings and specifications are to remain on site and available for inspection by the District Representative, Project Inspector and the Architect.
  - 2. Changes shall be made in an accurate and legible manner by a qualified draftsperson acceptable to Architect.
  - 3. Symbols and designations used in preparing Record Drawings shall match those used in the Contract Drawings.
- C. At project completion, the Record Drawings and Annotated Specifications shall be submitted by the Contractor for Owner's Project Inspector and Architect review and comment.
  - 1. These will be returned to the Contractor for revisions. Once corrections have been completed the Inspector shall sign and date the record set coversheet noting it as acceptance of the completed Record Drawings and Specifications.
  - 2. Prior to Application for Final Payment, the original Record Drawings and Specifications are to be resubmitted to the Architect along with a scanned electronic file set in PDF format with each drawing bookmarked, matching the Drawing titles.
  - 3. When submitting electronic file via Newforma, materials shall be organized in order ascending by Sheet Number as shown on the Drawing Sheet Index within one pdf file.
- D. Conditions of Payments:
  - 1. At the end of each month the Project Inspector will review the record drawings and specifications. If the records are incomplete, or incorrect, an appropriate amount of dollars, equivalent to the cost of uncovering the work to determine the locations of piping and the like, may be deducted from the next progress payment. The deducted sum will be withheld until the record drawings are updated and/or corrected.
  - 2. Written confirmation from the District Representative that the record drawings and specifications have been properly updated weekly shall be submitted with each pay application request, and the existence of such properly updated records shall be a condition precedent to payment.
  - 3. On completion of the Contractor's portion of the Work and prior to Application for Final Payment, the Contractor shall provide one complete set of approved Record Drawings and Specifications to the Owner, in format as specified, certifying them to be a complete and accurate reflection of the actual construction conditions of the Work. Delays in the submission of complete record documents may subject the Contractor to liquidated damages.

#### 2.15 EXTRA STOCK

A. Provide extra stock and materials, as described in the individual Specification Sections, to the Owner at time of final acceptance.

- B. Materials shall be inventoried in writing, neatly packaged, with labels clearly identifying contents and quantities.
- C. Contractor shall obtain written acceptance of delivery from Owner.

#### PART 3 - EXECUTION

#### 3.1 GENERAL SUBMISSION REQUIREMENTS

- A. This project is using Newforma Info Exchange for transmission and processing of project documentation. The Contractor is responsible for making contract submissions through this web accessed system. No supplementary software is required for use. User names and passwords will be granted at the beginning of the project.
- B. Contractor is responsible for the scheduling of submittals in order to avoid detrimental impact to the construction schedule and to support the timely sequence of the Work.
  - 1. Allow a minimum of 15-working days for submittal review by the Architect. Complex submittals or submittals which are not provided as complete packages may take longer than 15-working days for review.
  - 2. Contractor shall allow time for potential rejection and re-submittal of submittals which are being offered as substitution to the specified products.
- C. Contractor shall review submittals for completeness, coordination and conflicts between subcontractors and other Work in the Contract Documents.
  - 1. Subcontractors shall make submittals to Contractor.
  - 2. Submittals made by subcontractors which are not thoroughly reviewed by the Contractor will be returned. Submittals which vary significantly from the Contract Documents and are not so identified prior to submission, will be returned to the Contractor without review.
- D. Mechanical and electrical submittals, excluding underground work, shall each be packaged together so that products/components for these two major disciplines are transmitted to the Architect as a single submittal package for review.
- E. Submittals shall be accompanied by Submittal Transmittal, included at the end of this Section, addressed to the Architect. Each submittal transmittal shall:
  - 1. Be consecutively numbered.
  - 2. Re-submittals to have same submittal number as the original submittal with an alphanumeric suffix.
  - 3. Indicate Specification Section number. Separate submittals are required for each Specification Section involved.
  - 4. Include proper number of copies, as required in "Number of Copies Required" below.
  - 5. Contain index of items submitted, properly identified with Drawing numbers, etc.
  - 6. Substitutions shall be accompanied by a completed Substitution Request Form (included with the Project Manual).

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- F. Electronic Submittals.
  - 1. Product data submitted electronically shall be submitted in .pdf format. Submittals shall be organized in a logical format grouping items and subsections together. The first page of each item or subsection must be bookmarked and properly labeled. If multiple fixtures or products are included in a single submittal, each item and corresponding information shall be separately grouped and bookmarked as noted above. This formatting and bookmarking shall also apply to other data submitted electronically like warranties/guarantees, maintenance & operations manuals and certifications.
  - 2. Shop drawings submitted electronically shall be submitted in .pdf format. Shop drawings shall be organized in a logical format grouping sections together (plans, elevations, details, schedules, etc.). Each sheet of the shop drawings shall be bookmarked and properly labeled. Plan references and detail callouts shall be hyperlinked to properly jump to the referenced page or detail.
- G. Number of Copies Required Contractor shall submit following number of copies:
  - 1. Subcontractor List: 1-electronic copy in PDF.
  - 2. Progress Schedule: 1-electronic copy in PDF.
  - 3. Schedule of Values: 3-copies.
  - 4. Shop Drawings: 1-electronic copy in PDF format.
  - 5. Product Data/Material Lists: 1-electronic copy in PDF format.
  - 6. Samples: As specifically indicated in the respective Specification Section or, if not indicated, two more than the Contractor requires to be returned.
  - 7. Samples for Color/Pattern Selection: One set of manufacturer's complete range for initial selection; and 4 samples as requested of selected color/pattern for inclusion in final color boards.
    - a. As color selection is dependent on multiple submittals, it is critical that items requiring color decisions be submitted as early as possible and at the same time.
    - b. Selections will not be finalized until color dependent/selection submittals are received.
  - 8. Substitution Request: 1-electronic copy in PDF.
  - 9. Request for Information: 1-electronic copy in PDF.
  - 10. Electronic Transfer: 1-electronic copy in PDF.
  - 11. Deferred Approvals: 1-electronic copy in PDF.
  - 12. Certifications: 1-electronic copy in PDF.
  - 13. Maintenance/Operations Manuals: After approved via Newforma submittal, 1-hard copy plus 1-electronic copy in format acceptable to the Owner.
  - Guarantees/Warranties: After approved via Newforma submittal, 1-hard copy, plus 1-electronic copy in format acceptable to the Owner. Refer to Section 01 7836, Warranties, for forms and additional requirements for assembly of guarantees/warranties.
  - 15. Record Drawings: After approved via Newforma submittal, 1-hard copy plus 1electronic copy in format acceptable to the Owner.

- H. Submittals shall include the following, as applicable:
  - 1. Date and revision dates.
  - 2. Project title and number.
  - 3. The names of Architect, Contractor, Subcontractor and supplier or manufacturer.
  - 4. Identification of product or material.
  - 5. Relation to adjacent structure or material.
  - 6. Field dimensions, clearly identified as such.
  - 7. Specification section number.
  - 8. A blank space for Architect's stamp.
  - 9. Contractor's stamp on each, initialed or signed, certifying that submittal was reviewed, field measurements have been verified and submittal is in compliance with the applicable Specification Section and the overall Contract Documents.
- I. Incomplete, inaccurate or non-complying submittals requiring revisions, re-submittal and additional review time, shall not be considered as a basis for Contract time extension.

#### 3.2 PROCEDURES FOR ACTION SUBMITTALS

- A. Action Submittals are identified in the respective Specification Section and shall be submitted in accordance with the specified web based access system.
- B. Number of Copies: As specified under Article "General Submission Requirements."
- C. Architect's Review:
  - 1. General:
    - a. Except for finish, color, and other aesthetic matters left to Architect's decision by Contract Documents, Architect's review is only for Contractor's convenience in following work and does not relieve Contractor from responsibility for deviations from requirements of Contract Documents.
    - b. Do not construe Architect's review as a complete check or relief from responsibility for errors or omissions of any sort in shop drawings or schedules or from necessity of furnishing work required by Contract Documents that may not have been shown on shop drawings.
    - c. Architect's review of a separate item does not indicate review of complete assembly in which it functions.
    - d. Review comments of the Architect (or its consultants) will be shown when it is returned to the Contractor. The Contractor shall make and distribute such copies as are required for its purposes.
- D. Processing:
  - 1. Architect will review Action Submittals in accordance with agreed upon "Submittal Schedule" and will return them to Contractor with Architect's stamp.
  - 2. Notations by Architect which increase Contract cost or time of completion shall be brought to Architect's attention before proceeding with work. Failure to do so will result in the increased costs being borne by the Contractor.

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- 3. Each submittal will be stamped indicating appropriate action to be taken by the Contractor.
- 4. If for any reason the Contractor cannot comply with the notations, Contractor shall re-submit submittal. In the transmittal letter accompanying the re-submittal, clearly describe the reason(s) for not being able to comply with the notations.
- E. Action and Distribution:
  - 1. Architect will stamp submittals and Contractor shall comply with action noted on the Architect's "Submittal Review" stamp.
  - 2. Unless otherwise directed for mutually agreed or required by the Architect's stamp, Architect will return submittals to the Contractor via the specified web access system.
  - 3. If corrections are required, the Contractor is responsible for making the necessary corrections and re-submitting the shop drawings in a timely fashion as to not affect the project schedule.
  - 4. The Contractor shall secure final acceptance prior to commencing work involved.
- F. Consultants' Review:
  - 1. Submittals requiring review by Architect's or Owner's consultants shall be uploaded to the specified web access system for distribution by the Architect.
  - 2. Processing shall be in accordance with consultants stamp.
    - a. If action required by consultants stamp is not clear, Contractor shall immediately notify the Architect for a clarification.
    - b. If returned submittal also includes the Architect's stamp, processing shall be in accordance with the Architect's stamp.
- G. Revisions:
  - 1. If revisions are required, the Contractor is responsible for making the necessary changes pertinent to by comments noted on the submittal and re-submitting the shop drawings in a timely fashion as to not affect the project schedule.
  - 2. If the Contractor considers any required revision to be a change, they shall so notify the Architect.
  - 3. Show each revision by number, date, and subject in a revision block on the submittal.
  - 4. If for any reason Contractor cannot comply with the notations, Contractor shall resubmit submittal.
- H. Revisions after Review: When a submittal has been reviewed by the Architect, resubmittal for substitution of materials or equipment will not be considered unless accompanied by an acceptable explanation as to why the substitution is necessary.

#### 3.3 PROCEDURES FOR INFORMATIONAL SUBMITTALS

A. Informational Submittals are identified in the respective Specification Section and shall be submitted in accordance with the specified web based access system.

- B. Number of Copies: As specified under Article "General Submission Requirements."
- C. Certificates and Certifications: Provide a notarized statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
- D. Test and Inspection Reports: Comply with requirements specified in Section 01 4523, Testing and Inspection Services.

#### 3.4 PROCEDURES FOR CLOSEOUT AND MAINTENANCE MATERIAL SUBMITTALS

- A. Closeout and maintenance material submittals are identified in the respective Specification Section and shall be submitted as specified or, if not specified, in accordance instructions provided by the Architect.
- B. Comply with the additional requirements specified in Section 01 7700, Closeout Procedures.

#### 3.5 FORMS

- A. The following submittal forms are included as part of this Section.
  - 1. Submittal Transmittal.
  - 2. Substitution Request.
  - 3. Request for Information.
  - 4. Electronic Data Request.
  - 5. Megger Grounding Test Certificate.
  - 6. Certification of Chlorination and Sterilization.
  - 7. Certification of Compliance for Building Materials.

#### END OF SECTION

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# Victor ES - Portable Bldgs & Shelter Lodi Unified School District

# Architect's Project # 22-1551.01

DSA File/Appl. # 39-50 / 02-121807

# **1. SUBMITTAL TRANSMITTAL**

Attention: Jennifer Huang



# SUBMITTAL NO.:

# DATE:

Re-Submittal of Original No.:

Contractor: Company

Contact: Name

Sub Contractor:

Contact:

# Please submit only one trade per submittal!Description of submitted materials:QuantitySpecification Section

submitted	Section #	Section Title	Description of contents (e.g. product data, shop drawings, samples)
Cubinitiou			
Controctor	Ctotomonti (m		
This submitt precautions, unless acco	al has been re and program mpanied by a	eviewed and approved with respect to incidentals thereto. This submittal c substitution request.	o the means, methods, techniques, and procedures of construction, safety complies with the contract documents and comprises no variations thereto,
By:	1		Date:
N	lame		
		L TO CONTRACTOR:	Distribution: Contractor, Owner, Project Inspector, RGA, Othe
	ECIFIED ITEM		
and Specifica information g fabrication pro- satisfactory m	tions. This ger ven in the Cor ocesses and te anner. Grau Arch	neral check is only for the review of contract Documents. The Contractor is rechniques of construction, coordinating litects.	nformance with the design concept of the project and general compliance with the esponsible for confirming and correlating all quantities and dimensions, selecting his work with that of all the other trades, and performing his work in a safe and Date:
Additiona	Grau Arch	Itects By: ts:	Date:

See Specification Section 01 3300 for use of this form

Architect's Project # 22-1551.01 DSA File/Appl. # 39-50 / 02-121807

#### SUBSTITUTION REQUEST NO.:

Specified Item: Page No.:			Paragraph No.:		
2. PROPOSED SUBSTITUTIONS: The undersign	ned requests conside	eration of th	e following substitution:		
Include with a specified product Submittal	Contact:				
Please submit only one product per request!	Sub Contractor:				
A studio of HMC Architects	Contact:	Name	-		
Attention: Jennifer Huang	Contractor:	Company			
1. SUBSTITUTION REQUEST					
DSA File/Appl. # 39-50 / 02-121807	Date:				

Proposed Item:

#### 3. REASON FOR REQUEST:

Attached data includes product description, specifications, drawings, photographs, performance and test data adequate for evaluation of request; applicable portions of data are clearly identified. Attached data also includes a description of changes to Contract Documents, which proposed substitution will require for its proper installation.

The undersigned certifies that the following paragraphs, unless modified by attachments, are correct:

- 1. The proposed substitution does not affect dimensions shown on drawings and does not require design changes in the Contract Documents.
- 2. The undersigned will pay for changes to the building design, including engineering design, detailing and construction costs caused by the requested substitution.
- 3. The proposed substitution will have no adverse effect on the work, the schedule or specified warranty requirements.
- 4. Maintenance and service parts will be readily available for the proposed substitution.

The undersigned further states that the function, appearance and quality of the proposed substitution are equivalent or superior to the specified item.

Signature - Contractor/Subcontrac	stor	Date					
5. TRANSMITTAL TO CONTRA	ACTOR:	Distribution: Contractor, Owner, Project Inspector, RGA, Other					
	ACCEPTED AS NOTED						
Rainforth Grau Architects By:		Date:					
<u>Comments:</u>							

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Architect's Project # 22-1551.01 DSA File/Appl. # 39-50 / 02-121807

## **1. REQUEST FOR INFORMATION**

Attention: Jennifer Huang

From: Contractor: Contact: Company Name

**RFI NO.:** 

Date:

A studio of HMC Architects

Sub Contractor:

Contact:

Identify related specific references within the Contract Documents and supporting information:

Dwg./Document No.:

Building/Site Location:\_\_\_

2. Existing Condition (source / reason for the request):

3. Recommended Contractor Action(s) for resolution:

4. Project Inspector Acknowledgment:

5. Owner / A/E Resolution(s):

Date Reviewed:

Architect's Project # 22-1551.01 DSA File/Appl. # 39-50 / 02-121807

# **1. ELECTRONIC DATA REQUEST**

Attention: Jennifer Huang



From: Contractor: Contact: Sub Contractor:

Contact:

E-DATA

REQUEST NO.:

Date:

Company

Name

2. DATA REQUESTED - Provide list of specific drawings requested (include sheet numbers):

3. REASON FOR REQUEST - Provide clear explanation of why information is desired and for what purpose it will be utilized:

# 4. ACKNOWLEDGEMENT OF RESPONSIBILITY:

The electronic data files requested are distributed for reference only. Transferring such files can alter, delete or change original information. Accuracy of the data cannot be guaranteed as correct or complete and the Contractor accepts full responsibility for any and all inaccuracies, regardless of cause.

The hard copy documents, including addenda and subsequent written changes to the documents, represent the complete work of the contract and all electronic files should be cross-referenced and verified from that information as electronic files may not contain all contract information. It is the Contractor's responsibility to make any changes or revisions necessary.

This electronic data is furnished without guarantee of compatibility with your hardware or software. It is the Contractor's responsibility to notify the Architect in the event a compatibility problem or disk defect is encountered and a replacement disk is necessary.

This electronic data, in its present form, remains the property of Rainforth Grau Architects and shall not be used for any other purpose than to provide background information for the project noted above. It is not to be released to any other party without the written consent of Rainforth Grau Architects.

Accepted by:

Signature - Contractor/Subcontractor

Representing:

Contractor/Subcontractor Company Name

#### **MEGGER GROUNDING TEST CERTIFICATE**

This certifies th	at a Megger Groundi	ng Test for the	Victor Elementary	School - Portable	
Bldgs & Shelt	er for the	Lodi Unified	School District, of	San Joaquin	
County, Califor	nia was conducted or	the day	of	, 2023, per CCR	
Title 24, Sectio	ns 200 H and J. The	undersigned verifies	that the resistance to	ground was 25 ohms	
or less, as requ	lired, and is found to l	be acceptable.			
Proiect Name:					
DSA File No.:	Application No.:				
Address:					
-					
-					
General Contra	actor's Signature:				
Electrical Contr	actor's Signaturo:				
	actor s Signature.				
Testing Agency's Signature:					
District lass (					
District inspector's Signature:					

# SEPARATE CERTIFICATE IS REQUIRED FOR EACH SITE

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# **CERTIFICATION OF CHLORINATION AND STERILIZATION**

This certifies that			chlorinated the domestic hot and cold water						
plumbing lines for the Victor Eleme	entary Sc	<u>hool -</u>	Portat	ble Bldg	gs & Sh	nelter	.,		
Lodi Unified School District. The	e lines we	re first	flushed	d and c	hlorine	was inj	ected	in the	main
water line on	,	<b>2023</b> .	A mini	imum cł	nlorine i	residua	al of 5	0 ppm	was
measured at each outlet. The lines	were tagg	ed, seo	cured a	and the	make-u	p wate	er was	shut c	off. On
	_ , <b>2023</b> , (a	a minir	num of	f 24 hou	irs later	) the cl	hlorine	e resid	ual was
retested and found to contain a mini	mum of 50	) ppm.	The p	olumbing	g lines v	vere th	en the	orough	ly
flushed with fresh water until the chlo	orine resid	lual wa	as not g	greater t	han 0.2	2 ppm a	at all c	outlets.	Α
Bacteriological Examination report ha	as been p	rovide	d.						
District Inspector Signature:									
	Date								
Name of Chlorination and Testing Fi	rm:								
Authorized Representative Signature	e:								
	Date								
Name of General Contractor:									
Authorized Representative Signature	e:								
	Date								

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#### **CERTIFICATION OF COMPLIANCE FOR BUILDING MATERIALS**

This is to certify, in accordance with the Environmental Protection Agency requirements, that the materials and equipment used in the construction of the <u>Victor Elementary School - Portable</u> <u>Bldgs & Shelter</u> for the <u>Lodi Unified</u> School District of <u>San Joaquin</u> County, California, are asbestos free and are, therefore, not subject to monitoring for asbestos contamination.

Project Name:	
Address:	
Contractor:	
Address:	
Cimpeture	
Signature:	
Title:	
Date:	

## SEPARATE CERTIFICATE IS REQUIRED FOR EACH SITE

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#### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section Includes:
  - 1. Alteration requirements for modernizations, remodels, and additions.

#### 1.2 RELATED REQUIREMENTS

- A. Section 01 1100, Summary of Work.
- B. Section 01 5000, Temporary Facilities and Controls.
- C. Section 01 7329, Cutting and Patching.
- D. Section 02 4119, Selective Demolition.

#### 1.3 REFERENCES AND STANDARDS

- A. California Building Code (CBC), edition as noted on the drawings, as adopted by the California Division of the State Architect (DSA).
- B. California Green Building Standards Code (CALGreen), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).

#### 1.4 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
  - 1. Contractor to coordinate and conduct a meeting with the demolition contractor to verify which systems, if any, are to be protected and maintained. Such systems shall be clearly identified and marked to avoid unnecessary damage or removal.
  - 2. Coordinate work of alterations and renovations to expedite completion sequentially and to accommodate Owner occupancy.

#### 1.5 QUALITY ASSURANCE

- A. Manufacturer and Installer Qualifications: As specified in the product specifications.
- B. Use only new materials and products, unless existing materials or products are specifically shown otherwise on the Drawings to be salvaged and re-used.
- C. Single Source Responsibility: Use materials and products of one manufacturer whenever possible.
- D. All materials, components, assemblies, workmanship and installation are to be observed by the Owner's Inspector of Record. Work not so inspected is subject to uncovering and replacement.

#### ALTERATION PROJECT PROCEDURES SECTION 01 3516 22-1551.01

#### 1.6 FIELD CONDITIONS

A. Make and be responsible for all field dimensions necessary for proper fitting and completion of work. Report discrepancies to Architect before proceeding.

#### PART 2 - PRODUCTS

#### 2.1 PRODUCTS FOR PATCHING AND EXTENDING WORK

- A. New Materials: As specified in product Sections; match existing products and work for patching and extending work.
- B. Type and Quality of Existing Products: Determine by inspection and testing products where necessary, referring to existing work as a standard.

#### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Verify that demolition is complete and areas are ready for installation of new work.
- B. Inspect conditions of uncovered work affecting installation of products or performance work.
- C. Verify that specified items may be installed in accordance with the approved design.
- D. Beginning of restoration work means acceptance of existing conditions.
- E. In event of discrepancy, immediately notify Architect. Do not proceed in discrepant areas until discrepancies have been fully resolved.

#### 3.2 **PREPARATION**

- A. Close openings in exterior surfaces to protect existing work and salvage items for weather and extremes of temperature and humidity. Insulate ductwork and piping to prevent condensation in exposed areas.
- B. Cut, move or remove items as necessary for access to alterations and renovation work.
- C. Remove debris and abandoned items from area and from concealed spaces.
- D. Remove unsuitable material not marked for salvage, such as rotted wood, corroded metals, and deteriorated masonry and concrete.
- E. Prepare surface, and remove surface finishes to provide for proper installation of new work and finishes including blocking, framing, insulation, etc.
- F. Replace materials as specified for finished work.

#### 3.3 INSTALLATION

- A. Complete Project in all respects including operational mechanical and electrical work.
- B. Remove, cut and patch work in a manner to minimize damage and to provide a means of restoring products and finishes to original condition, and installation of concealed work, as specified in Section 01 7329, Cutting and Patching,
- C. Refinish visible existing surfaces to remain in renovated rooms and spaces, to specified condition for each material, with a neat transition to adjacent finishes.
- D. Install products as specified in individual specifications Sections.
- E. Where materials or equipment are removed, but no new finish is scheduled, patch and repair any damage to match existing wall surface.

#### 3.4 TRANSITIONS

- A. Where new work abuts or aligns with existing, perform a smooth and even transition. Patched work is to match existing adjacent work in texture and appearance.
- B. When finished surfaces are cut so that a smooth transition with new work is not possible, terminate existing surface along a straight line at a natural point of division and make recommendation to Architect.

#### 3.5 ADJUSTMENTS

- A. Where removal of partitions or walls results in adjacent spaces becoming one, rework floors, walls and ceilings to a smooth plane without breaks, steps or bulkheads.
- B. Where a change of plane of 1/8" or more occurs, submit recommendation for providing a smooth transition for Architect review.
- C. Trim existing doors as necessary to clear new floor finish. Refinish trim as required.
- D. Fit work at penetrations of surfaces as specified in Section 01 7329.

#### 3.6 FINISHES

- A. Finish surfaces as specified in individual Product Sections.
- B. Finish patches to produce uniform finish and texture over entire area. When finish cannot be matched, refinish entire surface to nearest intersections.

#### 3.7 REPAIR OF DAMAGED SURFACES

- A. Patch or replace portions of existing surfaces which are damaged, lifted, discolored, or showing other imperfections.
- B. Repair substrate prior to patching finish.

#### ALTERATION PROJECT PROCEDURES SECTION 01 3516 22-1551.01

C. In the event of damage, make all repairs and replacements necessary to the approval of the Architect at no additional cost to the Owner.

#### 3.8 CLEANING

A. Upon completion of installation, remove manufacturer's temporary labels and marks of identification. Thoroughly clean surfaces and remove foreign material. Leave entire work in neat, orderly, clean and acceptable condition.

#### 3.9 **PROTECTION**

- A. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.
- B. Exposed finishes shall be free from scratches, dents, permanent discolorations and other defects in workmanship or material.

## END OF SECTION

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#### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section Includes: Special environmental, sustainable, and "green" building practices related to indoor air quality, resource efficiency supplementing the Pollutant Control requirements specified under Section 01 8113.10, Sustainable Design Requirements, and to ensure healthy indoor air quality in final Project.
- B. Contractor is required to comply with sustainable building practices during construction and when considering materials for substitutions. Refer to Article "Design Requirements."

#### 1.2 RELATED REQUIREMENTS

- A. Section 01 6116, Volatile Organic Compound (VOC) Restrictions.
- B. Section 01 7419, Construction Waste Management and Disposal.

#### 1.3 ADMINISTRATIVE REQUIREMENTS

- A. Submittal Procedures:
  - 1. Informational Submittals shall be submitted in accordance with Section 01 3300, Submittal Procedures.
  - 2. Sustainable Design Submittals shall comply with the additional requirement of Section 01 8113, Sustainable Design Requirements.
  - 3. Closeout Submittals shall be submitted in accordance with Section 01 7700, Closeout Procedures.

#### 1.4 DESIGN REQUIREMENTS

- A. Owner has established general environmental goals for design and for construction of the Project.
  - 1. In addition to the Contractor, the Contractor's construction team, including subcontractors, suppliers, and manufacturers, are encouraged to participate where possible to realize the Owner's environmental goals.
  - 2. Intent is for environmental goals to be achieved in a manner which ultimately provides a safe and healthy environment for building occupants with minimal impact on the local, regional and global environment.
- B. Environmental Goals:
  - 1. Refer to specific Specifications Sections for more detailed construction requirements related to specific materials and systems.

#### ENVIRONMENTAL PROCEDURES SECTION 01 3543 22-1551.01

#### 1.5 INFORMATIONAL SUBMITTALS

- A. Indoor Air Quality (IAQ) Data:
  - 1. Environmental Issues: Submit emission test data produced by acceptable testing laboratory, listed in this Specification Article "Quality Assurance," for materials as required in each specific Specification Section.
    - Laboratory reports shall contain emissions test data on Volatile Organic Compounds (VOCs) including Total Volatile Organic Compounds (TVOC), specific individual VOCs, formaldehyde and other aldehydes as described in this Section.
    - b. Identify VOCs emitted by each material as required in these Specifications, and demonstrate compliance with the California Green Building Standards Code, edition current as of the date of this Contract.
    - c. Specific test conditions and requirements are set forth in the Specifications. For required tests, submit documentation of sample acquisition, handling, and test specimen preparation, as well as test conditions, methods, and procedures. The tests consist of a 10-day conditioning period followed by a 96-hour test period.
      - 1) Samples collected during the test period at 24, 48, and 96-hours shall be analyzed for TVOC and formaldehyde.
      - 2) VOC samples collected at 96 hours shall be identified and quantified for compounds that are found on the list of Chemicals of Concern. The Chemicals of Concern list is based on the California OEHHA list as of September 2002 (The most recent list shall be used for this Specification as published at:
        - a) http://www.oehha.org/air/chronic\_rels/allChrels.html.
  - 2. Cleaning and Maintenance Products: Provide data on manufacturers' recommended maintenance, cleaning, refinishing and disposal procedures for materials and products. These procedures are for final Contractor cleaning of the project prior to Substantial Completion and for provided materials and products as required by the specific Specification Sections.
    - a. Where chemical products are recommended for these procedures, provide documentation to indicate that no component present in the cleaning product at more than 1 percent of the total mass of the cleaning product is a carcinogen or reproductive toxicant as identified in the Chemicals of Concern list referenced above.
    - b. Avoid cleaning products containing alpha-pinene, d-limonene or other unsaturated carbon double bond alkenes due to chemical reactions with ozone to form aldehydes, acidic aerosols, and ultra-fine particulate matter in indoor air.
- B. Certificates:
  - 1. Prior to Final Completion, submit a certificate signed by corporate office holder of Contractor, subcontractor, supplier, vendor, installer or manufacturer primarily responsible for the manufacturing of the product, indicating materials provided are

essentially the same, and contain essentially the same components as products and materials tested.

2. Comply with requirements specified in Specification Section 01 7700, Closeout Procedures.

#### 1.6 CLOSEOUT SUBMITTALS

- A. Submit data relating to Environmental Issues.
  - 1. Submit environmental product certifications, in two forms:
    - a. Two CD-ROMs organized by CSI Division Format.
    - b. Three three-ring binders organized by CSI Division Format with Table of Contents and with dividers for each Division.

#### 1.7 QUALITY ASSURANCE

- A. Environmental Project Management and Coordination: Contractor to identify one person on Contractor's staff to be responsible for environmental issues compliance and coordination.
  - 1. Experience: Environmental project manager shall have experience relating to sustainable building construction.
  - 2. Responsibilities: Carefully review the Contract Documents for environmental issues, coordinate work of trades, subcontractors, and suppliers; instruct workers relating to environmental issues; and oversee Project Environmental Goals.
  - 3. Meetings: Discuss Environmental Goals at following meetings.
    - a. Pre-construction meeting.
    - b. Pre-installation meetings.
    - c. Regularly scheduled job-site meetings.
    - d. Special sustainability issues meetings.
- B. Environmental Issues Criteria: Comply with requirements listed in the Specification Sections.
- C. Acceptable Indoor Air Emissions Testing Laboratories:
  - 1. Selection of testing laboratories shall include assessment of prior experience in conducting indoor source emissions tests.
  - 2. The proposed laboratory shall be an independent company or organization not related to the manufacturer of the products to be tested.
  - 3. Submit documentation on proposed laboratory for review and approval by Owner.

#### 1.8 DELIVERY, STORAGE, AND HANDLING

A. Packaging: Deliver materials in recyclable or in reusable packaging such as cardboard, wood, paper, or reusable blankets, which will be reclaimed by supplier or manufacturer for recycling.

#### ENVIRONMENTAL PROCEDURES SECTION 01 3543 22-1551.01

- 1. Minimize packaging materials to maximum extent possible while still ensuring protection of materials during delivery, storage, and handling.
- 2. Unacceptable Packaging Materials: Polyurethane, polyisocyanate, polystyrene, polyethylene, and similar plastic materials such as "foam" plastics and "shrink-fit" plastics.
- 3. Reusable Blankets: Deliver and store materials in reusable blankets and mats reclaimed by the manufacturers or suppliers for reuse where the reclamation program exists or where a program can be developed for such reuse.
- 4. Pallets: Where pallets are used, suppliers shall be responsible to ensure pallets are removed from site for reuse or for recycling.
- 5. Corrugated Cardboard and Paper: Where paper products are used, recycle as part of the construction waste management recycling program, or return to the material's manufacturer for use by the manufacturer or supplier.
- 6. Sealants, Paint, Primers, Adhesives, and Coating Containers: Return to the supplier or manufacturer for reuse where such program is available.
- B. Comply with the additional requirements specified in Section 01 7419, Construction Waste Management and Disposal.

#### 1.9 FIELD CONDITIONS

- A. No smoking will be permitted in indoor Project site locations, in accordance with California Labor Code (Section 400-6413.5).
- B. Environmental Product Certification:
  - 1. Include certification that indicates cleaning materials comply with requirements of these Specifications.
- C. Construction Ventilation and Preconditioning:
  - Temporary Construction Ventilation: Maintain sufficient temporary ventilation of areas where materials are being used that emit VOCs. Maintain ventilation continuously during installation, and until emissions dissipate following installation. If continuous ventilation is not possible utilizing the building's HVAC system(s) then ventilation shall be supplied using open windows and temporary fans, sufficient to provide no less than three air changes per hour.
    - a. Period after installation shall be sufficient to dissipate odors and elevated concentrations of VOCs. Where no specific period is stated in these Specifications, a time period of 72 hours shall be used.
    - b. Ventilate areas directly to outside; ventilation to other enclosed areas is not acceptable.
  - 2. During dust producing activities, including drywall installation and finishing, turn ventilation system off, and openings in supply and return HVAC system shall be protected from dust infiltration. Provide temporary ventilation as required.
  - 3. Preconditioning: Prior to installation, allow products which have odors and significant VOC emissions to off-gas in dry, well-ventilated space for 14 calendar days to allow for reasonable dissipation of odors and emissions prior to delivery to Project site and installation.

- a. Condition products without containers and packaging to maximize offgassing of VOCs
- b. Condition products in ventilated warehouse or other building. Comply with substitution requirements for consideration of other locations.
- D. Protection:
  - 1. Moisture Stains: Materials with evidence of moisture damage, including stains, are not acceptable, including both stored and installed materials; immediately remove from site and properly dispose.
    - a. Take special care to prevent an accumulation of moisture on installed materials and within packaging during delivery, storage, and handling to prevent development of molds and mildew on packaging and on products
    - b. Immediately remove from site and properly dispose of materials showing signs of mold and signs of mildew, including materials with moisture stains.
    - c. Replace moldy materials with new, undamaged materials.
  - 2. Ducts: Seal ducts during transportation, delivery, and construction to prevent accumulation of construction dust and construction debris inside of ducts.

#### PART 2 - PRODUCTS

#### 2.1 SUBSTITUTIONS

- A. Requests for substitutions shall comply with requirements specified in Specification Section 01 3300, Submittals, and with the following additional information required where environmental issues are specified:
  - 1. Indicate how each proposed substitution complies with requirements for VOCs.
  - 2. Owner, in consultation with Architect reserve the right to reject proposed substitutions where data for VOCs is not provided or where emissions of individual VOCs are higher than for the specified materials.
  - 3. Comply with the specified recycled content and other environmental requirements.

#### PART 3 - EXECUTION

#### 3.1 FIELD QUALITY CONTROL

- A. Sequencing:
  - 1. On-Site Application: Where odorous and/or high VOC emitting products are applied on-site, apply prior to installation of porous and fibrous materials. Where this is not possible, protect porous materials with polyethylene vapor retarders.
  - 2. Complete interior finish material installation no less than 14 days prior to Substantial Completion to allow for Building Flush Out as described in Paragraph 3.1B.

#### ENVIRONMENTAL PROCEDURES SECTION 01 3543 22-1551.01

- B. Building Flush Out: Just prior to Substantial Completion, flush out building air continuously using maximum tempered outside air, or maximum amount of outside air while achieving reasonable indoor temperature, for at least 14 calendar days. Continuously is defined as 24 hours per day, 7 days a week. If interruptions of more than a few hours are required for testing and balancing purposes, extend flush out period accordingly in order to achieve the minimum 14 calendar day building flush out period.
  - 1. When Contractor is required to perform touch-up work, provide temporary construction ventilation during installation and extend building flush-out by a minimum of 4 calendar days after touch-up installation is complete with maximum tempered outside air for 24 hours per day.
  - 2. If construction schedule permits, extend flush-out period beyond minimum building flush out period for an additional 15 days.
  - 3. Return ventilation system to normal operation following flush-out period to minimize energy consumption.

#### 3.2 CLEANING

- A. Clean interior and exterior surfaces exposed to view; remove temporary labels, stains, and foreign substances; polish transparent and glossy surfaces using cleaning and maintenance products that conform to standards as described in Part 1 of this Section.
- B. Clean equipment and fixtures to sanitary condition using cleaning and maintenance products that conform to standards as described in Part 1 of this Section.
- C. Products used for cleaning shall comply with Proposition 65 and the additional restrictions for volatile organic compounds specified in Section 01 6116.
- D. Vacuum carpeted and soft surfaces with high efficiency particulate arrestor (HEPA) vacuum.
- E. If ducts were not sealed during construction, and contain dust or dirt, clean ducts using HEPA vacuum immediately prior to Substantial Completion and prior to using ducts to circulate air. Oil film on sheet metal shall be removed before shipment to site. Ducts shall be inspected to confirm that no oil film is present. Remove oil film.
- F. Replace air filters, both pre and final filters, just prior to Substantial Completion.
- G. Remove and properly dispose of recyclable materials using construction waste management program described in Section 01 7419, Construction Waste Management and Disposal.

#### 3.3 **PROTECTION**

- A. Protect interior materials from water intrusion or penetration where interior products are not intended for wet applications and are exposed to moisture.
- B. Protect installed products using methods that do not support growth of mold and mildew.
  - 1. Immediately remove from site materials with mold or mildew.

#### ENVIRONMENTAL PROCEDURES SECTION 01 3543 22-1551.01

# END OF SECTION

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#### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section Includes:
  - 1. Standard reference abbreviations use in the Project Manual.
  - 2. Requirements for standard references use in the various Specification Sections.

#### 1.2 STANDARD SPECIFICATIONS

- A. The contract Documents contain references to various standard specifications, codes, practices, and requirements for materials, work quality, installation, inspections and tests published and issued by the organizations, societies, and associations. Such references are hereby made part of the Contract Documents to the extent required.
- B. When standard specifications are included by abbreviation and number only, it is assumed that the Contractor is familiar with and has ready access to the specified standards.
- C. When the effective date of a reference standard is not given, it shall be understood that the current edition or latest revision thereof and any amendments or supplements thereto in effect on the date of original issue of these Contract Documents, as indicated on the cover, shall govern the Work.
- D. Reference standards are not furnished with the contract Documents, because the Contractor, subcontractors, manufacturers, suppliers, and the trades involved are assumed to be familiar with their requirements
- E. Contractor shall obtain its own copies of required specified referenced publications.
- F. The specification or standard referred to shall have full force and effect as though printed in these specifications.
- G. In addition to those standards specifically referenced in the Specifications, comply with the accepted industry standards and trade association recommendations for the respective portions of Work.
- H. In the case of difference between referenced standards and the Contract Documents, the most stringent requirements prevail.

#### 1.3 STANDARD SPECIFICATION ABBREVIATIONS

- A. In addition to abbreviations indicated on the Drawings, references in the Project Manual to trade associations, technical societies, recognized authorities, and other institutions may include the following organizations, which are sometimes referred to by only the corresponding abbreviations. Not all abbreviations are listed, and not all listed abbreviations are used.
- B. Initialisms and Acronyms:
### ABBREVIATIONS AND ACRONYMS SECTION 01 4213 22-1551.01

1.	AA	Aluminum Association
2.	AAMA	American Architectural Manufacturers Association
3.	AASHTO	American Association of State Highway and Transportation Officials
4.	AATCC	American Association of Textile Chemists and Colorists
5.	ABAA	Air Barrier Association of America
6.	ACI	American Concrete Institute
7.	ACS	Access Compliance Section (DSA)
8.	ACSE	American Society of Civil Engineers
9.	ADA	American with Disabilities Act
10.	AGA	American Galvanizers Association
11.	AIA	American Insurance Association (successor to NBFU)
12.	AISC	American Institute of Steel Construction
13.	AISI	American Iron and Steel Institute
14.	AITC	American Institute of Timber Construction
15.	ALSC	American Lumber Standards Committee
16.	ANSI	American National Standards Institute
17.	APA	The Engineered Wood Association
18.	ASHRAE	American Society of Heating, Refrigerating, and Air Conditioning
19.	ASTM	ASTM International
20.	AWI	Architectural Woodwork Institute
21.	AWPA	American Wood Protection Association
22.	AWS	American Welding Society
23.	BHMA	Builders Hardware Manufactures Association
24.	CALGreen	California Green Building Standards Code
25.	CBC	California Building Code
26.	CEC	California Electrical Code
27.	CFC	California Fire Code
28.	CLFMI	Chain Link Fence Manufacturing Institute
29.	CMC	California Mechanical Code
30.	CPC	California Plumbing Code
31.	CRA	California Redwood Association
32.	CRI	Carpet and Rug Institute
33.	CRSI	Concrete Reinforcing Steel Institute
34.	CS	Commercial Standard of National Bureau of Standards (US Dept of
		Commerce)
35.	DHI	Door and Hardware Institute
36.	DSA	Division of the State Architect
37.	DTSC	Department of Toxic Substances Control
38.	EPA	Environmental Protection Agency
39.	FDA	U.S. Food and Drug Administration

### ABBREVIATIONS AND ACRONYMS SECTION 01 4213 22-1551.01

40.	FLS	Fire & Life Safety (DSA)
41.	FM	Factory Mutual
42.	FS	Federal Specification of General Services Administration
43.	FSC	Forest Stewardship Council
44.	GA	Gypsum Association
45.	HMMA	Hollow Metal Manufacturers Association
46.	ICC-ES	International Code Council Evaluation Service
47.	ISO	International Organization for Standards
48.	MIA	Masonry Institute of America
49.	MMPA	Moulding and Millwork Producers Association
50.	MPI	Master Painters Institute
51.	NAAMM	National Association of Architectural Metal Manufactures
52.	NAAWS	North American Architectural Woodwork Standards
53.	NBFU	National Board of Fire Underwriters (See AIA)
54.	NBHA	National Builders Hardware Association
55.	NEC	National Electric Code of NFPA
56.	NEMA	National Electrical Manufacturers Association
57.	NFPA	National Fire Protection Association
58.	NFSHSA	National Federation of State High School Associations
59.	NRCA	National Roofing Contractors Association
60.	OSHA	Occupational Safety and Health Administration
61.	PCA	Portland Cement Association
62.	PCI	Precast Concrete Institute
63.	PI	Project Inspector
64.	PLIB	Pacific Lumber Inspection Bureau
65.	RIS	Redwood Inspection Service (Grading Rules)
66.	SCAQMD	South Coast Air Quality Management District
67.	SEI	Structural Engineering Institute
68.	SDI	Steel Door Institute
69.	SJI	Steel Joist Institute
70.	SMACNA	Sheet Metal and Air Conditioning Contractors National Association
71.	SMF	Office of the State Fire Marshal
72.	SPR	Simplified Practice Recommendation (US Dept. of Commerce)
73.	SSMA	Steel Stud Manufacturers Association
74.	SSPC	The society for Protective Coatings
75.	SWPPP	Storm Water Pollution Prevention Plan
76.	TCNA	Tile Council of North America
77.	Title 19	California Code of Regulations - Public Safety
78.	Title 24	California Code of Regulations - Building Codes
79.	TMS	The Masonry Institute

### ABBREVIATIONS AND ACRONYMS SECTION 01 4213 22-1551.01

UL	Underwriter's Laboratories, Inc.
WCLIB	West Coast Lumber Inspection Bureau (successor to WCLA)
WDMA	Window and Door Manufacturers Association
WI	Woodwork Institute
WRCLA	Western Red Cedar Lumber Association
WWPA	Western Wood Products Association
	UL WCLIB WDMA WI WRCLA WWPA

# **END OF SECTION**

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### PART 1 - GENERAL

### 1.1 SUMMARY

- A. Section Includes:
  - 1. Definitions of terms and requirements pertaining to the contract documents,

### 1.2 RELATED REQUIREMENTS

A. Drawings and general provisions of Contract, including General and other Division 1 Specification Sections, apply to work of this section.

### 1.3 DESCRIPTION OF REQUIREMENTS

- A. <u>General Explanation</u>: A substantial amount of specification language consists of definitions for terms found in other contract documents, including the drawings. (Drawings must be recognized as diagrammatic in nature and not completely descriptive of the requirements indicated thereon.) Certain terms used in contract documents are defined in this Section. Definitions and explanations contained in this section are not necessarily either complete or exclusive, but are general for the work to the extent that they are not stated more explicitly in another element of the Contract Documents.
- B. <u>General Requirements</u>: The provisions or requirements of Division 1 sections apply to entire work of Contract and, where so indicated, to other elements which are included in project.
- C. <u>Governing Regulations</u>: Refer to General for requirements related to compliance with governing regulations.
- D. <u>Abbreviations</u>: The language of specifications and other contract documents is of the abbreviated type in certain instances, and implies words and meanings which will be appropriately interpreted. Specific abbreviations have been established, principally for lengthy technical terminology and primarily in conjunction with coordination of specification requirements with notations on drawings and in schedules. These are frequently defined in sections at first instance of use. Trade association names and titles of general standards are frequently abbreviated.

# 1.4 DEFINITIONS

- A. <u>Approve</u>: Where used in conjunction with Architect's/ Engineer's response to submittals, requests, applications, inquiries, reports and claims by Contractor, the meaning of term "approved" will be held to limitations of Architect's/Engineer's responsibilities and duties as specified in General. In no case will "approval" by Architect/Engineer be interpreted as a release of Contractor from responsibilities to fulfill requirements of contract documents.
- B. <u>Directed, Requested</u>, etc.: Where not otherwise explained, terms such as "directed", "requested", "authorized", "selected", "approved", "required", "accepted", and

#### DEFINITIONS AND STANDARDS SECTION 01 4216 22-1551.01r

"permitted" mean "directed by Architect", "requested by Architect", and similar phrases. However, no such implied meaning will be interpreted to extend the Architect's responsibility into the Contractor's area of construction supervision.

- C. <u>Furnish</u>: Except as otherwise defined in greater detail, term "furnish" is used to mean supply and deliver to project site, unloaded, ready for assembly, installation, etc., as applicable in each instance. See Also "Provide".
- D. <u>Indicated</u>: The term "indicated" is a cross-reference to graphic representations, notes or schedules on drawings, to other paragraphs or schedules in the specification, and to similar means of recording requirements in contract documents. Where terms such as "shown", "noted", "scheduled", and "specified" are used in lieu of "indicated", it is for purpose of helping reader locate cross-reference, and no limitation of location is intended except as specifically noted.
- E. <u>Install</u>: Except as otherwise defined in greater detail, term "install" is used to describe operations at project site including unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning and similar operations, as applicable in each instance. See also "Provide".
- F. <u>Installer</u>: The term "installer" is defined as the entity (person or firm) engaged by the Contractor, its subcontractor or sub-subcontractor for performance of a particular unit of work at the project site, including installation, erection, application and similar required operations. It is a general requirement that such entities (installers) be expert in the operations they are engaged to perform.
- G. <u>Minimum Quality/Quantity</u>: In every instance, the quality level or quantity shown or specified is intended to be the minimum for the work to be performed or provided. Except as otherwise specifically indicated, the actual work may either comply exactly with that minimum (within specified tolerances), or may exceed that minimum within reasonable limits. In complying with these requirements, indicated numeric values are either minimums or maximums as noted, or as appropriate for context of the requirements. Refer instances of uncertainty to Architect for decision before proceeding.
- H. <u>Project Site</u>: The term "project site" is defined as the space available to the Contractor for performance of the work, either exclusively of or in conjunction with others performing other work as part of the project. The extent of the project site is shown on the drawings, and may or may not be identical with the description of the land upon which the project is to be built.
- I. <u>Provide</u>: Except as otherwise defined in greater detail, term "provide" means furnish and install, complete and ready for intended use, as applicable in each instance.
- J. <u>Specialists, Assignments</u>: In certain instances, specification test requires (or implies) that specific work is to be assigned to specialists or expert entities, who must be engaged for the performance of that work. Such assignments shall be recognized as special requirements over which the Contractor has no choice or option. These requirements should not be interpreted so as to conflict with the enforcement of building codes and similar regulations governing the work; they are also not intended to interfere with local union jurisdiction settlements and similar conventions. Such assignments are intended

to establish which party or entity involved in a specific unit of work is recognized as "expert" for the indicated construction processes or operations. Nevertheless, the final responsibility for fulfillment of the entire set of contract requirements remains with the Contractor.

- K. <u>Testing Laboratory</u>: The term "testing laboratory" is defined as an independent entity engaged to perform specific inspections or tests of the work, either at the project site or elsewhere, and to report, and (if required) interpret results of those inspections or tests.
- L. <u>Trades</u>: Except as otherwise indicated, the use of titles, such as "carpentry" in specification text, implies neither that the work must be performed by an accredited or unionized tradesperson of corresponding generic name (such as "carpenter"), nor that specified requirements apply exclusively to work by tradespersons of that corresponding generic name.

# 1.5 DRAWING SYMBOLS:

- A. <u>General</u>: Except as otherwise indicated, graphic symbols used on drawings are those symbols recognized in the construction industry for purposes indicated.
- B. <u>Mechanical/Electrical Drawings</u>: Graphic symbols used on mechanical and electrical drawings are generally aligned with symbols recommended by more specific symbols as recommended by other recognized technical associations including ASME, ASPE, IEEE and similar organizations. Refer instances of uncertainty to the Architect/Engineer for clarification before proceeding.

# 1.6 INDUSTRY STANDARDS:

- A. <u>General Applicability of Standards</u>: Except to the extent that more explicit or more stringent requirements are written directly into the contract documents, applicable standards of the construction industry have the same force and effect (and are made a part of the contract documents by reference) as if copied directly into the contract documents, or as if published copies where bound herewith. Refer to other contract documents for resolution of overlapping and conflicting requirements which result from the application of several different industry standards to the same unit of work. Refer to individual unit of work sections for indications of which specialized codes and standards the Contractor must keep at the project site, available for reference.
- B. <u>Referenced Standards</u> (referenced directly in contract documents or by governing regulations) have precedence over non-referenced standards which are recognized in industry for applicability to work.
- C. <u>Non-referenced Standards</u> are hereby defined as having no particular applicability to the work, except as a general requirement of whether the work complies with standards recognized in the construction industry.
- D. <u>Publication Dates</u>: Except as otherwise indicated, where compliance with an industry standard is required, comply with standard in effect as of date of contract documents.

#### DEFINITIONS AND STANDARDS SECTION 01 4216 22-1551.01r

- E. <u>Copies of Standards</u>: The contract documents require that each entity performing work be experienced in that part of the work being performed. Each entity is also required to be familiar with recognized industry standards applicable to that part of the work. Copies of applicable standards are not bound with the contract documents.
  - 1. Where copies of standards are needed for proper performance of the work, the Contractor is required to obtain such copies directly from the publication source.
  - 2. Although a certain number of copies of these standards may be required as a part of the submittal, the Architect/Engineer reserves the right to require the Contractor to submit additional copies of these standards as necessary for enforcement of the requirements.
- F. <u>Acronyms</u>: Where acronyms are used in the specifications or other contract documents they are defined to mean the industry recognized name of the trade association, standards generating organization, governing authority or other entity applicable to the context of the test provision.

# 1.7 GOVERNING REGULATIONS/AUTHORITIES

- A. <u>General:</u> The procedure followed by Architect/Engineer has been to contact governing authorities where necessary to obtain information needed for the purpose of preparing contract documents; recognizing that such information may or may not be of significance in relation to Contractor's responsibilities for performing the work. Contact governing authorities directly for necessary information and decisions having a bearing on performance of the work.
- B. "<u>Regulations</u>" is defined to include laws, statutes, ordinances and lawful orders issued by governing authorities, as well as those rules, conventions and agreements within the construction industry which effectively control the performance of the work regardless of whether they are lawfully imposed by governing authority or not.

# 1.8 SUBMITTALS

A. <u>Permits, Licenses, and Certificates</u>: For the Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipt for fee payments, judgments, and similar documents, correspondence and records established in conjunction with compliance with standards and regulations bearing upon performance of the work.

# END OF SECTION

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# PART 1 - GENERAL

### 1.1 SUMMARY

A. Section Includes: Administrative and procedural requirements related to inspections, tests, and related quality control procedures required to be performed by the Contractor and that facilitate the Contactor's compliance with the Contract Documents.

### 1.2 RELATED REQUIREMENTS

- A. Section 01 3300, Submittal Procedures; submission of manufacturers' instructions and certificates.
- B. Section 01 4523, Testing and Inspecting Services, and DSA 103; Special Tests and Inspections required by authorities having jurisdiction and are the responsibility of Owner.
- C. Section 01 7700, Closeout Procedures.
- D. Specific requirements for testing, inspections, mockups, and other quality control requirements as described in the various Sections of the Specifications.

#### 1.3 **DEFINITIONS**

- A. Experienced: When used with an entity or individual, and unless otherwise specified, means having successfully completed a minimum of three previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.
- B. Field Quality-Control Tests: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- C. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, subcontractor, or sub-subcontractor, to perform a particular construction operation, including installation, erection, application, assembly, and similar operations.
- D. Mockups: Full-size, physical assemblies that are constructed on-site and in-place mockups to demonstrate aesthetic effects and, where indicated, qualities of materials and execution, and to review construction, coordination, interface, testing, and operation of various building components. Mockups are not samples.
- E. Tests: Procedures intended to establish the quality, performance, or reliability of a product or system conducted by a qualified Testing Agency.
- F. Source Quality-Control Tests: Tests and inspections related to materials manufactured or fabricated away from the jobsite that will be incorporated into the work.

- G. Testing Agency: An independent entity engaged to perform specific tests, inspections, or both, is qualified to operate in California, and meets the additional requirements specified.
  - 1. Testing laboratory shall mean the same as Testing Agency.
- H. 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.
- I. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Contractor's quality-control services do not include Contract administration activities performed by Architect.

# 1.4 REFERENCES AND STANDARD SPECIFICATIONS

- A. General:
  - 1. The Contract Documents contain references to various standard specifications, codes, practices, and requirements for materials, work quality, installation, inspections, and tests published and issued by the organizations, societies, and associations.
  - 2. Contractor shall obtain its own copies of required specified referenced publications.
  - 3. The specification or standard referred to shall have full force and effect as though printed in these Specifications.
  - 4. When the effective date of a reference standard is not specified, it shall be understood that the current edition or latest revision thereof and any amendments or supplements thereto in effect on the date of the DSA approval, shall govern the Work.
  - 5. The contractual relationships, duties, and responsibilities of the parties in Contract or those of the Architect shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.
- B. Products or workmanship specified by association, trade, or other consensus standards shall comply with requirements of the referenced standard or specification except when more rigid requirements are specified or are required by applicable codes.
- C. Conflicting Requirements:
  - 1. If compliance with two or more standards or requirements are specified and the standards or requirements establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement.
  - 2. Refer conflicting requirements that are different, but apparently equal, to Architect for direction before proceeding.

# 1.5 ADMINISTRATIVE REQUIREMENTS

- A. Submittal Procedures:
  - 1. Informational Submittals shall be submitted in accordance with Section 01 3300, Submittal Procedures.
  - 2. Closeout Submittals shall be submitted in accordance with Section 01 7700, Closeout Procedures.

# 1.6 INFORMATIONAL SUBMITTALS

- A. Schedule of Tests and Inspections.
- B. Field Superintendent's Quality Control Responsibilities.
- C. Procedures for inspection prior to subsequent Work or cover up.
- D. Qualifications of Contractor's Testing Agencies.
- E. Certified copies of Reports and Documents.

### 1.7 CLOSEOUT SUBMITTALS

- A. Permits, Licenses, and Certificates: 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.
- B. Test and Inspection Log including final record for each test and inspection as specified in Part 3 and in accordance with Section 01 7839, Project Record Documents.

# 1.8 **REPORTS AND DOCUMENTS**

- A. Test and Inspection Reports: Prepare and submit certified written reports where specified in the Specification Sections. Include the following:
  - 1. Date of issue.
  - 2. Project title and number.
  - 3. Name, address, and telephone number of testing agency.
  - 4. Dates and locations of samples and tests or inspections.
  - 5. Names of individuals making tests and inspections.
  - 6. Description of the Work and test and inspection method.
  - 7. Identification of product and Specification Section.
  - 8. Complete test or inspection data.
  - 9. Test and inspection results and an interpretation of test results.
  - 10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.

- 11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
- 12. Name and signature of laboratory inspector.
- 13. Recommendations on retesting and re-inspecting.

# 1.9 QUALITY ASSURANCE

- A. Minimum Quantity or Quality Levels:
  - 1. 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.
  - 2. Refer uncertainties to Architect for a decision before proceeding.
- B. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade(s).
- C. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.
- D. Correct conditions or workmanship not in conformance with specified standards or quality. Do so immediately after non-conformance item is discovered or within a reasonable time frame agreed upon with Construction Manager.
- E. Comply with manufacturers' instructions, including each step in sequence. Should manufacturers' instructions conflict with Contract Documents, request clarification from the Architect before proceeding.
- F. Comply with specified standards as minimum quality for the Work, except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- G. Perform Work by persons qualified to produce required and specified quality.
- H. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.
- I. Upon delivery to the jobsite, materials and products shall be inspected for compliance with the Project Specifications.
  - Nonconforming materials, products, equipment, hardware, tools and/or safety devices shall be removed immediately from the general work area and stored within a secured area approved by the Owner as "NON CONFORMING MATERIALS AREA" to ensure that defective or nonconforming materials are not incorporated into or used on the project
  - 2. Materials or products shall not be removed from the designated area until they are deemed by the Architect to be in compliance, or until they are modified or fixed to

meet the project specifications, or until they are removed from the jobsite for the purposes of disposal or shipment back to the manufacturer.

# 1.10 CONTRACTORS TESTING AGENCY

- A. Qualifications: At Contractor's expense, provide an independent testing laboratory nationally recognized according to 29 CFR 1910.7 and accredited according to NIST's National Voluntary Laboratory Accreditation Program (NVLAP,) or other independent agency with the experience and capability to conduct testing and inspecting indicated, documented according to ASTM E329; with additional qualifications specified in individual Sections; and, where required, that is acceptable to authorities having jurisdiction.
- B. Testing Agency shall cooperate with Architect, Owner's Project Inspector, and Contractor in performance of duties.
- C. Testing Agency shall provide qualified personnel to perform required tests and inspections.
- D. Testing Agency shall not be authorized to release, revoke, alter, or increase the Contract Document requirements, approve or accept any portion of the Work, or perform any duties of Contractor.

# 1.11 TESTS AND INSPECTIONS

- A. Preconstruction Testing: Where preconstruction testing is specified to verify performance requirements, comply with the following as applicable:
  - 1. Contractor Responsibilities:
    - a. Provide test specimens representative of proposed products and construction.
    - b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
    - c. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups to adequately demonstrate capability of products to comply with performance requirements.
    - d. Build site-assembled test assemblies and mockups using installers who will perform same tasks for Project.
    - e. Build laboratory mockups at testing facility using personnel, products, and methods of construction indicated for the completed Work.
    - f. When testing is complete, remove test specimens, assemblies, and mockups; do not reuse products on Project unless approved by Architect in writing.
- B. Tests and Inspections indicated in individual Specification Sections shall be conducted by a qualified Testing Agency. The responsibilities of the Testing Agency shall be as follows:

- 1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviews the completeness and adequacy of those procedures to perform the Work.
- 2. Notifying Architect, Owner's Project Inspector, and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
- 3. Submit a certified written report of each test, inspection, and similar quality-control service to Architect and Owner's Project Inspector with copy to Contractor and to DSA.
- 4. Submit a final report of tests and inspections at Substantial Completion which includes a list of unresolved deficiencies.
- 5. Interpret tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
- 6. Retest and reinspect corrected work.
- C. Monitoring and Documentation: Contractor shall maintain testing and inspection reports including log of approved and rejected results as specified in Part 3.
  - 1. Include work Architect has indicated as nonconforming or defective.
  - 2. Indicate corrective actions taken to bring nonconforming work into compliance with requirements.
  - 3. Comply with requirements of the California Division of the State Architect (DSA).

# PART 2 - PRODUCTS (NOT USED)

# PART 3 - EXECUTION

# 3.1 NOTIFICATIONS

- A. Contractor shall provide the following notifications;
  - 1. Owner's Project Inspector writing:
    - a. 24 hours in advance of starting new Work
    - b. 24 hours in advance of each test or inspection
  - 2. 48 hours' prior notice, minimum, to the Testing Agency for required tests and inspections.

# 3.2 TEST AND INSPECTION FIELD BINDER

- A. Contractor shall maintain in the Field Office a Test and Inspection Field Binder that includes a hard copy of the following documents:
  - 1. Approved Quality Control Plan.
  - 2. Specification Sections that apply to the respective portions of work.
  - 3. RFI's, CCD's or other approved document that changes the work.

- 4. Manufacturer's Installation Instructions (MII).
- 5. Specific details of the Work as requested by the Inspector.
- 6. Test and Inspection Log.

# 3.3 TEST AND INSPECTION LOG

- A. Prepare and maintain a record of tests and inspections using an electronic spreadsheet.
- B. Include the following information:
  - 1. Date test or inspection was conducted.
  - 2. Description of the Work tested or inspected.
  - 3. List pertinent detail/sheet number.
  - 4. List pertinent Specification Section.
  - 5. Attach manufacturer's installation inspections if applicable.
  - 6. List and attach RFI's, ASI's or CCD's affecting the Work.
  - 7. Date Inspector verified work is acceptable.
- C. Final record for each test and inspection shall be submitted on Contractors letterhead and include the name of the responsible person to verify Work was in accordance with the approved Contract Documents.

### 3.4 MANUFACTURERS' FIELD SERVICES

- A. When specified in respective Specification Sections, Contractor shall require supplier or manufacturer to provide qualified personnel to observe field conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, testing, adjusting and balancing of equipment as applicable, and to make appropriate recommendations. Contractor is responsible for proper notification of manufacturer's representative before installation of applicable work and for obtaining necessary inspection certificate stating that installation was observed and approved.
- B. Product Performance Verification: The supplier of products specified based on performance criteria shall, at the request of the Agency, inspect the installed product and certify conformance of the product to specified criteria under the installed conditions.
- C. Manufacturer's representative shall submit written report to the Architect listing observations and recommendations.

# 3.5 TOLERANCES - GENERAL

- A. Monitor tolerance control of installed products or portions to produce acceptable Work. Do not permit tolerances to accumulate.
- B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Architect before proceeding.
- C. Adjust products to appropriate dimensions; position before securing products in place.

### 3.6 DIMENSIONING AND TOLERANCES FOR ACCESSIBILITY

A. While it is recognized that construction practices generally permit a level of reasonable dimensional tolerance, the installation of items subject to compliance with the Americans with Disabilities Act Accessibility Guidelines and Chapter 11B of the California Building Code, typically does not allow such tolerances. Therefore, these dimensions are to be considered absolute and will be strictly enforced. Items found to be out of tolerance may require modification and/or replacement at Contractor's expense.

# 3.7 REPAIR AND PROTECTION

- A. 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 or matching existing substrates and finishes.
  - 2. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 01 7329, 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**

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# PART 1 - GENERAL

# 1.1 SUMMARY

- A. Section Includes:
  - 1. Requirements for Testing Laboratory.
  - 2. Contractor's responsibilities for facilitation of Testing and Inspections.

# 1.2 RELATED SECTIONS AND DOCUMENTS

- A. Geologic Hazards & Soils Report.
- B. DSA 103 Structural Test & Inspections List.
- C. Section 13 3423, Relocatable Buildings.
- D. Section 31 0000, Earthwork.
- E. Individual Specification Sections: Inspections and tests required, and standards for testing.

# 1.3 **REFERENCES**

- A. California Administrative Code (CAC), edition as noted on the drawings, as adopted by the California Division of the State Architect (DSA).
- B. California Building Code (CBC), edition as noted on the drawings, as adopted by the California Division of the State Architect (DSA).

# 1.4 SELECTION AND PAYMENT

- A. Testing laboratory shall be approved by both the Architect and the Division of the State Architect.
- B. Owner will employ and pay for services of an independent testing laboratory to perform specified inspection and testing. Retesting costs for failed tests will be the Contractors responsibility and will be back-charged against the contract.
- C. Under provisions for Relocatable Building construction, Owner limits his exposure to inplant inspection and testing costs. Refer to other Specification Sections related to such specific construction.
- D. Employment of testing laboratory shall in no way relieve Contractor of obligation to perform work in accordance with requirements of Contract Documents.

# 1.5 LABORATORY REPORTS

A. After each inspection and test, promptly submit two copies of laboratory report to Owner, Architect, Contractor and DSA.

#### TESTING AND INSPECTION SERVICES SECTION 01 4523 22-1551.01

- B. Include:
  - 1. Date of issue,
  - 2. DSA Application and File numbers,
  - 3. Project title and number,
  - 4. Name of inspector,
  - 5. Date and time of sampling or inspection,
  - 6. Identification of product and Specification Section,
  - 7. Location in the Project,
  - 8. Type of inspection or test,
  - 9. Date of test,
  - 10. Results of test,
  - 11. Conformance with Contract Documents.
- C. When requested by Architect, provide interpretation of test results.

# 1.6 LIMITS ON TESTING LABORATORY AUTHORITY

- A. Laboratory may not release, revoke, alter or enlarge on requirements of Contract Documents.
- B. Laboratory may not approve or accept any portion of the work.
- C. Laboratory may not assume any duties of Contractor.
- D. Laboratory has no authority to stop the work.

# 1.7 CONTRACTOR RESPONSIBILITIES

- A. Deliver to laboratory at designated location, adequate samples of materials proposed to be used which require testing, along with proposed mix designs. Allow reasonable time for review and testing.
- B. Arrange for, and coordinate with, laboratory for all required testing and inspection. Provide adequate notice, in advance, for proper scheduling and processing of testing. The Inspector will not be responsible for scheduling or arranging for testing and inspection services.
- C. Cooperate with laboratory personnel, and provide access to the work and to manufacturer's facilities.
- D. Provide incidental labor and facilities to provide access to work to be tested, to obtain and handle samples at the site or at the source of products to be tested, to facilitate tests and inspections, storage and curing of test samples.
- E. Notify Architect, Inspector, Structural Engineer (when applicable) and laboratory 24 hours prior to expected time for operations requiring inspection and testing services.

# TESTING AND INSPECTION SERVICES SECTION 01 4523 22-1551.01

# **END OF SECTION**

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# PART 1 - GENERAL

# 1.1 SUMMARY

- A. Section Included: Except as otherwise specified, temporary facilities and controls required for performance of the Contract including, but not necessarily limited to:
  - 1. Field offices.
  - 2. Temporary utilities.
  - 3. Sanitary facilities.
  - 4. Construction equipment.
  - 5. Enclosures, fencing and barricades.
  - 6. Temporary signs.
  - 7. Site access and parking.
  - 8. Temporary controls.
  - 9. Winterization.
  - 10. Fire alarm, intrusion alarm and fire sprinkler systems.
  - 11. Existing conditions.

# 1.2 RELATED REQUIREMENTS

- A. Section 01 7419, Construction Waste Management and Disposal.
- B. Section 01 7700, Closeout Procedures; final cleaning.
- C. Permanent Utilities: As specified under other Specification Sections.

# 1.3 REQUIREMENTS OF REGULATORY AGENCIES

- A. General:
  - 1. Temporary facilities and controls shall be approved by local, state and federal authorities and regulatory agencies having jurisdiction, including insurance companies, with regard to safety precautions, operation and fire hazard.
  - 2. Contractor shall contact local authorities prior to start of work to coordinate local requirements.
- B. Comply with applicable standards referenced in Section 01 4216, Definitions and Standards.
- C. Contractor shall:
  - 1. Take suitable steps to ensure that public utilities encountered in connection with the Work will not be damaged.

- 2. Send notices, make necessary arrangements and provide services required for the care of gas mains, water pipes, sewer pipes, conduits, cables, and other equipment or property.
- 3. Arrange with utility companies for fees required to move or remove their meters, poles, cables, guy wires, or equipment in or set under the property which will interfere with the construction work or which will not be required in the new construction.

# 1.4 **PRODUCT HANDLING**

- A. Protection: Use all means necessary to protect and maintain temporary facilities and controls in proper and safe condition throughout progress of work.
- B. Replacements: In event of loss or damage, immediately make necessary repairs and replacements; as approved by Architect at no additional cost to Owner.

# PART 2 - TEMPORARY FACILITIES AND CONTROLS

# 2.1 MATERIALS

- A. General: Materials may be new or used but shall be adequate in capacity for the required usage, shall not create unsafe conditions, and shall not violate requirements of applicable codes and standards.
- B. Tools, extension cords, and electrical equipment shall conform to Underwriters' Laboratory standards and OSHA requirements and shall be in proper working order to preclude hazard to occupants and premises.

# 2.2 FIELD OFFICES - GENERAL

- A. Minimum Requirements: Provide the facilities specified.
- B. Provide adequate measures to secure Field Office contents from theft that may include, but are not limited to, alarms, and lock guards.
- C. Contractor shall comply with City Ordinances and requirements regarding but not limited to the number and location of all temporary trailers, offices, and equipment. Contractor shall apply and pay for all required permits.
- D. Office and equipment shall remain property of Contractor and shall be removed by Contractor upon completion of work.
- E. Utilities: Provide power for lighting and equipment, and make provisions for adequate heating and cooling.
- F. Contractor shall provide paper, and service and maintenance contract, for dedicated copiers and multi-function machines.
- G. Contractor shall arrange with the telephone utility and provide and pay for specified temporary telephone service in the Architect's and Inspector's Field Office.

- 1. Maintain service for the duration of operations under this Contract.
- H. Contractor shall provide for the storage of tools and equipment.
- I. Mobile trailers complying with the specified Field Office requirements are acceptable.
- J. Field offices are subject to approval by Owner and Architect.

### 2.3 CONTRACTOR'S FIELD OFFICE

- A. A space within the existing Buildings will be designated by the Owner for use by the Contractor as a field office.
- B. Furnish a temporary Contractor's Field Office for use by the Contractor's superintendent, complete with meeting space, drinking water, plan table, lighting, adequate storage facilities, and telephone and duplication service as specified.
- C. Furnishings:
  - 1. One (1) 36" x 120" conference table.
  - 2. Ten (10) folding chairs for use as needed.
  - 3. One (1) 36" x 144" plan table.
  - 4. One (1) plan rack with plan capacity appropriate for the size of project.
  - 5. One hot/cold bottled water dispenser with maintenance for life of contract.
- D. Temporary Telephone and Internet Service: Provide the following minimum service.
  - 1. One direct-line voice telephone.
  - 2. One direct-line for receiving facsimile transmissions to the multi-function machine specified below. Automatic voice/fax switching is acceptable.
  - 3. Direct internet access with service capable of sending and receiving large files.
  - 4. Minimum downstream Speed 50.0 Mbps and Upstream Speed 25 Mbps,
- E. Duplication: Provide the following minimum electronics.
  - 1. Multi-Function Copy/Scanner/Facsimile (FAX) Machine:
    - a. Type: Color laser.
    - b. Auto feed with collating capabilities.
    - c. Paper Sizes: 8-1/2" x 11" and 11" x 17".
  - 2. Network System: 801.11g wireless router with 4 Ethernet ports.
  - 3. Cables and Wiring: All necessary cables and wiring to connect the above components.
  - 4. Provide hardware and/or software support for items above.
- F. Provide additional facilities as agreed upon by Owner and Contractor.

# 2.4 ARCHITECT AND OWNERS' PROJECT INSPECTOR FIELD OFFICE

- A. In addition to field office space required by Contractor, provide a separate office space of sufficient size available for use by Architect, Owner's Project Inspector and their representatives when they visit the jobsite.
- B. Construction:
  - 1. Office shall be fitted with 3'-0" counter along one side.
  - 2. Minimum size to be 250 square feet.
  - 3. Minimum width to be 10 feet.
  - 4. Finish flooring to be VCT or sheet vinyl (no carpet).
  - 5. Trailer to be manufactured after 2010.
- C. Furnishings:
  - 1. Two (2) 36" x 72" desks with 5 drawers.
  - 2. Two (2) adjustable height desk chairs with arm rest.
  - 3. One (1) 4-drawer file cabinet with high side drawers for letter size files.
  - 4. One (1) 36" x 96" plan table.
  - 5. One (1) plan rack with plan capacity as appropriate for Project.
  - 6. Two (2) 48" wide x 48" high x 12" deep bookshelves with 2 shelves apiece.
  - 7. One hot/cold bottled water dispenser with maintenance for life of contract.
- D. Temporary Telephone and Internet Service: Provide the following minimum service.
  - 1. One direct-line voice telephone.
  - 2. One direct-line for a desktop facsimile (FAX) machine
    - a. Automatic voice/fax switching is acceptable but shall not interfere with pickup by the answering machine.
    - b. Machine may also be a multi-function unit as specified for Contractor's Field Office.
  - 3. Direct internet access with service capable of sending and receiving large files.
  - 4. Minimum downstream Speed 50.0 Mbps and Upstream Speed 25 Mbps
- E. An answering machine for use by Project Inspector, Architect and their representatives.
- F. Provide additional facilities as requested by Owner agreed upon with Contractor.

# 2.5 TEMPORARY UTILITIES

- A. General: Provide water, electricity, gas, fire protection and other specified utility services required during construction and extend temporary service lines to construction areas to allow use by all trades and subcontractors.
- B. Telephone:

- 1. In addition to requirements for phones in Field Offices, Contractor and its Superintendent shall have a cell phone for communication with the Architect and Owner when at the Project site.
- C. Temporary Water:
  - 1. Owner will provide source and pay for water for construction purposes from existing available source(s) on site. This does not include use of hydrants or off-site sources. If necessary provide and pay for these services.
  - 2. Provide temporary connections to source and sufficient hose or pipe to carry water to every required part of construction.
  - 3. Drinking Water Facilities: Provide clean, sanitary and adequate drinking water.
- D. Temporary Electrical Facilities:
  - 1. Electrical Service: Provide such temporary electrical power and facilities as necessary to supply lighting for work operations and power for portable power driven tools and for testing.
  - 2. Owner will provide temporary power free of charge from existing outlets. If existing sources are insufficient, provide and pay for temporary service from off-site.
  - 3. Payment for Electrical Energy Used: Make application for temporary service from serving utility company and pay for electric service and energy used.
  - Construction Requirements: Construct and maintain all temporary electrical facilities in accordance with division of Industrial Safety "Electrical Safety Orders" (ESO), Public Utilities Commission "Rules for Overhead Line Construction" (G.O. 95), and requirements of equipment used for these facilities shall be in good and safe condition, but need not be new.
- E. Temporary Heat and Ventilation:
  - 1. Provide heat and ventilation to protect work and materials and to keep humidity down to extent required to prevent corrosion of metal and to prevent dampness or mildew which is potentially damaging to materials and finishes. In addition, provide heat and ventilation prior to and during specific work operations, as follows
    - Provide sufficient heat to produce temperature of not less than 65 degrees
       F for 7 days prior to placing of interior finish materials and throughout application of drywall, painting and laying of resilient flooring materials.
    - b. Provide sufficient heat to maintain temperature of not less than 60 degrees after finishing trades are complete and until final acceptance or occupancy by Owner.
  - 2. Fuel, equipment and method of heating and ventilating shall be approved by Architect.
- F. Trash Removal:
  - 1. Store trash or rubbish resulting from construction within the Contract work area.
  - 2. Provide the necessary on-site containers for the collection of recycling materials, waste materials and debris.

- 3. Remove recycling materials, waste materials and debris from the site regularly and dispose of at recycling centers or legal disposal sites.
- 4. Keep the work area clean at all times. Increase frequency of trash removal when requested by the Owner to conform to this requirement.
- 5. Waste material and debris shall not be buried or burned at the site.
- 6. See additional requirement in Section 01 7419, Construction Waste Management and Disposal.

# 2.6 SANITARY FACILITIES

- A. Toilet Facilities: Provide sufficient suitably enclosed chemical toilets with urinal for use workers on project.
  - 1. Toilets shall be in place at the time work starts and maintained until the permanent toilet facilities are in operation if approved for use by the Owner.
  - 2. Temporary toilets shall be of the chemical type.
  - 3. The number and maintenance of temporary toilets shall meet the requirements of State and local health regulations and ordinances.
  - 4. Locate on the site so as not to be visually offensive and in locations acceptable to the Owner.
  - 5. Sanitary waste from the portable toilets shall be collected as required but not more than weekly.
- B. Washing Facilities: Provide properly mounted and adequate wash sinks connected to water supply; in location as approved by Architect.

# 2.7 CONSTRUCTION AIDS

- A. General: Erect, equip, operate, and maintain all construction equipment in strict accordance with applicable statutes, laws, ordinances, rules, and regulations of authorities having jurisdiction; including insurance companies, with regard to safety, operation and fire hazard.
- B. Provide and maintain scaffolding, staging, runways and similar equipment, as needed. Coordinate use and furnishing with subcontractors.
- C. Provide and maintain hoists and construction elevators, including elevators for hoisting workers; complete with operators, power and signals, as necessary for operation. Comply with the following:
  - 1. California Title 8, State Elevator Safety Order 3041c, and other applicable state and local codes.
  - 2. "American National Standard Safety Code for Elevators, Dumbwaiters, Escalators, and Moving Walks," ANSI A17.1.
  - 3. California Elevator Safety Construction Code.

# 2.8 ENCLOSURES, FENCING AND BARRICADES

- A. General: Provide and maintain barricades, fencing, shoring, pedestrian walkways including attached lights, other lights, and other safety precautions to properly guard against personal injury and property damage as prescribed by authority having jurisdiction; including insurance companies.
- B. Attention is directed to Safety Orders issued by State of California, Division of Industrial Safety. Contractor shall obtain copies of such Safety Orders as are applicable to type of work to be performed, shall be governed by requirements thereof in all construction operations, and shall fully inform subcontractors and material suppliers as to the requirements of applicable Safety Orders.
- C. Contractor's Corporation Yard: Locate where shown or agreed on with Owner and Architect. Enclose with fence and gates as required for security, and as approved.
- D. Provide and maintain 6 foot high temporary fencing around entire work area to keep unauthorized personnel from accessing the area. Protect work in place from damage, including fields, roads, landscaping, and other existing site improvements to remain. No work is allowed outside the designated construction boundary.
- E. The Architect, the Owner, and field inspectors are not hired to review or approve safety procedures followed by the Contractor.

#### 2.9 TEMPORARY SIGNS

A. Signs or advertising are not permitted, except Contractor's name may be placed on his field office and equipment, unless otherwise approved by the architect.

#### 2.10 SITE ACCESS AND PARKING

- A. Parking: On-site parking after occupancy may be limited or may not be permitted during the school year due to limited existing conditions. Check with District office to ascertain parking availability and do not park on-site if not permitted.
- B. Entrance to Work Site: Contractor and his employees shall use certain access roads or entrance ways as indicated on Drawings or as agreed to by Architect and Owner. Access shall not interfere with on-going operations, if any. Maintain these roads in satisfactory condition during the Contract time, and repair damages attributable to work of this project at intervals as needed. At completion of Contract, roads and entrance ways shall be left in condition at least equal to that existing at start of Contract, except as may be otherwise required by Contract Documents.
- C. Temporary access roads are to be provided by and completely removed by the Contractor upon completion of work. Place material such as base rock to provide and maintain safe access to temporary facilities, temporary parking and all areas of work required for continuing operations during winter months so that work may proceed in accordance with project schedule. Contractor is to restore these areas to condition at least equal to that at start of Contract or improve as required in the Contract Documents. All traffic is restricted to these access roads and the designated construction boundary.

- D. Site Storage and Work Areas: Owner will allocate available on-site storage and work areas to Contractor, subject to change as may be necessary by job progress, such as site development or other intervening work. If necessary, Contractor shall obtain off-site facilities for storage at his expense. No storage will be allowed beyond the designated construction boundary, or within designated Fire Lane.
- E. Regulations: Observe and comply with rules and regulations in effect at occupied campuses or other facilities, including, but not restricted to, parking and traffic regulations, security restrictions, and hours of access.
- F. Use of public Sidewalks and Streets (if applicable): Make arrangements with public authorities for temporary use of streets and sidewalks for offices, shops, storage, etc.. Abide by rules, regulations, and ordinances, obtain permits, and pay fees therefor.

### 2.11 TEMPORARY CONTROLS

- A. Debris Control: Keep work and storage areas clean and free of debris. Dispose of debris off premises, as it accumulates. Pay all fees required for use of public dumps. Burning on premises is prohibited.
- B. Dust Controls:
  - 1. Indoor Operations: Control dust resulting from indoor construction operations by localizing it to greatest practicable extent using temporary partitions, curtains, or other means which will prevent spread of dust beyond immediate work area. Duct openings and other openings communicating with other parts of building shall have effective temporary closures.
  - 2. Outdoor Operations: Use water wagons or spray from hoses to control dust created by outdoor work operations. Comply with all local and state dust control ordinances.
- C. Dewatering Facilities: Provide and maintain dewatering and pumping facilities to keep site reasonably dry, and to protect materials and installed work from water damage until dewatering is no longer required. Dewatering shall also include dewatering of trenches and footings due to surface run-off or sub-surface drainage facilities encountered, interrupted or damaged. Contractor is responsible for providing proper drainage and conditions at utility trenches, footing excavations or any other excavation as necessary for completing backfilling and compaction operations.
- D. Temporary Shoring: Provide all necessary shoring at trenches or other excavations as required to stabilize the trench or excavation walls. Shoring shall be provided in strict accordance with applicable statutes, laws, ordinances, rules, and regulations of authorities having jurisdiction
- E. Security: Contractor is responsible for security of areas of its work during entire time of Contract. Make good all damages to the work and loss of materials due to vandalism or theft, within this responsibility. This includes damages due to construction activities caused to existing facilities.

- F. Contractor may wish to provide a security force at its expense. The Owner will not provide any monitoring for security purposes.
- G. Use and Storage of Hazardous or Flammable Materials:
  - 1. Use and store hazardous or flammable chemicals, liquids, or gases brought into the Project site in approved containers, conforming to local, state, and national fire codes.
  - 2. Use hazardous materials in a manner that will prevent their accidental release into other areas.
  - 3. Do not discard hazardous materials into the jobsite waste-disposal facilities.
  - 4. Remove empty containers from the premises immediately, and disposed of in a legal manner.
- H. Welding: There shall be at the jobsite adequate shields, guards, or covering placed so as to protect adjacent persons or property during the progress of work requiring welding and cutting equipment including heat, flame, or spark-producing devices.

# 2.12 WINTERIZATION

- A. Provide winterization preparations as required for the full duration of the project. Necessary efforts shall be taken to ensure that work may proceed on the project during normal, expected weather conditions based on the project schedule.
- B. Access onto and around the site shall be maintained during wet conditions by placement of gravel or other material. Such materials shall be removed to allow installation of specified finish material.
- C. On-site water shall be collected and controlled until storm drainage and roof drain systems are complete, to prevent damage or delay due to runoff, in accordance with the SWPPP.
- D. Contractor shall take other measures necessary, including but not limited to, temporary roofing, protection of openings, interior conditioning, etc.

# 2.13 FIRE ALARM, INTRUSION ALARM AND FIRE SPRINKLER SYSTEMS

- A. Existing Systems:
  - 1. Prior to start of demolition, the Contractor shall fully test the fire and intrusion alarms systems in the presence of district personnel to determine the working status of the systems. The test results shall be coordinated with the Owner's Project Inspector, documented and provided to the Owner and Architect.
  - 2. During construction, the Contractor shall protect and maintain the fire and intrusion alarm systems and the fire sprinkler protection systems of the existing and completed buildings. Failure to provide such protection and maintenance shall result in the Contractor assuming full responsibility for all existing and new unprotected buildings and property whether a part of the Contract or not.
- B. Fire Protection During Construction:

- 1. General: Comply with NFPA 241, "Standard for Safeguarding Construction, Alteration, and Demolition Operations" and any additional temporary fire protection requirements of Owner's Insurance Representative and governing authorities.
- During demolition and construction phases, the Contractor shall provide fire safety precautions as described in and required by the California Fire Code, Chapter 33

   Fire Safety during Construction and Demolition. Safety measures include but are not limited to maintaining fire department access, cutting and welding precautions and maintaining water supplies for firefighting purposes.
- 3. In the event the Contractor discovers utilities not identified in the Contract Drawings or specifications, the Contractor shall immediately notify the Architect and the utility owner by the most expeditious means available and later confirm in writing.
- 4. Existing building utilities shall not be interrupted during normal operating hours.
- 5. Fire Extinguishers:
  - a. During the progress of work, there shall be at the jobsite an adequate number and type of fire extinguishers accessible for use.
  - b. Provide Type A extinguishers at locations of low-potential hazard for either electrical or grease-oil-flammable liquids fires; provide Type ABC dry chemical extinguishers at other locations; comply with recommendations of NFPA No. 10.
  - c. Post warning and quick-instructions at each extinguisher location, and instruct personnel at Project site, at time of their first arrival, on proper use of extinguishers and other available facilities at Project site.
- 6. Provide temporary, battery operated, heat detectors until permanent detection and alarm system is activated. Locate based on area layout including separation of spaces.
- C. Smoking:
  - 1. Contractor shall prohibit smoking in all areas of the Project and shall use due diligence to see that such prohibition is enforced.
  - 2. No Smoking signs shall be furnished and posted in accordance with governing fire regulations.

# 2.14 EXISTING CONDITIONS

- A. Before commencement of work on the site, take digital photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points, as directed by Architect.
- B. Show existing conditions of adjoining construction and site improvements, including finish surfaces that might be misconstrued as cracking or other damage caused by site preparation, earthwork, and building construction operations.
- C. Submit digital file and prints as specified for periodic construction photographs.
- D. Submit before Work begins.

### PART 3 - EXECUTION

### 3.1 USE OF PERMANENT SYSTEMS FOR CONSTRUCTION PURPOSES

- A. Obtain Owner's prior written authorization of use of permanent systems. Authorization will indicate:
  - 1. Reason for use.
  - 2. Condition of use.
  - 3. Which parts of system may be used.
  - 4. Disconnection from source, restoration, and cleaning of system.

#### 3.2 MAINTENANCE AND REMOVAL

- A. Maintain all temporary facilities and controls as long as needed for safe and proper completion of Work; remove all such temporary facilities and controls as rapidly as progress of Work will permit.
- B. Non-compliance with requirements within this Section may result in payment being withheld and/or deductive change orders for lack of proper facilities and controls. If necessary, the Owner will provide such facilities and controls required and back-charge the Contractor.

#### 3.3 ADJUSTING

- A. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
- B. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.
- C. Restore existing facilities used for temporary services to specified or to original condition.

#### 3.4 CLEAN UP

- A. Contractor shall be responsible for controlling, containing and cleaning up of all construction debris throughout construction period.
- B. Full compensation for cleanup shall be included in the Contract. No separate compensation will be allowed for work pertaining to cleanup or disposal of material.

# END OF SECTION

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#### EROSION CONTROL SECTION 01 5713 R221551X01

#### PART 1 - GENERAL

### 1.1 SUMMARY

- A. Section Includes:
  - 1. Requirements for preparing Storm Water Pollution Prevention Plan.

### 1.2 SCOPE OF WORK

- A. General: Provide all materials, equipment and labor necessary to furnish and install straw wattles or silt fence barriers at locations shown on the Drawings and as required during construction.
- B. The Contractor shall as a minimum address:
  - 1. Cut and fill operations.
  - 2. Temporary stockpiles.
  - 3. Vehicle and equipment storage, maintenance and fueling operations.
  - 4. Concrete, plaster, mortar and paint disposal.
  - 5. Dust control.
  - 6. Tracking of dirt, mud on off-site streets.
  - 7. Pipe flushing.

# 1.3 ADMINISTRATIVE REQUIREMENTS

- A. Submittal Procedures:
- B. Action Submittals and Informational Submittals shall be submitted in accordance with Section 01 3300, Submittal Procedures

#### 1.4 QUALITY ASSURANCE

A. General: Comply with governing codes and regulations.

# PART 2 - PRODUCTS

# 2.1 MATERIALS

- A. Straw Wattles: New manufactured straw roles in compliance with state requirements for sediment control.
- B. Silt Fences: New manufactured silt fence in compliance with state requirements for sediment control.
- C. Filter Bag: As required by local jurisdiction.

### EROSION CONTROL SECTION 01 5713 R221551X01

### **PART 3 - EXECUTION**

# 3.1 INSTALLATION

- A. Straw Wattles: Install per the drawings and/or as required.
- B. Silt Fences: Install per the Drawings and/or as required. Silt Fences shall not be used around inlets.
- C. Filter Bags: Installed as required by manufacturer's requirements.

### 3.2 MAINTENANCE AND REMOVAL:

- A. General: Maintain and repair existing and new erosion control facilities throughout the construction period. Remove silt build up at straw wattles and/or silt fences as needed. Repair damage to earth slopes and banks. Erosion control measures shall be left in place until final paving and landscaping are complete.
- B. Monitoring: Provide monitoring of erosion control measures before and after storm events.
- C. Cleaning: Keep area clean of debris.
- D. Remove erosion control measures prior to placing finish landscaping.

# END OF SECTION

# PART 1 - GENERAL

# 1.1 SUMMARY

- A. Section Includes:
  - 1. Cutting and patching:
    - a. For construction that is defective, or as required to install incomplete work shown in the Contract Documents.
    - b. To extend work or restore existing construction to its original condition, unless otherwise specified or shown on the drawings.

# 1.2 RELATED REQUIREMENTS

- A. Section 01 6116, Volatile Organic Compound (VOC) Restrictions, for VOC limits pertaining to adhesives, sealants, fillers, primers, and coatings.
- B. Section 01 3516, Alteration Project Procedures.
- C. Section 31 2333, Trenching and Backfilling.

### 1.3 **REFERENCES**

- A. California Building Code (CBC), edition as noted on the drawings, as adopted by the California Division of the State Architect (DSA).
- B. California Green Building Standards Code (CALGreen), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).

# 1.4 ADMINISTRATION REQUIREMENTS

- A. Submittal Procedures:
  - 1. Action Submittals and Informational Submittals shall be submitted in accordance with Section 01 3300, Submittal Procedures.
  - 2. Closeout Submittals shall be submitted in accordance with Section 01 7700, Closeout Procedures.
  - 3. Sustainable Design Submittals shall comply with the additional requirements of Section 01 8113, Sustainable Design Requirements.

# 1.5 ACTION SUBMITTALS

- A. Manufacturer's Data: For products not included in the specifications, submit list and complete descriptive data of all products proposed for use. Include manufacturer's specifications, and installation instructions.
- B. Samples: As requested by the Architect.
- C. Request for Cutting and Patching:

### CUTTING AND PATCHING SECTION 01 7329 22-1551.01

- 1. Submit a written request to Architect well in advance of executing any cutting or alteration which affects:
  - a. Work of the Owner or any separate contractor.
  - b. Structural value or integrity of any element of the Project.
  - c. Integrity or effectiveness of weather-exposed or moisture-resistant elements or systems.
  - d. Efficiency, operational life, maintenance or safety of operational elements.
  - e. Visual qualities of sight-exposed elements.
  - f. No cutting of structural elements is allowed unless shown on the Division of the State Architect's approved drawings
- 2. Request shall include:
  - a. Project identification.
  - b. Description of affected work.
  - c. Necessity for cutting, alteration or excavation.
  - d. Effect on work of Owner or any separate contractor, or on structural or weatherproof integrity of Project.
  - e. Description of proposed work:
    - 1) Scope of cutting, patching, alteration, or excavation.
    - 2) Trades who will execute the work.
    - 3) Products proposed to be used.
    - 4) Extent of refinishing to be done.
  - f. Alternatives to cutting and patching.
  - g. Cost proposal, when applicable.
  - h. Written permission of any separate contractor whose work will be affected.
- D. Should conditions of work or schedule indicate change of products from original installation, Contractor shall submit request for substitution.
- E. Submit written notice to Architect designating date and time work will be uncovered.

# 1.6 INFORMATIONAL SUBMITTALS

- A. Sample of manufacturer's warranty, where applicable.
- B. Sustainable Design:
  - 1. General:
    - a. Submit information necessary to establish and document compliance with the California Green Building Standards Code.
    - b. Sustainable design submittals are in addition to other submittals.
  - 2. The following information shall be provided:
    - a. Adhesives and Sealants: Evidence of compliance that products meet maximum VOC content limits specified in Section 01 6116.
    - b. Paints and Coatings: Evidence of compliance that products meet maximum VOC content limits specified in Section 01 6116.

- c. Composite Wood: Evidence of compliance that products meet formaldehyde limits of current CARB Airborne Toxic Control Measure (ATCM) as specified in Section 01 6116.
- d. Resilient Flooring: Documentation or Certification that products meet the pollutant emission limits from one of the sources specified in Section 01 6116.
- e. Carpet: Evidence of compliance that products meet the testing and product requirements specified in Section 01 6116.
- f. Carpet Cushion: Evidence of compliance that products meet the requirements of the Carpet and Rug Institute's Green Label program as specified in Section 01 6116.

# 1.7 CLOSEOUT SUBMITTALS

A. Warranty/Guarantee: Submit executed warranties and Subcontractors' guarantees for products not included in the specifications.

### 1.8 QUALITY ASSURANCE

- A. Qualifications for Installers:
  - 1. General: As specified in the product specifications.
  - 2. Employ specially qualified installers or fabricators to perform cutting and patching for:
    - a. Weather-exposed or moisture-resistant elements.
    - b. Sight-exposed finished surfaces.
- B. Use only new materials and products, unless existing materials or products are specifically shown otherwise on the Drawings to be salvaged and re-used.
- C. Single-Source Responsibility: Use materials and products of one manufacturer whenever possible.
- D. All materials, components, assemblies, workmanship and installation are to be observed by the Owner's Project Inspector. Work not so inspected is subject to uncovering and replacement.

#### 1.9 FIELD CONDITIONS

A. Make and be responsible for all field dimensions necessary for proper fitting and completion of work. Report discrepancies to Architect before proceeding.

### 1.10 WARRANTY

A. Manufacturer: In addition to the Contractor's and Subcontractor's Guarantee, furnish Owner with manufacturers' available fully executed written warranties for products not included in the specifications against defects in materials and workmanship

#### CUTTING AND PATCHING SECTION 01 7329 22-1551.01

#### PART 2 - PRODUCTS

# 2.1 DESIGN AND PERFORMANCE CRITERIA

- A. Sustainable Design:
  - 1. VOC emissions for field-applied adhesives, sealants, and sealant primers must comply with limits specified in Section 01 6116.
  - 2. VOC emissions for field-applied paints and coatings must comply with limits specified in Section 01 6116.
  - 3. Composite wood products must meet current formaldehyde emission limits of CARB Airborne Toxic Control Measure (ATCM) as specified in Section 01 6116.
  - 4. Resilient flooring material must comply with one of the certification and compliance programs specified in Section 01 6116.
  - 5. Carpet must comply with one of the certification and compliance programs specified in Section 01 6116.
  - 6. Carpet cushion must comply with the labeling program specified in Section 01 6116.

### 2.2 MATERIALS

A. Comply with these specifications, standards and manufacturer's recommendations for each specific product involved.

#### PART 3 - EXECUTION

### 3.1 **EXAMINATION**

- A. Inspect conditions of Project, including elements subject to damage or to movement during cutting and patching.
- B. After uncovering work, inspect conditions affecting installation of products, or performance of work.
- C. Verify that specified items may be installed in accordance with the approved design.
- D. In event of discrepancy, immediately notify Architect. Do not proceed in discrepant areas until discrepancies have been fully resolved.

### 3.2 **PREPARATION**

- A. Provide adequate temporary support as necessary to assure structural value or integrity of affected portion of work.
- B. Provide devices and methods to protect other portions of Project from damage.
- C. Provide protection from elements for that portion of Project which may be exposed by cutting and patching work, and maintain excavations free from water.

# 3.3 INSTALLATION

- A. Execute cutting and demolition by methods which will prevent damage to other work and will provide proper surfaces to receive installation of repairs.
  - 1. Removal or cutting of concrete paving shall occur at adjacent expansion joint or control joint.
- B. Execute excavating and backfilling by methods which will prevent settlement or damage to other work, and in accordance with Section 31 2333, Trenching and Backfilling.
- C. Execute fitting and adjustment of products to provide finished installation to comply with specified products, functions, tolerances and finishes.
- D. Restore work which has been cut or removed; install new products to provide completed work in accord with requirements of Contract Documents.
- E. Fit work airtight to pipe, sleeves, ducts, conduit and other penetrations through surfaces.
- F. Refinish entire surfaces as necessary to provide even finish to match adjacent finishes:
  - 1. For continuous surfaces, refinish to nearest intersection.
  - 2. For an assembly, refinish entire unit.

### 3.4 CLEANING AND ADJUSTING

- A. In the event of damage, make all repairs and replacements necessary to the approval of the Architect at no additional cost to the Owner.
- B. Upon completion of installation, thoroughly wash surfaces and remove foreign material. Leave entire work in neat, orderly, clean and acceptable condition.

# 3.5 **PROTECTION**

- A. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.
- B. Exposed finishes shall be free from scratches, dents, permanent discolorations and other defects in workmanship or material.

# END OF SECTION

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# PART 1 - GENERAL

# 1.1 SUMMARY

- A. Section includes: Requirements and procedures for ensuring optimal diversion of construction waste materials generated by the Work from landfill disposal within the limits of the Construction Schedule and Contract Sum.
  - 1. The Work of this Contract requires that a minimum of 65% by weight of the construction and demolition materials generated in the Work is diverted from landfill disposal through a combination of re-use and recycling activities.
  - 2. CAL-Green: Alternate waste reduction methods developed in cooperation with local agencies if diversion or recycle facilities capable of compliance with CAL-Green requirements do not exist within the haul boundary of the jobsite (California Code of Regulations, Title 24, Part 11, 5.408).
  - 3. Requirements for submittal of Contractor's Construction Waste and Recycling Plan prior to the commencement of the Work.
  - 4. Contractor's quantitative reports for construction waste materials as a condition of approval of progress payments submitted to the Architect.

# 1.2 RELATED REQUIREMENTS

- A. Section 01 3516, Alteration Project Procedures.
- B. Section 01 5000, Temporary Facilities & Controls.
- C. Section 01 7329, Cutting and Patching.
- D. Section 02 4119, Selective Demolition.
- E. Section 31 1000, Site Clearing.

# 1.3 REFERENCES AND STANDARDS

A. California Green Building Standards Code (CALGreen), edition as noted on the drawings, as adopted by the California Division of the State Architect (DSA).

# 1.4 DEFINITIONS

- A. Class III Landfill: A landfill that accepts non-hazardous resources such as household, commercial, and industrial waste, resulting from construction, remodeling, repair, and demolition operations. A Class III landfill must have a solid waste facilities permit from the California Integrated Waste Management Board (CIWMB) and is regulated by the Enforcement Agency (EA).
- B. Construction and Demolition Debris: Building materials and solid waste resulting from construction, remodeling, repair, cleanup, or demolition operations that are not hazardous as defined in California Code of Regulations, Title 22, Section 66261.3 et seq. This term includes, but is not limited to, asphalt concrete, Portland cement concrete,

#### CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL SECTION 01 7419 22-1551.01r

brick, lumber, gypsum wallboard, cardboard and other associated packaging, roofing material, ceramic tile, carpeting, plastic pipe, and steel. The debris may be commingled with rock, soil, tree stumps, and other vegetative matter resulting from land clearing and landscaping for construction or land development projects.

- C. C&D Recycling Center: A facility that receives only construction and demolition debris material that has been separated for reuse prior to receipt, in which the residual (disposed) amount of waste in the material is less than 10% of the amount separated for reuse by weight.
- D. Disposal: Final deposition of construction and demolition or inert debris into land, including stockpiling onto land of construction and demolition debris that has not been sorted for further processing or resale, if such stockpiling is for a period of time greater than 30 days; and construction and demolition debris that has been sorted for further processing or resale, if such stockpiling is for a period of time greater than one year, or stockpiling onto land of inert debris that is for a period of time greater than one year.
- E. Enforcement Agency (EA): Enforcement agency is the authority having jurisdiction within the Project location.
- F. Inert Disposal Facility or Inert Waste Landfill: A disposal facility that accepts only inert waste such as soil and rock, fully cured asphalt paving, uncontaminated concrete (including fiberglass or steel reinforcing rods embedded in the concrete), brick, glass, and ceramics, for land disposal.
- G. Mixed Debris: Loads that include commingled recyclable and non-recyclable materials generated at the construction site.
- H. Mixed Debris Recycling Facility: A processing facility that accepts loads of commingled construction and demolition debris for the purpose of recovering re-usable and recyclable materials and disposing the non-recyclable residual materials.
- I. Recycling: The process of sorting, cleansing, treating and reconstituting materials for the purpose of using the altered form in the manufacture of a new product. Recycling does not include burning, incinerating or thermally destroying solid waste.
- J. Reuse. The use, in the same or similar form as it was produced, of a material which might otherwise be discarded.
- K. Separated for Reuse. Materials, including commingled recyclables, that have been separated or kept separate from the solid waste stream for the purpose of additional sorting or processing those materials for reuse or recycling in order to return them to the economic mainstream in the form of raw material for new, reused, or reconstituted products which meet the quality standards necessary to be used in the marketplace, and includes materials that have been "source separated".
- L. Solid Waste: All putrescible and nonputrescible solid, semisolid, and liquid wastes, including garbage, trash, refuse, paper, rubbish, ashes, industrial wastes, demolition and construction wastes, abandoned vehicles and parts thereof, discarded home and industrial appliances, dewatered, treated, or chemically fixed sewage sludge which is not hazardous waste, manure, vegetable or animal solid and semisolid wastes, and other

discarded solid and semisolid wastes. "Solid waste" does not include hazardous waste, radioactive waste, or medical waste as defined or regulated by State law.

- M. Source-Separated: Materials, including commingled recyclables, that have been separated or kept separate from the solid waste stream at the point of generation, for the purpose of additional sorting or processing of those materials for reuse or recycling in order to return them to the economic mainstream in the form of raw materials for new, reused, or reconstituted products which meet the quality standards necessary to be used in the marketplace.
- N. Waste Hauler: A company that possesses a valid permit from the local waste management authority having jurisdiction to collect and transport solid wastes from individuals or businesses for the purpose of recycling or disposal.

# 1.5 ADMINISTRATIVE REQUIREMENTS

- A. Submittal Procedures:
  - 1. Action Submittals and Informational Submittals shall be submitted in accordance with Section 01 3300, Submittal Procedures.
  - 2. Closeout Submittals shall be submitted in accordance with Section 01 7700, Closeout Procedures.
  - 3. Sustainable Design Submittals shall comply with the additional requirements of Section 01 8113, Sustainable Design Requirements.

# 1.6 ACTION SUBMITTALS

- A. Contractor's Construction Waste and Recycling Plan:
  - 1. Review Contract Documents and estimate the types and quantities of materials under the Work that are anticipated to be feasible for on-site processing, source separation for re-use or recycling. Indicate the procedures that will be implemented in this program to effect jobsite source separation, such as, identifying a convenient location where dumpsters would be located, putting signage to identify materials to be placed in dumpsters, etc.
  - 2. Prior to commencing the Work, submit Contractor's Construction Waste and Recycling Plan. Submit in format provided with this specification section. The Plan must include, but is not limited to the following:
    - a. Contractor's name and project identification information;
    - b. Procedures to be used;
    - c. Materials to be re-used and recycled;
    - d. Estimated quantities of materials;
    - e. Names and locations of re-use and recycling facilities/sites;
    - f. Tonnage calculations that demonstrate that Contractor will re-use and recycle a minimum of 65% by weight of the construction waste materials generated by the Work.
  - 3. Contractor's Construction Waste and Recycling Plan must be approved by the Architect prior to the start of Work.

#### CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL SECTION 01 7419 22-1551.01r

4. Contractor's Construction Waste and Recycling Plan will not otherwise relieve the Contractor of responsibility for adequate and continuing control of pollutants and other environmental protection measures

# 1.7 INFORMATIONAL SUBMITTALS

- A. Contractor's Reuse, Recycling, and Disposal Report:
  - Submit Contractor's Reuse, Recycling, and Disposal Report on the form provided with this specification section with each Application & Certificate for Payment. Failure to submit the form and its supporting documentation will render the Application & Certificate for Payment incomplete and delay progress payments. If applicable, include manifests, weight tickets, receipts, and invoices specifically identifying the Project for re-used and recycled materials:
    - a. Reuse of building materials or salvage items on site (i.e. crushed base or red clay brick).
    - b. Salvaging building materials or salvage items at an offsite salvage or reuse center (i.e. lighting, fixtures).
    - c. Recycling source separated materials on site (i.e. crushing asphalt/concrete for base course, or grinding for mulch).
    - d. Recycling source separated material at an offsite recycling center (i.e. scrap metal or green materials).
    - e. Use of material as Alternative Daily Cover (ADC) at landfills.
    - f. Delivery of soils or mixed inerts to an inert landfill for disposal (inert fill).
    - g. Disposal at a landfill or transfer station (where no recycling takes place).
    - h. Other (describe).
  - 2. Contractor's Reuse, Recycling, and Disposal Report must quantify all materials generated in the Work, disposed in Class III landfills, or diverted from disposal through recycling. Indicate zero (0) if there is no quantity to report for a type of material. As indicated on the form:
    - a. Report disposal or recycling either in tons or in cubic yards. If scales are available at disposal or recycling facility, report in tons; otherwise, report in cubic yards. Report in units for salvage items when no tonnage or cubic yard measurement is feasible.
    - b. Indicate locations to which materials are delivered for reuse, salvage, recycling, accepted as daily cover, inert backfill, or disposal in landfills or transfer stations.
    - c. Provide legible copies of weight tickets, receipts, or invoices that specifically identify the project generating the material. Said documents must be from recyclers and/or disposal site operators that can legally accept the materials for the purpose of re-use, recycling, or disposal.
      - 1) Indicate project title, project number, progress payment number, name of the company completing the Contractor's Report and compiling backup documentation, the printed name, signature, and daytime phone number of the person completing the form, the beginning and ending dates of the period covered on the Contractor's Report, and the date that the Contractor's Report is completed.

- 3. Demonstrate compliance with California Code of Regulations, Title 24, Part 11 California Green Building Standards Code, "CAL-Green" 5.408.2, to the satisfaction of the enforcing agency.
  - a. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.
  - b. Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

# PART 2 - PRODUCTS-NOT USED

# PART 3 - EXECUTION

#### 3.1 WASTE MANAGEMENT PLAN

- A. Implement procedures for disposal of materials, as specified in Contractor's Construction Waste and Recycling Plan, which are not diverted for re-use, salvage or recycling.
  - 1. Identify materials to be diverted from disposal by efficient usage, recycling, reuse on the project, or salvage for future use or sale.
  - 2. Determine if materials will be sorted on-site or mixed.
  - 3. Identify diversion facilities where material collected will be taken.
  - 4. Specify that quantities of diverted material will calculated by weight or volume, but not both.

# 3.2 SALVAGE, RE-USE, RECYCLING AND PROCEDURES

- A. Re-use, Salvage, and Recycling Facilities: As specified in Contractor's Construction Waste and Recycling Plan.
- B. Develop and implement procedures to re-use, salvage, and recycle new construction and excavation materials, based on the Contract Documents, the Contractor's Construction Waste and Recycling Plan, estimated quantities of available materials, and availability of recycling facilities. Procedures may include on-site recycling, source separated recycling, and/or mixed debris recycling efforts.
  - 1. Identify materials that are feasible for salvage, determine requirements for site storage, and transportation of materials to a salvage facility.
  - 2. Source separate new construction, excavation and demolition materials including, but not limited to the following types.
    - a. Asphalt.
    - b. Concrete, concrete block, slump stone (decorative concrete block), and rocks.
    - c. Drywall.
    - d. Green materials (i.e. tree trimmings and land clearing debris).

#### CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL SECTION 01 7419 22-1551.01r

- e. Metal (ferrous and non-ferrous).
- f. Miscellaneous Construction Debris.
- g. Paper or cardboard.
- h. Red Clay Brick.
- i. Reuse or Salvage Materials
- j. Soils.
- k. Wire and Cable.
- I. Wood.
- m. Other (describe)
- 3. Miscellaneous Construction Debris: Develop and implement a program to transport loads of mixed (commingled) new construction materials that cannot be feasibly source separated to a mixed materials recycling facility

# 3.3 DISPOSAL OPERATIONS AND WASTE HAULING

- A. Legally transport and dispose of materials that cannot be delivered to a source separated or mixed recycling facility to a transfer station or disposal facility that can legally accept the materials for the purpose of disposal.
- B. Use a permitted waste hauler or Contractor's trucking services and personnel. To confirm valid permitted status of waste haulers, contact the local solid waste authority having jurisdiction.
- C. Become familiar with the conditions for acceptance of new construction, excavation and demolition materials at recycling facilities, prior to delivering materials.
- D. Deliver to facilities that can legally accept new construction, excavation and demolition materials for purpose of re-use, recycling, composting, or disposal.
- E. Do not burn, bury or otherwise dispose of solid waste on the project job-site.

# 3.4 RE-USE AND DONATION OPTIONS

- A. Implement a re-use program to the greatest extent feasible. Options may include:
  - California Materials Exchange (CAL-MAX) Program is sponsored by the California Integrated Waste Management Board. CAL-MAX is a free service provided by the California Integrated Waste Management Board, designed to help businesses find markets for materials that traditionally would be discarded. The premise of the CAL-MAX Program is that material discarded by one business may be a resource for another business. To obtain a current Materials Listings Catalog, call CAL-MAX/California Integrated Waste Management Board at (916) 255-2369 or send a FAX to (916) 255-2200. The CALMAX Catalog is available through the Internet Site at http://www.ciwmb/ca.gov/calmax.

#### 3.5 REVENUE

A. Revenues or other savings obtained from recycled, re-used, or salvaged materials shall accrue to Contractor unless otherwise noted in the Contract Documents

### CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL SECTION 01 7419 22-1551.01

# **END OF SECTION**

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# SECTION 01 7419A

#### CONTRACTOR'S CONSTRUCTION WASTE AND RECYCLING PLAN (Submit After Award of Contract and Prior to Start of Work)

(Submit After Award	of Contract	and Prior to 3	Start of Work)

Project Title:									
Contract or Work Order No.:									
Contractor's Name:									
Street Address:									
Citv:	tv: State: Zin:								
Phone: ()			Fax: ()		1				
F-Mail Address:									
Prepared by: (Print Name)									
	Trainc)								
Date Submitted:									
Project Period:	Erom <sup>.</sup>			TO					
r loject r enoù.				10.					
	Reuse Recyclin	ng or Disposal	Processes To I	Be Used	_	_			
Describe the types of re	ecveling processes or dispos	al activities the	at will be used :	for material gener	ated in the nr	oiect			
Indicate the type of prod	cess or activity by number. t	vpes of materia	als, and estima	ted quantities that	t will be recvo	led or			
disposed in the sections	s below:	,,a.on	, counta						
01 - Reuse of building n	naterials or salvage items or	n site (i.e. crusl	hed base or re	d clay brick)					
02 - Salvaging building	materials or salvage items a	at an off site sa	lvage or re-use	e center (i.e. lightir	ng, fixtures)				
03 - Recycling source s	eparated materials on site (i	i.e. crushing as	phalt/concrete	for reuse or grind	ing for mulch	)			
04 - Recycling source s	eparated materials at an off	site recycling	center (i.e. scra	ap metal or green	matls)				
05 - Recycling comming	gled loads of C&D matls at a	an off site mixe	d debris recycli	ng center or trans	fer station				
06 - Recycling material	as Alternative Daily Cover a	at landfills							
07 - Delivery of soils or	mixed inerts to an inert land	Ifill for disposal	(inert fill).						
08 - Disposal at a landfi	II or transfer station.								
09 - Other (please desc	ribe)								
		f Matarial Ta	De Cenerate						
			Be Generale	u 	the project				
$0$ = $\Delta$ = $\Delta$ = $\Delta$	C = Concrete	M - Motols	nai that will b	e generaled on i L = Mixed Inert	G = Groon	Matle			
A – Asphalt	C = COncrete P/C=Paper/Cardboard	W/C = Wire	Cable	S = Soils (Non F	- Gieen Hazardous)	Maus			
M/C = Miscellaneous	Construction Debris	R = Reuse/	Salvade	W = Wood	$\Omega = \Omega$ ther	(describe)			
Facilities Used: Provide	Eacilities Used: Provide Name of Eacility and Location (City)								
Total Truck Loads: Prov	vide Number of Trucks Haul	ed from Site D	uring Reporting	l Period					
Total Quantities: If scale	es are available at sites rep	ort in tons If n	ot quantify by	cubic vards. For s	alvage/reuse	items			
quantify by estimated w	eight (or units).		or, quantify by		arrage,reace	itomo,			
SECTION I - RE-USED/RECYCLED MATERIALS									
Include all recycling activities for source separated or mixed material recycling centers where recycling will occur.									
ype of Type Facility to be Total Truck Total Quantities									
Material of Activity	/ity Used/Location Loads Tons Cubic YD Other W								
(ex.) M 04	ABC Metals, Los Angel	es	24	355					
	<u> </u>								
	┥───								
	┥───								
	+		0			<u> </u>			
a Total Diversion	1 1								

# SECTION 01 7419A

# CONTRACTOR'S CONSTRUCTION WASTE AND RECYCLING PLAN

Continued

			SECTION I	I - DISPOS	ED MATERIA	LS		
Include all disposal activities for landfills, transfer stations, or inert landfills where no recycling will occur.							ır.	
Type of	Туре	Facility to be			Total Truck	Tot	al Quantities	011 14/
Material	of Activity	Used/Locat	ion	_	Loads	lons	Cubic YD	Other Wt.
(ex.) D	80	DEF Landi	II, Los Angele	:S I	2	35		
							_	
b. Total Dis	sposal						0 0	0
		SE	CTION III - TO	OTAL MATE	RIALS GENE	RATED		
This s	ection calculat	es the total ma	terials to be gene	erated during t	he project period	(Reuse/Recycle +	Disposal = Gene	eration
						Tons	Cubic YD	Other Wt.
a. Total Re	used/Recyc	cled					0 0	0
b. Total Dis	sposed						0 0	0
c. Total Generated					0	0		
	SECT							
	JECH			from Section	$\frac{1}{1}$			
	Add totals		Tons	Cubic Yards	Other Wt			
a. Material	s Re-Used a	and Recycle	d	0		o alor Ma	-	
b. Material	s Disposed			0			-	
c. Total Ma	terials Gen	erated (a. +	b. = c.)	0	0		0	
d. Landfill [	Diversion Ra	ate (Tons O	nly)*	#DIV/0!			1	
* Use tons	only to calc	ulate recycli	ng percentag	es: Tons Re	eused/Recycle	d/Tons Genera	ted = % Recy	/cled
Contractor	s Commont	re (Provido c	ny additional	information	portinent to p	lannod rouso r	ooveling or d	icnocal
activities).	s comment	S (FIUVILE 2		IIIOIIIauoii	per ineni io p	lanneu reuse, r	ecycling, or u	ispusai
uouviiico).								
							,	
Notes:								
1. Suggeste	d Conversior	n Factors: Fro	m Cubic Yards	s to Tons (Us	e when scales a	are not available)		
Asphalt:	.61 (ex. 100	0 CY Aspha	alt = 610 tons.	Applies to	broken chunks	s of asphalt)		
Concrete: .93 (ex. 1000 CY Concrete = 930 tons. Applies to broke				ken chunks of c	concrete)			
Ferrous M	etals: .22 (ex	. 1000 CY F€	errous Metal = 2	220 tons)	0.4		Drywall Scra	ip: .20
Non-Ferrous Metals: .10 (ex. 1000 CY Non-Ferrous Metals = 100 tons) Wood Scrap: .16						:.16		

# SECTION 01 7419B CONTRACTOR'S REUSE, RECYCLING, AND DISPOSAL REPORT (Submit With Each Progress Payment)

Project Title:								
Contract or Work Order No.:								
Contracto	r's Name:				:			
Street Add	dress:							
City <sup>.</sup>					State <sup>.</sup>		Zip <sup>.</sup>	
Phone <sup>.</sup> (	)				Fax: ()		<u></u>	
F-Mail Ad	/ dress:							
Prenared	hv: (Print I	lame)						
Troparcu	by. (I filler	vanic)						
Date Subr	nitted <sup>.</sup>							
Period Co	vered:	From <sup>.</sup>				To		
	vereu.	110111.				10.		
			Reuse, Recvo	lina or Dispo	sal Processes l	Jsed		
				<u></u>				
Describe the	e types of red	vclina proce	sses or disposa	l activities us	ed for material	generated in the p	roiect. Indica	te the type
of process of	r activitv bv i	number. tvpe	s of materials. a	and quantitie	s that were recv	cled or disposed in	n the section	s below:
01 - Reuse o	of building m	aterials or sa	lvage items on	, site (i.e. crus	hed base or red	, d clay brick)		
02 - Salvagi	ng building n	naterials or s	alvage items at	an off site sa	alvage or re-use	center (i.e. lighting	g, fixtures)	
03 - Recyclii	ng source se	parated mate	erials on site (i.e	e. crushing a	sphalt/concrete	for reuse or grindin	ng for mulch)	
04 - Recyclii	ng source se	parated mate	erials at an off s	ite recycling	center (i.e. scra	p metal or green n	natls)	
05 - Recyclii	ng commingl	ed loads of C	&D matls at an	off site mixe	d debris recycli	ng center or transf	er station	
06 - Recyclii	ng material a	s Alternative	Daily Cover at	landfills	-	-		
07 - Delivery	of soils or n	nixed inerts to	o an inert landfi	ll for disposa	l (inert fill).			
08 - Disposa	al at a landfill	or transfer s	tation.					
09 - Other (please describe)								
		<u> </u>	Types	of Material	Generated		·	
	Use the:	se codes to	indicate the ty	pes of mate	erial that were	generated on the	e project	
A = Asphal	t	C = Concre	ete	M = Metals		I = Mixed Inert	G = Green	Matis
D = Drywall P/C=Paper/Cardboard W/C = Wire/Cable S= Soils (Non Hazardous)						(deceribe)		
IVI/C = IVIISC	ellaneous (	Jonstruction	1 Depris	R = Reuse	/Salvage	vv = vvood	O = Other	(describe)
Total Truck	eu. Floviue i Loads: Provi	de Number o	f Trucks Hauler	t (City) I from Site D	uring Reporting	Period		
Total Ouanti	tion: If apple			t in tone of n	anny Reporting	n enou	lvogo/rouso	tomo
quantify by e	Total Quantities: It scales are available at sites, report in tons. It not, quantify by cubic yards. For salvage/reuse items,							
SECTION L- RE-LISED/RECYCLED MATERIALS								
Include all recycling activities for source separated or mixed material recycling centers where recycling occurred								
Type of	vpe of Type Facilities Total Orantities							
Material	of Activity	v Used/Location Loads Tons Cubic YD Other W						Other Wt.
(ex.) M	04	ABC Metals, Los Angeles 24 355						
	-		j					
a. Total Div	version				0	0	0	0

# SECTION 01 7419B

# CONTRACTOR'S REUSE, RECYCLING, AND DISPOSAL REPORT

Continued

			SECTION I	I - DISPOS	ED MATERIA	LS		
Include all disposal activities for landfills, transfer station				ns, or inert land	fills where no rec	ycling occurre	d.	
Type of	Type Facilities			Total Truck	Tota	al Quantities		
Material	of Activity	Used/Location			Loads	Tons	Cubic YD	Other Wt.
(ex.) D	08	DEF Landf	ll, Los Angele	S	2	35		
b. Total Dis	sposal					(	0 0	0
		SE	CTION III - TO	OTAL MATE	RIALS GENE	RATED		
Thi	s section calcu	lates the total	materials genera	ted during the	project period (R	euse/Recycle + Dis	posal = Genera	tion
						Tons	Cubic YD	Other Wt.
a. Total Re	used/Recyc	cled				(	) 0	0
b. Total Dis	sposed					(	0 0	0
c. Total Generated				(	0 0	0		
	SECT	ION IV - CO	NTRACTOR'S	S LANDFILI	DIVERSION	RATE CALCU	ATION	
			Add totals	from Sectio	on I + Section	<u>  </u>		
	<u> </u>			Tons	Cubic Yards	Other Wt.	_	
a. Material	s Re-Used a	and Recycle	d	0			4	
b. Material	s Disposed	anatad (a	h - c )	0	0		_	
C. TOLATIVIA	literials Gen	$\frac{\text{erated}(a, +)}{\text{oto}(Tops)}$	$D_{\cdot} = C_{\cdot}$		0		<u>/</u>	
			ing no roonto a	#DIV/0!			tod - % Doo	
" Use tons	only to calc	ulate recycl	ing percentag	es: Tons Re	eusea/Recycle	a/Tons Genera	tea = % Rec	/ciea
Contractor	s Comment	ts (Provide a	any additional	information	pertinent to p	lanned reuse, re	ecycling, or a	lisposal
activities):								
Notes:			<b>.</b>					
1. Suggeste	d Conversior	n Factors: Fro	om Cubic Yards	to Tons (Us	e when scales a	are not available)		
Asphalt:	.61 (ex. 100	0 CY Aspha	alt = $610$ tons.	Applies to I	oroken chunks	s of asphalt)		
Concrete: .93 (ex. 1000 CY Concrete = 930 tons. Applies to broke				ken chunks of c	concrete)			
Non Forra	etais: .22 (e)		Prious Metal = 2	∠∠∪ lONS) s Metals - 10	() tons)		Wood Scrap	ip∴.∠∪ ⊡.16
Non-Ferrous Metals: 10 (ex. 1000 CY Non-Ferrous Metals = 100 tons) Wood Scrap: 16						10		

# 1.1 SUMMARY

- A. Section Includes: Administrative and procedural requirements for Contract closeout.
- B. These requirements supplement those included in the General Conditions and are subject to modification upon mutual agreement between the Architect, Owner, and Contractor.

#### 1.2 FINAL CLEANING

- A. Immediately prior to completion and occupancy, remove marks, stains, fingerprints, dust, dirt and paint drippings resulting from work of this project, both interior and exterior including roofs, walls, floors, sidewalks, paving and other finished surfaces.
- B. Contractor shall engage the services of an independent, professional cleaning service to perform final cleaning after Contractor's final clean-up is completed.
- C. Materials:
  - 1. Use only those cleaning materials that will neither create hazards to health or property, damage surfaces, and are in compliance with Proposition 65.
  - 2. Use only those cleaning materials and methods recommended by manufacturer of the surface material to be cleaned.
  - 3. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.
  - 4. Use only environmentally acceptable "green" cleaning products.
- D. Wash tile, plumbing and other fixtures clean.
- E. Clean and polish hardware and other unpainted metals.
- F. Remove temporary labels, tags and paper covering.
- G. Glass, both interior and exterior, and mirrors shall be cleaned to the level expected by a professional window washer.

# 1.3 REQUIREMENTS PREPARATORY TO FINAL ACCEPTANCE

- A. Temporary facilities shall be removed from site.
- B. Plumbing, mechanical and electrical equipment shall operate quietly and free from vibration. Properly adjust, repair, balance, or replace equipment producing objectionable noise or vibration in occupied areas of building. Provide additional brackets, bracing, etc., to prevent objectionable noise or vibration. Systems shall operate without humming, surging, or rapid cycling.
- C. Operating instructions for equipment shall be properly mounted and posted.

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- D. Training: Provide training and orientation of Owner's operating staff in proper care and operation of equipment, systems and controls including:
  - 1. Plumbing equipment.
  - 2. HVAC equipment.
  - 3. Control systems.
  - 4. Signal systems.
  - 5. Telephone communication systems.
  - 6. Data systems.
  - 7. Television/Video systems.
  - 8. Fire alarm systems.
  - 9. Intrusion alarm systems.
  - 10. Other systems as required in the specifications or needed to properly instruct Owner's representatives.
  - 11. Three copies of certificate, signed by the Owner's representative, attesting to their having been instructed.
- E. The following shall be submitted in accordance with Section 01 3300, Submittal Procedures.
  - 1. Completed Record Drawings signed by Contractor and Inspector.
  - 2. Maintenance and Operating instructions and manuals.
  - 3. Certifications completed and signed.
  - 4. Guarantees and warranties as specified and required by the General Conditions.
- F. Contractor's Final Verified Report (Form DSA 6-C) and other Reports and Affidavits required by Division of State Architect shall be submitted; originals and one copy.
- G. Deferred Approvals shall be completed and approved by DSA.
- H. Extra Stock shall be delivered and acknowledged by the Owner in quantities specified.

# 1.4 PUNCH LIST

- A. Prior to Architect's punch list, Contractor shall prepare and address initial deficiencies list for all work. Upon completion, this list shall be sent to the Architect.
- B. Contractor shall notify Architect when Contractor, with concurrence of Inspector, feels project is complete enough for preparation of Architect's punch list.
- C. Architect will then notify appropriate consultants including civil, mechanical and electrical engineers, landscape architect, food service designer and others as needed, to make their inspections and prepare "punch lists". Consultant "punch lists" will be completed before Architect will make its "punch list".
- D. Architect will prepare a "punch list".
- E. Punch lists will be published within 14 days of Architect's walk through.

F. Work on the punch list, except minor items as determined by the Architect, shall be completed prior to completion and occupancy.

# 1.5 FINAL ACCEPTANCE

- A. After requirements preparatory to Final Acceptance have been completed as hereinbefore specified, Contractor shall notify Architect to perform acceptance tour. Notice shall be given at least three days in advance of the time the acceptance tour is to be performed.
- B. Contractor or its principal superintendents authorized to act in behalf of Contractor, shall accompany Architect and Inspector on acceptance tour, as well as any principal subcontractors that Architect may request to be present.
- C. If work has been completed in accordance with Contract Documents, and no further corrective measures are required, Architect will recommend Final Acceptance to the Owner and initiate the filing of the Notice of Completion.
- D. If work has been substantially completed in accordance with Contract Documents, and only minor corrective measures are required, Architect will recommend that Owner conditionally accept Project and file Notice of Completion based upon Contractor's assurance that corrective measures will be completed within shortest practicable time period (but absolutely not later than 30 days).
- E. If work has not been substantially completed in accordance with Contract Documents, and several or many corrective measures are still required, Architect will recommend one or the other of the following:
  - 1. That Owner accept Project and file Notice of Completion only upon receiving from Contractor a Cashier's Check in amount sufficient to account for corrective measures still required, in the event that Owner had to have others complete the work.
  - 2. That Owner not accept project and not file Notice of Completion. Instead, based on information gathered from acceptance tour, Contractor will be required to complete all corrective measures and then call for another project acceptance tour following procedure outlined above.
- F. Should any corrective measures remain incomplete at time final payment is due, Contractor shall provide Owner with Money Order(s) or Cashier's Check in exchange for retention. Money Order(s) or Cashier's Check shall be in an amount one and one-half times the agreed estimated cost as determined by the Architect.
- G. Upon Final Acceptance of Project by Owner, Contractor shall submit his request for final payment, less retention. Retention payment will not be made by Owner until 35 days after board acceptance and filing of Notice of Completion with County Recorder, as specified in General Conditions.
- H. Retention payment will not be made until Contractor has filed the required Form DSA 6-C with DSA with two original copies to the Architect.

#### CLOSEOUT PROCEDURES SECTION 01 7700 22-1551.01

# 1.6 CLOSEOUT CHECKLIST

- A. The following items are to be fully completed and/or submitted as a condition for final acceptance of the project (as applicable)
  - 1. Specifications and Plans Review for Closeout
  - 2. Fire Alarm System Certification
  - 3. Megger Grounding Test Certificate
  - 4. Certificate of Chlorination and Sterilization
  - 5. Certificate of Compliance for Building Materials
  - 6. Contractor's Reuse, Recycling and Disposal Report
  - 7. Environmental Product Certification as required under Section 01 3543
  - 8. Certifications as required under Section 01 3300.
  - 9. Air Balance Report
  - 10. Operation & Maintenance Manuals
  - 11. Guarantees/Warranties
  - 12. Training
  - 13. Record Drawings
  - 14. Labels and name plates on all electrical panels
  - 15. Keys (from Contractor properly labeled):
    - a. gate valve key
    - b. electrical panel keys
    - c. communication panel keys
    - d. all cabinet keys
    - e. toilet accessories
    - f. extra door keys as required by specifications
  - 16. Punch List Items Completed
  - 17. Extra Stock of Specified Items, delivered to Owner (including documents)
  - 18. Back charges Resolved
  - 19. Removal of Stop Notices
  - 20. Contractor's Final Verified Reports (DSA 6-C)

# **END OF SECTION**

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#### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section Includes:
  - 1. Requirements for explicit warranties, guarantees, bonds, and service and maintenance contracts specified in the individual Sections and supplementing the requirements included in the General Conditions.
  - 2. Guarantee and warranty period inspections.
  - 3. Forms for Guarantees/Warranties.

# 1.2 RELATED REQUIREMENTS

A. Section 01 3300, Submittal Procedures; additional requirements and submittal procedures for guarantees/warranties.

#### 1.3 **DEFINITIONS**

- A. General: The following definitions apply to the language used in these Specifications.
- B. Warranty: A representation or affirmative covenant that the work will be performed in accordance with certain standards stated in the Contract, such as in "a good and workmanlike manner," and otherwise be free of defects and in conformity with the Contract Documents for the duration noted or, if a duration is not indicated, the statute of limitations period for contract breaches will constitute the time frame for enforcement.
- C. Guarantee: A provision of the warranty which becomes operative after completion of the work under the Contract and requires replacement of defective or non-conforming materials or equipment, or remedy improper workmanship, at the guarantors own cost and expense, for the duration noted under the General Conditions of the Contract or in the Specifications.
- D. Standard Product Guarantees/Warranties: Preprinted written documents published by individual manufacturers for particular products and specifically endorsed by the manufacturer to the Owner.
- E. Contractor Standard Guarantee: The Contractor's guarantee for the term included in the General Conditions.
- F. Subcontractor Standard Guarantee: A Subcontractor's guarantee period that coincides with the term of the Contractor's guarantee included in the General Conditions.
- G. Special Guarantees/Warranties: Written guarantees/warranties required by or incorporated in the Contract Documents to be provided by the Contractor or its Subcontractors to either extend time limits of the Standard Guarantees/Warranties included in the General Conditions or to provide greater rights for the Owner.

#### WARRANTIES SECTION 01 7836 22-1551.01

#### 1.4 GENERAL REQUIREMENTS

- A. Guarantees/warranties between Contractor and manufacturers and between Contractor and suppliers shall not affect those issued to the Owner.
- B. Contractor shall not be held responsible for defects due to misuse, negligence, willful damage, improper maintenance, or accident caused by others nor shall it be responsible for damaged parts whose replacement is necessitated by failure of Owner's maintenance forces to properly clean and service them, provided that Contractor has furnished complete operating and maintenance instructions to Owner.
- C. By terms of each guarantee/warranty, unless otherwise specified or stipulated, also agree to remove and replace other work, as required, that has been connected to or superimposed on substrate material to be replaced.
- D. In addition to other requirements specified:
  - 1. Compile specified service and maintenance contracts.
  - 2. Coexecute submittals when specified.
  - 3. Review submittals to verify compliance with Contract Documents.
  - 4. Submit to Architect for review and transmittal to Owner.
- E. In case of items remaining incomplete after date of filing of the Notice of Completion, the guarantee/warranty period shall run from the date of acceptance of such items.
- F. Special guarantees/warranties applicable to definite parts of the Work and as specifically stipulated in the respective Sections of the Specifications or other Contract Documents shall be subject to the terms of this Section.
- G. If repairs or changes are required in connection with the work within a guarantee/warranty period, the Contractor shall, promptly upon receipt of notice from the Owner and without expense to the Owner, comply with the following:
  - 1. Correct defects and place in satisfactory condition the work covered by the respective guarantee/warranty.
  - 2. Repair, to the satisfaction of the Owner, damage to the Buildings and/or site that is the result of the cause for said repairs and changes.
  - 3. Repairs and corrective work shall be made to the satisfaction of the Owner including the equipment and contents of the Buildings and/or site disturbed during performance of the guarantee/warranty work.
- H. The Owner may, at its sole discretion, proceed with the correction work at Contractor's expense if Contractor does not proceed with the corrective work within a reasonable time fixed by a written notice from the Owner.
  - 1. As part of the corrective work, the Owner reserves the right to remove and store or dispose of defective equipment or material at Contractor's expense.
  - 2. If Contractor does not pay the costs of such removal and storage within ten days thereafter, the Owner may, upon ten additional days' written notice, sell such

defective items and shall account for the net proceeds after deducting all the costs that should have been borne by the Contractor, including compensation for the Architect's additional services.

- 3. If the proceeds from the sale are insufficient to cover all amounts chargeable to Contractor, Contractor shall pay the difference to the Owner.
- I. If repairs or changes are required in connection with guarantee/warranty work and notice is given within the guarantee/warranty period, the warranty shall continue until the corrective work has been completed, regardless of the termination of the specified guarantee/warranty period.
- J. In case of work performed by subcontractors and where a special guarantee/warranty is required, guarantees/warranties addressed to and in favor of the Owner shall be secured from said subcontractors.
- K. No provision in the Contract Documents or in any special or general guarantee/warranty shall be held to limit, as to time or scope of liability, the Contractor's liability for defects or the liability of its sureties to less than the legal limit of liability under laws having jurisdiction.
- L. The delivery of any guarantees/warranties shall not relieve the Contractor from any obligation assumed under any other provision of the Contract Documents.
- M. The obligation of the Contractor under this Section shall survive the termination of the Contract.

# 1.5 SUBMITTAL REQUIREMENTS

- A. Assemble guarantees/warranties, bonds, and service and maintenance contracts executed by each of the respective manufacturers, suppliers, and subcontractors.
- B. Format:
  - 1. Size: 8-1/2-inch-by 11-inch sheets, punched for three-ring binder. Fold larger sheets to fit into binders.
  - 2. Binders: Commercial quality, three-ring, "View" type, with durable and cleanable plastic covers.
  - 3. Cover: Identify each packet with typed or printed title, "GUARANTEES/WARRANTIES," and list the title of Project and name of Contractor.
- C. Contents:
  - 1. Neatly typed, in orderly sequence.
  - 2. Provide complete information for each item including:
    - a. Product or work item.
    - b. Firm name with name of principal, address, and telephone number.
    - c. Beginning date and duration of warranty, bond, or service and maintenance contract.

#### WARRANTIES SECTION 01 7836 22-1551.01

- 3. Provide the following information for Owner's personnel:
  - a. Proper procedure in case of failure.
  - b. Circumstances that might affect the validity of guarantee/warranty or bond.
- 4. Contractor's name, name of responsible principal, address, and telephone number.
- D. Refer to Section 01 3300, Submittal Procedures, for additional requirements.

# PART 2 - PRODUCTS (NOT USED)

### PART 3 - EXECUTION

#### 3.1 TIME OF SUBMITTALS

- A. Typical: Within 30 days after filing date of Notice of Completion.
- B. Equipment or component parts of equipment put into service during progress of construction; submit documents within 10 days after inspection and acceptance.
- C. Items of work, where acceptance is delayed materially beyond date of filing date of Notice of Completion; provide updated submittal within 14 days after acceptance, listing date of acceptance as start of guarantee/warranty period.

# 3.2 GUARANTEE PERIOD INSPECTIONS

A. Contractor and subcontractors performing the construction work are required to guarantee workmanship and materials for the period noted in the Contract. Within a month of the end of such guarantee period, Contractor's agent shall prepare an inspection report indicating the condition of the Owner's facility and related common facility, itemizing the work to be completed, performed and/or corrected. Such guarantee period shall be continued in effect and extended until such time as Owner submits to Contractor written confirmation of the satisfactory completion of the itemized work, which confirmation shall be submitted within a reasonable period of time.

# 3.3 GUARANTEE/WARRANTY FORMS

- A. Contractor Standard Guarantee: Submit the following written Standard Guarantee/Warranty form for the overall Work against defects in materials and workmanship for the period of guarantee/warranty required under the Contract after the filing of the Notice of Completion (included with this section).
- B. Subcontractor Standard Guarantee: Submit the following written Standard Guarantee/Warranty form for Subcontracted Work against defects in materials and workmanship for the period of guarantee/warranty required under the Contract after the filing of the Notice of Completion (included with this section).
- C. Subcontractor Special or Extended Guarantee/Warranty: Contractor shall have its Subcontractor submit the following Special Extended Written Guarantee/Warranty, typed

on Subcontractor's letterhead, when required by a Specification Section for a period in excess of 2 years (included with this section).

# **END OF SECTION**

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(Letterhead of Contractor)
STANDARD GUARANTEE / WARRANTY
for
Project Name
Contract No.
We hereby warrant that the Work we have provided under the above reference Contract has been completed in accordance with the Drawings, Specifications, and other Contract Documents.
Under the terms of this warranty, we agree to repair or replace any or all of our work, together with any other adjacent work which may be displaced or damaged by so doing, which may prove to be either patently defective in its workmanship or latently defective in its workmanship or materials within the period of 24 months from the date of filing of the Notice of Completion of the above named Project by the Board of Trustees of the School District, and we also agree to repair any and all damages resulting from such defects, without any expense whatsoever to said Board
of Trustees, ordinary wear and tear and unusual abuse or neglect excepted.
In the event of our failure to comply with above-mentioned guarantee conditions within ten (10) day after being notified in writing by the Owner, we collectively and separately do hereby authorize the Owner to have said defective work and damages repaired or replaced and made good at our expense and will honor and pay the costs and charges therefore upon demand.
SIGNED (Contractor)
(Address)
(Printed Name of Authorized Representative) Signature
(License Number) (Date of Signing)
COUNTERSIGNED (Owner)
(Printed Name of Authorized Representative) Signature
Date of Filing or Notice of Completion:

(Letterhead of Company)
SUBCONTRACTOR STANDARD GUARANTEE / WARRANTY
We hereby warrant that
which we have provided in
Name of Project
District
has been completed in accordance with Specification Section and
requirements of the Contract Documents.
Under the terms of this warranty, we agree to repair or replace any or all of our work, together
with any other adjacent work which may be displaced or damaged by so doing, which may prove
materials within a period of 24 months from date of filing the Notice of Completion of the above-
named Project by the Board of Trustees of the School District without any expense whatsoever
to said Board of Trustees, ordinary wear and tear and unusual abuse or neglect excepted.
In the event of our failure to comply with above-mentioned guarantee conditions within ten (10)
day after being notified in writing by the Owner, we collectively and separately do hereby authorize
the Owner to have said defective work and damages repaired or replaced and made good at our
expense and will honor and pay the costs and charges therefore upon demand.
SIGNED (Subcontractor)
(Signature)
(Company Name)
(Address)
(Liconso Number)
(License Number) (Date of Signing)
COUNTERSIGNED (General Contractor)
· · · · ·
(Signature)
(Company Name)
(Address)
(License Number) (Date of Signing)

(Letterhead of Company)
SPECIAL EXTENDED WRITTEN GUARANTEE / WARRANTY
We hereby warrant that
which we have provided in
for
District
has been completed in accordance with Specification Section and requirements of the Contract Documents.
Under the terms of this warranty, we agree to repair or replace any or all of our work, together with any other adjacent work which may be displaced or damaged by so doing, which may prove to be either patently defective in its workmanship or latently defective in its workmanship or materials within a period of year(s) from date of filing the Notice of Completion of the above-named Project by the Board of Trustees of the School District without any expense whatsoever to said Board of Trustees, ordinary wear and tear and unusual abuse or neglect excepted. We also agree to repair any and all damages resulting from such defects. In the event of our failure to comply with above-mentioned conditions within a reasonable time but in no case longer than ten (10) calendar days after being notified in writing by the Owner, we collectively and separately do hereby authorize the Owner to have said defective work and damages repaired or replaced and made good at our expense and will honor and pay the costs and charges therefore upon demand.
SIGNED (Subcontractor)
(Name)
(Address)
(License Number) (Date of Signing)
COUNTERSIGNED (General Contractor)
(Name)
(Address)
(License Number) (Date of Signing)

# PART 1 - GENERAL

### 1.1 SUMMARY

- A. Section Includes:
  - 1. Removal, transporting, and reassembling of existing relocatable buildings to new location on site.
  - 2. Removal, transporting, and reassembling of existing relocatable buildings to an offsite location of the Owner.
  - 3. Removal and disposal by the Contractor of existing relocatable buildings.

# 1.2 RELATED REQUIREMENTS

- A. Section 013516, Alteration Project Procedures.
- B. Section 01 6116, Volatile Organic Compound (VOC) Restrictions; for VOC limits pertaining to adhesives, sealants, fillers, primers, and coatings.
- C. Section 01\_7329, Cutting and Patching.
- D. Division 26, Electrical.
- E. Section 31 0000, Earthwork.
- F. Section 31 2333, Trenching and Backfilling.

# 1.3 **REFERENCES AND STANDARDS**

- A. California Building Code (CBC), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).
- B. California Green Building Standards Code (CALGreen), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).
- C. Conform to applicable codes, obtain permits, licenses, and pay deposit sums; arrange for route of move; disconnect and reconnect utility services on route.

# 1.4 ADMINISTRATIVE REQUIREMENTS

- A. Submittal Procedures:
  - 1. Action Submittals and Informational Submittals shall be submitted in accordance with Section 01 3300, Submittal Procedures.
  - 2. Sustainable Design Submittals shall comply with the additional requirements of Section 01 8113, Sustainable Design Requirements.
- B. Pre-Moving Conference: Contractor shall participate in Pre-Moving Conference with Architect and Owner's Project Inspector, and shall be prepared to:

#### BUILDING RELOCATION SECTION 02 4313 22-1551.01

- 1. Discuss method of predetermining potential damage to existing structure and finishes.
- 2. Identify existing damage to sidewalks, roads and curbs.
- 3. Review the intended method and responsibility for repairs after moving.
- 4. Review the intended route for moving.
- 5. Discuss coordination with utility companies, if any.

#### 1.5 SCHEDULING

- A. No work shall occur when the site is occupied by students or staff without proper protection measures and written consent of Owner.
- B. Building relocation work shall not interfere with the Owner's use of affected and unaffected facilities.

#### 1.6 ACTION SUBMITTALS

A. Relocation Plan.

# 1.7 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For building moving firm.
- B. Record of Pre-Moving Conference.
- C. Sustainable Design:
  - 1. General:
    - a. Submit information necessary to establish and document compliance with the California Green Building Standards Code.
    - b. Sustainable design submittals are in addition to other submittals.
  - 2. The following information shall be provided:
    - a. Construction and Demolition Debris: Verification of compliance with waste reduction requirements specified in Section 01 8113, Sustainable Design Requirements.

#### 1.8 RELOCATION PLAN

- A. The Contractor shall submit a complete Plan detailing procedures and sequence for moving the existing structures in a safe and controlled manner to ensure buildings will be moved, relocated, and anchored in their new locations without damage.
- B. Thoroughly investigate the condition of the existing buildings' structures to be moved before proceeding with the Relocation Plan.
- C. The Relocation Plan shall consist of the following:
  - 1. Detailed sequence of work with starting and ending dates for each activity.
  - 2. Disconnection of utility services.

- 3. Coordination for shutoff and capping utilities servicing the buildings.
- 4. Details and locations of barriers and other measures to ensure that people, property and existing improvements will not be endangered or damaged during the moving process.
- 5. Procedures for transporting the modules including use of a truck and trailer or crane to lift and place the buildings in their new location.
- D. Review by the Architect and Owner of the Relocation Plan, or field observations performed by the Architect or Owner's other consultants, will in no way relieve the Contractor of full responsibility for the Relocation Plan and procedure.

#### 1.9 QUALITY ASSURANCE

- A. Qualifications:
  - 1. Mover: Company specializing in relocating building structures with 5 years documented experience.
- B. Obtain required permits from authorities and agencies.
- C. If available, verify transporting procedures with manufacturer's recommendations.
- D. Use only new materials and products, unless existing materials or products are specifically shown otherwise on the Drawings to be salvaged and re-used.
- E. Single-Source Responsibility: Use materials and products of one manufacturer whenever possible.
- F. Materials, components, assemblies, workmanship and installation are to be observed by the Owner's Project Inspector. Work not so inspected is subject to uncovering and replacement.

#### 1.10 FIELD CONDITIONS

- A. Buildings to be relocated will be vacated and their use discontinued before start of Work.
- B. Do not proceed with relocating buildings during inclement weather or if rain is forecast during the scheduled relocation period. Contractor shall be responsible for damage to interior exposed to the outside before it's sealed off for transport.

#### 1.11 SALVAGE MATERIALS

A. Where ownership of the buildings will not be retained by the Owner, salvage is at the discretion of the Contractor. Storage or sale of removed buildings will not be permitted on Project Site. Transport buildings from Project Site as they are removed.

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#### PART 2 - PRODUCTS

#### 2.1 EQUIPMENT

A. Equipment and Moving Structure: As required to achieve a successful structure move and in accordance with the approved Relocation Plan.

#### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Visit site of structure, route of transport, and site of destination. Determine utility services and obstructions to be removed, relocated, or abandoned during progress of work.
- B. Verify load limits to ensure conditions are adequate to support moving loads of structure.
- C. Inspect structure thoroughly and notify Architect in writing of visible defects, structural or otherwise, which would affect safe movement of structure to final location.
- D. Compile a list of visible defects to building structure, finishes, accessories, and equipment. This list will form the basis for comparing required repair work after the move.
- E. Prepare photographic record of visible defects to correspond with above itemized list. Provide Owner with two (2) copies of list and photographs.
- F. Ensure that foundations have been built and properly prepped, and electricity and other utilities are completed at new location.
- G. Beginning work of this Section means acceptance of existing conditions.

#### 3.2 PREPARATION

- A. Coordinate the work of utility disconnection and reconnection with the work of this Section.
- B. Shut off, disconnect, and cap mechanical and utility services. Remove overhead or exposed utility services to provide clear working and moving space around and below structure.
- C. Exterior building materials such as skirts, steps and decks, accessible ramps, gutters, and security systems shall be disassembled so they're not damaged in the move and available for installation at final location.
- D. Where existing building consists of multiple units, dismantle and remove interior components such as sprinklers, electrical connections, flooring and duct work that might overlap with any seams.
- E. Build-in and secure supplementary framing and bracing to structure, as required.
- F. Secure operating, moving or suspended items, such as doors, windows, and light fixtures, in a manner to prevent damage to items or structure during move.

- G. Protect elements surrounding the work of this Section from damage or disfiguration.
- H. During move, protect adjacent structures, and private and public property from damage caused by moving of structure. Repair any damage.

# 3.3 RAISE STRUCTURE

- A. Cut structure free of foundation and parts of structure not being moved.
- B. Undercut structure, reinforce, brace, and raise clear of foundation.
- C. Provide necessary framing, bracing, closures, jacks and blocking.
- D. Raise and move structure in manner to prevent damage.
- E. Secure structure to supporting structural members to prevent shifting of structure during move.

#### 3.4 MOVE STRUCTURE

- A. Provide transport vehicles for moving structure to final location.
- B. Move structure, control speed, and provide anchor and restraining devices so that integrity of structure will be retained.

#### 3.5 REINSTALL STRUCTURE

- A. Position structure over prepared foundation and site and lower onto site foundation.
- B. Remove moving equipment. Leave reinforcing, framing, and bracing intact until structure is fully attached and structure loads are supported by site foundations.

#### 3.6 **REINSTALLATION TOLERANCES**

- A. Maximum Variation from Level and Plumb: 1/4 inch.
- B. Maximum Offset from True Position: 1/4 inch.

#### 3.7 REPAIR OF DAMAGE

- A. Repair damage to structure not identified in writing prior to move.
- B. Refinish repaired surfaces to match adjacent work.

#### 3.8 SITE RESTORATION

- A. Original foundation for structure shall be removed and disposed of by Contractor.
- B. Cap and abandon disconnected utility risers one foot below grade.
- C. Completely fill voids with satisfactory soil materials according to backfill requirements and recommendations of the Geotechnical Engineer.

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#### 3.9 CLEANING

A. Remove moving equipment and materials from original site, final site and route of travel.

# **END OF SECTION**

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# PART 1 - GENERAL

### 1.1 SUMMARY

- A. Section Includes: Painting and painter's finish on all exposed exterior and interior surfaces, except prefinished items and unless otherwise noted, as required to complete finishing of the Work. The Work includes, but is not necessarily limited to, the following specific items:
  - 1. Paint, stain or otherwise finish all new surfaces.
  - 2. Back priming of concealed surfaces, except as otherwise specified.
  - 3. Paint, repaint or finish of existing painted surfaces altered, defaced or damaged as a result of work of this Contract.
  - 4. Paint site items which are not prefinished, including posts, screens, panels, bollards, supports, rails and other similar improvements.
  - 5. Mechanical and plumbing vents on roof.
  - 6. Unpainted or unfinished exposed building components, pipes and conduit, including sprinkler piping, and metal ductwork, which run exposed across finished or painted surfaces.
- B. Surface treatment, priming and coats of paint specified in this Section are in addition to shop priming and surface treatment specified under other Sections unless otherwise noted.
- C. Items Not Included in This Section:
  - 1. Factory and shop-prefinished items as specified in various Sections.
  - 2. Painting specified elsewhere and included in respective Sections, including but not necessarily limited to shop priming.

# 1.2 WORK NOT TO BE PAINTED UNLESS OTHERWISE INDICATED

- A. Exposed exterior concrete and concrete slab surfaces, except as noted.
- B. Unfinished masonry, except where noted.
- C. Suspended acoustical ceilings and acoustical tile, except as noted.
- D. Pre-finished casework and other factory and shop-prefinished items as specified in various Sections.
- E. Finish hardware except prime coated items.
- F. Items typically not to be painted including, but not limited to, the following:
  - 1. Glass.
  - 2. Ceramic tile.
  - 3. Membrane roofing.

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- 4. Safety nosings.
- 5. Resilient floor covering and base.
- 6. Carpet.
- 7. Pre-finished paneling.
- 8. Plastic laminate.
- 9. Porcelain enamel.
- 10. Vinyl wallcovering, except where noted.
- G. Aluminum doors, windows, frames and railings.
- H. Metal or plastic toilet partitions.
- I. Items of chromium, copper, nickel, brass, bronze or stainless steel.
- J. Surfaces in concealed areas such as furred spaces.
- K. Tops of gravel stop flanges (including priming) where roofing material will be adhered to.
- L. Wall areas concealed by cases, counters, cabinets, chalkboards, tackboards (prime coat only required).
- M. Piping or conduit including brackets and similar items therewith running on or across unpainted or otherwise unfinished walls or ceilings.
- N. Galvanized gratings, recessed foot grilles, and thresholds.
- O. Structural steel scheduled to receive fireproofing.
- P. Existing rooms or areas not affected by work of this project, unless specifically noted otherwise.

# 1.3 RELATED REQUIREMENTS

- A. Section 01 6116, Volatile Organic Compound (VOC) Restrictions; for VOC limits pertaining to adhesives, sealants, fillers, primers, and coatings.
- B. Divisions 22, 23 and 26, Exposed piping, ductwork and conduit.

# 1.4 **REFERENCES AND STANDARDS**

- A. California Building Code (CBC), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).
- B. California Green Building Standards Code (CAL Green), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).
- C. ASTM International (ASTM):
  - 1. D523: Standard Test Method for Specular Gloss.
  - 2. D4263: Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method.

- 3. D6386: Standard Practice for Preparation of Zinc (Hot-Dip Galvanized) Coated Iron and Steel Product and Hardware Surfaces for Painting.
- 4. D7396: Standard Guide for Preparation of New, Continuous Zinc-Coated (Galvanized) Steel Surfaces for Painting.
- D. Master Painters Institute (MPI):
  - 1. Architectural Painting Manual Guide Specification.
- E. The Association for Materials Protection and Performance (AMPP):
  - 1. SSPC-Society for Protective Coatings/ National Association of Corrosion Engineers International (NACE):
    - a. SSPC-SP 1: Solvent Cleaning.
    - b. SSPC SP-10/NACE No. 2: Near-White Metal Blast Cleaning.
    - c. SSPC-SP 16: Brush-Off Blast Cleaning of Coated and Uncoated Galvanized Steel, Stainless Steels, and Non-Ferrous Metals.

# 1.5 ADMINISTRATIVE REQUIREMENTS

- A. Submittal Procedures:
  - 1. Action Submittals and Informational Submittals shall be submitted in accordance with Section 01 3300, Submittal Procedures.
  - 2. Closeout Submittals shall be submitted in accordance with Section 01 7700, Closeout Procedures.
  - 3. Sustainable Design Submittals shall comply with the additional requirement of Section 01 8113, Sustainable Design Requirements.

# 1.6 ACTION SUBMITTALS

- A. Product Data: Submit list and complete descriptive data of products proposed for use. Include manufacturer's specifications, published warranty or guarantee, and application instructions. Cross-reference to paint system and locations of application areas.
- B. Samples:
  - 1. Appropriately label and identify each sample, including location and application. Include Architect's number as scheduled on the Drawings, manufacturer's name, color number, and gloss units.
  - 2. Prepare on 8 inch x 10 inch card stock for selected colors and finishes.
  - 3. Submit sufficiently ahead of work progress to allow for color board assembly and distribution.
  - 4. Resubmit as requested until required sheen, color, and texture are approved.

# 1.7 INFORMATIONAL SUBMITTALS

- A. Statement of applicator qualifications.
- B. Sustainable Design:

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- 1. General:
  - a. Submit information necessary to establish and document compliance with the California Green Building Standards Code.
  - b. Sustainable design submittals are in addition to other submittals.
- 2. The following information shall be provided:
  - a. Paints and Coatings: Evidence of compliance that products meet maximum VOC content limits specified in Section 01 6116.

# 1.8 CLOSEOUT SUBMITTALS

A. Guarantee: Submit Subcontractor's guarantee.

#### 1.9 MAINTENANCE MATERIAL SUBMITTALS

- A. At completion of the Work, deliver to Owner extra stock of paint of each color used in each coating material used.
- B. Containers shall be full, tightly sealed, and clearly marked.
- C. Provide the following quantities:
  - 1. Field Colors: 1 one-gallon container.
  - 2. Accent Colors: 1 one-gallon container.

# 1.10 QUALITY ASSURANCE

- A. Use only new materials and products.
- B. Single-Source Responsibility:
  - 1. To the maximum extent practicable, select a single manufacturer to provide all materials required by this Section, using additional manufacturers to provide systems not offered by the selected principal manufacturer.
  - 2. For each individual system:
    - a. Provide primer and other undercoat paint produced by same manufacturer as finish coat.
    - b. Use thinner within manufacturer's recommended limits.
- C. Source Quality Control: Material shall be best grade products of type specified and listed below as regularly manufactured by these manufacturers. Materials not bearing manufacturer's identification as standard "best grade product" of their regular line will not be considered for use.
- D. Materials, components, assemblies, workmanship and installation are to be observed by the Owner's Project Inspector. Work not so inspected is subject to uncovering and replacement.
- E. Materials and application procedures shall comply with local, state and federal air pollution control regulations.

F. Manufacturer's representative from coating supplier shall visit the site prior to application to review and approve the specified systems. Discrepancies or recommended changes shall be submitted to the Architect for consideration prior to finalization of submittal.

# 1.11 DELIVERY, STORAGE AND HANDLING

- A. Deliver undamaged products to job in manufacturer's sealed containers and/or original bundles with tags and labels intact.
- B. Store materials in protected, clean, dry conditions off of ground and in areas which will not interfere with the progress of the Work.
- C. Transport, store and handle in strict accordance with the manufacturer's written recommendations and as specified below.
- D. Remove paint-soiled rags and waste from premises at end of each day's work or store in metal containers with metal covers.
- E. Paint stored at site, shall be in separate structure not less than 60 feet from any other building or structure. Remove empty containers and soiled rags as they accumulate. At completion, remove structure, cleanup area, and leave in original condition.

# 1.12 FIELD CONDITIONS

- A. Do not apply paints and coatings under conditions which jeopardize quality or appearance of painting or finishing.
- B. Cover or otherwise protect finished work of other trades and surfaces not being painted concurrently or not to be painted.
- C. Exterior:
  - 1. Comply with manufacturer's recommendations as to environmental conditions under which coatings and coating systems can be stored and applied.
  - 2. Do not apply exterior paint when air or surface temperature is under 50 degrees F or when air or surface temperature will be below 50 degrees F for 48 hours after painting.
  - 3. Do not apply immediately following snow, rain, dew or during foggy weather.
  - 4. Do not apply when temperature is over 85 degrees F except in protected or shaded areas.
- D. Interior:
  - 1. Do not apply interior paint when air or surface temperature is below 50 degrees F unless temperature is maintained constantly.
  - 2. Do not apply when ventilation is inadequate to maintain humidity lower than dew point of coldest wall.
- E. Use moisture meter for determining proper moisture levels of surfaces for painting.

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- F. Report to Architect in writing upon discovery of any prime coat painting specified in other Sections of Specifications that would prevent proper application of specified finish.
- G. Furnish, erect and remove scaffolding and planks required for work under this Section. Conform to state and local codes, rules and regulations.

# 1.13 EXISTING CONDITIONS

- A. Existing Surfaces:
  - 1. Paint, stain or otherwise finish all existing surfaces as indicated or scheduled on the Drawings.
  - 2. Work includes primer, paint, repaint or finish of existing painted surfaces altered, defaced or damaged as a result of work under this Contract.
- B. Existing surfaces with paint, stain, varnish or similar type coating shall be assumed to contain various concentrations of lead. Cal/OSHA regulations are therefore applicable during disturbance, preparation or repainting of these surfaces.
- C. Existing surfaces to be painted include:
  - 1. Exterior wall surfaces, including fascia, trim.
  - 2. Soffits and exterior ceilings including exposed roof framing.
  - 3. Doors and frames, both wood and metal.
  - 4. Window frames, trim and solid infill panels except unpainted or prefinished aluminum.
  - 5. Exposed conduit, piping, brackets, supports, and similar metal fabrications.
  - 6. Downspouts and gutters.
  - 7. Parapet caps and exposed flashings.
  - 8. Concrete foundation where exposed below painted wall surfaces.
  - 9. Closure panels between relocatable buildings.
  - 10. Enclosure walls, screen walls, equipment yards.
  - 11. Other work as shown on the Drawings, specified, or as required for a complete Project.

#### 1.14 GUARANTEE

A. Contractor: Under conditions of its Guarantee under the Contract, paint colors shall be substantially unchanged and finishes shall maintain their original adherence without showing blisters, flaking, peeling, scaling, staining or unusual deterioration or other defects.

#### PART 2 - PRODUCTS

# 2.1 DESIGN AND PERFORMANCE CRITERIA

A. Sustainable Design:

1. VOC emissions for field-applied paints and coatings must comply with limits specified in Section 01 6116.

# 2.2 MANUFACTURERS AND COATING PRODUCTS

- A. Products are specified under "Paint Systems" in Part 3 below and are manufactured by Kelly-Moore, except as otherwise indicated. Equivalent products to those scheduled manufactured by Sherwin-Williams, PPG Architectural Finishes, Glidden Professional, Benjamin Moore & Co., Dunn-Edwards, Vista, or equal, are acceptable.
- B. Materials selected for coating systems for each type surface shall be the product of a single manufacturer or shall be acceptable to manufacturer of finish coating for system.
- C. If more than one quality level of product type is marketed, use material of highest quality.

#### 2.3 MIXING AND TINTING

- A. Deliver paints and stains ready mixed to jobsite. On-site color mixing or tinting will not be allowed.
- B. Each kind of coating for paint finishes shall be factory-mixed to match approved samples, colors, and ready for immediate application.
- C. Mix proprietary products in strict accordance with manufacturer's printed directions.
- D. Thinning, if permitted by manufacturer for a specific coating, shall be in accordance with manufacturer's instructions. Thinning of other products shall be in accordance with standard practice.

# 2.4 COLORS

- A. Architect will prepare a color schedule with samples for guidance of painter and reserves right to select, allocate, and vary colors on different surfaces throughout building.
  - 1. Colors selected by Architect may be from manufacturer's full range standard palette or be custom mixed.
  - 2. Unless otherwise indicated on the Drawings, different colors will be selected for different materials such as walls, trim, and doors.
- B. Colors to be selected by the Architect, or where scheduled on the Drawings, are solely for the purpose of conveying color information and do not imply manufacturer's approval or waiver of the requirement that all coatings be from the same manufacturer, unless a specific system is not available from the primary manufacturer.

# PART 3 - EXECUTION

#### 3.1 EXAMINATION

A. Prior to the work of this Section, carefully inspect and verify that the installed work of all other trades is complete to the point where this work may properly commence.
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- B. Verify that painting may be performed in accordance with the approved design.
- C. In the event of discrepancy, immediately notify Architect. Do not proceed in discrepant areas until discrepancies have been fully resolved.

### 3.2 **PREPARATION**

- A. General:
  - 1. Surface preparation and product application shall be in accordance with manufacturer's printed instructions.
  - 2. In addition to prime coats indicated (primer, sealer, filler, undercoat), use two finish coats minimum, and additional coats as required for complete coverage and good appearance of scheduled finish coat.
  - 3. Surfaces to receive new finish shall be properly prepared prior to application of finish coatings.
  - 4. Do not apply paint, enamel, stains or varnishes to wet, damp, dusty, finger-marked, rough, unfinished, or defective surfaces until such defects have been corrected.
- B. Wood Interior:
  - 1. Thoroughly sandpaper and dust off woodwork; putty nail holes, cracks, and other defects after first coat to match color of paint. Putty where finish will be clear.
  - 2. First coat on wood surfaces shall be sanded smooth. Other coats, except finish coat, shall be lightly sanded and dusted before and between each coat.
  - 3. Smoothing, rubbing and sand-papering shall be sufficient to insure good results. Sand down all raised grain or rough surfaces and re-coat. Knots, pitch pockets and sappy portion of wood, all nail holes, cuts, cracks and other defects in wood shall have any necessary extra treatment to provide proper paint base.
- C. Wood Exterior:
  - 1. Surfaces shall be dry and free of grease and splatters.
  - 2. Rough surfaces shall be sanded smooth. Do not sandpaper resawn surfaces.
  - 3. At opaque finish, fill nail holes, cracks, open joints, and other defects with filler after priming coat has dried. Exposed nail heads shall be spot primed.
  - 4. Avoid painting surfaces while exposed directly to hot sun.
  - 5. Smooth surfaces shall be sanded thoroughly to allow proper penetration and adhesion. Areas exhibiting tannic acid staining shall receive two coats of primer waiting 24 hours between coats. Sand and prime as soon as possible after installation to avoid UV degradation of unpainted wood surface.
  - 6. Mildew, if present, shall be removed by scrubbing with a commercial mildew wash in accordance with manufacturer's directions.
- D. Metals-General:
  - 1. On metal work, only such sanding will be required as is necessary to provide for complete bonding of coats.

- 2. Steel and ironwork shall be scraped clean of scale, and rust and any grease shall be entirely removed.
- 3. Touch-up scratched and damaged places on metal priming coats.
- 4. Galvanized or zinc-coated metal shall be given an approved acid treatment 48 hours before paint is applied.
- 5. Prep and prime coat factory or shop primed metal products, including metal doors and frames, exposed framing, and other exposed metal if material was not shop primed.
- 6. Metal surfaces receiving epoxy coatings shall have stripe coat applied at all welds, edges, joints, etc., with epoxy primer prior to application of primer.
- E. Metals–Galvanized Surfaces:
  - 1. Surfaces shall be cleaned, and profiled where specified, prior to receiving applied coatings in accordance with ASTM D6386 or ASTM D7396 for sheet products.
    - a. Methods shall be selected based on age of galvanized coating, condition of surface and intended paint coating.
    - b. Care shall be taken not to damage the zinc coating.
    - c. Do not use phosphate treatment on galvanized surfaces scheduled to receive zinc-rich primers.
  - 2. Comply with additional recommendations included in the AGA document "Duplex Systems: Painting Over Hot Dip Galvanized Steel."
  - 3. Comply with any additional procedures required by the coating manufacturer.
- F. Gypsum Board:
  - 1. General:
    - a. Fill narrow, shallow cracks and small holes with spackling compound.
      - 1) Rake deep, wide cracks and deep holes.
      - 2) Dampen with clear water.
    - b. Fill with thin layers of drywall joint cement.
    - c. Allow to dry.
    - d. Sand smooth after drying. Do not raise nap of paper on gypsum board.
  - 2. Gypsum Board to Receive Wall Covering and Carpeting:
    - a. Prep and prime surfaces scheduled to receive wall covering with scheduled primer. Refer to Section 09 7200, Wall Covering, for clear acrylic primer to be used at vinyl wall covering.
    - b. Sprayed applications of primer shall be back rolled to assure that the primer has thoroughly sealed the surface.
- G. Concrete:
  - 1. Cracks, gaps, hollow areas, bug holes, honey combs, voids, fins, form marks and other protrusions or rough edges are to be ground or stoned to provide a smooth continuous surface.
  - 2. Imperfections may require filling.

- a. Patch concrete areas with cracks, gaps, hollow areas or other imperfections with compatible material to provide smooth continuous surface.
- b. Material shall be compatible with and as recommended by the coating manufacturer.
- 3. Moisture Content:
  - a. Prepared surfaces shall not be painted until they have completely cured and have stabilized moisture content within limits required by the coating manufacturer.
  - b. Testing for Moisture Vapor Emission Rate (MVER) shall be performed to verify suitability using a moisture meter, Delmhorst or equal, or method described in ASTM D4263.
- 4. Surface shall be reviewed by Architect after surface preparation is complete and prior to application of primer. Additional patching and/or grinding necessary to provide a visually acceptable surface after application of paint coatings shall be accomplished at no additional cost.
- H. Surfaces that cannot be prepared or painted as specified, or to level required by the coating manufacturer, shall be immediately brought to the attention of the Architect, in writing.
  - 1. Starting of work without such notification will be considered acceptance by the Contractor of surfaces involved.
  - 2. Replace unsatisfactory work caused by improper or defective surfaces, as directed by Architect.

# 3.3 REPAINTING EXISTING INTERIOR SURFACES

- A. Interior surfaces required to be repainted, except acoustic tile, shall be prepared as follows.
  - 1. Wash clean with solution of trisodium phosphate in water and thoroughly rinse or wash with approved self-neutralizing detergent.
  - 2. Spackle, patch, sandpaper, repair, spot or partially prime to provide "hold out" for finish coats of paint and otherwise properly prepare as necessary to provide suitable surfaces, reasonably equal to new, over which to apply specified paints.
- B. Wall Covering:
  - 1. Check wall covering for adhesion. Loose seams and/or edges shall be reattached prior to painting.
  - 2. Holes, cracks and imperfections shall be filled flush with surface.

# 3.4 REPAINTING EXISTING EXTERIOR SURFACES

- A. General:
  - 1. Exterior surfaces required to be re-painted, shall be power washed with surfactant, followed by rinsing to remove all loose coatings, chalk, dirt, efflorescence, oils, and other contaminants that would inhibit bond of new coating.

- 2. Mold or mildew shall be treated with bleach solution followed by thorough rinsing.
- 3. Protect openings into interior spaces during power washing including louvers, vents, vent screeds, grilles, to prevent water from entering interior areas including, attics and soffits.
- B. Ferrous Metal: Steel framing, metal doors and frames, louvers, metal ductwork, and similar Items:
  - 1. Remove all flaking, peeling and poorly bonded coatings, including rust from metal surfaces using power tool sanders or equivalent equipment. Feather edge remaining coatings.
  - 2. Solvent scrub with MEK, all exposed bare metal, shop applied pretreatment and chalked coatings.
  - 3. Spot prime exposed bare metal and metal pre-treatment prior to application of specified prime coat.
- C. Galvanized Metal: Down spouts, wall caps, and Other Exposed Galvanized Metal.
  - 1. Remove all loose, flaking or peeling coatings by scraping, chipping or sanding. Feather all rough edges by sanding.
  - 2. Apply phosphoric acid etch pre-treatment to exposed galvanized metal.
- D. Plaster and Concrete Masonry:
  - 1. Remove loose coatings using hand or power tools.
  - 2. Patch plaster areas where original material has cracked, spalled or otherwise been removed with compatible material. Fill areas completely to provide smooth, even surface for refinishing. Spot prime patches prior to proceeding.
  - 3. Patch masonry joints with cracks or missing material with compatible materials.
- E. Wood Siding and Trim:
  - 1. Remove loose, flaking or peeling coatings by scraping, chipping or sanding. Feather rough edges by sanding.
  - 2. Surfaces that exhibit moderate to heavy chalk deposits shall be thoroughly cleaned to sound substrate by wire brushing, sanding, or power washing.
  - 3. Spot prime bare wood, exposed nail and fastener heads prior to application of specified prime coat.
  - 4. Glossy surfaces shall be dulled by sanding. Crystalline deposits shall be removed by flushing with water from a hose.
  - 5. Mildew, if present, shall be removed by scrubbing with a commercial mildew wash in accordance with manufacturer's directions.
- F. Concrete:
  - 1. Existing exposed concrete scheduled to receive new finish shall be pressure washed or scrubbed to completely remove all bond breakers and oils.
  - 2. Remove loose coatings not removed by pressure washing using hand or power tools.

- 3. Efflorescence to be removed following procedures recommended by the paint manufacturer.
- 4. Cracks, gaps, hollow areas, bug holes, honey combs, voids, fins, form marks and other protrusions or rough edges are to be ground or stoned to provide a smooth continuous surface.
- 5. Imperfections may require filling.
  - a. Patch concrete areas with cracks, gaps, hollow areas or other imperfections with compatible material to provide smooth continuous surface.
  - b. Material shall be compatible with and as recommended by paint manufacturer.
- 6. Test for moisture as specified for new concrete.
- 7. Surface shall be reviewed by Architect after patching is complete and primer is applied. Additional patching and/or grinding necessary to provide a visually acceptable surface shall be accomplished at no additional cost.
- G. Stained Wood Surfaces:
  - 1. Thoroughly sand all surfaces.
  - 2. Fill holes, cracks and defects after first coat with color matched putty.
  - 3. Sand between coats to ensure proper adhesion.

### 3.5 CAULKING

- A. Caulk all cracks in finished surfaces.
- B. Seal around any wall openings where original sealant is not fully sealing.
- C. Provide 3/8 inch sealant around all steel columns at concrete base prior to painting.
- D. Provide sealant at material transitions and intersections as required.

# 3.6 **PROTECTION**

- A. Hardware, fixture canopies, outlet covers, switch plates and other such items shall be removed or loosened and replaced after completing work as required for painting and finishing. Protect items until reinstalled.
- B. Protect work and work of others during progress against damage. Leave such work clean and whole. Correct damage by cleaning, repairing, replacing or repainting as directed.
- C. Provide necessary drop cloths for protection of work. Cover finished surfaces adjacent to work.

# 3.7 APPLICATION

- A. General:
  - 1. Do not apply initial coating until moisture content of surface is within limitations recommended by paint manufacturer.

- 2. Apply coatings in accordance with manufacturer's recommendations and the additional requirements, as applicable, of the Architectural Painting Manual Guide Specifications for application methods and paint systems.
- 3. Flow coat on evenly and well brushed in. Should dead spots occur, touch-up before next coat is applied. Should spots or cracks burn through after final coat is applied, apply additional coats to entire surface as necessary to remedy defects.
- 4. Rate of application shall be within limits recommended by paint manufacturer for surface involved.
- B. Thicknesses: Rate of application shall be within limits recommended by paint manufacturer for surface involved and comply with the following.
  - 1. Paint materials shall be applied in manner to average 1.5 to 3 Dry Mils in thickness for the total number of coats scheduled.
  - 2. Provide Tooke Dry Mill Coating Inspection Gauge manufactured by Micro Metrics Company to the Project Inspector for inspection of finished coating systems, if requested.
- C. Refinish whole area where portion of finish is not acceptable.
- D. Adjust natural finishes as necessary to obtain identical appearance on veneers and solid stock.
- E. Equipment adjacent to walls shall be disconnected, using workers skilled in appropriate trades, and moved to permit wall surfaces to be painted. Following completion of painting, they shall be expertly replaced and reconnected.
- F. Top and bottom edges of all doors shall receive same paint system finish required for door faces.
- G. Do not paint over fire-rating labels, fusible links, or sprinkler heads.

# 3.8 DEFECTIVE WORK

A. Painter shall be responsible for damage or unsuitable work, including that caused by improperly prepared surfaces. Refinishing shall be at no cost to the Owner. Repair work damaged during construction; touch-up or refinish as necessary any abraded, stained or otherwise damaged surfaces.

#### 3.9 CLEANING AND PROTECTION

- A. Thoroughly clean any drips, splatters, spills, splashes, etc., from walls, floor or other surfaces, with no damage to those surfaces.
- B. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.
- C. In the event of damage, make all repairs and replacements necessary to the approval of the Architect at no additional cost to the Owner.

#### 3.10 PAINT SYSTEMS

- A. General:
  - 1. Only major areas are scheduled, but miscellaneous and similar items and areas within room or space shall be treated with suitable system.
  - 2. This Specification shall serve as guide and is meant to establish procedure and quality. Confer with the Architect to determine exact finish desired.
  - 3. Number of coats scheduled is minimum. Additional coats shall be applied at no additional cost as required to hide base material completely, produce uniform color, and provide required and satisfactory finish.
- B. Gloss and Sheen Ratings: Paint gloss shall be defined as the sheen rating of applied paint, in accordance with the following limits in conformance with Master Painters Institute, Inc. (MPI) Standards according to ASTM D523. Not all of the Gloss Levels are necessarily scheduled or used on this Project.

Gloss Level	Description	Units @ 60 degrees	Units @ 85 degrees
G1	Matte or Flat finish	0 to 5	10 max.
G2	Velvet finish	0 to 10	10 to 35
G3	Eggshell finish	10 to 25	10 to 35
G4	Satin finish	20 to 35	35 min.
G5	Semi-Gloss finish	35 to 70	
G6	Gloss finish	70 to 85	
G7	High-Gloss finish	> 85	

- C. Clarification of System Terminology:
  - 1. Interior paint Systems are specified and identified herein by initial letters "INT."
  - 2. Exterior paint Systems are specified and identified herein by initial letters "EXT."
  - 3. The numbers following "INT" and "EXT" for each System identifies the substrate to be coated.
  - 4. Initial numbers for each System identify the substrate to be coated summarized as follows with further clarification included with the System description:

CODE	DESCRIPTION
3.1	Concrete
3.2	Cement Plaster
4	Masonry
5	Metal
6	Wood
9.2	Gypsum Board
9.3	Acoustical Panels and Tile

5. The letter following substrate number identifies the general finish coat chemistry summarized as follows:

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CODE	DESCRIPTION
A	Standard acrylic
В	Non-bridging vinyl acrylic
С	Epoxy-like acrylic
D	Semi-transparent stain
E	Elastomeric
F	High performance epoxy-like acrylic
G	Lacquer
Н	Aliphatic urethane
I	Fire Retardant Intumescent
J	Acrylic Urethane
К	PVA primer
L	Acrylic primer
М	Premium performance acrylic polymer

6. Hyphenated suffix identifies the topcoat gloss level.

# 3.11 INTERIOR PAINTING SYSTEMS

IN	IT 3.1A-3			
Acrylic on Concrete - Gloss Level 3				
I	coat	97 T ACTYPIEX	previously painted)	
2	coats	1010 Premium Professional	Latex Eggshell	
IN	IT 3.2A-3			
A	crylic on Interior Ceme	nt Plaster- Gloss Level 3		
1	coat	971 AcryPlex	Vinyl Acrylic Primer (if not	
			previously painted)	
2	coats	1010 Premium Professional	Latex Eggshell	
	II 4.1A-1 amilia an Cananata Unit	Managemy Class Lawal 4, at th		
A	crylic on Concrete Unit	Masonry - Gloss Level 1; at th	A survive Disease Fillen (if we the	
1	coat	521 Color Shield	Acrylic Block Filler (If not	
0	a a a ta	Speedbide 6 752 by	previously painted)	
Ζ	coals	Speedhide 6-753 by	A amplie Latery Flat Dia als	
		PPG Architectural Finishes	ACTYLIC LATEX FIAT BLACK	
IN	IT 4 1A-3			
A	crvlic on Concrete Unit	Masonry - Gloss Level 3: unle	ss otherwise indicated.	
1	coat	521 Color Shield	Acrylic Block Filler (if not	
•			previously painted)	
2	coats	1010 Premium Professional	Latex Eggshell	
IN	IT 4.1A-5			
A	crylic on Concrete Unit	Masonry - Gloss Level 5; in to	ilet rooms / food service areas	
1	coat	521 Color Shield	Acrylic Block Filler (if not	
_			previously painted)	
2	coats	1050 Premium Professional	Latex Semi-Gloss	

3.12

INT 5.1A-5 Acrylic on Exposed Steel, Not Shop Primed - Gloss Level 5 1 coat 5725 DTM Acrvlic Primer 1050 Premium Professional Latex Semi-Gloss 2 coats Note: Modify scheduled finish coat if lower gloss level is selected by Architect. INT 5.2A-5 Acrylic on Shop Primed Metal Including Hollow Metal Doors & Frames - Gloss Level 5 1050 Premium Professional Latex Semi-Gloss 2 coats Note: Modify scheduled finish coat if higher or lower gloss level is selected by Architect. INT 5.2M-6 Premium Performance Acrylic on Exposed Metal - Gloss Level 6 1 coat Devcryl 1440 Waterborne Acrylic 2 coats Devcryl 1449 100% Acrylic-Gloss INT 6.4A-5 Acrylic on Plywood - Gloss Level 5 1 coat 973 AcryPlex Acrylic Primer 1050 Premium Professional Latex Semi-Gloss 2 coats INT 6.4I-3 Intumescent on Plywood Signal Terminal Backboards - Gloss Level 3 1 coat Benjamin Moore Insl-x"FR-110 Fire Retardant Paint INT 9.2A-3 Acrylic on Gypsum Board, textured finish - Gloss Level 3 1 coat 971 AcryPlex PVA Primer/Sealer 1010 Premium Professional Latex Eggshell 2 coats INT 9.2A-5 Acrylic on Gypsum Board, smooth finish - Gloss Level 5 1 coat 971 AcryPlex PVA Primer/Sealer 2 coats 1050 Premium Professional Latex Semi-Gloss Note: Provide additional topcoat at toilet rooms and food service areas. **EXTERIOR PAINTING SYSTEMS** EXT 3.1A-2 Acrylic on Concrete - Gloss Level 2 1 coat 247 AcryShield Acrylic Masonry Primer 2 coats 100% Acrylic Low Sheen 1210 Premium Professional EXT 5.1A-5 Acrylic over Unprimed Steel - Gloss Level 5 1 coat 5725 DTM Metal Primer

2 coats 1215 Premium Professional 100% Acrylic Semi-Gloss

EXT 5.2A-5 Acrylic over Shop Primed Metal Doors and Frames, Steel Frame, Mechanical and Electrical Equipment, and Panels - Gloss Level 5 2 coats 2888 DuraPoxy HP Acrylic Urethane Semi-Gloss EXT 5.3A-5 Premium Acrylic over Waterborne Primer on Galvanized Metal – Gloss Level 5

Pretreatment SSPC SP-1 Heavy-duty cleaner 1 coat 5725 DTM Acrylic Primer 2 coats 1215 Premium Professional 100% Acrylic Semi-Gloss Note: Provide pretreatment and primer if preparation and primer not applied in shop.

### EXT 5.5A-5

A	crylic over	Thermoplastic Olefin (TPO) Coated Metal	– Gloss Level 5
1	coat	Carlisle "Low VOC TPO Primer"	Solvent based as provided by
			roofing manufacturer
2	coats	1250 AcryShield	100% Acrylic Semi-Gloss

# 3.13 MISCELLANEOUS PAINTING

- A. Mechanical and Electrical Equipment, Conduits and Piping: Paint exposed items as scheduled using appropriate system for material and whether or not item has been factory-primed.
- B. Exposed Insulation-Covered Piping: Size with Arabol, or equal latex type adhesive, and apply 2 coats of semi-gloss enamel.
- C. Material Visible through Grilles, Screens, Louvers, Vents and Screens and Exposed Hardware Cloth Screening: Painted flat black to make them as unnoticeable as possible.
- D. Mechanical Equipment: Paint mechanical equipment housings where indicated on the Drawings.

# END OF SECTION

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### PART 1 - GENERAL

### 1.1 SUMMARY

- A. Section Includes:
  - 1. Code required signage.
  - 2. Exterior building identification and other non-code signage.

# 1.2 RELATED REQUIREMENTS

- A. Section 01 6116, Volatile Organic Compound (VOC) Restrictions; for VOC limits pertaining to adhesives, sealants, fillers, primers, and coatings.
- B. Division 26, Electrical.
- C. Signage requirements included on the Drawings.

### 1.3 **REFERENCES AND STANDARDS**

- A. California Building Code, edition as noted on the drawings, as adopted by the California Division of the State Architect (DSA).
- B. California Green Building Standards Code (CAL Green), edition as noted on drawings, as adopted by the California Division of the State Architect (DSA).
- C. Title 19, CCR, Article 33.01(i).
- D. American National Standards Institute (ANSI):
  - 1. A-117.1: Accessible and Usable Buildings and Facilities.
- E. ASTM International (ASTM):
  - 1. A53/A53M: Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
  - 2. A153/A153M: Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.

# 1.4 ADMINISTRATIVE REQUIREMENTS

- A. Submittal Procedures:
  - 1. Action Submittals and Informational Submittals shall be submitted in accordance with Section 01 3300, Submittal Procedures.
  - 2. Closeout Submittals shall be submitted in accordance with Section 01 7700, Closeout Procedures.
  - 3. Sustainable Design Submittals shall comply with the additional requirement of Section 01 8113, Sustainable Design Requirements.

- B. Coordination:
  - 1. Prior to production of shop drawings and samples, coordinate a pre-submittal conference with Architect to confirm submittal requirements, schedule, and sign review process.
  - 2. For signs supported by or anchored to permanent construction, advise installers of anchorage devices about specific requirements for placement of anchorage devices and similar items to be used for attaching signs. Provide template for placement of sign-anchorage devices **[and electrical service]** embedded in permanent construction by other installers.

# 1.5 ACTION SUBMITTALS

- A. Shop Drawings:
  - 1. Scaled drawings and signage schedule for each sign indicating materials, lettering layout, and colors.
- B. Product Data: Submit list and complete descriptive data of all products proposed for use. Include manufacturer's specifications, published warranty or guarantee, installation instructions, and maintenance instructions.
- C. Samples:
  - 1. Submit three samples of specified signage fonts to be used for visual and tactile characters including braille below the raised characters.
  - 2. Color Verification: Provide physical sample of each available color form the manufacturer. Include color system name and serial number, code and name as applicable.
  - 3. Control Samples. Samples shall be prepared on same base material to be used in fabrication. Submit one sample of each sign type. Signage types are indicated in Construction Document details. Interior signs shall be full size.
  - 4. Dimensional Letters: One full-size representative samples of each dimensional letter type required, showing letter style, color, and material finish and method of attachment.
  - 5. Symbol of Accessibility and Pictograms. Full scale sample of pictograms and symbol of accessibility to be used on sign panels and graphics.

# 1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For installer.
- B. Sustainable Design:
  - 1. General:
    - a. Submit information necessary to establish and document compliance with the California Green Building Standards Code.
    - b. Sustainable design submittals are in addition to other submittals.
  - 2. The following information shall be provided:

- a. Adhesives and Sealants: Evidence of compliance that products meet maximum VOC content limits specified in Section 01 6116.
- C. Sample of manufacturer's warranty.
- D. Signage Schedule and Alphanumeric Nomenclature. As a component of shop drawings and informational submittals, verify with Architect the sign nomenclature; room names and numbers; wording of way-finding, directional and informational signage; text; and orientation of wayfinding pictorial graphics.

## 1.7 CLOSEOUT SUBMITTALS

- A. Warranty/Guarantee: Submit executed warranty and Subcontractor's guarantee.
- B. Maintenance data for signs and sign types including maintenance manuals.

### 1.8 QUALITY ASSURANCE

- A. Contractor shall assure that the vendor shall be responsible for the quality of materials and workmanship of any firm acting as the vendor's subcontractor.
- B. Use only new materials and products, unless existing materials or products are specifically shown otherwise on the Drawings to be salvaged and re-used.
- C. Use materials and products of one manufacturer whenever possible.
- D. Materials, components, assemblies, workmanship and installation are to be observed by the Owner's Project Inspector. Work not so inspected is subject to uncovering and replacement.
- E. The adhesion of inlaid letters and symbols will be tested. See Article WARRANTY.

#### 1.9 DELIVERY, STORAGE AND HANDLING

- A. Deliver undamaged products to job in manufacturer's sealed containers and/or original bundles with tags and labels intact.
- B. Store materials in protected, dry conditions off of ground and in areas so as to not interfere with the progress of the work.
- C. Transport, store and handle in strict accord with the manufacturer's written recommendations.

#### 1.10 FIELD MEASUREMENTS

A. Make and be responsible for all field dimensions necessary for proper fitting and completion of work. Report discrepancies to Architect before proceeding.

#### 1.11 WARRANTY

A. Manufacturer: In addition to the Contractor's and Subcontractor's Guarantee, furnish Owner with manufacturer's available fully executed written warranty for signage against all defects in materials and workmanship, including without limitation against yellowing, cracking, crazing, and other visible and performance defects for a period of 5 years.

1. Text, pictograms or symbols that can be removed from the sign face utilizing a sharp object or other conventional methods will be considered a manufacturing defect.

# PART 2 - PRODUCTS

# 2.1 DESIGN AND PERFORMANCE CRITERIA

- A. Regulatory Standards:
  - 1. Except as otherwise specified or shown, signage shall conform to the following:
    - a. ANSI A-117.1 and the Americans with Disabilities Act (ADA).
    - b. ATBCB Design Guidelines for Signage in relation to the Americans with Disabilities Act.
    - c. California Code of Regulations, Titles 19 and 24.
      - 1) Contracted Grade 2 Braille shall be used whenever Braille symbols are specifically required. Refer to CBC Section 11B-703.3.
      - 2) All signage shall conform to CBC Section 11B-703.
    - d. Uniform Sign Code.
  - 2. When there is a conflict between the CBC and ADA, comply with the most stringent.
- B. Design Criteria: Refer to Chapter 11B of the California Building Code.
  - 1. Raised Characters: Section 11B-703.2.
    - a. Depth: Section 11B-703.2.1.
    - b. Case: Section 11B-703.2.2.
    - c. Style: Section 11B-703.2.3.
    - d. Character Proportions: Section 11B703.2.4.
    - e. Character Height: Section 11B-703.2.5.
    - f. Stroke Thickness: Section 11B-703.2.6.
    - g. Character Spacing: Section 11B-703.2.7.
    - h. Line Spacing: Section 11B-703.2.8.
    - i. Installation Height and Location: Section 11B-703.4.
  - 2. Braille: Section 11B-703.3.
    - a. Contracted (Grade 2) Braille with rounded or domed dots shall be used wherever Braille is required.
      - 1) Braille dimensions in accordance with Table 11B-703.3.1.
  - 3. Visual Characters: Section 11B-703.5.
    - a. Character Proportions: Section 11B-703.5.4.
    - b. Stroke Thickness: Section 11B-703.5.7.

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- c. Character Spacing: Section 11B-703.5.8.
- d. Line Spacing: Section 11B-703.5.9.
- 4. Pictograms: Section 11B-703.6.
  - a. Pictogram Field: 11B-703.6.1.
    - 1) Characters and Braille shall not be located in the pictogram field.
  - b. Finish and Contrast: Section 11B-703.6.2.
    - 1) Pictograms and their field shall have a non-glare finish. Pictograms shall contrast with their field with either a light pictogram on a dark field or a dark pictogram on a light field.
  - c. Text Descriptors: Section 11B-703.6.3.
    - 1) Locate text descriptors directly below the pictogram field.
    - 2) Text shall be raised characters with braille directly below.
- 5. International Symbol of Accessibility: Section 11B-703.7.2.1.
- 6. Toilet Room Door Symbols: Section 11B-703.7.2.6.
- 7. Tactile Exit Signs: Tactile exit signage to comply with1013.4 and 11B-703.4.
- C. Sustainable Design:
  - 1. VOC emissions for field-applied adhesives, sealants, and sealant primers must comply with limits specified in Section 01 6116.

### 2.2 PLASTIC SIGNS - TACTILE

- A. Materials, Unless Otherwise Noted:
  - 1. Manufacturer and Product: "Inlaid Tactile Sign" by Accent Signage Systems, Inc. Minneapolis, MN, 800-215-9437 as specified and the basis of design; Ellis & Ellis Sign Systems, Sacramento, CA, 916-924-1936; ASI-Modulex, Los Altos, CA, 650-940-1354; Weidner Architectural Signage, Sacramento, CA; or equal.
    - a. Sign Face: Two 1/8-inch plies with eased edges; New Hermes "Gravo-Tac," or equal.
      - 1) Total Thickness: 1/4 inch.
      - 2) Painted signs will not be accepted.
    - b. Tactile Text: Provide tactile text and "Raster" Braille at plastic tactile signage.
      - 1) Tactile text shall be inlaid into sign face 1/32-inch and raised 1/32- inch minimum above sign face surface.
      - 2) Inlaid text shall be 1-ply, 1/16-inch thick material; "Gravo-Tac" Exterior or equal.
      - 3) Provide text and graphics precisely formed, uniformly opaque to comply with relevant ADA regulations and requirements indicated for size, style, spacing, content, position and colors.
      - 4) Symbols where specified shall be International Style.
      - 5) Braille shall be Contracted (Grade 2) Braille.

- a) Dots shall be 0.10-inch on centers in each cell, 0.30-inch on center between corresponding dots in adjacent cells, and 0.395-inch minimum to 0.400-inch maximum on center between corresponding dots in cell directly below.
- b) Dots shall be raised a minimum of 0.025-inch and a maximum of 0.037-inch above the background, and a base diameter of 0.059-inch minimum and 0.063- inch maximum.
- c) Dots with straight sides and flat tops are not acceptable.
- c. Colors: High contrast, non-glare, integral colors for graphics.
  - 1) Integral materials shall be U.V. stabilized.
  - 2) Characters, symbols and pictograms shall be in high contrast (light color) with background (dark) color and must conform to the CBC and the ADA Standards.
- B. Fabrication:
  - 1. Panel Appearance: Manufacturer's standard, high contrast, semi-matte colors.
  - 2. Surface Texture: Matte Non-glare.
  - 3. Character Style, Size and Layout Position:
    - a. Characters shall be 1-inch high, unless otherwise indicated.
    - b. The stroke of the uppercase letter "I" shall be 15 percent maximum of the height of the character.
    - c. The width of the uppercase letter "O" shall be 60 percent minimum and 110 percent maximum of the height of the uppercase letter "I".
    - d. Character style to be Sans Serif, uppercase, accompanied by Braille directly below text at all locations where raised characters are required.
    - e. Spacing between baselines of separate lines of raised characters with a message shall be 135 percent minimum and 170 percent maximum of the raised character height.
  - 4. Text Schedule: Confirm text, symbols and numbering with the Architect and Owner.
  - 5. Sign Size: As indicated on the Drawings or, if not shown, as reasonably required to accommodate text, symbols and Braille.
    - a. Where signs are installed on window glazing, fabricate a blank sign back to match in size and shape to sign.
    - b. Sign backs shall cover back side of sign from view through window on opposite side of sign.
    - c. Signs that are mounted back-to-back on glazing are to be matching in size; the smaller sign is to be increased in size as reasonably required to match the larger sign.
  - 6. Sign Shape: As indicated on the Drawings.
    - a. Corners: Radiused, unless otherwise shown.
  - 7. Inlaid Letter Adhesion Process: Inlaid material shall be adhered into 1/32-inch deep routed sign face utilizing the heat and pressure bonded/chemically welded

process as developed by Accent Signage Systems for the specified "Inlaid Tactile Sign."

- a. Sign manufacturers for the specified "Inlaid Tactile Sign" shall be familiar with and utilize the exact same manufacturing process developed by Accent Signage Systems.
- b. Manufacturer must utilize the same and required equipment, products and techniques necessary to produce authentic "Inlaid Tactile Signs" as developed by Accent Signage Systems.
- c. Other adhesive products and methods, including applied adhesive tapes will not be accepted.
- C. Sign Types: Provide braille translation directly below the raised characters.
  - 1. Room Identification Sign: Provide as shown on the Drawings.
    - a. Provide name and room number at each door indicated.
    - b. Names and numbers to be reviewed and approved by Architect and Owner prior to fabrication.
    - c. Allow an average of 4-numbers and 14-letters for each sign.
    - d. Sign to be provided adjacent to doors as shown.
  - 2. Toilet Room Identification Sign: In addition to the specified Door Symbol, provide a Toilet Room Identification Sign at the strike side of every toilet room door.
    - a. Sign shall include an International Symbol of Accessibility, pictogram, and raised characters, specifying the room name with Braille translation below pictogram.

# 2.3 PLASTIC SIGNS - NON-TACTILE

A. Materials, Unless Otherwise Noted:

Manufacturer and Product: Acrylic panel sign as manufactured and distributed by Ellis & Ellis Sign Systems, 916-924-1936, as specified and the basis of design, or equal.

- 1. Sign Face: 1/4-inch, matt finish, non-glare acrylic with subsurface vinyl and paint. Painted faces will not be accepted.
- 2. Colors: Colors shall match specified Tactile Signs and as selected by Architect and Owner.
  - a. Integral materials shall be U.V. stabilized.
  - b. Graphics and text shall be in high contrast (light color) with background (dark) color.
- B. Fabrication:
  - 1. Sign Thickness: 1/4-inch.
  - 2. Character Style, Size and Layout Position:
    - a. Characters shall be a minimum of 1-inch high, unless otherwise indicated.
    - b. The stroke thickness of the uppercase letter "I" shall be 10 percent minimum and 20 percent maximum of the height of the character.

- c. The width of the uppercase letter "O" shall be 60 percent minimum and 110 percent maximum of the height of the uppercase letter "I".
- d. Letter style to be Sans Serif, uppercase.
- e. Space characters 10 percent minimum and 35 percent maximum of height of characters, measured between two closest points of adjacent characters, excluding word spaces.
- f. Spacing between baselines of separate lines of characters within a message shall be 135 percent minimum and 170 percent maximum of character height.
- 3. Text Schedule: Confirm text, symbols and numbering Architect and Owner using the shop drawing/submittal process.
- 4. Sign Size: As indicated on the Drawings or, if not shown, as reasonably required to accommodate text and symbols.
  - a. Where signs are installed on window glazing, fabricate a blank sign back to match in size and shape to sign.
  - b. Sign backs will cover back side of sign from view through window on opposite side of sign.
- 5. Sign Shape: As indicated on the Drawings or, as reasonably required to accommodate the specified text and size at lettering.
  - a. Corners: 1/4-inch radius, unless otherwise shown.
- C. Sign Types:
  - 1. Toilet Room Door Symbol: Provide one of the following symbols as appropriate to the toilet room type. Toilet Room Door Symbols shall have a color contrast that is distinctly different from the color of the door. Characters, as shown, to be flush with face of symbol. The entire background color must contrast with door. A thin contrasting border around the symbol, with remainder of sign background in a non-contrasting color is not allowed.
    - a. Girls: 12-inch diameter circle, with eased edges.
    - b. Boys: Equilateral triangle with sides 12-inches long, with eased edges.
    - c. Women: 12-inch diameter circle, with eased edges.
    - d. Men: Equilateral triangle with sides 12-inches long, with eased edges.
    - e. Unisex or Staff: equilateral triangle of contrasting color and super imposed on and geometrically inscribed within the face of 12-inch diameter circle, which is a contrasting color to the door. The vertices of the triangle symbol shall be located ¼-inch maximum from the edge of the circle with the vertex pointing upward. Both the circle and triangle to have eased edges.
  - 2. Disabled Accessible Entrance Signs: 6-inches high x 6-inches wide with International Symbol of Accessibility.
  - 3. Assistive Listening System Sign: Provide as indicated on the Drawings.

# 2.4 METAL SIGNS

A. Letter Style:

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- 1. The stroke thickness of the uppercase letter "I" shall be 10 percent minimum and 20 percent maximum of the height of the character.
- 2. The width of the uppercase letter "O" shall be 60 percent minimum and 110 percent maximum of the height of the uppercase letter "I".
- 3. Letter style to be Sans Serif, uppercase.
- B. Metal Reflectorized Signs:
  - 1. Blue reflective vinyl background with white copy or symbol on 0.080 aluminum unless noted otherwise:
    - a. Disabled Accessible Parking Stall:
      - 1) International Symbol of Accessibility with text below to read "MINIMUM FINE \$250".
      - 2) Pole mounted.
    - b. Van Accessible Parking Stall:
      - 1) Same as Standard Accessible Parking Stall sign with text below to read "VAN ACCESSIBLE".
      - 2) Pole mounted.
  - 2. Parking Lot Entrance: Text as shown on the Drawings, on dark blue background.
  - 3. On-site Stop Sign: Red reflectorized vinyl background with white copy and border. Pole mounted; in compliance with State of California Business, Transportation and Housing Agency, Department of Transportation 1990 Uniform Sign Chart.
  - 4. Traffic Control Signs (On-site and Off-site): Signs shall comply with State of California Business, Transportation and Housing Agency, Department of Transportation 1990 Uniform Sign Chart, California Sign Chart and local ordinances. Colors as selected by Architect.
- C. Metal Painted Signs: Baked enamel on steel.
  - 1. Gate Sign: 4-inch high lettering in all caps to read: "EXIT".
    - a. Provide at exit gate(s) as shown.
    - b. Colors: As selected by Architect.

# PART 3 - EXECUTION

# 3.1 EXAMINATION

- A. Prior to installation, carefully inspect and verify that the installed work of other trades is complete to the point where this installation may properly commence.
- B. Verify that specified items may be installed in accordance with the approved design.
- C. In the event of discrepancy, immediately notify Architect. Do not proceed in discrepant areas until discrepancies have been fully resolved.

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# 3.2 INSTALLATION OF SIGNS

- A. General: Locations of signs must be in accordance with the Drawings and approved shop drawings.
- B. Plastic Signs:
  - 1. General:
    - a. Provide both mechanical fasteners and either adhesive or 2-sided adhesive tape as recommended by manufacturer for given mounting substrate.
    - b. Fasteners: Minimum 4-recessed flush head tamper-proof (vandal-resistant) screws per sign.
  - 2. Wood and Metal Framed Walls: Mechanical fasteners shall be of adequate length to penetrate exterior finishes and provide secure embedment into wall structure or sheathing.
  - 3. Glass:
    - a. Utilize mounting adhesive and silicone where signs are mounted to glass.
    - b. Provide vinyl window sign backer to match sign face size, mounted on opposite side of glass.
    - c. Signs mounted back-to-back are to be matching in size.
    - d. Do not pre-drill signs for mechanical fastening where sign is to be mounted to glass.
- C. Pole Mounted:
  - 1. General:
    - a. Mount signs using galvanized steel carriage bolt with hex nut and washer.
    - b. Touch up bolt head with paint to match background.
  - 2. Accessible Parking Stall Sign:
    - a. Provide one sign at each stall.
  - 3. Parking Lot Entry Sign and Stop Sign: Provide sign at location and height as indicated on the Drawings.
  - 4. Pole: ASTM A53, Grade B, hot-dip galvanized in accordance with ASTM A153.
    - a. Diameter and Height: As shown on the Drawings.
  - 5. Foundations: Pole mounted signs shall be mounted in concrete footing as shown on the Drawings.
- D. Other Signs: Use mounting method that is permanent, vandal resistant, and has been approved by the Architect.

# 3.3 **PROTECTION**

A. Protect work and materials of this Section and other Sections prior to and during installation, and protect the installed work and materials of all other trades.

B. In the event of damage, immediately make all repairs and replacements necessary to the approval of the Architect and at no additional cost to the Owner.

# 3.4 ADJUSTING AND CLEANING

A. Remove all dust, dirt, finger marks, etc. from signs and letters using cleaning methods as recommended by manufacturer.

# END OF SECTION

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# PART 1 - GENERAL

# 1.1 SUMMARY

- A. Section Includes:
  - 1. Floor-supported, overhead-braced, solid plastic toilet partitions.
  - 2. Solid plastic urinal screens.

# 1.2 RELATED REQUIREMENTS

- A. Section 01 6116, Volatile Organic Compound (VOC) Restrictions; for VOC limits pertaining to adhesives, sealants, fillers, primers, and coatings.
- B. Section 10 2800, Toilet Accessories.

# 1.3 REFERENCES AND STANDARDS

- A. California Building Code (CBC), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).
- B. California Green Building Standards Code (CAL Green), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).
- C. National Fire Protection Agency (NFPA)
  - 1. NFPA 286: Fire Test for Evaluation Contribution of Wall and Ceiling Interior Finish to Room Fire Growth.
- D. ASTM International (ASTM):
  - 1. A 167: Standard Specification for Stainless and Heat-Resisting Chromium. Nickel Steel Plate.
  - 2. B 221: Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles and Tubes.
  - 3. E 84: Test Method for Surface Burning Characteristics of Building Materials.

# 1.4 ADMINISTRATIVE REQUIREMENTS

- A. Submittal Procedures:
  - 1. Action Submittals and Informational Submittals shall be submitted in accordance with Section 01 3300, Submittal Procedures.
  - 2. Closeout Submittals shall be submitted in accordance with Section 01 7700, Closeout Procedures.
  - 3. Sustainable Design Submittals shall comply with the additional requirement of Section 01 8113, Sustainable Design Requirements.
- B. Scheduling and Coordination:

#### PLASTIC TOILET COMPARTMENTS SECTION 10 2113 22-1551.01

- 1. Floor anchor plates for partitions shall be secured to structural subfloor prior to installation of mortar setting bed for tile floor.
- 2. Coordinate with placement of support framing and anchors in walls.

# 1.5 ACTION SUBMITTALS

- A. Shop Drawings: Submit plan, interior elevations and details showing components, connections and anchorages, adjacent materials, fully dimensioned and noted. Include blocking layout for use in structural framing.
- B. Product Data: Submit list and manufacturer's complete descriptive data of products proposed for use. Include manufacturer's installation and maintenance instructions.
- C. Samples:
  - 1. 6-inch-square or larger sample of panel corner in selected color, showing core, edge treatment, and corner treatment.
  - 2. Manufacturer's full range of colors for Architect's selection.
  - 3. Hardware samples, if requested by Architect.

### 1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For manufacturer and installer.
- B. Certification: Submit certification showing independent testing that compartments comply with NFPA 286.
- C. Evidence that plastic panels are Greenguard Certified
- D. Sample of manufacturer's warranty.

# 1.7 CLOSEOUT SUBMITTALS

A. Warranty/Guarantee: Submit executed warranty and Subcontractor's guarantee.

# 1.8 QUALITY ASSURANCE

- A. Qualifications:
  - 1. Manufacturer: Minimum 5 years' experience in manufacturing of solid plastic (HDPE) toilet compartments with products in satisfactory use under similar service conditions.
  - 2. Installer: Minimum 5 years' experience in work of this Section.
- B. Use only new materials and products, unless existing materials or products are specifically shown otherwise on the Drawings to be salvaged and re-used.
- C. Single-Source Responsibility: Use materials and products of one manufacturer whenever possible.

- D. All materials, components, assemblies, workmanship and installation are to be observed by the Owner's Project Inspector. Work not so inspected is subject to uncovering and replacement.
- E. Mockups:
  - 1. First installed example of each type of toilet compartment and urinal screen shall serve as a mockup for review and approval by Architect of workmanship, visual effect, accessibility, and interface with adjacent construction.
  - 2. Toilet compartment shall be complete with hardware and with toilet accessories specified in Section 10 2813, Toilet Accessories.

# 1.9 DELIVERY, STORAGE AND HANDLING

- A. Deliver undamaged products to job in manufacturer's sealed containers and/or original bundles with tags and labels intact.
- B. Store materials in protected, dry conditions off of ground and in areas so as to not interfere with the progress of the work.
- C. Transport, store and handle in strict accord with the manufacturer's written recommendations to avoid deformation.

# 1.10 FIELD MEASUREMENTS

A. Make and be responsible for all field dimensions necessary for proper fitting and completion of work. Report discrepancies to Architect before proceeding.

# 1.11 WARRANTY

- A. Manufacturer: In addition to the Contractor's and Subcontractor's Guarantee, furnish Owner with manufacturer's fully executed written warranty for plastic toilet partition system against defects in materials and workmanship including breakage, warpage, corrosion or delamination of installed plastic components, door latch and strike, integral hinge system and stainless steel shoes and wall brackets for a period of 25 years.
  - 1. Defective components shall be replaced.
  - 2. Labor for reinstallation shall be included.

# PART 2 - PRODUCTS

#### 2.1 DESIGN AND PERFORMANCE CRITERIA

- A. Comply with accessibility requirements of CBC Section 11B-604, "Water closets and toilet compartments," and ADA "Standards for Accessible Design." Comply with the most stringent where there is a conflict.
- B. Brace partitions to structure to meet seismic provisions of the CBC.
- C. Fire Resistance when Tested in accordance with ASTM E 84:

#### PLASTIC TOILET COMPARTMENTS SECTION 10 2113 22-1551.01

- 1. Smoke Developed Index: Not to exceed 450.
- 2. Flame Spread Index: Not to exceed 25.
- 3. Material Fire Ratings:
  - a. Test Method: NFPA 286.
  - b. Rating: International Code Council (ICC) Class A.
- D. Sustainable Design:
  - 1. Plastic panels shall be Greenguard Certified.

#### 2.2 TOILET COMPARTMENTS

A. Manufacturer and System: "Hiny Hiders" by Scranton Products, or equal:

### 2.3 MOUNTING CONFIGURATIONS

- A. Toilet Enclosures: Floor-supported, overhead-braced.
- B. Urinal-Screen Style: Post-to-ceiling supported flat panel.

### 2.4 MATERIALS AND COMPONENTS

- A. Doors, Panels and Pilasters:
  - 1. Material: High density polyethylene (HDPE), fabricated from polymer resins compounded under high pressure, forming single thickness panel.
    - a. Surface Characteristics: HDPE shall be waterproof and nonabsorbent, with self-lubricating surface, resistant to marks by pens, pencils, markers, and other writing instruments.
  - 2. Minimum Finished Thickness:
    - a. Panels and Urinal Screens: 1 inch straight cut with fine radius edge.
    - b. Stiles: 1 inch straight cut with fine radius edge.
    - c. Doors: 1 inch straight cut with fine radius edge.
  - 3. Door Width:
    - a. Typical: 24 inch minimum.
    - b. Accessible Stalls: Sized to provide minimum 36 inch clear opening.
  - 4. Door and Panel Height: 55 inches mounted 14 inches above finish floor.
  - 5. Urinal Screens:
    - a. Height: 42 inches mounted 14 inches above floor.
    - b. Depth: 18 inches.
- B. Leveling Device: 7-gauge (0.0874 inch) hot rolled steel bar; chromate-treated and zincplated; through-bolted to base of solid color reinforced composite stile.
- C. Stile Shoes: Type-304, 20-gauge (0.036 inch) stainless steel with satin finish.
  - 1. Top shall have 90 degree return to stile.
  - 2. Shoe shall be one-piece and capable of being securing fastened to stiles.

- D. Headrails: 1-inch x 1-5/8-inch minimum, heavy-duty tubular stainless steel or extruded anodized aluminum, satin finish, anti-grip profile.
- E. Floor to Ceiling Posts: 1-1/4 inch square x 18 gauge stainless steel with satin finish, full height, where indicated.
- F. Other Components: Non-corroding metal.

# 2.5 HARDWARE AND FITTINGS

- A. General:
  - 1. Hardware shall be ADA and accessibility compliant.
  - 2. All hardware to be 18-8, type-304 stainless steel with satin finish.
  - 3. Hardware of chrome-plated "Zamak", aluminum, or plastic is unacceptable except as otherwise specified.
  - 4. All hardware to be Vandal-Resistant, Institutional Grade.
  - 5. Each through-bolted fasteners and threaded bass insert shall withstand direct pull force exceeding 1,500 pounds.
  - 6. Emergency Access: Hinges and door latch shall allow door to be lifted over keeper from outside compartment on inswing doors.
- B. Mounting Brackets:
  - 1. Panels: 18-gauge (0.048 inches) stainless steel, full height of panel.
    - a. U-channels shall be furnished to secure panels to stiles.
    - b. Angle brackets shall be furnished to secure stiles to walls and panels to walls.
    - c. Fasteners at locations connecting panels-to-stiles shall utilize through bolted, stainless steel, pin-in-head Torx sex bolt fasteners.
  - 2. Urinal Screen: 11 gauge (0.120 inches) stainless steel, full height of panel.
- C. Hinges and Stops:
  - 1. Hinges: Self-closing, 16-gauge (0.060 inch) continuous piano hinge.
    - a. Continuous piano hinge, self-closing gravity type, shall be attached to door and stile by theft-resistant, pin-in-head Torx stainless steel machine screws into factory-installed, threaded brass inserts. Fasteners secured directly into the core are not acceptable.
  - 2. Stops: Two 11-gauge (0.120 inch) stainless steel door stop plates with attached rubber bumpers to resist door from being kicked in/out beyond stile.
  - 3. Door stops and hinges shall be secured with stainless steel, pin-in-head Torx machine screws into threaded brass inserts.
- D. Latch, Strike, and Keeper:
  - 1. Stainless steel door latch shall slide into a stainless steel keeper.

#### PLASTIC TOILET COMPARTMENTS SECTION 10 2113 22-1551.01

- a. Sliding door latch shall require less than 5-pound force to operate. Twisting latch operation is not acceptable.
- b. Latch track shall be attached to door by machine screws into factory-installed threaded brass inserts.
- 2. Through bolted, stainless steel, pin-in-head Torx sex bolt fasteners shall be used at attach keeper-to-stile.
- 3. Mount latch at 42-inches above the finished floor in accessible stalls.
- 4. Track of door latch shall prevent inswing doors from swinging out beyond stile.
- 5. On outswing doors, door keeper shall prevents door from swinging in beyond stile.
- 6. Bumper: Extruded black vinyl.
- E. Locking: Door locked from inside by sliding door latch into keeper.
- F. Coat Hook and Bumper:
  - 1. Combination type.
  - 2. Equip outswing doors at accessible compartments with second door pull and door stop.
  - 3. Mount hook at 48-inches above the finished floor in center of door on the inside of the stall.
- G. Door Pulls:
  - 1. Provide door pull and wall stop for outswinging doors.
  - 2. Equip doors to accessible stall with both inside and outside pulls.
  - 3. Pulls shall be "U" shaped.
- H. Fasteners: As recommended by partition manufacturer and the following:
  - 1. Use stainless steel hardware to attach panel-to-stile brackets, coat hooks, and latch keepers.
  - 2. Exposed Bolts and Screws: Theft-resistant, one-way heads, stainless steel, ASTM A167; Type 304, pinhead Torx screws.

# 2.6 COLORS AND FINISHES

- A. Color of HDPE: As selected by the Architect from the manufacturer's available standard colors for fire-rated HDPE. Doors, pilasters and panels may be of different colors.
- B. Stainless Steel: No. 4 satin finish.
- C. Aluminum: Clear Anodized.

# PART 3 - EXECUTION

# 3.1 EXAMINATION

- A. Prior to installation, carefully inspect and verify that the installed work of other trades is complete to the point where this installation may properly commence.
- B. Verify that toilet partitions may be installed in complete accordance with the original design. Verify solid blocking has been provided in walls and ceilings at all partition and bracing connection locations. Do not install if blocking is missing.
- C. In the event of discrepancy, immediately notify the Architect. Do not proceed in discrepant areas until discrepancies have been fully resolved.

# 3.2 INSTALLATION

- A. General:
  - 1. Install all toilet partitions and screens where indicated on the Drawings and reviewed shop drawings, anchoring into solid blocking in compliance with manufacturer's installation instructions.
  - 2. Install partitions and screens rigid, straight, plumb and level.
- B. Provide clearances of not more than 3/8 inch between pilasters and panels, and not more than 1/2 inch between panels and walls and not more than 3/8 inch between vertical edge of doors and pilasters.
- C. Secure panels to walls with full length, continuous wall brackets using stainless steel fasteners spaced maximum 12 inches on-center.
- D. Stile shoes shall be anchored to floor with 1-1/2 inch, #14 stainless steel screws and metal anchors. Secure pilaster within shoe with theft resistant sex bolt.
- E. Attach panels and pilasters to continuous brackets with theft resistant sex bolts.
- F. Secure overhead brace to face sheets with not less than 2 fasteners per face.
- G. Set tops of doors to be parallel with top of pilasters and overhead brace when doors are in closed position.
- H. Urinal Screens: Provide floor to ceiling post and wall brackets.

# 3.3 ERECTION TOLERANCES

- A. Maximum Variation From True Position: 1/4 inch.
- B. Maximum Variation From Plumb: 1/8 inch.

# 3.4 ADJUSTING

A. Make final adjustments to leveling devices.

#### PLASTIC TOILET COMPARTMENTS SECTION 10 2113 22-1551.01

- B. Adjust and lubricate hardware for proper operation after installation.
  - 1. Set hinges on in-swing doors to hold doors open approximately 30 degrees from closed position when unlatched.
  - 2. Set hinges on out-swing doors to return to fully closed position.
- C. Replace damaged parts, surfaces which are not free from imperfections. Field touch-up of scratches or damaged finish will not be permitted. Replace damaged or scratched materials with new materials.

# 3.5 CLEANING

- A. Upon completion, and as a condition of acceptance, visually inspect the entire work of this Section. Surfaces shall be free of imperfections, scratch marks, blemishes or color variations.
- B. Upon completion, thoroughly wash surfaces, remove foreign material, and polish surfaces.
- C. Leave entire work in neat, orderly, clean, acceptable condition as approved.

#### 3.6 **PROTECTION**

- A. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.
- B. In the event of damage, make all repairs and replacements necessary to the approval of the Architect at no additional cost to the Owner.
- C. Adequately protect products during and after installation against damage of every nature. Exposed finishes shall be free from scratches, dents, permanent discolorations and other defects in workmanship or materials.

# END OF SECTION

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# PART 1 - GENERAL

### 1.1 SUMMARY

- A. Section Includes:
  - 1. Toilet accessories.

# 1.2 RELATED REQUIREMENTS

- A. Section 10 2113, Plastic Toilet Compartments.
- B. Division 26, Electrical.

### 1.3 **REFERENCES AND STANDARDS**

- A. California Building Code (CBC), edition as noted on the Drawings, as adopted by the California Division of the state Architect (DSA).
- B. California Green Building Standards Code (CAL Green), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).

### 1.4 ADMINISTRATIVE REQUIREMENTS

- A. Submittal Procedures:
  - 1. Action Submittals and Informational Submittals shall be submitted in accordance with Section 01 3300, Submittal Procedures.
  - 2. Closeout Submittals shall be submitted in accordance with Section 01 7700, Closeout Procedures.
- B. Coordination: Coordinate with other trades as required to ensure proper and adequate provision in framing and wall finish for the installation of the selected toilet accessories in the locations required including recessed items)

# 1.5 ACTION SUBMITTALS

- A. Shop Drawings: Submit showing parts, connections and anchorages, adjacent materials, fully dimensioned and noted.
- B. Product Data: Submit list of each required accessory and complete descriptive data of products proposed for use. Include manufacturer's specifications, published warranty, installation instructions, and maintenance instructions.

#### 1.6 INFORMATIONAL SUBMITTALS

A. Sample of manufacturer's warranty.

### TOILET ACCESSORIES SECTION 10 2813 22-1551.01

### 1.7 CLOSEOUT SUBMITTALS

- A. Warranty/Guarantee: Submit executed warranty and Subcontractor's guarantee.
- B. Keys for lockable accessories.
- C. Maintenance data and operating instructions.

#### 1.8 QUALITY ASSURANCE

- A. Use only new materials and products, unless existing materials or products are specifically shown otherwise on the Drawings to be salvaged and re-used.
- B. Use materials and products of one manufacturer whenever possible.
- C. All materials, components, assemblies, workmanship and installation are to be observed by the Owner's Project Inspector. Work not so inspected is subject to uncovering and replacement.

### 1.9 DELIVERY, STORAGE AND HANDLING

- A. Deliver undamaged products to job in manufacturer's sealed containers and/or original bundles with tags and labels intact.
- B. Store materials in protected, dry conditions off of ground and in areas so as to not interfere with the progress of the Work.
- C. Transport, store and handle in strict accord with the manufacturer's written recommendations.

### 1.10 FIELD CONDITIONS

- A. Make and be responsible for field dimensions necessary for proper fitting and completion of Work. Report discrepancies to Architect before proceeding.
- B. Verify wall depths are adequate for each item prior to ordering. Notify Architect of conflicts or discrepancies.

## 1.11 WARRANTY

- A. Manufacturer: In addition to the Contractor's and Subcontractor's Guarantee, furnish Owner with manufacturer's fully executed written warranty for toilet accessories against defects in materials and workmanship, agreeing to replace and install toilet accessories at no additional cost to the Owner, within warranty period as follows:
  - 1. Hand and Hair Dryer:
    - a. Motor Brushes: For a period of 3 years.
    - b. All Other Parts: For a period of10 years.
  - 2. Glass Mirrors: For a period of10 years.
  - 3. All Other Accessories: For a period of 3 years.

# PART 2 - PRODUCTS

# 2.1 OWNER FURNISHED CONTRACTOR INSTALLED PRODUCTS

- A. The following products will be furnished by the Owner for installation by Contractor. Provide adequate blocking for attachment. Miscellaneous items are to be provided and installed by Contractor.
  - 1. Soap Dispensers
  - 2. Paper Towel Dispensers.
  - 3. Toilet Tissue Dispensers (non-accessible locations only).

### 2.2 DESIGN AND PERFORMANCE CRITERIA

A. Conform to applicable requirements of ADA and CBC for accessibility. When in conflict, conform to the most stringent.

### 2.3 MANUFACTURERS

- A. Accessories: Bobrick Washroom Equipment Inc. or Bradley Corporation as specified and the basis of design, unless otherwise noted, or equal.
  - 1. Manufactured accessories not specified shall require approval as a substitution to be considered equal. Refer to substitution requirements specified in Section 01 3300, Submittal Procedures.
  - 2. Although multiple manufacturers may be specified for a specific accessory, all accessories shall be the product of a single manufacturer, unless otherwise specified or approved.

# 2.4 MANUFACTURED UNITS

- A. General:
  - 1. Locked Dispensing Units: Key alike for all accessories.
- B. Grab Bars: 18 gauge 1-1/2 inch outside diameter, type 304 stainless steel welded to 1/8 inch type 304 solid stainless steel wall plates; Bobrick Series B-6806, Bradley 812 Series, or equal.
  - 1. Configurations and Lengths: As shown.
  - 2. Grab bar shall withstand a 250 pound point load.
  - 3. Joints ground and polished.
  - 4. Finish on Exposed Surfaces: Satin.
  - 5. Fastening: Concealed, vandal resistant.
- C. Mirror, Glass: 1/4 inch thick No. 1 (mirror glazing) quality, clear polished float glass, with protective copper backing over silver coating and non-metallic elastic paint; Bobrick Series B-165, Bradley 781 Series, or equal.
  - 1. Edges shall be protected by friction-absorbing filler strips.

### TOILET ACCESSORIES SECTION 10 2813 22-1551.01

- 2. Size, Unless Otherwise Shown:
  - a. Kindergarten and Elementary Toilet Rooms: 18 inches wide x 30 inches high.
  - b. Middle School/Junior High, High School, College and Staff Toilet Rooms: 18 inches wide x 36 inches high.
- 3. Safety Backing: Full size, shock absorbing, water-resistant, non-abrasive, 3/16 inch thick polyethylene padding.
- 4. Backs: Galvanized steel backing with formed edges, integral horizontal hanging brackets. Provide with theft-resistant concealed hangers.
- 5. Frames: Stainless steel, 1/2 inch x 1/2 inch x 3/8 inch channel with bright polish finish.
  - a. Use theft-resistant screws in countersunk holes where screws are exposed.
  - b. Corners: Square and mitered, weld or mechanically fastened to tight hairline joint, or frame as one piece with rounded corners.
- D. Mirror, Stainless Steel: Vandal-resistant stainless steel, frameless mirror; type 430, minimum 20 gauge stainless steel with bright polished finish, and 1/4 inch return; Bobrick Model B-942, or Bradley Model SA05.
  - 1. Mounting: Tamper-resistant screws.
- E. Recessed Toilet Paper Dispenser at Disabled Accessible Locations: Multi-roll; Bobrick B-3888.
- F. Recessed Toilet Paper Dispenser at Disabled Accessible Locations -Kindergarten/Elementary: Dual-roll, with anti-theft spindle; Bobrick B-6977, Bradley 5124-52.
- G. Surface Mounted Toilet Paper Dispenser: 22 gauge, type-304 stainless steel, satin finish with vandal resistant tumbler lock; Bobrick B-272, Bradley 515.
- H. Surface-Mounted Toilet Seat Cover Dispenser: Bobrick "Contura Series" B-4221, Bradley 5A40-11.
- I. Liquid Soap Dispenser: Owner furnished, contractor installed.
- J. Paper Towel Dispenser: Owner furnished, contractor installed.
- K. Sanitary Napkin/Tampon Dispenser: Coin free operation. Provide semi-recessed unit except where obstruction precludes recessing.
  - 1. Semi-Recessed: Bobrick B-370634C.
  - 2. Surface-Mounted: Bobrick B-2706C.
- L. Sanitary Napkin Disposal:
  - 1. Partition Mounted for Two Toilet Compartments: Bobrick B-354, Bradley 4721-15.
  - 2. Surface Mounted for Single Compartment: Bobrick B-270, Bradley 4781-11.

# 2.5 FASTENINGS

- A. Toilet accessories shall be complete with required fastenings.
- B. Fastenings shall either harmonize with the item being fastened, or be of the concealed type.
- C. Exposed fastenings shall be theft and vandal-resistant.

# PART 3 - EXECUTION

# 3.1 EXAMINATION

- A. Prior to installation of the Work of this Section, carefully inspect and verify that the installed Work of other trades is complete to the point where this installation may properly commence.
- B. Verify that specified items may be installed in accordance with the approved design.
- C. In the event of discrepancy, immediately notify the Architect. Do not proceed in discrepant areas until discrepancies have been fully resolved.

# 3.2 PREPARATION

- A. The Contractor shall provide recesses, anchorage and back-up blocking in sizes and in locations as required for proper installation of accessories. Coordinate with other trades where necessary to make provisions for installation.
- B. Securely anchor items in place in locations and at mounting heights indicated. Where specific dimensions are not noted, installation shall be approved by the Architect.
- C. Securely fasten grab bar mounting plates to solid framing or blocking, in accordance with CBC.
- D. Provide cut-outs in toilet partitions for napkin disposal units as required.

# 3.3 INSTALLATION

- A. Install fixtures, accessories and items in accordance with manufacturers' printed instructions where shown or as approved by Architect.
- B. Mount surface-mounted accessories to solid backing or blocking.
- C. Install plumb and level, securely and rigidly anchored to substrate.
- D. Use concealed vandal-resistant fastenings wherever possible.
  - 1. Adhesive installation not permitted.
  - 2. Provide anchors, bolts and other necessary fasteners, and attach accessories securely to walls or toilet partitions as recommended by manufacturer for each item and each type of substrate condition.

#### TOILET ACCESSORIES SECTION 10 2813 22-1551.01

- E. Grab bars: Solidly anchor grab bars to withstand minimum downward pull of 500 pounds between any 2 supports after installation.
- F. Verify type, location and attachment methods of items furnished by Owner to ensure proper preparation of substrate for solid attachment of accessories.
- G. Sealants: Comply with requirements of Section 07 9200, Joint Sealants.
  - 1. Apply behind toilet accessories as necessary to ensure sanitary and watertight integrity of surfaces.
  - 2. Conceal sealants.

### 3.4 CLEANING AND ADJUSTING

- A. Upon completion of installation, remove manufacturer's temporary labels, marks of identification.
- B. Thoroughly wash surfaces, remove foreign materials, polish surfaces.
- C. Leave entire accessories in neat, orderly, clean, acceptable condition as approved.
- D. Replace damaged parts, surfaces which are not free from imperfections.

### 3.5 **PROTECTION**

- A. Protect Work and materials of this Section prior to and during installation, and protect the installed Work and materials of other trades.
- B. In the event of damage, make repairs and replacements necessary to the approval of the Architect at no additional cost to the Owner.
- C. Exposed finish shall be free from scratches, dents, permanent discolorations and other defects in workmanship or material.

# END OF SECTION

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### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section Includes:
  - 1. Fire extinguishers, hangers and cabinets.

### 1.2 RELATED REQUIREMENTS

A. Section 09 9100, Painting.

### 1.3 **REFERENCES AND STANDARDS**

- A. California Building Code (CBC), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).
- B. California Green Building Standards Code (CAL Green), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).

# 1.4 ADMINISTRATIVE REQUIREMENTS

- A. Submittal Procedures:
  - 1. Action Submittals and Informational Submittals shall be submitted in accordance with Section 01 3300, Submittal Procedures.
  - 2. Closeout Submittals shall be submitted in accordance with Section 01 7700, Closeout Procedures.

#### 1.5 ACTION SUBMITTALS

- A. Shop Drawings: Submit showing all parts, connections and anchorages, adjacent materials, fully dimensioned and noted. Include in-wall blocking requirements.
- B. Product Data: Submit list and complete descriptive data of all products proposed for use. Include manufacturer's specifications and installation instructions.

#### 1.6 INFORMATIONAL SUBMITTALS

- A. Statement that all extinguishers and cabinets comply with the current applicable UL and NFPA classifications and ratings.
- B. Sample of manufacturer's warranty.

#### 1.7 CLOSEOUT SUBMITTALS

- A. Written instructions to Owner's personnel in the operation, maintenance and charging of the fire extinguishers furnished.
- B. Warranty/Guarantee: Submit executed warranty and subcontractor's guarantee.
#### FIRE EXTINGUISHERS AND CABINETS SECTION 10 4416 22-1551.01

#### 1.8 QUALITY ASSURANCE

- A. Use only new materials and products, unless existing materials or products are specifically shown otherwise on the Drawings to be salvaged and re-used.
- B. Single-Source Responsibility: Use materials and products of one manufacturer.
- C. Materials, components, assemblies, workmanship and installation are to be observed by the Owner's Project Inspector. Work not so inspected is subject to uncovering and replacement.
- D. Equipment shall be approved by Underwriters' Laboratories, Inc., bear UL Label and be approved by the State Fire Marshal.

### 1.9 DELIVERY, STORAGE AND HANDLING

- A. Deliver undamaged products to job in manufacturer's sealed containers and/or original bundles with tags and labels intact.
- B. Store materials in protected, dry conditions off of ground and in areas so as to not interfere with the progress of the work.
- C. Transport, store and handle in strict accord with the manufacturer's written recommendations.

#### 1.10 FIELD MEASUREMENTS

A. Make and be responsible for all field dimensions necessary for proper fitting and completion of work. Report discrepancies to Architect before proceeding.

#### 1.11 WARRANTY

A. Manufacturer: In addition to the Contractor's and Subcontractor's Standard Guarantee, furnish Owner with manufacturer's fully executed written warranty for fire extinguishers against defects in materials and workmanship for a period of not less than 5 years.

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

#### 2.1 DESIGN AND PERFORMANCE CRITERIA

A. Conform to all applicable standards of the National Fire Protection Association (NFPA) and California State Fire Marshal (CSFM) for fire extinguisher cabinets and locations.

#### 2.2 FIRE EXTINGUISHERS

- A. Manufacturer: By same manufacturer as fire extinguisher cabinets.
- B. Types:

- 1. Fire extinguishers General Use: UL Rating 3A-40BC extinguishers shall be 5pound nominal capacity multi-purpose dry chemical type, bearing U.L. Label; finish shall be red enameled steel.
- C. Tamperseals on each extinguisher shall be of the breakable metal type, indicating accidental or unauthorized partial discharge.
- D. Pressure gauges on each extinguisher shall be of the dial type.
- E. Mounting Brackets:
  - 1. Manufacturer: Provide brackets from same manufacturer as fire extinguisher.
  - 2. Brackets shall be of quick release design, not subject to release by bumping.
  - 3. Bracket attachments shall be furnished with each bracket, suitable for the surface to which attachment is to be made.

# PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Prior to installation of work of this Section, carefully inspect and verify that the installed work of all other trades is complete to the point where this installation may properly commence.
- B. Verify that specified items may be installed in accordance with the approved design.
- C. In the event of discrepancy, immediately notify Architect. Do not proceed in discrepant areas until discrepancies have been fully resolved.

# 3.2 PROTECTION

- A. Protect work and materials of this Section and other Sections prior to and during installation, and protect the installed work and materials of other trades.
- B. In the event of damage, immediately make all repairs and replacements necessary to the approval of the Architect and at no additional cost to the Owner.

#### 3.3 INSTALLATION

- A. Install extinguishers where indicated on the Drawings and as required by the local Fire Authority. Where exact location is not indicated, locate as directed by Architect.
- B. Install so that handle of extinguisher meets accessibility requirements.
- C. Provide blocking, backing and other materials necessary for proper attachment and fire rating.
- D. Anchor brackets securely in place.

#### FIRE EXTINGUISHERS AND CABINETS SECTION 10 4416 22-1551.01

# 3.4 INSTALLATION OF FIRE EXTINGUISHERS

- A. Determine approximate completion date of work and then inspect, charge, and tag fire extinguishers not more than 10 calendar days before nor less than one day before actual completion of work.
- B. The installation of the specified fire extinguishers in no way relieves the Contractor from providing adequate fire protection during the course of this work.

# **END OF SECTION**

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#### PART 1 - GENERAL

# 1.1 SCOPE OF SERVICES

A. DESCRIPTION: Work to be done under this Section shall include all labor, materials, equipment, calculations, drawings, services, supervision and transportation necessary to design, furnish, deliver, and install pre-engineered shade structures as shown on the drawings and specified herein, complete including foundations and ready for use by Owner.

### 1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. Pertinent Sections specifying Volatile Organic Compound (VOC) Content Restrictions.
- B. Section 31 0000, Earthwork.
- C. Section 32 1600, Site Concrete

# 1.3 PRODUCT QUALIFICATION - DSA PC REQUIRED

- A. Each bidder shall submit with is duly executed Bid Form a set of Manufacturer's structural and architectural plans and structural calculations for this design bearing a PC previously approved by DSA under the 2022 CBC. Specifications from said previous job are not required. This set shall bear a stamp of approval by DSA. This set shall be provided for determining bidder's ability to perform within the time limits of this specific project, and shall show the PC number.
- B. Failure to submit DSA-approved PC plans with the bid shall constitute an incomplete submission of bid and be as basis for rejection of bid.
- C. The plans submitted must show capability of manufacturer to produce a product meeting all conditions shown on the drawings and specified herein.
- D. The manufacturer cited must have the legal rights to construct the representative design. Under no conditions will these submitted plans be considered to be design drawings called for under item 1.03 below, nor will the said plan submission be considered for the purpose of any substitution of the total requirements of the bid documents.

# 1.4 APPROVAL PROCESS

- A. Phase I:
  - 1. Signing of Contract
  - 2. Contractor's preparation of shade structure design drawings and calculations, and coordination of same with bid documents including architectural, mechanical and electrical plans and specifications. Drawings and calculations to be based on manufacturer's previously approved PC.

- 3. Presentation of the above Contractor documents for Architect's review and comment. Submit electronic copy of drawings and calculations.
- 4. Revisions of Contractor's drawings and calculations, if required by Architect to conform with bid documents.
- 5. Delivery to Architect of Contractor's original drawings, four copies of drawings and two copies of calculations.
- 6. Architect files all designs with DSA, application fee paid by Owner.
- 7. Processing of Contractor's submittals and shop drawings, ordering of materials (no physical construction on-site or in-factory can begin until Phase III).
- B. Phase II:
  - 1. DSA (Structural Safety Unit, Access Compliance Unit and Fire & Life Safety Unit) plan checking, returning same to Architect.
  - 2. Contractor corrects drawings and Architect revises specifications pursuant to DSA comments; Architect arranges for backcheck with DSA.
  - 3. DSA backcheck with subsequent approval of drawings and specifications.
  - 4. Contractor and Architect continue processing of submittals and shop drawings, through Phase III.
- C. Phase III:
  - 1. Factory and on-site construction of the buildings and associated sitework.
- D. Work Schedule: Work of this project will proceed on the following schedule. (The number of calendar days shown on Bid Form for project completion <u>includes</u> DSA Plan Checking).
  - 1. Preparation of Contractor's Structural Plans and Calculations and Delivery to Architect Previously approved PC is required To be received 2 days after receipt of Notice of Intent to Award.
  - 2. Architect and Structural Engineering Checking of Contractor's Plans and Return to Contractor 7 days.
  - 3. Revisions of Plans by Contractor (if necessary) and Final Review by Architect 7 days.
  - 4. DSA Plans Checking 20 days.
  - 5. Plans Revision by Contractor to Reflect DSA Comments 7 calendar days.
  - 6. Backcheck at DSA after Return of Checkset 7 calendar days.
  - 7. In-plant and On-site Construction Balance of calendar days specified in Bid Form. (Phase III)

# 1.5 SUBMITTALS

A. Refer to Section 01 3300.

- B. Manufacturer's Data: Submit list and complete descriptive data of all products proposed for use. Include manufacturer's specifications, published warranty or guarantee, installation instructions, and maintenance instructions.
- C. CAL-GREEN Submittals:
  - 1. Product Data VOC Limits: For adhesives, sealants, fillers and primers, documentation including printed statement of VOC contents, comply with limits specified in Section 01 6116.

# 1.6 **REFERENCES AND STANDARDS**

- A. California Building Code (CBC), edition as noted on the drawings, as adopted by the California Division of the State Architect (DSA).
- B. California Green Building Standards Code, edition as noted on the drawings, as adopted by the California Division of the State Architect (DSA).

### 1.7 **PRODUCT HANDLING**

- A. GENERAL: All work shall be fabricated and delivered to site in ample time so as not to delay construction progress.
- B. DELIVERY: Protect products during shipping; dents or other defects not acceptable.
- C. STORAGE: Store products so as to protect them from damage.

### 1.8 GUARANTEE

- A. Refer to General Conditions and Section 01 3300.
- B. Submit fully executed guarantee covering all materials and workmanship under this section.

#### 1.9 OBSERVATION, INSPECTION AND TESTING (SEE ALSO SECTION 01 4523)

- A. Inspection and Testing requirements shall be in accord with Title 24, DSA, and as further described below.
- B. Plant inspection of manufacturing of pre-engineered shade structures as required shall be specified in complete documents to be submitted to Owner's Architect for review before filing with DSA (T & I List). Material testing is not required for steel stressed to less than 15,000 psi; for steel stressed over 15,000 psi comply with Title 24, Section 2212A.1.
- C. All costs of Inspection and Testing of work done in manufacturer's plant and of materials and assemblies delivered to site shall be paid for by Owner (not included in this contract). Order for such inspection will be issued by Owner. (See Section 01 4523.)

D. All work done at school site and plant shall be subject to inspection by Inspector of Owner as required under Chapter 4 of Part 1 of Title 24. All on-site inspection costs will be paid for by Owner, including special inspection required by Title 24.

## 1.10 LAYOUT AND USE OF PROPERTY

- A. Specific areas will be designated for this work, for storage of materials on site, for traffic lanes to and from building site. Contractor's activities shall be limited to these areas.
- B. Work shall proceed in such manner as to not interfere with Owner's activities in and about existing facilities. Exceptions will be made only after previous agreement between Owner, Architect and Contractor.

### 1.11 **PROTECTION**

A. Protect existing installations from damage. Take measures to prevent damage to existing turf, trees, paving, streets, curbs, walks, lawn sprinkler heads, and existing buildings during construction. Restore and repair any damage caused by work under this Contract to existing facilities without expense to Owner.

### 1.12 EXISTING UTILITIES

- A. Location of existing underground utilities shown on drawings are approximate only. Realigning of existing active underground lines that are to remain in use, which are uncovered by work of this Contract and which cannot be determined by Contractor in estimating work, shall be done at expense of Owner. Price shall be agreed upon before doing this work, per change order requirements of the General Conditions.
- B. Contractor shall positively locate any overhead utilities which may have lines crossing or blocking his path in any way and shall arrange and pay for all permits or licenses for crossing city or county lines and for travel over all roads and highways.

### 1.13 GRADING AND DRAINAGE

A. Any grades disturbed by Contractor shall be graded at no additional cost to Owner to assure proper drainage away from structure and paved walks and drives and so as not to disturb existing drainage patterns.

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

### 2.1 PERFORMANCE REQUIREMENTS

- A. VOC Limits for adhesives, sealants, fillers, coatings and primers. Comply with limits specified in related Section.
- B. Provide products conforming to local, State and Federal government requirements limiting the amount of volatile organic compounds contained in the product, for its intended application. If specified product exceeds current requirement, provide conforming product at no additional cost. Provide written confirmation to Architect

describing reason for revision and demonstrate compliance of replacement product with specified requirements.

# 2.1 DESIGN REQUIREMENTS

- A. Columns: Structure shall be open on all sides with steel columns as shown on contract drawings to provide vertical and lateral load support.
- B. Roofs: Design live load of 20 psf (no area reduction). All roofs shall be designed to resist applied horizontal and vertical loads including wind uplift.
- C. Foundations: Pre-engineered structure design shall include the proper design of concrete foundations fully conforming to 2016 CBC, as adopted by DSA. Total load vertical pressure shall not be in excess of 2000 psf. Resistance to lateral loads shall not exceed 200 psf lateral bearing per foot of depth below the top 24" of soil. All foundations shall have a minimum penetration into lowest adjacent grade of five feet. All concrete foundations shall be in accordance with Sections 31 2000, 03 1000, 03 2000, 03 3000.
- D. Lateral Loads: Wind design shall be for 85 m.p.h. minimum basic wind speed with Exposure C terrain. Seismic design shall be per 2016 CBC.
- E. Owner's Architect will select all colors for materials inside and outside of the structure. Submit samples of all materials immediately after award of the Contract to assure adequate time for color selection.
- F. Submittals for all phases of the work shall be in accordance with Section 01 3300 and individual specification section requiring submittals.
- G. Wherever stacks of material, erection equipment or other loads are carried by work during construction, make provisions to take care of stresses and strains resulting. Keep temporary bracing in place until permanent walls and roofs are completed; provide temporary bracing sufficient to keep structure stable, plumb and in line until completed. Place temporary bracing to allow freedom of workmen in building and erecting other work.

# 2.2 MATERIALS

- A. Pre-engineered shade structure shall be as shown and specified in contract documents. Provide free standing steel structure as shown on Poligon PC No. 02-116824 by W.H. Porter Inc., or accepted equal. Any approved equal outside of the drawings within this package must undergo DSA review as a construction change.
- B. MATERIALS:
  - 1. Structural shapes & plates ASTM A-36 Typical
  - 2. HSS shapes (tube columns) ASTM A-500 Grade B
  - 3. Bolts:
    - a. Machine Bolts ASTM A-307; Nuts ASTM A-563 Hex, Grade A

- b. High Strength Bolts ASTM A-325; Nuts ASTM A-563 Heavy Hex, Grade CL
- 4. Non-shrink grout ASTM C-1107; 7,000 psi (non-metallic).
- 5. Roofing to be Kynar coated standing seam roof over 30 pound felt over roof deck.

## 2.3 FABRICATION

- A. Workmanship, fabrication, and connections shall be in accordance with AISC specifications.
- B. WELDING: Electrodes Class E-70 XX series, low hydrogen, AWS D1.1; Welders certified by DSA; Groove & Butt Welds Complete penetration (CP) UON; Fillet Welds sizes specified are minimum structural welds. Increase as required by ASD table J2.4; Field Welding may be required to facilitate construction; Termination welds terminating at ends or sides, wherever practicable shall be returned continuously around corners a distance 2 times the nominal size of the weld per ASD section J2.2B.
- C. SHOP DRAWINGS: Reviewed by the engineer before fabrication.
- D. BOLT HOLES: Typical diameter + 1/16 inch; Anchor diameter + 3/16 inch.
- E. EXPOSED STEEL: Hot dip galvanized or primer painted if finish painting to be applied.
- F. SPLICES: None accepted.

#### PART 3 - CLEANING

# 3.1 EXAMINATION OF CONDITIONS

- A. CONDITIONS OF WORK IN PLACE: Subsurfaces which are to receive materials specified under this Section shall be carefully examined before beginning work hereunder, and any defects therein shall be reported, in writing, to the Architect. Work shall not be started until such defects have been corrected. Starting of work shall imply acceptance of conditions as they exist.
- B. JOB MEASUREMENTS: Take field measurements for this work and be responsible for same. Report any major discrepancy between plan and field dimensions to the Architect.

#### 3.2 INSTALLATION

A. GENERAL: Installation shall be in strict conformance with AISC standards, the manufacturer's written directions, as shown on approved drawings and as herein specified.

# 3.3 CLEANING

- A. GENERAL: Premises shall be kept free from accumulation of waste and rubbish. At completion of work and as necessary during progress of work, remove from premises all surplus materials, rubbish, and debris.
- B. FINAL PREPARATION: Prepare all surfaces so as to eliminate burrs, sharp projections, splinters, etc.

### - END OF SECTION -

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## PART 1 - GENERAL

#### 1.1 SUMMARY

A. Section Includes: The labor, materials, equipment, appliances, services, supervision and transportation necessary to design, furnish, deliver, and install prefabricated relocatable buildings where and as shown on the Drawings and specified, complete and ready for occupancy and use by the School District herein referred to as Owner.

### 1.2 RELATED REQUIREMENTS

- A. Section 01 6116, Volatile Organic Compound (VOC) Restrictions; for VOC limits pertaining to adhesives, sealants, fillers, primers, and coatings.
- B. Section 09 9100, Painting.
- C. Section 10 1400, Signage.
- D. Section 10 2113, Plastic Toilet Partitions.
- E. Section 10 2813, Toilet Accessories.

# 1.3 **REFERENCES AND STANDARDS**

- A. California Building Code (CBC), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).
- B. California Green Building Standards Code (CALGreen), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).
- C. DSA Interpretation of Regulations:
  - 1. IR 16-1.16: Design and Construction Requirements for Relocatable Buildings and Modular Elevator Towers.
  - 2. IR E-1: Grounding of Buildings Fabricated Off site.
  - 3. IR PC-6: Pre-Check (PC) Design Criteria for Relocatable Buildings.
- D. American Architectural Manufacturers Association (AAMA):
  - 1. AAMA/WDMA/CSA 101/I.S.2/A440: Standard/Specification for Windows, Doors, and Unit Skylights.
- E. American Institute of Steel Construction (AISC):
  - 1. Steel Construction Manual.
  - 2. ANSI/AISC 303: Code of Standard Practice for Steel Buildings and Bridges.
  - 3. ANSI/AISC 360: Specification for Structural Steel Buildings.
- F. American Iron and Steel Institute (AISI):

- 1. S100: North American Specification for the Design of Cold-formed Steel Structural Members.
- 2. S240: North American Standard for Cold-Formed Steel Structural Framing.
- G. American National Standards Institute (ANSI)/Builders Hardware Manufacturers Association (BHMA):
  - 1. ANSI/BHMA A156 Series of Documents.
- H. American National Standards Institute (ANSI)//Steel Door Institute (SDI):
  - 1. ANSI/SDI A250.6: Recommended Practice for Hardware Reinforcing on Standard Steel Doors and Frames.
  - 2. ANSI/SI A250.8: Recommended Specifications for Standard Steel Doors and Frames.
- I. American National Standards Institute (ANSI)/National Particleboard Association (NPA):
  - 1. ANSI/NPA A208.1: Particleboard.
- J. American Society of Civil Engineers (ASCE)/Structural Engineering Institute (SEI):
  - 1. ASCE/SEI 7: Minimum Design Loads and Associated Criteria for Buildings and Other Structures.
- K. American Welding Society (AWS):
  - 1. ANSI/AWS D1.1/D1.1M: Structural Welding Code-Steel.
  - 2. ANSI/AWS D1.3/D1.3M: Structural Welding Code Sheet Steel.
- L. American Wood Protection Association (AWPA):
  - 1. T1: Use Category System: Processing and Treatment Standard.
  - 2. U1: Use Category System: User Specification for Treated Wood.
- M. APA The Engineered Wood Association (APA):
  - 1. US Product Standard PS 1: For Construction & Industrial Plywood with Typical APA Trademarks.
  - 2. B840: 303 Siding Manufacturing Specifications
- N. ASTM International (ASTM):
  - 1. A36/A36M: Standard Specification for Carbon Structural Steel.
  - 2. A153/A153M: Standard Specification for Zinc Coating (Hot-Dip) on Iron and Street Hardware.
  - 3. A307: Standard Specification for Carbon Steel, Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength.
  - 4. A325: Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.

- 5. A500/A500M: Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
- 6. A568/A568M: Standard Specification for Steel, Sheet, Carbon, Structural, and High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, General Requirements for.
- 7. A570: Standard Specification for Hot-Rolled Carbon Steel Sheet and Strip, Structural Quality.
- 8. A 653/A 653: Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- 9. A 755/A 755M: Standard Specification for Steel Sheet, Metallic Coated by the Hot-Dip Process and Prepainted by the Coil-Coating Process for Exterior Exposed Building Products.
- 10. A 792/A 792M: Standard Specification for Steel Sheet, 55 % Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.
- 11. A1008/A1008M: Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable.
- 12. A1011/A1011M: Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, with Improved Formability, and Ultra-High Strength.
- 13. C33/C33M: Standard Specification for Concrete Aggregates.
- 14. C36/C36M: Standard Specification for Gypsum Wallboard.
- 15. C150/C150M: Standard Specification for Portland Cement.
- 16. C423: Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method
- 17. C475/C475M: Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
- 18. C635/C635M: Standard Specification for Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.
- 19. C636/C636M: Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels.
- 20. C1047: Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.
- 21. C1396/C1396M: Specification for Gypsum Board.
- 22. E84: Standard Test Method for Surface Burning Characteristics of Building Materials.
- 23. E1264: Standard Classification for Acoustical Ceiling Products.
- 24. E1477: Standard Test Method for Luminous Reflectance Factor of Acoustical Materials by Use of Integrating-Sphere Reflectometers
- 25. F1066: Standard Specification for Vinyl Composition Floor Tile.
- 26. F1303: Standard Specification for Sheet Vinyl Floor Covering with Backing.
- 27. F1861: Standard Specification for Resilient Wall Base.
- O. Hollow Metal Manufacturers Association (HMMA) Division of the National Association of Architectural Metal Manufacturers (NAAMM):

- 1. Hollow Metal Manual.
- P. International Code Council (ICC) Evaluation Service: Evaluation Reports as noted.
- Q. International Organization for Standardization (ISO):
  - 1. 4586-2: "High-pressure decorative laminates Sheets made from thermosetting resins Part 2: Determination of properties."
- R. National Electrical Manufacturers Association (NEMA):
  - 1. LD3.1: High-Pressure Decorative Laminates.
- S. National Fire Protection Association (NFPA):
  - 1. NFPA 80: Standard for Fire Doors and Other Opening Protectives.
  - 2. NFPA 101: Life Safety Code.
  - 3. NFPA 253, Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source.
  - 4. NFPA 258, Recommended Practice for Determining Smoke Generation of Solid Materials.
  - 5. NFPA 286: Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth.
- T. NSF International/American National Standards Institute (ANSI):
  - 1. NSF/ANSI 342: Sustainability Assessment for Wallcovering Products.
- U. Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA): Architectural Sheet Metal Manual.
- V. Steel Door Institute (SDI):
  - 1. 100: Specifications for Standard Steel Doors and Frames.
- W. Window and Door Manufacturers Association (WDMA), American National Standards Institute (ANSI):
  - 1. ANSI/WDMA IS-1A: Architectural Wood Flush Doors.
- X. Woodwork Institute (WI): "North American Architectural Woodwork Standards" (NAAWS) published jointly by WI and the Architectural Woodwork Manufacturers of Canada (AWMAC).
  - 1. Section 9 Doors.

# 1.4 BID SUPPLEMENTS AND QUALIFICATION REQUIREMENTS

A. Contractor shall submit with its executed Bid Form a set of building manufacturer's structural and architectural plans and structural calculations from a previous project of similar requirements. Specifications from a previous job are not required. This set shall

bear a stamp of approval by the Division of the State Architect. This set shall be provided for determining Contractor's experience in the business of relocatable classroom construction and its ability to perform within the time limits of this specific Project.

- B. Failure to submit DSA-approved plans of a previous project with the bid shall constitute an incomplete submission of bid and be a basis for rejection of bid. This requirement will be waived only when Architect has personal experience with Contractor's ability to meet these requirements.
- C. The plans submitted must show capability of manufacturer to produce a unit meeting the conditions of this Section. Submission of a set of plans, which are not in the Architect's opinion capable of being readily modified to meet the above cited requirements, shall be cause for rejection of the bid. Minimum requirements will be DSA approval of both 10x32-foot and 12x40-foot modules with structural design performance in accordance with Article BUILDING DESIGN REQUIREMENTS in Part 2.
- D. The plans submitted need not be identical in all respects to the technical provisions of these Specifications, but must represent the structural design to be used and the manufacturer who will be constructing the buildings. The manufacturer cited must have the legal rights to construct the representative design. Under no conditions will these submitted plans be considered to be design drawings called for in accordance with Article BUILDING DESIGN REQUIREMENTS in Part 2, nor will the said plan submission be considered for the purpose of any substitution of the total requirements of the bid documents.
- E. Plans of a similar building type shall be previously approved by DSA such that the building plans for this Project are approvable by DSA by an over-the-counter plan check and not subject to a full review process.
- F. Contractor shall be prepared to give evidence of at least five consecutive years of experience in the construction of relocatable school buildings in California. Such evidence will be required prior to award and is a condition of award. This requirement will be waived only when Architect has personal knowledge of Contractor's compliance with these qualifications.

# 1.5 CHAPTER 1113 OF STATUTES OF 1982

- A. Attention is called to the following sections extracted from Assembly Bill 166 (effective January 1, 1982):
  - 1. SEC.6. Section 39144 of the Education Code is amended to read: 39144. Except as provided in Section 39144.5, before letting any contract for any construction or alteration of any such school building, the written approval of plans, as to safety of design and construction, by the Department of General Services, shall be first had and obtained.
  - 2. SEC.7. Section 39144.5 is added to the Education Code, to read: 39144.5. Before the commencement of any fabrication, construction, or alteration of a relocatable school building of a type previously approved by the Department of General Services, the written approval of plans, as to the safety and design of construction, by the Department of General Services, shall be first had and obtained.

B. The above provisions of A.B. 166 will permit the Owner and Contractor to enter into a valid agreement for construction prior to obtaining written DSA approval of the modular manufacturer's detailed structural drawings and calculations. Work, however, on the site or in the plant of manufacture may not commence until such written approval of DSA is secured.

# 1.6 WORK SEQUENCE

- A. Work of this Section shall be performed in three phases as follows:
  - 1. Phase I:
    - a. Contractor's preparation of drawings and calculations for the relocatable buildings, including the architectural, mechanical and electrical, in coordination with the bid documents.
    - b. Presentation of the Contractor's drawings and calculations for Architect's review and comment.
    - c. Revisions of Contractor's drawings and calculations, as required by Architect and/or Structural Engineer of Record, to conform with bid documents.
    - d. Delivery to Architect of Contractor's original drawings.
    - e. Architect's filing with DSA.
    - f. Processing of submittals and shop drawings, ordering of materials (no construction on-site or in-factory can begin until Phase III).
  - 2. Phase II:
    - a. Submittal to DSA for plan check review.
    - b. Contractor corrects Drawings and Architect revises Specifications subsequent to DSA comments.
    - c. DSA approval of the Drawings and Specifications.
    - d. Continuous processing of submittals and shop drawings.
  - 3. Phase III:
    - a. Factory and on-site construction of the buildings.
    - b. Sitework shall begin immediately after signing of agreements. Payments for sitework will not be made prior to DSA approval.

# 1.7 **PROJECT SCHEDULE**

- A. Contractor must commence work on project within 10 business days after being notified in writing to do so by Architect or Owner and must diligently pursue work, providing adequate workers in crafts involved, in order to assure completion of project within time specified.
- B. The specified Work Sequence must be performed within the time limits set herein to permit the Owner to move in and prepare for the 2024-2025 school year.
- C. If the submitted PC building is the same as the PC approved in the set of drawings, no additional DSA review is required. If the PC is an approved equal, the below schedule will take effect.

- D. Contractor's preparation of its building drawings and calculations and submission to the Architect: 5 business days.
- E. Architect's review of and commentary on Contractor's documents and return to the Contractor: 5 business days.
- F. Return of Contractor's revised documents to Architect: 5 business days.
- G. Submittal to DSA for checking: 2 business days.
- H. DSA plan checking period of unknown length, although submittals approvals and materials ordering may continue.
- I. Architect returns DSA check sets to Contractor within 2 calendar days of receipt from DSA.
- J. Architect and Contractor revise drawings and specifications, as required, and obtain DSA approval stamping within 5 business days.
- K. Contractor commences in-plant and on-site construction and completes project for occupancy as described in Section 01 1100, Summary of Work.
- L. Sitework shall begin immediately after signing of agreements. Payments for sitework only will be made prior to DSA approval.

#### 1.8 ADMINISTRATIVE REQUIREMENTS

- A. Submittal Procedures:
  - 1. Action Submittals and Informational Submittals shall be submitted in accordance with Section 01 3300, Submittal Procedures.
  - 2. Closeout Submittals shall be submitted in accordance with Section 01 7700, Closeout Procedures.
  - 3. Sustainable Design Submittals shall comply with the additional requirements of Section 01 8113, Sustainable Design Requirements.
- B. Contractor shall have the relocatable building manufacturer furnish a Project Manager to follow the project from order to delivery.
- C. Pre-design Meeting: Conduct meeting with relocatable building manufacturer and Architect. The intent of this critical meeting is to clarify and finalize design parameters and final design modifications, and document work responsibilities for all parties included in the project.

# 1.9 ACTION SUBMITTALS

- A. Shop Drawings: Manufacturer's detailed drawings and calculations prepared for the relocatable buildings to be furnished.
  - 1. These documents shall be prepared by a California registered Structural Engineer

- 2. Drawings shall indicate the module serial number for each module and the location of the Module Serial Number Identification Plates in accordance with Article MODULE SERIAL NUMBER IDENTIFICATION PLATE.
- 3. Drawings shall show components parts, connections and anchorages, adjacent materials, fully dimensioned and noted and include the following, as applicable.
  - a. Floor plans for each Building layout using custom or standard elevations and detail drawings, showing features specified and shown.
  - b. Include anchorage details, joint details where multiple buildings are joined, and point of connection for utilities including electrical, plumbing, telephone, cable and other applicable connections.
  - c. Where applicable, include a stem wall foundation plan for each elevated Building, and slab-on-grade details for "no floor" Buildings.
  - d. Show interface of each Building with raised decking where occurs.
  - e. Clearly note openings will meet accessibility requirements.
- 4. Include complete energy compliance calculations.
- B. Product Data: Submit list and complete descriptive data of products proposed for use. Include manufacturer's specifications, installation instructions, and maintenance instructions. Products include, but are not limited to, the following and as applicable.
  - 1. Doors and windows showing materials, function, and finish.
  - 2. Door hardware in accordance with Article FINISH HARDWARE in Part 2.
  - 3. Siding identifying profile, material, thickness, color and fastener system.
  - 4. Roofing showing available colors and installation instructions.
  - 5. Weather barrier and roofing underlayment.
  - 6. Interior Ceilings and Walls: Substrate material, thickness, and finish colors.
  - 7. Finish flooring.
  - 8. Visual display equipment.
  - 9. Light Fixtures: Manufacturer's catalog information, including appearance and electrical characteristics.
  - 10. HVAC equipment.
  - 11. Plumbing fixtures and fittings
  - 12. Additional Items: As requested by Architect.
- C. Samples: Submit the following for selection by the Architect whenever a choice of color or pattern is available in a specified product, unless the precise color and pattern is specifically specified or noted.
  - 1. Color chips for exterior and interior coatings and finishes, clearly noting item or surface to receive respective color in accordance with Article BUILDING DESIGN REQUIREMENTS in Part 2.
  - 2. Roofing in selected color and appearance.
  - 3. Each siding material in proposed profile, material, thickness, and finish.
  - 4. Finish hardware as specified.
  - 5. Additional Samples: As requested by Architect.

- D. Evaluation Reports: For the following, from ICC-ES:
  - 1. Wood-preservative-treated wood.
  - 2. Metal framing anchors.

## 1.10 INFORMATIONAL SUBMITTALS

- A. Sustainable Design:
  - 1. General:
    - a. Submit information necessary to establish and document compliance with the California Green Building Standards Code.
    - b. Sustainable design submittals are in addition to other submittals.
  - 2. The following information shall be provided:
    - a. Adhesives and Sealants: Evidence of compliance that products meet maximum VOC content limits specified in Section 01 6116.
    - b. Paints and Coatings: Evidence of compliance that products meet maximum VOC content limits specified in Section 01 6116.
    - c. Composite Wood: Evidence of compliance that products meet formaldehyde limits of current CARB Airborne Toxic Control Measure (ATCM) as specified in Section 01 6116.
    - d. Insulation: Evidence of compliance that products contain no added formaldehyde as specified in Section 01 6116.
    - e. Resilient Flooring: Documentation or Certification that products meet the pollutant emission limits from one of the sources specified in Section 01 6116.
    - f. Carpet: Evidence of compliance that products meet the testing and product requirements specified in Section 01 6116.
    - g. Carpet Cushion: Evidence of compliance that products meet the requirements of the Carpet and Rug Institute's Green Label program as specified in Section 01 6116.

# 1.11 CLOSEOUT SUBMITTALS

- A. Warranty/Guarantee: Submit executed warranty and Subcontractor's guarantee.
- B. Owner's manuals for equipment.
- C. Building manufacturer's recommended maintenance procedures.
- D. Balance Report for the HVAC system.

# 1.12 QUALITY ASSURANCE

- A. Fastenings:
  - 1. Movable and fixed items of work in building(s) shall be provided with sufficient nails, screws, bolts, anchors, hangers, fastenings and supports of type acceptable

under requirements of applicable regulations, and as required by best construction practice.

#### 1.13 ENERGY CONSERVATION AND SUSTAINABLE DESIGN

- A. Comply with the California Energy Code, Title 24, Part 6, on Energy Efficient Standards and Required Certification.
  - 1. Provide complete energy compliance calculations with submittal drawings.
  - 2. Take measures necessary to comply with energy regulations at no additional cost to the Owner.
- B. Comply with the Mandatory Measures of the California Green Building Standards Code (CALGreen, Title 24, Part 11

# 1.14 GROUNDING OF BUILDING COMPONENTS

A. Provide necessary connectors to ground the metal portions of the building including, but not limited to, frame and ramp, in compliance with DSA IR E-1.

# 1.15 OBSERVATION, INSPECTION AND TESTING

- A. Observation, Inspection and Testing requirements shall be in accordance with Title 24, Part 1, DSA, and as further described below.
- B. Observation of work shall be by Architect and its engineers.
- C. Plant inspection of manufacturing of building units, as required, shall be specified in complete documents to be submitted to Architect for review before filing with DSA Form 103 (T & I List). DSA Form 103 shall be posted on the Drawings.
- D. Costs of inspection and observation of work done in manufacturer's plant and of delivery of materials and assemblies to site shall be included in Contract price. Order for such inspection will be issued by Owner and paid for by Owner. Retesting costs for failed tests will be the Contractor's responsibility and will be back-charged against the Contract.
- E. Work done at school site and plant shall be subject to inspection by the Owner's Project Inspector, as required under Title 21, Section 29. On-site inspection costs will be paid for by the Owner.

#### 1.16 CONTRACTOR'S USE OF PREMISES

- A. Specific areas will be designated for this work, for storage of materials on site, for traffic lanes to and from building site(s). Contractor's activities shall be limited to these areas.
- B. Work shall proceed in such manner as to not interfere with Owner's activities in and about existing facilities. Exceptions will be made only after previous agreement between Owner, Architect and Contractor.
- C. There shall be no smoking or consumption of alcoholic beverages on school grounds.

## 1.17 BUILDING LOCATION

- A. It shall be the responsibility of the Contractor to properly locate buildings and furnish the required field engineering including location and identification of markers and lines, as well as setting of building in plan and elevation.
- B. Modules shall be set so floor shall be at one elevation.

## 1.18 TEMPORARY WATER AND ELECTRICITY

A. Owner will furnish water and electricity for construction purposes. Contractor shall make and pay for temporary connection from source to construction area.

### 1.19 **PROTECTION**

A. Protect existing site improvements from damage. Take measures to prevent damage to existing turf, trees, paving, streets, curbs, walks, lawn sprinkler heads, and existing buildings during construction. Restore and repair any damage caused by work under this Contract to existing facilities without expense to Owner.

### 1.20 GRADING AND DRAINAGE

A. Grades disturbed by Contractor shall be re-graded, at no additional cost to Owner, to assure proper drainage away from buildings and paved walks and drives and so as not to disturb existing drainage patterns.

#### 1.21 EXISTING UTILITIES

- A. It is recognized by the Owner and the Contractor that the location of existing utility facilities as shown on Contract Drawings and Specifications are approximate; their exact location is unknown.
- B. Recognition is given to the fact that there may be additional utilities existing on the property unknown to either party to the Contract. Location of utilities as shown on Drawings and Specifications represent the best information obtainable from utility maps and other information furnished by the various agencies involved. The Owner warrants neither the accuracy nor the extent of actual installations, as shown on the Drawings and Specifications.
- C. Because of this uncertainty, it may become necessary for the Architect to make adjustments in the line or grade of sewers or storm drains. Installation of such adjusted lines shall be made at the regular unit price bid for the work, if any, otherwise as provided in these Specifications for change orders, and no additional compensation will be paid therefore, unless the scope and character of the work has been changed.
- D. The Contractor agrees and is required to coordinate and fully cooperate with the Owner and utility owners for the location, relocation, and protection of utilities. The Contractor's attention is directed to the existence of utilities, underground and overhead, necessary for all buildings within the area of work.
- E. In accordance with Section 4215 of the Government Code of the State of California, the Owner shall make provisions to compensate the Contractor for the costs of locating,

repairing damage not due to the failure of the Contractor to exercise reasonable care, and removing or relocating such main and trunk line utility facilities not indicated in the Drawings and Specifications with reasonable accuracy, and for equipment on the project necessarily idled during such work. Compensation will be in accordance with the provisions of these Specifications providing for change orders. Nor shall the Contractor be assessed liquidated damages for delay in completion of the project when such delay was caused by the failure of the Owner or the owner of the utility to provide for removal or relocation of such utility facilities.

- F. Nothing herein shall be deemed to require compensation to the Contractor or to relieve it from being assessed liquidated damages for such delay whenever the presence of service laterals or appurtenances on the site can be inferred from the presence of other visible facilities on or adjacent to the site of construction including, but not limited to, buildings, meter and junction boxes, drain inlets, , and the delay was caused in whole or in part by a failure of the Owner to indicate the presence of such service laterals or appurtenances.
- G. In the event the Contractor discovers utilities not identified in the Contract Drawings or Specifications, the Contractor shall immediately notify the Architect and the utility owner by the most expeditious means available and later confirm in writing.

# 1.22 MODULE SERIAL NUMBER IDENTIFICATION PLATE

- A. Two engraved or die-stamped metal identification plates shall be provided for each module, in compliance with DSA IR 16-1.16.
  - 1. One plate shall be located on a roof member under the rear overhang (or below soffit) in an area visible after completion of project.
  - 2. The other plate shall be located on the interior frame above the ceiling, at the end of the module.
  - 3. Attachment shall be by screws only (no nails).

# 1.23 SAFETY AND SECURITY OF CONSTRUCTION AREAS

A. Contractor will be required to provide a security/safety barrier at site to protect passersby. This shall be a 6-foot chain link fence surrounding the work area of this Contract.

# 1.24 WARRANTY

A. Manufacturer: In addition to the Contractor's and Subcontractor's Guarantee, furnish Owner with manufacturer's fully executed written warranty for the relocatable building roofing against leakage and other defects in materials and workmanship for a period of 5 years.

# PART 2 - PRODUCTS

# 2.1 DESIGN CONCEPT

- A. Relocatable buildings shall consist of new prefabricated modules, including roof, walls, floors, doors, windows, and electrical and mechanical services as specified and indicated on the Drawings.
  - 1. Each building shall be built of 10-foot x 32-foot or 12-foot x 40-foot modules fitted with exterior walls at sides, and with exterior walls filling in the ends of each module. Sizes as shown on the drawings.
  - 2. Wall joints and roof joints between modules shall be made weathertight.
  - 3. Each module shall be designed as a clear span, steel rigid frame in both directions.
- B. Arrange modules as shown on Drawings. Manufacturer's standard component parts may be used, providing components, accessories and complete buildings conform to architectural design appearance shown and requirements specified herein.
- C. Each module shall conform to the following requirements.
  - 1. Shipping:
    - a. Be capable of being shipped in knockdown or standup position; equipped with castings or other interconnecting pieces for accurate and easy field assembly, if the knockdown option is used.
    - b. Be capable of being conveniently transported as a unit on State or National Highways on stock equipment, or by attachment of trailer hitch and wheels to structural frame, without special permit.
  - 2. Be designed to connect to adjacent module with minimum amount of connections to form an integral building unit.
  - 3. Be designed with wood sub-floor system.
  - 4. Be capable of being individually relocated without removing light fixtures, cabinets, floor covering, and other installed fixtures, except to extent necessary for disconnecting modular components.
- D. Sustainable Design:
  - 1. VOC emissions for field-applied adhesives, sealants, and sealant primers must comply with limits specified in Section 01 6116.
  - 2. VOC emissions for field-applied paints and coatings must comply with limits specified in Section 01 6116.
  - 3. Composite wood products must meet current formaldehyde emission limits of CARB Airborne Toxic Control Measure (ATCM) as specified in Section 01 6116.

# 2.2 BUILDING DESIGN REQUIREMENTS

A. Basic Design Criteria: In accordance with provisions of Title 24, Part 1, and Chapter 31 Article 3113 of Title 24, Part 2, and Interpretation of Regulations PC-6 Pre-Check (PC) Design Criteria for Relocatable Buildings issued by Structural Safety Section of DSA. Title 19 and other portions of Title 24 regarding fire safety, energy standards and accessibility for the disabled shall also apply.

- B. Approval: Contractor shall prepare and submit drawings and calculations, and other supporting documents prepared in accordance with Paragraph "Basic Design Criteria", prior to doing any other work related to this Project. These documents will be reviewed by Architect and required corrections, if any, shall be made by the Contractor before any filing with DSA, Department of General Services, State of California. Filing fee will be paid by Owner. Contractor shall make changes or corrections required by DSA and shall deliver to Architect electronic copies of approved drawings and calculations. Drawings become property of Owner. Original drawings submitted by Contractor shall bear the original DSA stamp of identification. Contractor shall accompany Architect to DSA to over-the-counter appointments if requested.
- C. Manufacturer shall be responsible for providing and submitting complete energy compliance documentation and calculations as required by California State Building Code as established by the Energy Efficiency Standards for Buildings as prescribed by the California Energy Commission.
- D. Fabrication or erection shall not begin prior to approval of detail drawings and specifications by Architect and DSA. However, submittals and shop drawing processing may begin upon receipt of "start" letter. Approval of submittals subject to DSA review, e.g. roofing, suspended ceiling systems, finish materials, will be done subject to conditions of DSA approval of final drawings and specifications. DSA approval procedures may require resubmittals of DSA-rejected materials.
- E. Exterior walls shall be designed to withstand wind loads perpendicular to wall plane equivalent to "exposure C, 80 mph wind". This requirement applies to all exterior walls of building section even though present configuration of building may be such that some of these walls are not exposed to wind. Buildings are required to meet all current requirements of Title 24, Parts 1 & 2 and DSA Interpretations of Regulations.
- F. Floors: Design live load 50 psf. Floors shall be designed as diaphragms, as required for resisting applied horizontal loads.
- G. Roofs: Design live load of 20 psf with no area reduction. Roofs shall be designed as diaphragms as required for resisting applied horizontal loads. Roof shall be sloped to drain to the rear of the building only, unless shown otherwise on the Drawings.
- H. Modules shall be so detailed that positive anchorages to foundations will not be necessary to tie finished building down against uplift forces regardless of whether building is erected on skids or on concrete foundations, in accordance with ASCE/SEI 7, Section 1.4.4.
- I. Place building on wood foundation beams or skids, anchored against sliding, or concrete foundations where indicated.
- J. Building units shall be installed using manufacturer's standard minimum clearance between underside of frame and grade, plus size of foundation beams or skids, unless shown otherwise on the Drawings.

- K. For purposes of proper design of foundations, total soil load bearing pressure shall not be in excess of 1,000 pounds per square foot.
- L. Fabrication criteria shall be such that building shall be weather-tight with modules easily assembled into a building and disassembled from a completed building into transportable modules.
- M. Architect will select colors for interior materials and for exterior materials with up to 3 colors selected for the exterior. Submit samples of materials immediately after award of the Contract to assure adequate time for color selection. Contractor is to assume that color schemes will be different from site to site.
- N. Landings: Provide steel framed relocatable landing, steps, ramp and railings as required to provide access to buildings, as shown on Drawings. Landing and ramp decks and stair treads shall be permanently slip resistant, perforated, textured metal decking described in Section 05 5000. Toe of ramp shall be within 1-1/2 inches of finish grade. Design drawing transparencies and calculations shall include details of these.
- O. Foundation Vents: Provide for the free flow of air under the supported floor of building. Provide vents equivalent to 1 square foot of vent per 150 square feet of under floor area. If through foundation skirting, vents shall be 16 gauge galvanized expanded metal in steel frame. Provide equal ventilation on two opposite sides of the building.
- P. Closure Panels: Use full height closure panels between new or new and existing relocatable buildings, as shown on the Drawings.

# 2.3 FOUNDATIONS

- A. The building shall be set on wood foundation. Foundations shall be designed to meet code requirements and additional loading requirements as described in the Contract Documents. See the Geotechnical Report in the Appendix for soil bearing capacity.
- B. Provide foundation vents in accordance with Article BUILDING DESIGN REQUIREMENTS.

# 2.4 STRUCTURAL AND MISCELLANEOUS METALS

- A. Steel (Structural Shapes): ASTM A36/A36M.
- B. Sheet Steel: ASTM A570 (Grade 33 or 40); see Drawings.
- C. Sheet Tubes: ASTM A500/A500M (Grade B).
- D. Bolts: ASTM A307 or ASTM A325.
- E. Performance Criteria:
  - 1. Structural steel members shall comply with the referenced AISC publications.
  - 2. Light gauge steel members shall comply with AISI S100 and S240, and CBC Sections 2210, 2211.

3. Welded connections shall comply with AWS D1.1/D1.1M for structural steel and AWS D1.3/D1.3M for light gauge steel. Welding Inspection shall comply with the requirements of CBC Section 1705.

## 2.5 FRAMING

- A. General:
  - 1. Steel frame building shall meet the following specified design requirements.
  - 2. Wood frame construction shall meet the following minimum design details.
- B. Framing lumber shall be marked MC-15 or surface dry (S-dry):
  - 1. Roof Framing:
    - a. Joists: Douglas Fir/Larch No. 2 or better.
    - b. Blocking: Douglas Fir/Larch No. 3 or better, or Hemlock Fir No. 3 or better.
    - c. Plywood Sheathing: APA or comparable rating sheathing EXP 1 complying with PS 1, 3/4-inch T & G fastened with self-tapping screws.
  - 2. Wall Framing:
    - a. Studs: Douglas Fir/Larch No. 2 or better. Minimum 2 x 4 at 16 inches on center.
    - b. Sill (Sole Plate): Douglas Fir/Larch No. 2 or better.
    - c. Top Plates: Douglas Fir/Larch No. 2 or better.
    - d. Double Headers: Douglas Fir/Larch No. 2 or better, minimum 2-2 x 4 on edge with 1/2-inch APA or comparable rated plywood, EXP 1 filler.
    - e. Door and Window Openings Double Stud/cripples, Douglas Fir/Larch No. 2 or better.
    - f. Blocking: Douglas Fir/Larch No. 3 or better.
  - 3. Floor Framing:
    - a. Joists: Douglas Fir/Larch No. 2 or better. Joist hangers shall be used in the design; Simpson Strong-Tie Co., or equal.
    - b. Rim Joists: Double Douglas Fir/Larch No. 2 or better, minimum 8-foot lap.
    - c. Blocking: Douglas Fir/Larch No. 3 or better, or Hem/Fir No. 3 or better.
    - d. Subfloor: Plywood sheathing, APA or comparable rated STURD-1-Floor, 48 inches on center, 1-1/8 inch thick, T & G, Exp. 1 or series C-101, C plugged D, 48 inches on center, 1-3/32 inch thick, T & G, Exp. 1. Plywood fastened with self-tapping screws. Panel adhesive to be applied to all framing members in contact with sub-floor.
  - 4. Fire Stops: Fire stops shall be provided as required by CBC Section 2516 (f).
- C. Structural members below the subfloor, including girders, joists, headers, blocking, shall be either steel or wood. If wood, it shall be pressure treated with an approved process and preservative to the maximum possible retention by full-cell process complying with the AWPA U1 and T1 Standards. Markings shall be legible on each pressure treated structural member and certification of treatment must be supplied for each charge. Shims may be Redwood or Cedar.

# 2.6 MOISTURE BARRIER

- A. Weather-exposed surfaces shall have a weather-resistive barrier to protect the interior wall covering complying with CBC Section 1404.2.
- B. Barrier shall be free from holes and breaks other than those created by fasteners and construction system due to attaching of the building paper in manner recommended by manufacturer, and shall be applied over studs or sheathing of exterior walls.
- C. Weather barrier shall be applied weather-board fashion, lapped not less than 2 inches at horizontal joints and not less than 6 inches at vertical joints, including corners.

# 2.7 SIDING

- A. General:
  - 1. Plywood siding shall be APA or comparable rated exterior type.
  - 2. Each panel shall be identified with the grade mark of the grading association and shall meet the requirements of Product Standards PS 1.
- B. Siding:
  - 1. Siding: Medium density overlay (M.D.O.) APA 303-0/L grooves at 8 inches on center, fastened with 8d galvanized nails by Roseburg Forest Products, or equal.
- C. Application:
  - 1. Panel edges and ends shall be sealed with a heavy coat of premium grade exterior house primer or an aluminum primer formulated for wood before installation.
  - 2. Vertical shiplapped joints shall have 1/16 inch clearance between panels.
  - 3. A 3d or 4d galvanized finish nail may be used as a gauge between panels and left in place.
  - 4. Horizontal joints in both the siding and the skirting and between skirting and siding shall be protected by a galvanized z-bar flashing. In addition, horizontal wood to metal floor framing contacts shall be protected by galvanized z-bar metal flashing.

# 2.8 EXTERIOR TRIM

- A. Windows, corners, and door openings shall receive trim of at least 3/4 x 3-1/2 inch size.
- B. The roof edge shall receive at least 1-1/2 x 5-1/2 inch size trim. The trim shall be rough or resawn D select D.F., H.F., or Spruce.
- C. Trim shall be back-primed before installation, hand nailed with galvanized nails, sealed at all edges with silicone or architectural grade sealant.
- D. Sealant shall be painted to match siding or trim color unless of the transparent type.

#### 2.9 SKIRTING

- A. Skirting shall be the same thickness and type of plywood used for siding except that plain ungrooved material shall be used where the long direction of the sheet runs horizontal.
  - 1. If grooved plywood is used for skirting, the grooves shall match and line-up with the grooves in the siding.
  - 2. Edges and the bottom of the skirting shall be supported and the entire space below the building shall be closed off.
  - 3. Maintain 1-1/2 inch minimum clearance from the bottom of plywood skirting to finish grade.
  - 4. Provide foundation vents in accordance with Article BUILDING DESIGN REQUIREMENTS.

### 2.10 ROOFING

- A. The roofing system shall be Class A fire rated in compliance with CBC Section 1505. Test results showing the roofing system will withstand the uplift of a 75 mph wind shall be submitted with the Drawings and Specifications.
- B. Roof construction shall be pre-finished, unpenetrated interlocking roof panels mechanically crimped, standing seam or ribbed type, 26 gauge over 30 pound saturated felt underlayment and 1/2 inch plywood deck (CDX grade).
- C. Installation:
  - 1. Design and installation of the deck and/or roof substrate shall result in the roof draining freely.
  - 2. Roof shall have a minimum pitch of 1/8 inch per foot. Areas where water ponds for more than 24 hours are unacceptable and shall be corrected by the manufacturer.

## 2.11 ROOF OVERHANG

- A. General:
  - 1. Overhangs shall present a pleasing and finished appearance.
  - 2. Soffits shall be enclosed with no visible framing members.
  - 3. Soffit material shall be 3/8 inch minimum plywood.
  - 4. If grooved material is to be used, grooves shall match the grooves on the exterior siding.
  - 5. Plywood soffit material shall be applied with long direction running parallel to the length of the building.
  - 6. Soffit shall be neatly and closely fitted and trimmed to cover gaps.
  - 7. Enclosed soffit areas shall be ventilated in accordance with the CBC.

# 2.12 SHEET METAL ACCESSORIES

A. General:

- 1. Work shall comply with SMACNA recommendations.
- 2. Sheet Metal, Unless Otherwise Indicated: Zinc-coated (galvanized) steel sheet complying with ASTM A653/A653M with a G90 coating, or aluminum-zinc alloy-coated steel sheet in accordance with ASTM A792/A792M, Class AZ50 coating designation, Grade 40.
  - a. Thickness: 0.022 inch thick (26 gauge) minimum.
  - b. Finish: Prepainted by coil process complying with ASTM A755/A755M.
- B. Gutters: Formed in sections not less than 30 feet in length, complete with elbows and offsets.
  - 1. Join sections with minimum 1-1/2 inch telescoping joints.
  - 2. Downspouts"
    - a. Size: 2" x 3", typical.
    - b. Provide fasteners for top, bottom and at 5 feet on center intermediately between, designed to securely hold downspouts not less than 1 inch away from walls.
    - c. Downspouts to be placed as required and spill to grade onto splash blocks.
- C. Foundation Flashing: Provide continuous galvanized sheet metal flashing from 4 inches above finish floor to 6 inches below bottom of floor framing where finish grade is in contact with building frame.

### 2.13 EXTERIOR METAL FRAMES AND DOORS

- A. General:
  - 1. Provide standard hollow metal frames for doors and other openings as indicated.
  - 2. Standards: Comply with requirements of SDI-100, and as specified.
  - 3. Steel for exterior frames and doors shall be galvanized with a minimum A60 or G60 coating.
  - 4. Shop paint exposed surfaces of hollow metal units, using manufacturer's standard baked-on rust-inhibitive primer. Coordinate with finished paint for compatibility.
- B. Frames:
  - 1. Door frames must be welded type.
  - 2. Material: Steel doors and frames; hot-rolled, pickled and oiled complying with ASTM A1011/A1011M and ASTM A568/A568M; cold-rolled complying with ASTM A1008/A1008M and ASTM A568/A568M.
  - 3. Anchors and Accessories: Manufacturer's standard units, complying with ASTM A153/A153M. Anchors to be 16 gauge, welded to frame; 4 anchors minimum at strike and jamb sides of frame.
  - 4. Fabrication: Fabricate units to be rigid, neat in appearance, and free from defects, warps or buckles. Weld exposed joints continuously, grind, dress and make smooth, flush and invisible.
  - 5. Prepare frames to receive mortised and concealed finish hardware, including cutout, reinforcing, drilling and tapping, complying with ANSI/BHMA A115.

- C. Doors:
  - 1. Comply with SDI-100 for the types and styles indicated, for materials quality, metal gauges and construction details.
  - 2. Face Sheets: 0.064 inch (16 gauge) thick minimum.
- D. Provide minimum gage hardware reinforcing in accordance with Table 4 of ANSI/SDIA250.8 or Table 1 of ANSI/SDI A250.6.

### 2.14 INTERIOR METAL FRAMES

- A. Knock down or welded type complying with requirements of SDI or HMMA.
- B. Construction: 0.064 inch (16 gauge) thick in manufacturer's standard profiles and in depth to suit wall thickness.
- C. Provide 3 anchors minimum per jamb and adjustable floor anchors at bottom of each jamb. Prepare and reinforce for required hardware, including strike box and reinforcement for closures on all frames.
- D. Provide sound deaden on concealed faces with 1/8 inch thick undercoating or fill metal door frame cavity with insulation to attain the sound deadening requirement.

### 2.15 INTERIOR WALLS

- A. Fiber Reinforced Panels: Pre-finished, 0.090 inch minimum thick textured plastic.
  - 1. Provide vinyl moldings color matched to panels secured with concealed fastening.
  - 2. Color and pattern as selected by Architect from manufacturer's standard.
  - 3. Flammability: Class A with flame spread rating of 25 or less, and a smoke developed rating of 370.
- B. Gypsum Wallboard: ASTM C1396, 5/8 inch thick, Type "X" fire rated with UL label; USG "Sheetrock Firecode," Georgia-Pacific "Fireguard Gypsum Board Type X", National Gypsum "Board Gold Bond Fire-Shield," or equal.
  - 1. Joint system materials to conform to ASTM C475/475M.
  - 2. Metal corner beads, casings, and other profiles shall be electrogalvanized, conforming to ASTM C1047.
  - 3. Where fire rated construction is indicated install wallboard assembly to provide fireresistive rating required.
- C. Interior Wood Trim: Vertical Grain Clear Douglas Fir or Pine. No plywood paneling or film trim will be allowed.

# 2.16 SUSPENDED ACOUSTICAL CEILING AND ACOUSTICAL PANELS

- A. General:
  - 1. Provide completely designed system complying with requirements of CBC Section 808, ASTM C635, ASTM C636 and DSA Interpretation Regulation 25-2.13.

- 2. Seismic Requirements:
  - a. Provide acoustical ceiling system that has been evaluated by an independent party and found to be compliant with the California Building Code, Seismic Categories D, E, and F.
  - System shall be tested in accordance with International Code Council -Evaluation Services - AC 156 Acceptance Criteria for Seismic Qualification Testing of Non-structural Components as evidenced by International Code Council Evaluation Report.
- 3. Fire Performance Characteristics: As follows, tested in accordance with ASTM E84.
  - a. Flame Spread: 25 or less.
  - b. Smoke Developed: 50 or less.
- B. Grid Structural Classification: ASTM C635, ASTM C636, and the DSA IR for Heavy Duty systems.
- C. Acoustical Panels: 24-inch x 48-inch modular size, 5/8 inch minimum thickness, mineral fiberboard, or vinyl-faced fiberglass lay-in panels.
  - 1. Edges: Square.
  - 2. Light Reflectance (LR): ASTM E1477, 75 percent minimum.
  - 3. Noise Reduction Coefficient (NRC): ASTM C423; 0.65 minimum.
  - 4. Flame Spread: ASTM E1264 Classification.
    - a. Type III, Form 2, Pattern C E.
    - b. Class A (UL).
- D. Contractor shall inspect ceiling after installation and replace exposed members showing dents or defects.

#### 2.17 PAINTING

- A. General:
  - 1. Exposed surfaces: Exterior and interior surfaces, including conduits, electrical boxes, mechanical units, and similar items, shall be painted except prefinished aluminum window frames and thresholds. Material shall be of the grade specified or equal.
  - 2. Paints used by the Contractor of the type indicated shall be listed on the State of California Qualified Products List for Maintenance Paints.
- B. Exterior Wood Siding, Trim and Skirting: Semi-gloss latex.
  - 1. Apply one coat of primer and at least two finish coats.
  - 2. Prime coat shall be brushed on or sprayed and back brushed into all grooves in the siding.
    - a. If necessary, in the opinion of the Inspector, an extra coat shall be applied to all grooves so that the finish coat will have a uniform appearance.
    - b. Allow prime coat to dry according to manufacturer's recommendation.

- 3. Prime and finish coats shall be compatible and manufactured by the same company.
- C. Interior: Trim not pre-coated shall be painted with two coats of semi-gloss latex over primer.
- D. Metal: Metal surfaces other than OEM finishes on installed equipment shall be painted with two coats of alkyd finish coat over zinc chromate, or comparable rust inhibiting primer.
- E. Gypsum Wallboard at Toilets, Storage and Janitor Room: Primer and 3 coats stipple gloss enamel.
- F. Pipe rails: One coat of metal primer and at least two finish coats.
- G. Paint Schedule:
  - 1. Refer to requirements in Section 09 9100, Painting.

# 2.18 FLOOR COVERING AND BASE

- A. Sheet Vinyl: ASTM F1303, Type II, Grade 1, Class A Backing; "Connection Corlon" by Armstrong World Industries as specified and the basis of design, or equal.
  - 1. Physical Properties:
    - a. Total Thickness: 0.080 inch. (2.0mm)
    - b. Wear layer Thickness: 0.050 inch (1.27mm).
    - c. Roll Width: 72 inches.
    - d. Roll Length: Up to 82 feet (25m).
    - e. Construction: Inlaid heterogeneous.
    - f. Color: As selected by Architect from manufacturer's full range.
  - 2. Installation Method: Full spread adhesive with minimum welded seams.
    - a. Cove base where indicated using a solid coved backing strip continuously at juncture of wall and floor.
- B. Adhesives: Shall be water based, VOC compliant. Solvent based not acceptable. Furnish and apply in accordance with manufacturer's written instructions.

# 2.19 INSULATION

- A. General:
  - 1. Minimum flame spread classification of 25 or less, and a smoke developed rating of 50 or less.
  - 2. Provide more insulation where required by energy calculations.
- B. Wall and floor insulation shall have a rating of R-11.
  - 1. Floor insulation shall be secured with a permeable material in a manner approved by the Architect.

- 2. The insulation support material shall prevent movement of the insulation during transportation.
- 3. The insulation and support material shall be intact upon delivery to the site and shall completely cover the floor cavity.
- C. Roof insulation shall have a rating of R-19.

# 2.20 FIRE EXTINGUISHER

- A. Refer to requirements in Section 10 4416, Fire Extinguishers and Cabinets.
- B. Fire Extinguishers shall be the pressure type fire extinguisher with 2A10BC UL rating, to be mounted on the interior wall of the building near the doorway(s) at a height of 46 inches above finish floor to operating handle, in a semi-recessed wall cabinet with breakglass door.

# 2.21 PLASTIC TOILET PARTITIONS

- A. Manufacturer and Product:
  - 1. Refer to requirements in Section 10 2113, Plastic Toilet Compartments.
- B. Fire Resistance when Tested in accordance with ASTM E84:
  - 1. Smoke Developed Index: Not to exceed 450.
  - 2. Flame Spread Index: Not to exceed 75.
  - 3. Material Fire Ratings:
    - a. Test Method: NFPA 286.
    - b. Rating: International Code Council (ICC) Class A.

# 2.22 TOILET ACCESSORIES

A. Refer to requirements in Section 10 2813, Toilet Accessories.

#### 2.23 SIGNAGE

A. Refer to requirements specified in Section 10 1400, Signage.

# 2.24 FINISH HARDWARE

- A. Finish hardware shall comply with applicable fire and building codes, including provisions for accessibility required by the CBC and ADA Standards for Accessible Design. Comply with the most stringent.
- B. Submittals:
  - 1. Hardware Schedule: Submit completely detailed finish hardware schedule, in either horizontal or vertical format. Reference hardware headings to groups specified and clearly indicate door type or mark location, hand, size, material and fire rating if applicable.

- 2. List Manufacturers' names and numbers for items used in schedule to facilitate checking for compliance.
- 3. Samples: Submit physical sample of each item of hardware substituted for specified item or its listed acceptable alternate.
  - a. Clearly mark each sample to indicate name of item, brand name, manufacturer's catalog number and item for which it is substituted.
  - b. Submit with finish hardware schedule.
  - c. Approved samples may be used in work.
  - d. Rejected samples will be returned and specified item or its acceptable alternate shall be provided.
- C. Furnish 2 copies of approved finish hardware schedule for use by door and frame suppliers.
- D. Templates:
  - 1. Hardware applied to metal door and frames and factory prepared wood doors shall be made to template.
  - 2. Furnish two copies of each template to those manufacturers who are not listed as current registered template book holders.
  - 3. Furnish 2 copies of each template for items whose manufacturers do not provide registered template book.
- E. Door Clearances:
  - 1. Unless detailed otherwise on Drawings, provide following door clearances:
    - a. Floor Clearance:
      - 1) Labeled doors 3/8 inch maximum over floor or threshold.
      - 2) No threshold 3/4 inch maximum for metal doors; 5/8 inch maximum for wood doors.
      - 3) Threshold 1/8 inch typical.
      - 4) Carpet 1/8 inch over top of nap.
  - 2. Head and Jamb Clearance: 1/8 inch maximum.
- F. Hardware Placement:
  - 1. Unless detailed otherwise, place hardware at following height above finish floor:
    - a. Strike (centerline for locks and latches) 40-5/16 inches.
      b. Hinges Manufacturer's standard.
      c. Door Pull (centerline) 42 inches.

44 inches.

- d. Push Plate (centerline)
- G. Keying:
  - 1. Key as shown on Door Schedule on Drawings or as directed by Architect. Supplier shall be prepared to meet with Architect, if required, to assist in creating detailed keying schedule. Provide the following:

- a. Grand Master Key system (existing) with six cut GMK and 6 cut Master Keys.
- b. Three standard bow change keys per cylinder.
- 2. Label and deliver all keys by registered mail or personal messenger direct to Owner. Submit bitting list with shipment of permanent keys.
- H. Closers:
  - 1. Key valve type.
  - 2. Furnish one key for each 5 closures.
  - 3. Fasten with 4 sex bolts per closer.
  - 4. Provide 180 degree opening where indicated.
  - 5. Provide parallel arms with jamb attachment for all out-swinging doors.
  - 6. Provide correct brackets at flush transom panel doors.
- I. Screws, Bolts, and Fastening Devices:
  - 1. Exposed heads, oval, Phillips type in countersunk holes, unless otherwise specified or required.
  - 2. Use screws, bolts, washers, grommets, nuts, and other fastening devices of appropriate length, type, head, metal and finish, as necessary for proper match and application of hardware.
- J. Handling and Marking:
  - 1. Furnish hardware in proper "hand" for doors.
  - 2. Package and mark hardware for door number, hardware type and location.
- K. Exit Door Latching Devices: Self-releasing type operable from inside at all times by simply turning knob or by pressure on panic device.
- L. Fire Rated Doors:
  - 1. Equip fire rated doors with UL listed hardware meeting requirements NFPA 80 and 101, and Fire Protection Equipment list of Underwriters Laboratories, Inc.
  - 2. Treat and equip 20 minute rated openings same as 45 minute rated doors.
- M. Finishes:
  - 1. In general, provide finishes as follows, unless otherwise indicated:

Hinges	626
Locks	626
Exit Devices	626
Closures	Sprayed Aluminum
Trim	630
Stops	626
Floor Closures	N/A
Thresholds/Weatherstripping	Mill Finish

Special Items	As Noted
Key Cabinet	N/A

- N. Installation:
  - 1. Install hardware in precise manner, in accordance with manufacturer's instructions; door clearance and hardware placement as specified.
    - a. Predrill pilot holes in wood for screws.
    - b. Drill and tap for surface mounted hardware on metal.
    - c. Set hinge leaves snug and flat in mortises; turn screws to flat seat; do not drive.
  - 2. Mount door closures for maximum swing of door before setting stops.
    - a. Silencers shall be n place before adjusting strikes.
    - b. Drive hinge pins down and tighten set screws.
  - 3. Install locks with keyways in proper position, and knobs, roses and escutcheons firmly affixed.
  - 4. Set thresholds in waterproof butyl type sealant and secure with shields and countersunk screws of same finish as threshold.
  - 5. Except for hinges, do not install hardware until completion of painting and finishing work.
  - 6. Adjust hardware so that moving parts operate freely without bind or excessive play. Installed hardware shall be free from paint, corrosion or damage.
  - 7. Adjust door and floor closures for closing speed, latching speed, back checking, and adjust hold-open devices for full control of door. Maximum effort to operate doors shall not exceed 5.0 pounds for exterior and interior doors, and 15 pounds for fire doors.
- O. Hardware Types List:
  - 1. Catalog numbers used herein are those of following manufacturers:

Hinges	Hager	HGR
Locks and Cylinders	Schlage	SCH
Exit Devices	Von Duprin	VDP
Closers	LCN	LCN
Trim	Trimco	TRM
Floor/Wall Stops	Trimco	TRIM
Overhead Stops	LCN	LCN
Thresholds/Weatherstripping/Astragals	Pemko	PKO
Silencers	Glynn Johnson	GLJ
Special Items	As Noted	
Cylinder	Best	BST

2. Acceptable Alternate Manufacturers:
- a. Item produced by manufacturers, equal to those specified in material, weight, size, function, design and finish will require submittal of physical sample or request for substitution.
- b. Architect's decision regarding any item submitted for approval as equal to that specified shall be final.
- 3. Hardware Types:
  - a. Hardware Group No. 01 Student Toilet Rooms:

<u>QTY</u>	DESCRIPTION	CATALOG NUMBER	<u>FINISH</u>	<u>MFR</u>
3 EA	HW HINGE	5BB1HW 4.5X4.5 NRP	630	IVE
1 EA	CLASSROOM	L463P	626	SCH
	DEAD LOCK			
1 EA	PUSH PLATE	8200 6"X16"	630	IVE
1 EA	PULL PLATE	8303 10" 4"X16"	630	IVE
1 EA	SURFACE	4011	689	LCN
	CLOSER			
1 EA	KICK PLATE	8400 10"X2" LDW B4E	630	IVE
1 EA	WALL STOP	WS406/407CVX	630	IVE
1 SET	SEALS	5050CL	CLR	NGP
1 EA	DOOR BOTTOM	35VA	CL	NGP
1 EA	THRESHOLD	PER DETAIL	ALM	NGP

# b. Hardware Group No. 02 - Staff Toilet Room:

<b>OTV</b>				
<u>QIY</u>	DESCRIPTION	CATALOG NUMBER	<u>FINISH</u>	MFR
3 EA	HW HINGE	5BB1HW 4.5X4.5 NRP	630	IVE
1EA	VANDL	ND94PD RHO	626	SCH
	CLASSROOM LOCK			
1 EA	SURFACE	4040XP	689	LCN
	CLOSER			
1 EA	KICK PLATE	8400 10"X2" LDW B4E	630	IVE
1 EA	WALL STOP/	WS45	626	IVE
	HOLDER			
1 SET	SEALS	5050CL	CLR	NGP
1 EA	DOOR BOTTOM	35VA	CL	NGP
1 EA	THRESHOLD	PER DETAIL	AL	NGP

#### 2.25 MECHANICAL

- A. Plumbing:
  - 1. Extend gas line from point-of-connection (POC) to HVAC unit and connect as required. Install exposed line between buildings where possible paint to match walls.

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- 2. Extend water and sanitary sewer and connect plumbing fixtures where shown on the Drawings.
- B. Heating, Ventilating and Air Conditioning:
  - 1. Provide toilet room exhaust and balancing as required by code.

### 2.26 BUILDING ELECTRICAL

- A. Furnish and install electrical conduit, outlets, wire, switches, panelboard, fixtures, lamps, and appurtenances, including wiring and electrical connections to heating and ventilating equipment. Wiring shall be in conduit.
- B. Panelboards: plug-in "QO" circuit breaker type loadcenter, flush-mount with hinge door and lock and automatic main circuit breaker.
  - 1. Size with circuit breakers as required by CEC to serve lighting, receptacle, A/C, and other load circuits.
  - 2. Provide 25 percent spaces with provisions for future breakers.
- C. Conductors: Insulated copper wires type THHN / THWN.
  - 1. For #12 and #10 use solid copper.
  - 2. For #8 and larger use stranded copper.
  - 3. Wires to be type THHN / THWN.
- D. Interior Lighting:
  - 1. Fixtures: Recessed lay-in fluorescent type, dieformed of 22-gauge steel, minimum 4 inch deep housing and finished with baked-on 80 percent reflective white enamel.
    - a. Fixtures shall be equipped with high efficiency electronic ballasts, 10 percent THD, and four T8 "ECO" friendly (low mercury) lamps, 3500° K, and acrylic A12 diffuser mounted within hinged and latch door, as selected by Architect.
    - b. Lamps and ballasts shall be compatible; Sylvania, GE or equal.
  - 2. Lighting system shall be designed for 50 foot-candles maintained at desk level with even two-level switching. When occupant load is such to require exit and emergency lighting, provide the following:
    - a. An LED exit sign above each exit door.
      - Exit light shall have white or black thermoplastic housing, green stencil text, and battery backup to provide 90 minutes of power in event of power failure.
      - 2) Each exit light shall be equipped with an LED pilot light and a push-totest button
      - 3) Light shall be connected to unswitched leg of interior lighting circuit.
    - b. Emergency egress lighting to produce a minimum of 1 foot-candle at floor level.

- 1) Provide selected lay-in fixtures with an emergency battery backup ballast to provide 90 minutes of emergency illumination.
- 2) Backup ballast shall have a red LED pilot light and a push-to-test button and shall have circuitry for self-testing in compliance with UL 924.
- 3) Connect to switched lighting circuit and unswitched leg such that selected fixtures switch with other fixtures in room and automatically switch on in event of power failure.
- E. Switches and Receptacles:
  - 1. Toggle Switches: Extra heavy duty type; Hubbell #HBL1221 Series, or equal.
  - 2. Receptacles: Heavy duty Specification Grade: Hubbell HBL5362 series, or equal.
  - 3. Rating: 20 amp.
  - 4. Color: As selected by Architect, unless otherwise indicated.
  - 5. Cover plates shall be stainless steel, satin finish.
  - 6. Receptacles shall be located as shown on the Electrical and/or Architectural Drawings, but not less than 8 feet on center at every wall.
- F. Exterior Lighting: Luminaire LBL58-BLK-WET, or equal, with vandal-resistant prismatic diffuser and one 26 watt quad compact fluorescent lamp.
  - 1. When occupant load is such to require interior emergency lighting and exit lights, provide exterior emergency lighting at each exit door.
  - 2. Equip outside light with an emergency battery backup ballast with backbox which will provide 90 minutes of emergency illumination.
  - 3. Equip emergency ballast with red pilot light and push-to-test button.
- G. Fire Alarm, Clock, TV, Cable and Intercom: Raceway, back-boxes, junction boxes and other provisions shall be as shown on the Electrical Drawings. The Fire Alarm System shall be approved by the Division of the State Architect prior to installation.
- H. Data Outlets: As shown on Drawings or in locations directed by Architect, minimum 4 boxes with cover plates per classroom with conduit stubbed above ceiling.
- I. Intrusion Alarm: Provide flush door contacts and wiring to attic space at exterior doors. Provide matching door magnet.

#### PART 3 - EXECUTION

# 3.1 INSTALLATION

- A. The relocatable buildings shall be located at areas designated on the Drawings at Victor Elementary School, Lodi Unified School District, San Joaquin County, California.
- B. Engineered foundations or mounting skids shall comply with requirements of relocatable building manufacturer and the approved drawings.

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- C. Lifting in place shall be in accordance with the manufacturer's instructions and identified lifting points.
- D. Install all anchor bolts in accordance with style and locations of bolts required by the manufacturer and to meet the specified wind and seismic code requirements.
- E. Field-installed items and finishing shall be in accordance with component manufacturer's instructions.
- F. After anchorage is inspected by governing authorities, install bottom trim or skirt furnished by modular building manufacturer, after each Building is anchored and secured, to conceal foundation.

# 3.2 CLOSEOUT ACTIVITIES

- A. Architect will inspect the "like new" condition of each Building and components. Clean fix and re-paint as necessary for the Owner's occupancy.
- B. Verify that each building is complete and ready for occupancy.
- C. Exterior roof, walls and windows shall be washed, as necessary and cleaned free of dirt.

# **END OF SECTION**

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# SECTION 26 00 00 - ELECTRICAL GENERAL REQUIREMENTS

# PART 1 - GENERAL

#### 1.01 WORK INCLUDED

- A. Furnish and install all necessary labor, materials, tools and equipment to perform and completely finish the work according to the intent of this specification, and the accompanying drawings.
- B. Furnish and install any incidental work which can reasonably be inferred as required and necessary to provide complete and workable systems.
- C. Provide connections of all equipment specified under these sections and other Divisions including Divisions 22 (Plumbing) and 23 (HVAC) including installation and connection of all motors, relays, remote starters, etc.
- D. The requirements of the General and Supplemental Conditions, and Division 01 apply to Divisions 26, 27 and 28, and these specifications. All sections in Divisions 26, 27, and 28 are interrelated. Work specified in other sections, as applicable, shall apply to all work hereunder.

#### 1.02 LOCAL CONDITIONS

- A. Examine site; verify dimensions and locations against drawings and become informed of all conditions under which work is to be done before submitting proposal. No allowance will be made for extra expenses because of omission on Contractor's part to include cost of work under prevailing conditions.
- B. Information shown relative to services is based upon available records and data shall be regarded as approximate only. Minor deviations found necessary to conform with actual locations and conditions shall be made without extra cost.
- C. Extreme care shall be exercised in excavating near existing utilities to avoid any damage thereto. It shall be the contractor's responsibility to verify existing underground utilities prior to digging anywhere. Information provided on these plans indicating existing conditions shall only be used as reference, and shall not be deemed considered accurate. Any damage to existing utilities done by the contractor shall be repaired and/or replaced by the contractor at their expense to its pre-damage condition.

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# ELECTRICAL GENERAL REQUIREMENTS

### 1.03 PERMITS AND INSPECTIONS

- A. Obtain and pay for all permits and service charges required in installation of the work. Arrange for required inspections and secure approvals from authorities having jurisdiction.
- B. During its progress, work shall be subject to inspection by Project Inspector.

### 1.04 CODES AND STANDARDS

- A. Work and materials shall be in full accordance with California Occupational Safety Health Act (CAL-OSHA), California Electrical Code (CEC), State Fire Marshal, Electrical Safety Orders (Title 8, Subchapter 5), the National Fire Protection Association, California Building Code (CBC); California Code of Regulations - Title 24 and other applicable State or local laws or regulations. Nothing in the Drawings or Specifications shall be construed to permit work not conforming to these codes.
- B. Electrical materials shall bear the label of, or be listed by, the Underwriter's Laboratories (UL) unless of a type for which label or listing service is not provided.
- C. Materials and components shall conform to Industry Standards, including:
  - 1. NEMA National Electrical Manufacturer's Association
  - 2. ANSI American National Standards Institute
  - 3. ASTM American Society for Testing Material Association
  - 4. IPCEA Insulated Power Cable Engineer's Association
  - 5. CBM Certified Ballast Manufacturers
- D. When Contract Documents differ from governing codes, furnish and install larger size or higher standards called for without extra charge.

#### 1.05 REVIEW OF MATERIALS

- A. Prior to commencement of Work and within 35 days after award of contract, submit for approval in accordance with General Conditions all equipment and materials to be furnished.
  - Equipment/Product submittals shall be bound and indexed and shall include a table of contents listing all equipment submitted. The table of contents shall include: Project designation, submittal number, submittal name including specification section, date, and include manufacturer, model number, reference specification paragraph or sheet detail number, description, and page location. Where a group or series of products are submitted, each item does not have to be listed; only the series need to be identified. Example:

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Project:

Submittal No.

Submittal Name:

Date:

Spec para.,

Page(s)	Manufacturer	Model No.	Detail No.	Description
1-12	XYZ Corp	123ABC	2.5	Control panel
13,14	XYZ Corp	456DEF	2.6-A	Power supply
15	ABC Corp	789GHK	A/E9.5	Rack
16,17	Cantex	PVC-40	2.1	PVC conduit
18	Steel City	XYZ series	2.2	Steel fittings

- 2. Shop drawings submittals shall be neat and professionally done using CAD (computer aided drafting), hand-drawn submittals will not be accepted. Shop drawings shall have sufficient information to clearly indicate work to be performed and be complete including device/equipment locations, wire sizes, wire types and number of wires, symbol list or legend, point-to-point connections, wiring diagrams, and equipment anchorage detail where needed. Shop drawings shall utilize the same size paper as the Bid set of plans.
- B. Substitutions:
  - 1. Only one request for substitution will be considered on each item of material or equipment. No substitutions will be considered thereafter. Substitutions will be interpreted to be all manufacturers other than those specifically listed by model or catalog number. Should the original submittal of a proposed substitution be rejected, the specified item shall be furnished.
  - 2. Submit complete information or catalog data to show equality of equipment or material offered to that specified. Identify which product is being substituted in the specifications and/or the plans and provide analysis as indicating either it "Complies" or that it "Does Not Comply" and providing a reason. Each Specification paragraph shall be provided with this analysis. No substitutions will be allowed unless requested and approved in writing. Materials of equal merit

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and appearance, in the opinion of the Engineer, will be approved for use. Engineer reserves the right to require originally specified item.

- 3. Acceptance of a substitute is not to be considered a release from the Specifications. Any deficiencies in an item, even though approved, shall be corrected by the Contractor at his expense.
- 4. Responsibility for installation of approved substitution is included herein. Any changes required for installation of approved substituted equipment shall be made without additional cost to Owner.
- C. Where it is in the best interest of the Owner, Engineer may give written consent to a submittal received after expiration of designated time limits, or for an additional resubmittal.
- D. Submit for approval in ample time to avoid delay of construction, shop drawings or submittals on all items of equipment and materials covered in list mentioned above. Submit in accordance with General Conditions in a complete package; partial submittals will not be considered.
- E. Failure to comply with any of the preceding requirements will necessitate that the specified materials be submitted and supplied.

### 1.06 RECORD DRAWINGS

- A. Upon completion of Work, furnish Engineer with AutoCAD file, PDF file, and one printed full size hardcopy upon which shall be shown all Work installed under contract including any Work which are not in accordance with Original Contract Drawings. AutoCAD files shall be 2004 or later version, with external references bound to its parent drawing. Provide a separate PDF file for each sheet, do not combine all sheets into a single file. Furnish digital files on a USB flash drive or CD.
  - 1. The above shall also include shop drawings.
- B. All symbols and designations used in preparing Record Drawing shall match those used in Contract Drawings.
- C. Show all buried and concealed conduit, stub-outs, etc. Locate all buried conduit and stub-outs by dimensions from permanent, easily located and identifiable portions of structure; also, dimension ends of stub-outs, etc. Note depth of buried items below grade.

# 1.07 ADDENDA AND CHANGE ORDERS

A. Changes in the plans and specifications shall be made by Addenda or Change Orders signed by the Engineer.

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# PART 2 - PRODUCTS

#### 2.01 MATERIALS

- A. Materials mentioned herein or on drawings require that each item listed be provided and of quality noted, or an approved equal. All material shall be new, full weight and standard in all respects and in first-class conditions. Where possible, all materials used shall be of the same brand or manufacturer throughout for each class of material or equipment.
- B. Grade or quality of materials desired is indicated by trade names or catalog numbers stated herein. Dimensions, sizes and capacities shown are a minimum and shall not be changed without permission of Engineer.

### PART 3 - EXECUTION

#### 3.01 DRAWINGS AND COORDINATION

- A. Examine Drawings and Site; be familiar with types of construction where electrical installation is involved. Work shall be neatly installed in a workmanlike manner in accordance with NECA Standard of Installation. Work shall be coordinated with other trades to avoid conflicts. Clarifications will be made by Engineer and minor adjustments shall be made without additional cost to Owner. Obtain ruling from Engineer concerning any obvious discrepancies or omissions in work before bidding. All work involved in correcting obvious errors or omissions after award of Contract shall be performed as directed by Engineer without additional cost to Owner.
- B. Layouts of equipment, accessories and wiring systems are diagrammatic (not pictorial), but shall be followed as closely as possible. Drawings and Specifications are for assistance and guidance, and exact locations, distances, levels, etc., will be governed by Site.
- C. All equipment (devices, conduits, boxes, etc.) shall be flush or semi-flush mounted unless otherwise noted. Where conditions do not allow flush mounting and where acceptable to the Architect, equipment may be surface mounted.

#### 3.02 WORKING SPACE

A. Provide adequate working space around electrical equipment in compliance with Article 4 of Electrical Safety Orders. In general, provide 36 inches minimum clear work space in front of panelboards and controls of 120/208 volt systems and 42 inches minimum for 277/480 volt systems.

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### 3.03 CARE AND CLEANING

- A. All broken, damaged or otherwise defective parts shall be repaired or replaced without additional cost to Owner. Work shall be left in a condition satisfactory to Engineer. At completion, carefully clean and adjust all equipment, fixtures and trim installed as part of this work. Systems and equipment shall be left in a satisfactory operating condition.
- B. All surplus materials and debris resulting from this work shall be cleaned out and removed from site; this includes surplus excavated material.

### 3.04 EXCAVATING AND BACKFILLING

- A. Excavate and backfill as required for installation of electrical work. Restore all surfaces, roadways, sod, walks, curbs, walls, existing underground installation, etc., cut by installations to original condition in an acceptable manner. Maintain all warning signs, barricades, flares and lanterns as required by the Safety Orders and local ordinances.
- B. Excavation: Dig trenches straight and true to line and grade, with bottom clear of any rock points. Minimum conduit depth of pipe crown shall be 24 inches below finished grade.
- C. Backfill: Support conduits with 2" sand bedding at bottom of trench. Provide sand backfill from bottom to 12" below finished grade. The top 12" to be local fine earth material free of rubble, rubbish or vegetation. Trenches shall be backfilled and compacted to 90% (per ASTM D1557) of maximum dry density at optimum moisture content in layers not to exceed 6" when compacted.
- 3.05 PROTECTION
  - A. In performance of work, protect work from damage. Protect electrical equipment, stored and installed, from dust, water or other damage.
- 3.06 EQUIPMENT IDENTIFICATION
  - A. Panelboards, remote control switches, terminal boxes, etc., shall be properly identified with a descriptive nameplate. Nameplate shall be made of 3/32 inch laminated plastic with black background and white letters. Size of letters shall be 1/4 inch high for equipment in device box or boxes 12" or smaller, and 1/2 inch high for panelboard, terminal can, or larger items. Letters shall be machine engraved. Punched strip type nameplates and cardholders in any form are not acceptable. Nameplates shall be attached with oval head machine screws tapped into front panel.

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B. Indicate type of equipment and equipment designation, ex. "PANEL-XXX", "MAIN SWITCHBOARD-XXX", "TRANSFORMER-XXX", "SIGNAL-XXX", "TV-XXX", "EF-1", "AC-1", etc.

#### 3.07 RUST INHIBITOR

A. Channels, joiners, hangers, straps, clamps, brackets, caps, nuts and bolts and associated parts shall be plated electrolytically with zinc followed immediately thereafter by treating freshly deposited zinc surfaces with chromic acid to obtain a surface which will not form a white deposit on surface for an average of one hundred twenty (120) hours when subjected to a standard salt spray cabinet test, or shall be hot dipped galvanized.

#### 3.08 EQUIPMENT PADS

A. Concrete reinforced pads for mounting of equipment (i.e. switchboard, transformers, freestanding panels, etc.) shall be minimum 3000psi, 6" thick with #4 rebars at 12" on center each way. Rebars shall be centered in pad. Pad shall extend 2" beyond equipment and 1.5" above surrounding area. Backfill and compact to 95% maximum dry density at optimum moisture content in layers not to exceed 6" when compacted.

#### 3.09 EQUIPMENT ANCHORAGE

- A. Seismic Anchorage of Electrical equipment shall conform to the regulations of CBC-2019 and ASCE 7-16, Chapters 13 and 29. All equipment shall be braced or anchored to resist a horizontal force acting in any direction using the following criteria:
  - 1. The total design lateral seismic force shall be determined from section 1613A California Building Code (CBC) 2019 and 13.3 ASCE 7-16. Forces shall be applied in the horizontal directions, which results in the most critical loadings for design.
  - 2. The value of Ap (component amplification factor) and Rp (component response modification factor) of section 13 .3 .1 ASCE 7-16 shall be selected from section 13.6-1 ASCE 7-16. The value of Ip (seismic importance factor) shall be selected from 13.1.3 ASCE 7-16.
- B. Where anchorage details are not shown on the drawings, the field installation shall be subject to the approval of the structural engineer and the District Engineer of the Division of The State Architect.

#### 3.10 ARC FLASH

A. Electrical equipment such as switchboards, panelboards, load centers, motor control centers, industrial control panels, meter centers shall be field marked to warn persons

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of potential electric arc flash hazards per CEC 110.16 and NFPA 70E Standard for Electrical Safety in the Workplace. Minimum label wording shall be as follows:

### DANGER

Arc Flash and Shock Hazard.

Appropriate PPE Required.

Do not operate controls or open doors without appropriate

personal protection equipment.

Failure to comply may result in injury or death.

- 3.11 TEST
  - A. Test all wiring and connections for continuity and grounds; where such test indicate faulty insulation or other defects, locate, repair and retest. Balance loads at panelboards. Furnish all testing equipment.
- 3.12 CLOSING OF AN UNINSPECTED WORK
  - A. Do not allow or cause any of work installed hereunder to be covered up or enclosed before it has been inspected and approved.
  - B. Should any work be enclosed or covered up before it has been approved, uncover such work and after it has been inspected and approved, make all repairs necessary to restore work of others to conditions in which it was found at time of cutting, all without additional cost to Owner.

# 3.13 WARRANTY

- A. All materials and installation shall be provided with a one (1) year warranty which shall include replacement parts, labor, retesting, and travel to and from the job site. The warranty period shall begin after final acceptance of the project. The warranty shall cover but is not limited to the following:
  - 1. Defective workmanship and installation.
  - 2. All System components, devices, conduit, wires, etc.
  - 3. Manufactured items such as light fixtures, receptacles, switchboard, panelboard, transformer, switches, etc.
  - 4. Basic materials such as conduit, wires, boxes, cabinets, etc.

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B. Certain manufactured items will have longer warranty periods. Refer to specific item and specification section for warranty information and terms.

# END OF SECTION

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### SECTION 26 05 00 - BASIC MATERIALS AND METHODS

#### PART 1 - GENERAL

#### 1.01 SCOPE

A. The work of this Section consists of basic materials and methods for all work included under Divisions 26, 27, and 28. Additional specifications requirements for electrical work are specified under other sections of Divisions 26, 27 and 28 and where those requirements differ from the requirements of this Section, they shall govern.

#### 1.02 SUBMITTALS

A. Submit product data per Section 26 00 00.

#### PART 2 - PRODUCTS

- 2.01 CONDUIT
  - A. Rigid Steel Conduit: Standard weight, mild steel pipe, zinc coated on both inside and outside by a hot dipping or sherardizing process. Inside and outside of conduit shall be finished with a protective coating. All threads galvanized after cutting. Meets UL 6, UL Card #DYIX, and ANSI C80.1.
  - B. Intermediate Metallic Conduit (IMC): Intermediate weight, mild steel pipe, meeting same requirements for finish and material as rigid steel conduit. Meets UL 1242, UL Card #DYIX, and ANSI C80.6.
  - C. Electrical Metallic Tubing (EMT): Cold rolled steel tubing, hot-dipped galvanized, with zinc coating on outside and protective lubricating coating on inside. Fittings shall meet same requirements for finish and material as EMT. Meets UL 797 and ANSI C80.3.
  - D. Flexible Conduit: UL Listed. Flexible steel, zinc coated on both inside and outside by hot dipping or sherardizing process. Liquid-tight conduit shall be galvanized with extruded polyvinyl covering and with watertight connectors, sunlight resistant, direct burial rated. Flexible steel conduit less than 1/2" shall not be used except that 3/8" shall be permitted in lengths not in excess of 6 feet as part of a listed assembly or for tap connections to lighting fixtures as required in CEC Section 410-67(c). Flexible conduit to be one continuous length, no couplings. AFC Liquid-Tuff Type-LFMC and AFC Reduced Wall Flexible Steel Conduit, or equal.

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- E. Raceway Fittings:
  - 1. Rigid Steel Conduit: Fittings, such as couplings, connectors, condulets, elbows, bends, etc., shall be subject to same requirements as for rigid steel conduit. Couplings and unions shall be threaded type, assembled with anti-corrosion, conductive anti-seize compound at joints made absolutely tight to exclude water. Connectors shall be threaded hubs with bonding insulated metallic bushings. Unions shall be equal to Crouse Hinds UNY or UNF.
  - 2. IMC: Fittings shall be as specified for rigid steel conduit.
  - 3. EMT: Fittings shall be steel, box connectors shall have insulated throat. Connectors and couplings to be compression type.
  - 4. Flexible Metallic Conduit: Connectors to be insulated. Metallic connectors (except for liquid-tight) shall be steel "squeeze" type via a screw, Steel City XC-90X and XC-49X series. Liquid-tight metallic connectors shall be watertight approved for such use.
  - 5. Bushings: Metallic insulated type. Weatherproof or dust-tight installations; liquid-tight with sealing ring and insulated throat, OZ/Gedney type "KR".
  - 6. Expansion and Deflection Fittings: OZ/Gedney, Type "DX" or accepted equal.
  - 7. All box connectors to be insulated throat type.
  - 8. Conduit Straps: Galvanized steel, 2-hole straps. 1-hole straps may be used for conduit sizes 1" and smaller concealed in wall or above ceiling.
- F. Metallic conduits, raceways, and fittings shall be listed and approved as a grounding means.

# 2.02 BOXES

- A. Galvanized one-piece or welded pressed steel type. Boxes for fixture shall not be less than 4" square and shall be equipped with fixture stud. Boxes shall be at least 1-1/2" deep, 4" square for 1 or 2 gang devices, with plaster rings and gang box with gang cover. Boxes mounted in wall or ceiling finished with gypsum board shall be furnished with 3/4" deep plaster rings. Use screws and not nails to support/secure outlet boxes. Provide blank cover plates for all boxes without devices.
  - 1. 1-gang and 2-gang outlet and junction boxes installed exposed outdoors shall be weatherproof type FS, FD, WS, WD die cast metal or aluminum boxes, Appleton or equal. Plug all unused hubs.
  - 2. Provide an equipment grounding pigtail at all receptacle, switch, and device outlet boxes. Ground conductor size to match circuit overcurrent protection complying with CEC.
  - 3. Outlet boxes for data, telecommunications, video, and TV outlets shall be 4 11/16" square x 2.125" deep.
  - 4. Outlet boxes containing #8, #6, or #4 AWG wires shall be a minimum 2.125" deep per CEC.

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- B. Junction boxes located outdoors, or in wet or damp locations shall be rated NEMA-3R, with hinged door and pad-locking tabs.
- C. Equipment furnished by other trade but require electrical connection shall be provided with appropriate backbox.

#### 2.03 WIRES

- A. Wire shall be copper only, manufactured by General Cable Co., Rome, General Electric Co., or Anaconda. Wire shall be rated 90 degrees C for both dry and wet locations, THWN-2, XHHW-2, or RHW-2 insulation. 90 degrees C THHN may be used in dry and damp locations. Wire installed in high temperature areas, including branch circuits in or above roof insulation or in fluorescent ballast channel, shall have type RHW-2 or XHHW-2 90° insulation.
  - 1. Feeders sized #2 and larger routed below grade, extending beyond or outside the building foundation line shall use types XHHW-2, THW-2, or RHW-2 insulation, 90 degrees C dry and wet rated.
- B. Wire shall be Code type copper wire of not less than 98% conductivity. Wires #8 gauge and larger, shall be stranded. Wires shall bear the Underwriters' label, be color coded and be marked with gauge, type and manufacturer's name on 24" centers. Wires smaller than #8 may be solid or stranded. Where stranded wire is used, provide solid pigtail for connection to screw terminals of receptacles, switches, etc.
- C. Color Coding to be as follows:

	208/120 Volts	480/277 Volts
Phase A	Black	Brown
Phase B	Red	Orange
Phase C	Blue	Yellow
Neutral	White	Natural Grey
Ground	Green	Green

- 1. Switch legs shall use the same branch circuit phase color coding which they are connected to. IG ground wire shall be green with yellow tracer.
- D. Bring wire to job in original unbroken packages. Obtain approval of inspector or Engineer before installation of wires.

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# 2.04 SAFETY/DISCONNECT SWITCHES

A. Type "HD" Heavy Duty safety switches with externally operated handle. Switches shall be manufactured by Westinghouse, General Electric, Square D, or approved equal. Switches shall be rated 250 and 600 volts, A.C., of size and poles as shown on Drawings and as required. Disconnects used outdoor shall be in NEMA-3R. Provide fused switches with proper sized fuses where required by equipment manufacturer. All switches shall have pad-locking cover with interlocking cover. Switches shall be capable of be pad-lockable in the ON or OFF position. Label switch with circuit identification per section 26 00 00, example "AC-1, HD1-24".

### 2.05 INDIVIDUAL CIRCUIT BREAKERS

- A. Circuit breakers shall be molded case thermal magnetic type with trip rating as scheduled on drawings.
  - 1. Circuit breaker trip settings 300 amps and higher shall have Long-Time setting, STPU, STD, GFPU, Inst. PU settings. Breaker shall be solid state with field adjustable and replaceable trip rating plugs, or of the electronic type.
  - 2. Circuit breakers with trip settings 1200 amps and higher shall be solid state electronic type with full function trip units including: LTPU, LTD, STPU, STD, Inst PU, Inst OFF, GFPU, GFD.
- B. Circuit breakers shall be quick-make, quick-break, trip free operation. The trip-free mechanism shall be independent of manual handle control. All circuit breakers shall be fully rated to withstand the available short circuit current as designated on the drawings. Series rated equipment will not be acceptable.
- C. Breakers to be in NEMA-1 (indoor) or NEMA-3R (damp, wet, and outdoor) enclosures. NEMA-3R enclosures shall have the handle concealed behind the cover, and the hinged cover shall be provided with padlocking tabs. Each circuit breaker shall be identified with an engraved, laminated phenolic plate showing the load served or the function of the circuit breaker and trip rating. The nameplate shall be attached with oval head machine screws tapped into the front of the board. Equip breaker handles with padlocking "lock-off" devices.

#### 2.06 PULL LINE

- A. Furnish and install pull line in all unused (empty) raceways. Pull lines shall not rot or mildew.
  - 1. Conduits up to 1.5": 1/8" diameter braided line of polypropylene with 200 lbs. tensile strength, IDEAL, Jet-Line #232, or equal.

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- 2. Conduits 2" or Larger: 3/16" polypropolene pull rope with 800 lbs. tensile strength, IDEAL Pro-Pull or equal.
- B. Provide pull line in conduits for utility company systems, size and type per their requirements.

### 2.07 SURFACE METALLIC AND NONMETALLIC RACEWAYS

- A. The surface raceway system for branch circuit wiring and/or data network, voice, video and other low-voltage wiring shall be manufactured by the Wiremold Company, or equal. Raceway series as indicated on the plans. The raceway and all system components must be UL listed and exhibit non-flammable self-extinguishing characteristics. The raceway shall be a two-piece design with a base and a snap-on cover.
  - 1. The nonmetallic raceway base and cover shall be manufactured of rigid PVC compound, available in ivory color. Exposed cuts shall be covered with cover clips.
  - 2. The metal raceway base and cover shall be manufactured of galvanized steel, ivory finish and suitable for field painting.
- B. A full complement of fittings must be available including, but not limited to flat, internal and external elbows, tees, entrance fittings, boxes, covers, adapters, cover clips, and end caps. The fittings shall match the base and cover, and be of matching colors. All fittings shall be supplied with a base where applicable to eliminate mitering. A transition fitting shall be available to adapt to other Wiremold series raceways. Field cuts shall be clean, straight, and true with no rough edges.
- C. For multicompartment raceways, device brackets shall be available for mounting standard devices in-line or offset from the raceway. A device bracket shall be available for mounting up to four devices at one location. Faceplates shall match and fit flush in the device plate and shall overlay the cover and base to hide uneven cuts. They shall match the raceway base and cover. The raceway manufacturer will provide a complete line of connectivity outlets and modular inserts for UTP (i.e. data jacks), STP (150 ohm), Fiber Optic, Coaxial and other cabling types with face plates and bezels to facilitate mounting.
- D. Work shall include furnishing all raceway and appropriate fittings and device plates to install a nonmetallic surface raceway system. Installer shall comply with detailed manufacturer's instruction sheets, which accompany system components as well as system instruction sheets.

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E. Non-metallic raceway systems shall not be used in Assembly areas and other areas where the system is not rated for the installation. Assembly areas include but not limited to; gymnasiums, multipurpose rooms, auditoriums, conference rooms, etc.

### PART 3 - EXECUTION

### 3.01 CONDUITS & CIRCUITS

- A. All conduits shall be rigid steel or IMC except EMT may be used at following locations:
  - 1. In dry locations in concealed furred spaces.
  - 2. In partitions other than concrete, concrete block, or solid masonry.
  - 3. For exposed work indoors and outdoors above 10 ft except:
    - a. In special locations prohibited by Code, such as hazardous locations, rigid steel shall be used.
    - b. Conduits exposed on/above the roof shall be rigid steel up to 10 ft above roof surface.
    - c. Conduits exposed in Gymnasiums and Multi-Purpose Rooms shall be rigid steel up to 25 ft.
  - 4. Concealed above suspended ceilings or ceilings directly attached to structure above.
- B. Flexible Conduit: Shall be used to provide flexible connections of short length (3 ft or less) to equipment subject to vibration or movement and to all motors. Up to 6 ft is allowed where additional flexibility is needed. Provide a separate bonding conductor in all flexible connections/conduit. Flexible conduit shall be one continuous length without couplings.
  - 1. Secure flex conduit within 12" of each box, cabinet, conduit body, or other termination, and maximum 4.5 ft on center. Refer to the CEC for other secure lengths where flexibility is required or in other specific instances.
- C. Run conduit concealed in areas having finished ceilings and in walls. Run all cross conduits and vertical risers or drops concealed in wall and/or partitions. Should it be necessary to notch any framing members, make such notching only at locations and in a manner as approved by the Architects. Where concealing conduit is not possible or practical, conduit may be run exposed in areas only where so permitted by the Architect. Install exposed conduit run neatly, parallel to or at right angles to structural members. Maintain a minimum of 6" clearance from steam or hot water pipes.

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- D. Support conduit with straps and secure to wood structure by means of bolts or lag screws, to concrete by means of insert or expansion bolts, to brickwork by means of expansion bolts, and to hollow masonry by means of toggle bolts. Expanders and shields shall be steel or malleable iron.
- E. Do not install in concrete slabs.
- F. Support individual conduits with 2-hole steel straps. 1-hole steel straps may be used for conduits 1" and smaller concealed in wall or above ceilings.
- G. Galvanized iron hanger rods sizes 1/4" diameter and larger with spring steel fasteners, clips or clamps specifically designed for purpose for conduits up to 1" size may be used.
- H. Individual conduits 3/4" and smaller run above wire suspended ceilings may be supported from independent hanger wires with approved spring steel clips. Wire ties will not be acceptable. Wire shall be taut and secured to ceiling and structure above.
- I. Support multi-parallel horizontal conduit runs with trapeze type hangers consisting of two or more steel hanger rods, cross channels, J-bolts, clamps, etc.
- J. Sizes of rods and cross channels shall be designed to support four times actual load. Hanger rods shall have safety factor of 5 based on ultimate strength of material used.
- K. Conduits for data, telecommunications, signal, video, TV, and/or containing fiber optic, coaxial, or OSP (outside plant) multi-pair cables shall have a minimum inside bend radius per CEC Table 346-10 (do not use exception); except that conduits 2" to 4" shall be minimum 24" radius bends.
- L. After installation of conductors, all conduits routed below grade shall be sealed at each opening, including risers and in pull boxes, to prevent the entrance of water and debris.
- M. Conduits not terminated into a box or cabinet, such as stubbed to a backboard, shall be terminated with an insulated bushing. Bushings for metallic conduits shall be metallic type secured by set screw, compression, or threaded type. Bushings for PVC conduits shall be glued in place.
- N. Although circuiting is shown as diagrammatic, their point-to-point destinations and their indication of above/below ground route shall be followed as much as possible. Where site conditions dictate that an alternate means of routing will alleviate conflicts, the alternate means will be considered with prior approval by the Engineer.
- O. Where cinder fill is encountered in Block walls, conduit shall be PVC-40 where in contact with cinder fill. Boxes shall be PVC type where in contact with cinder fill.

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- P. EMT conduit circuits installed on the roof, if allowed by the Engineer, shall have a ground conductor routed with the circuit conductors sized per the circuit protective device.
- Q. Horizontal runs of conduit above suspended wire lay-in ceilings shall not be less than 12" above the ceiling.
- R. Maintain 12 inch separation between power circuits (>120V) and all signal circuits (data, telephone, speaker, clock, etc.) to prevent interference.
- S. Feeder conduits connected to panels/switchboard shall have ground lug bushing connected to equipment ground buss with ground wire same size as largest ground wire in the panel/switchboard.
- T. Conduits penetrating through the roof shall be secured within 12" below roof and supported within 12" of the penetration on the roof.
- U. Where conduits cross building expansion/seismic joints provide a short length of flexible conduit (do not exceed 6 ft.) and fittings listed as a grounding means, or in locations where flex conduit cannot be used provide UL listed expansion/seismic fittings.
- V. Conduits concealed in any masonry shall be routed in a conduit sleeve. Such sleeves shall not be placed closer than 3 diameters, center to center.
- W. Conduits to air conditioning (AC) equipment, fans, or other roof mounted equipment shall rise up from the ceiling below through the equipment curb or conduit window within the equipment, if allowed by equipment manufacturer, to prevent additional roof penetrations.
- X. Where conduit passes through finished walls or ceilings, provide steel escutcheon plates, chrome or painted as directed. Conduit which penetrate floor slabs, concrete or masonry walls shall be grouted and sealed watertight at penetrations.
- Y. For 20-amp 120 or 277 Volt Circuits using 90-deg C Wires:
  - 1. Do not install more than three(3) circuits in any conduit.
  - 2. Do not install more than six(6) current carrying conductors in any conduit.
  - 3. Where using #10 AWG wires to allow for conductor derating:
    - a. Do not install more than six(6) circuits in any conduit.
    - b. Do not install more than twelve(12) current carrying conductors in any conduit.

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### 3.02 CAPPING

- A. Cap conduits during construction with manufactured seals. Swab out conduits before wires are pulled in.
- B. Cap all empty conduits below grade and in pull boxes with manufacturer's caps to prevent entrance of water and debris, attach pull string to cap.

#### 3.03 BOXES

- A. Nails shall not be used to support outlet boxes. Boxes must be accurately placed for finish, independently and securely supported by adequate wood backing or by manufactured adjustable channel type heavy-duty box hangers. For metal stud construction, use metal box hangers only. Box hangers shall be securely tied or welded (where permitted) or screwed to metal studs. Paint weld with rust inhibitor. Boxes installed in masonry tile or concrete block construction shall be secured with auxiliary plates, bars or clips and be grouted in place.
  - 1. Outlet Boxes with Receptacles or Switches: Provide a solid pigtail (green) ground wire grounded to the metallic outlet box. Pigtail shall also ground device and separate ground conductor if available. Size of ground wire to match overcurrent protection.
- B. Locate outlets at the following heights above floor to the center of the device or handle unless otherwise noted on Drawings or in Specifications.
  - 1. The top of the outlet box shall not be higher than 48" above finished floor, and the bottom of the outlet box shall not be less than 15" above finished floor. For forward or side approach over counter, maximum 44" and 46" respectively to top of box.
  - 2. Convenience Outlets: 18" (4" above counter or splash).
  - 3. Local Switches: 45".
  - 4. Telephone Outlets: 18" (45" for wall phone).
  - 5. Data, TV Outlets: 18".
  - 6. Where devices are shown at counter locations, they shall be located approximately 4" above counter, clearing back-splash where applicable.
  - 7. Refer to elevations and details on Architectural Drawings for exact heights and locations of all electrical outlets for switches, receptacles, special equipment, etc. Where above heights do not suit building construction or finish, consult Architect.
- C. Install pull boxes or junction boxes as required in accessible spaces but do not install in finished areas unless approved by Architect.

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- D. Where fire rated construction is required (refer to Architectural Drawings), do not locate electrical outlet boxes back-to-back. Provide a minimum of 24" horizontal separation between outlet boxes on opposite side of the same wall. Where such restrictions cannot be met, provide fire-stopping around box such as 3M Moldable Putty Pads or equal.
- E. Boxes up to 100 cubic inches located in suspended wire ceilings may be supported through an independent hanger wire with approved tension clips. Wire shall be taut. Secure wire to the structure above and the ceiling below.

#### 3.04 CONDUCTORS

- A. Splices and joints for #10 AWG or smaller wiring shall be twisted together electrically and mechanically strong and insulated with approved type insulated electrical spring connectors, Scotchlok or Ideal. Joints and connections for #8 AWG or larger shall be made with Burndy, T & B, or approved equal, solderless tool applied pressure lugs and connectors. Uninsulated lugs and wire ends shall be insulated with layers of plastic tape equal to insulation of wire and with all irregular surfaces properly padded with "Scotchfil" putty prior to application of tape. Tape shall be equal to Scotch #33, General Electric #AW-1, or approved equal. Feeder splicing is not permitted.
  - 1. In special instances where feeder splicing is allowed by the Engineer, it shall be made with high compression sleeve type connector followed by manufactured splicing kit utilizing as insulators, resins poured into a ready-to-use plastic mold to provide a uniform, moisture-proof tough, impact-resistant insulation.
  - 2. Conductor splices below grade shall meet ANSI C119.1-1986 and UL 486D Standards. Raychem WCSM or FCSM heavy wall heat shrink tubing; or RVS or RVC series if use of flame heat is prohibited. Conductors to be joined with compression sleeve connectors.
- B. Use only UL approved wire pulling compound as lubricant.
- C. Lace conductors together with waxed linen lacing cord, T & B "Ty-Rap", Holub "Quik-Wrap" or equal, in a neat and workmanlike manner in panelboards, wireways, raceways, pull boxes and similar locations.
- D. #12 AWG wire shall be minimum size wire used for lighting and power circuits. Motor control circuits may be #14 except as marked on Drawings, unless shown.
- E. Provide cable supports in risers by means of a clamping device with insulated wedges or "Kellem" grips.
- F. All conductors shall be in conduit unless otherwise indicated.

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- G. Conduit sizes shall be based on code fill table for THW insulated wires to accommodate the number, size, and type of wires shown or specified.
- H. Wiring installed in pull boxes or junction boxes, where wire is pulled through without terminations (except splices), shall have a service loop around the interior of the box for 360 degrees utilizing the largest circumference.
- I. Use #10 AWG conductor for 20 Amp 120 Volt circuit home runs longer than 75 feet, and for 20 Amp 277 Volt circuit homeruns longer than 200 feet.
- J. Where conductors are increased in size and number (such as for voltage drop reasons), such that conductors will not fit the standard breaker or panel lugs, terminate conductors in one of the following means:
  - 1. Provide larger breaker frame or panelboard.
  - 2. Provide oversized lugs.
  - 3. Last Option only with Approval from Engineer: Terminate wires in multiport connector and provide pigtail. Splice to be made in panel or switchboard if space is available, or in separate splice box. This option will not be normally granted.

# 3.05 PANELS AND CABINETS

A. Recessed enclosures (panelboards, terminal cabinets, cabinets, control cabinets, etc.) shall be provided with a minimum of three 3/4" empty conduits stubbed into accessible space above the ceiling. Drawings may require additional conduits.

#### 3.06 GROUNDING

- A. Grounding and ground bonding of the electrical installation shall be in accordance with CEC Article 250, and any applicable codes. Ground fittings shall be approved manufactured type, installed and connected to conform with Code requirements.
- B. Neutral conductors and noncurrent-carrying parts of equipment at each installation shall be grounded in accordance with applicable code. Ground conductor shall be copper having a current capacity sized in accordance with CEC.
- C. All equipment cases, motor frames, etc., shall be completely grounded to satisfy requirements of CEC. Install bond wire in flexible conduit. Install copper bond wire, sized in accordance with CEC, in all nonmetallic raceways and bond to all metallic parts using approved fittings.
- D. Service ground conductor shall be connected to a "Ufer" encased ground and bonded to the metallic cold water pipe system and to the metallic natural gas line.

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- E. Interior metallic cold water pipe system and other interior metallic piping systems shall be ground bonded to the building grounding system.
- F. Each building shall be provided with a grounding electrode connected to the metallic enclosure of the building disconnecting means. Grounding electrode conductor shall be sized per CEC table 250-66.
- G. Total ground resistance shall not exceed 25 ohms.
- H. All connections shall be made with solderless connectors or molded fusion-welding process.
- I. Equipment grounding conductors shall be insulated with a continuous green outer finish along its entire length. Conductors size #4 AWG and larger may be identified (with green electrical tape applied half-lapped) at each end and at every point where the conductor is accessible. Tape shall be applied from its point of entry to point of exit or termination.
- J. Insulated grounded (neutral) conductors shall be identified with a continuous white outer finish along its entire length. Neutral conductors #4 AWG or larger can be identified by a distinctive white marking (applied half-lapped with white electrical tape) for the last 12 inches at each end.

# 3.07 FIELD TESTS

- A. General: Perform field test in the presence of the Owner's Representative except as otherwise specified. Provide required labor, materials, equipment and connections to perform tests. Document results and submit them to the Owner's Representative. Repair or replace all defective work.
- 3.08 GROUND FAULT PROTECTION AND TESTING
  - A. Where indicated on the plans, provide circuit breaker with ground fault protection. The ground fault system shall include a memory circuit for positive tripping action despite intermittent arcing ground faults.
  - B. Provide an integral means of testing the ground fault system to meet the on-site requirements of CEC Articles 230 and 517.
  - C. Provide acceptance testing per InterNational Electrical Testing Association Inc. (NETA) specifications and standards. Submit test results.

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### 3.09 CLEANING

- A. Brush and clean work prior to concealing, painting and acceptance. Performed in stages if directed.
- B. Clean and repair soiled or damaged painted exposed work and match adjoining work before final acceptance.
- C. Remove debris from inside and outside of material, equipment and structures.

### 3.10 WARRANTY

A. All materials and installation shall be provided with a one (1) year warranty which shall include replacement parts, labor, retesting, and travel to and from the job site. The warranty period shall begin after final acceptance of the project.

END OF SECTION

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# SECTION 26 05 26 - GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

# PART 1 - GENERAL

- 1.01 SUMMARY
  - A. This Section includes grounding of electrical systems and equipment. Requirements specified in this Section may be supplemented by requirements of other Sections.
- 1.02 SUBMITTALS
  - A. Section 01 33 00 Submittal Procedures.
  - B. Product Data: For ground rods.
    - 1. Field quality-control test reports.
- 1.03 QUALITY ASSURANCE
  - A. Electrical Components, Devices, and Accessories: Listed and labeled under UL 467 as defined in CEC, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- 1.04 GROUNDING ELECTRODE SYSTEM
  - A. Metal underground water pipe.
  - B. Metal frame of the building.
  - C. Concrete-encased electrode.
  - D. Rod electrode.
- 1.05 PERFORAMNCE REQUIREMENTS
  - A. Grounding System Resistance: 5 ohms.
- 1.06 SUBMITTALS
  - A. Section 01 33 00 Submittal Procedures.
  - B. Product Data: Provide data for grounding electrodes and connections.

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- C. Test Reports: Indicate all resistance to ground and resistance of each electrode.
- D. Manufacturer's Instructions: Include all instructions for storage, handling, protection, examination, preparation and installation of exothermic connectors.

### PART 2 - PRODUCTS

#### 2.01 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Cadweld.
  - 2. Thermoweld.
  - 3. Copperweld Corp.
  - 4. Dossert Corp.
  - 5. Erico Inc.; Electrical Products Group.
  - 6. Galvan Industries, Inc.
  - 7. Harger Lightning Protection, Inc.
  - 8. Hastings Fiber Glass Products, Inc.
  - 9. ILSCO.
  - 10. Kearney/Cooper Power Systems.
  - 11. Korns, C. C. Co.; Division of Robroy Industries.
  - 12. Lyncole XIT Grounding.
  - 13. O-Z/Gedney Co.; a business of the EGS Electrical Group.
  - 14. Burndy "Hyground" compression system
  - 15. Thomas & Betts, compression system

### 2.02 GROUNDING CONDUCTORS

- A. For insulated conductors, comply with Section 26 05 19 "Low-Voltage Power Conductors and Cables."
- B. Equipment Grounding Conductors: Insulated with green-colored insulation.
- C. Isolated Ground Conductors: Insulated with green-colored insulation with yellow stripe. On feeders with isolated ground, use colored tape, alternating bands of green and yellow tape to provide a minimum of three bands of green and two bands of yellow.
- D. Grounding Electrode Conductors: Stranded cable.
- E. Underground Conductors: Bare, tinned, stranded, unless otherwise indicated.

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- F. Bare, Solid-Copper Conductors: ASTM B 3.
- G. Assembly of Bare, Stranded-Copper Conductors: ASTM B 8.
- H. Bare, Tinned-Copper Conductors: ASTM B 33.
- I. Copper Bonding Conductor: No. 4 or No. 6 AWG, stranded copper conductor.
- J. Copper Bonding Jumper: Bare copper tape, braided bare copper conductors, terminated with copper ferrules; 1-5/8 inches wide and 1/16 inch thick.
- K. Tinned-Copper Bonding Jumper: Tinned-copper tape, braided copper conductors, terminated with copper ferrules; 1-5/8 inches wide and 1/16 inch thick.
- L. Grounding Bus: Bare, annealed copper bars of rectangular cross section, with insulated spacer.
- M. Connectors: Comply with IEEE 837 and UL 467; listed for use for specific types, sizes, and combinations of conductors and connected items. Exothermic-welded type, in kit form, selected per manufacturer's written instructions.
- N. Foundation Electrode: 4/0 AWG.
- 2.03 ROD ELECTRODES
  - A. Ground Rods: Copper-clad steel.
    - 1. Size: 3/4 inch diameter by 120 inches.
    - 2. Manufacturer: Blackburn; Eritech; Or equal.
- 2.04 GROUNDING WELL COMPONENTS
  - A. Well Pipe: 12 inch diameter by 24 inches long concrete pipe with belled end.
  - B. Well Cover: Cast iron with legend 'GROUND" embossed cover.

#### PART 3 - EXECUTION

- 3.01 INSTALLATION
  - A. Use only copper conductors for both insulated and bare grounding conductors in direct contact with earth, concrete, masonry, crushed stone and similar materials.
  - B. In raceways, use insulated equipment grounding conductors.

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- C. Exothermic-Welded Connections: Use for connections to structural steel and for underground connections.
- D. Grounding Bus: Install in electrical and telephone equipment rooms, in rooms housing service equipment, and elsewhere as indicated.
  - 1. Use insulated spacer; space 1 inch from wall and support from wall 6 inches above finished floor, unless otherwise indicated.
- E. Equipment Grounding Conductors: Comply with CEC, Article 250, for types, sizes, and quantities of equipment grounding conductors, unless specific types, larger sizes, or more conductors than required by CEC are indicated.
  - 1. Install insulated equipment grounding conductors in feeders.
  - 2. Isolated Grounding Receptacle Circuits: Install an insulated equipment grounding conductor connected to the receptacle grounding terminal. Isolate grounding conductor from raceway and from panelboard grounding terminals. Terminate at equipment grounding conductor terminal of the applicable derived system or service, unless otherwise indicated.
  - 3. Nonmetallic Raceways: Install an equipment grounding conductor in nonmetallic raceways unless they are designated for telephone or data cables.
  - 4. Signal and Communication Systems: For telephone, alarm, voice and data, and other communication systems, provide No. 4 AWG minimum insulated grounding conductor in raceway from grounding electrode system to each service location, terminal cabinet, wiring closet, and central equipment location.
    - a. Service and Central Equipment Locations and Wiring Closets: Terminate grounding conductor on a 1/4-by-2-by-12-inch grounding bus.
    - b. Terminal Cabinets: Terminate grounding conductor on cabinet grounding terminal.
- F. Ground Rods: Install at least three rods spaced at least one-rod length from each other and located at least the same distance from other grounding electrodes.
  - 1. Drive ground rods until tops are 2 inches below finished floor or final grade, unless otherwise indicated.
  - 2. Interconnect ground rods with grounding electrode conductors. Use exothermic welds, except as otherwise indicated. Make connections without exposing steel or damaging copper coating.
- G. Grounding Conductors: Route along shortest and straightest paths possible, unless otherwise indicated. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.

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- H. Bonding Straps and Jumpers: Install so vibration by equipment mounted on vibration isolation hangers or supports is not transmitted to rigidly mounted equipment. Use exothermic-welded connectors for outdoor locations, unless a disconnect-type connection is required; then, use a bolted clamp. Bond straps directly to the basic structure taking care not to penetrate any adjacent parts. Install straps only in locations accessible for maintenance.
- I. Connections: Make connections so galvanic action or electrolysis possibility is minimized. Select connectors, connection hardware, conductors, and connection methods so metals in direct contact will be galvanically compatible.
  - 1. Use electroplated or hot-tin-coated materials to ensure high conductivity and to make contact points closer to order of galvanic series.
  - 2. Make connections with clean, bare metal at points of contact.
  - 3. Make aluminum-to-steel connections with stainless-steel separators and mechanical clamps.
  - 4. Make aluminum-to-galvanized steel connections with tin-plated copper jumpers and mechanical clamps.
  - 5. Coat and seal connections having dissimilar metals with inert material to prevent future penetration of moisture to contact surfaces.
  - 6. Exothermic-Welded Connections: Comply with manufacturer's written instructions. Welds that are puffed up or that show convex surfaces indicating improper cleaning are not acceptable.
  - 7. Equipment Grounding Conductor Terminations: For No. 8 AWG and larger, use pressure-type grounding lugs. No. 10 AWG and smaller grounding conductors may be terminated with winged pressure-type connectors.
  - 8. Noncontact Metal Raceway Terminations: If metallic raceways terminate at metal housings without mechanical and electrical connection to housing, terminate each conduit with a grounding bushing. Connect grounding bushings with a bare grounding conductor to grounding bus or terminal in housing. Bond electrically noncontinuous conduits at entrances and exits with grounding bushings and bare grounding conductors, unless otherwise indicated.
  - 9. Tighten screws and bolts for grounding and bonding connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A.
  - 10. Compression-Type Connections: Use hydraulic compression tools to provide correct circumferential pressure for compression connectors. Use tools and dies recommended by connector manufacturer. Provide embossing die code or other standard method to make a visible indication that a connector has been adequately compressed on grounding conductor.
  - 11. Moisture Protection: If insulated grounding conductors are connected to ground rods or grounding buses, insulate entire area of connection and seal against moisture penetration of insulation and cable.

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- J. Manholes and Handholes: Install a driven ground rod close to wall and set rod depth so 4 inches will extend above finished floor. If necessary, install ground rod before manhole is placed and provide a No. 1/0 AWG bare, tinned-copper conductor from ground rod into manhole through a waterproof sleeve in manhole wall. Protect ground rods passing through concrete floor with a double wrapping of pressure-sensitive tape or heat-shrunk insulating sleeve from 2 inches above to 6 inches below concrete. Seal floor opening with waterproof, nonshrink grout.
- K. Connections to Manhole Components: Connect exposed-metal parts, such as inserts, cable racks, pulling irons, ladders, and cable shields within each manhole or handhole, to ground rod or grounding conductor. Make connections with No. 4 AWG minimum, stranded, hard-drawn copper conductor. Train conductors level or plumb around corners and fasten to manhole walls. Connect to cable armor and cable shields as recommended by manufacturer of splicing and termination kits.

### 3.02 FIELD QUALITY CONTROL

- A. Testing: Perform the following field quality-control testing:
  - 1. After installing grounding system but before permanent electrical circuitry has been energized, test for compliance with requirements.
  - 2. Test completed grounding system at each location where a maximum groundresistance level is indicated and at service disconnect enclosure grounding terminal. Measure ground resistance not less than two full days after the last trace of precipitation, and without the soil being moistened by any means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance. Perform tests, by the fallof-potential method according to IEEE 81.
  - 3. Provide drawings locating each ground rod, ground rod assembly, and other grounding electrodes. Identify each by letter in alphabetical order, and key to the record of tests and observations. Include the number of rods driven and their depth at each location and include observations of weather and other phenomena that may affect test results. Describe measures taken to improve test results. Nominal maximum values are as follows:
    - a. Equipment Rated 500 kVA and Less: 10 ohms.
    - b. Equipment Rated 500 to 1000 kVA: 5 ohms.
    - c. Equipment Rated More Than 1000 kVA: 3 ohms.
    - d. Manhole Grounds: 10 ohms.

# END OF SECTION

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# SECTION 27 05 50 - INSTALLATION AND IDENTIFICATION OF SIGNAL CABLES

# PART 1 - GENERAL

- 1.01 SECTION INCLUDES
  - A. The installation and identification of Signal cables. Signal cables as referenced in this section shall include but not limited to cables for the following systems; intercom, paging, clock, telephone, speaker, fire alarm, intrusion, television/video, and sound/audio.
- 1.02 RELATED SECTIONS
  - A. Sections where signal cables are specified. Such systems are specified in the Divisions 27 and 28.
- 1.03 SUBMITTALS
  - A. Submit cables and method of labeling including tags, ties, labels, etc.
  - B. Submit per Section 26 00 00.

# PART 2 - PRODUCTS

- 2.01 PRODUCTS
  - A. Refer to cables and wires specified under other sections.
  - B. All energy limited cables that are identified as opened wired (not in conduit) within buildings shall be rated for the environment it is installed. Exposed wiring shall not be used in hazardous locations and locations not allowed by the CEC.
    - 1. General Purpose rating allows the cable to be used in areas allowed by the CEC but shall not be used as riser cable and in air plenums.
    - 2. A Riser rating allows the cable to be used in general purpose applications and building riser applications. Riser cables shall not be used in air plenums.
    - 3. A Plenum rating allows the cable to be used in general purpose, riser, and air plenum applications.

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PART 3 - EXECUTION

### 3.01 INSTALLATION

- A. Install all wiring in accordance with manufacturer's recommendations. All work shall be performed in a neat and workmanlike manner. All debris, trash, leftover materials etc., shall be cleaned out of pull boxes, terminal cabinets, terminal rooms and the general work areas.
- B. Cables shall be labeled at each terminal location and at pull boxes.
- C. Protection of Cables: Cables within terminal cabinets, equipment racks, etc., shall be grouped and bundled (harnessed) as to type and laced with No. 12 cord waxed linen lacing twine or T & B "Ty-Rap" cable. Edge protection material ("cat-track") shall be installed on edges of holes, lips of ducts or any other point where cables or harnesses cross metallic edge.
- D. Cable Identification: Individual conductors not in a multiconductor cable and multiconductor cables shall be color coded and/or individually identified. Each cable identification shall be a unique number located approximately 1-1/2" from cable connection at both ends of cable. Numbers shall be approximately 1/4" in height. A typewritten schedule shall be provided at each cabinet or terminal location indicating the destination of the cable from such location. Example, an intercom cable entering and terminating in Building-A from Building-B shall be labeled at Building-A as follows, "INTERCOM FROM BLDG-B". A schedule shall be provided for each system cables. The schedule shall be on an 8.5" x 11" plain paper identifying all cables of the system at the terminal location, and shall be typewritten, neatly handwritten are allowed only when approved. A copy of the schedule shall located at the terminal location and a copy shall be provided to the Owner. The schedule shall match the identification on the As-Built drawings.
- E. At pull boxes, use engraved plastic tags minimum of 2"H X 4"W securely tied around cable. Tags shall be listed for such use and shall not corrode or be susceptible to such environments. All cables shall be labeled by system type and destination, to and from.
- F. Shielding: Cable shielding shall be connected to common ground at point of lowest audio level and shall be free from ground at any other point. Shields shall be connected a one end only to prevent ground loops. Cable shields shall be terminated in same manner as conductors.
- G. Nameplates: Terminal cabinets and junction boxes shall have plastic engraved nameplates to identify each with Drawings and Specifications. Refer to Section 26 00 00. Provide nameplates at backboard terminals for each system, sample "INTERCOM". Secure all labels with screws.

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- H. Outlet Box Identification: All outlet boxes mounted in attic space shall be individually identified with a black permanent waterproof marker. Identification shall be by system type and/or cable type.
- I. All cables shall be run in continuous lengths between terminal locations and/or equipment, no splicing permitted.
- J. The Contractor shall supply and install all modular mushroom rings, D-rings, etc., needed for the terminal boards. The blocks should allow for a minimum of 25% growth.
- K. Cables on backboards shall be neatly trained following the lines of the room/backboard. Typically routes shall be vertical and horizontal with smooth turns. Do not route cables in odd angles.
- L. Provide grounding electrode conductor, #6 AWG bare stranded copper. Locate at each terminal location and bond to building grounding electrode system. At backboards, provide a minimum 3"H X 6"W copper ground buss with stand-offs, secure to backboard. At each terminal cabinet, terminate ground wire in ground lug. One ground conductor may serve multiple backboards and terminal cabinets in the same area.
- M. Terminations shall be consistent as to the color of conductors throughout the system at like stations.
- N. The system shall be checked by the Contractor for opens, grounds, and shorts.

END OF SECTION

# SECTION 27 13 20 - DATA COMMUNICATIONS SYSTEM

#### PART 1 - GENERAL

#### 1.01 SCOPE OF WORK

- A. Furnish and install a complete data communications system. The system shall consist of but not limited to cables (twisted-pair copper), innerduct, patch panels, fiber interconnect equipment, connectors (fiber and copper), wiring blocks and telecommunications outlets and any other equipment and accessories as required. The work performed under this specification shall be of good quality and performed in a workmanlike manner. In this context "good quality" means the work shall meet industry technical standards and quality of appearance. The Owner reserves the right to reject all or a portion of the work performed, either on technical or aesthetic grounds. All materials to comply with school district standards.
- B. The copper cabling system shall perform to Category-6 Permanent Link performance requirements, from patch panel to outlet jack. The system shall be capable for transmission of the Gigabit Ethernet (1000Base-T) protocol and other designed for Category-6 cabling systems.
- 1.02 RELATED DOCUMENTS
  - A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 01 Specifications Sections, apply to work specified in this Section.
  - B. Sections 26 00 00, 26 05 00, 27 05 50.
  - C. Applicable Standards:
    - 1. ANSI/TIA/EIA-569-A, Commercial Building Standard for Telecommunications Pathways and Spaces.
    - 2. ANSI/TIA/EIA-568-B, Commercial Building Telecommunications Cabling Standard.
    - 3. ANSI/TIA/EIA-568-B.2, Transmission Performance Specifications for 4-Pair 100 Ohm Category 6e, 6A Cabling.
    - 4. TIA/EIA-606-A (2002), Administration Standard for the Telecommunications Infrastructure of Commercial Buildings.
    - 5. J-STND-607-A (2002), Commercial Building Grounding and Bonding Requirements for Telecommunications.

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- 6. EIA/TIA-455-61, FOTP-61, Measurement of Fiber or Cable Attenuation Using an OTDR.
- 7. IEEE 802.3, Carrier Sense Multiple Access With Collision Detection.
- 8. CEC Articles 770 and 800.

## 1.03 CONTRACTOR QUALIFICATIONS

- A. In order to qualify for installation of the data communications system, Contractor must possess the required license classification, a performance history, experience in the installation and termination of fiber optics cable systems, certification from cabling manufacturer, and proof of time in business.
- B. License Classification: Contractor must possess a valid C-7 California State Contractor's License. This license must have been issued two years prior to the date of this bid. No other license classification is acceptable.
- C. Performance History: Contractor must have successfully performed at least three projects of similar scope, within two years of the date of this bid. Proof of performance shall be in the form of reference sheets which shall include a brief description of the project, the beginning and ending contract price, the project foreman or superintendent's name, and the name, address, and telephone number of a project contact.
- D. Fiber Optics Experience: Contractor must be able to prove to the satisfaction of Owner that it has significant experience in the installation of fiber optics cable systems. Installation must include installation of fiber optics cable, fiber termination, a knowledge of interconnect equipment, and a thorough knowledge of testing procedures. Contractor must provide a minimum of 3 references supporting its claim of experience for similar projects within the 2 years prior to this bid. Documentation must be included with the bid documents submitted.
- E. Certification from Cabling Manufacturer: Contractor must be able to prove to the satisfaction of the Owner via a certificate that certification in copper and fiber optic product installation has been granted and is current.
- F. Time in Business: Contractor must have been in business and in the business of installing telecommunications systems, continuously, for a period of at least three years, prior to the date of this bid. Contractor must submit at least one project reference for each of the three years prior to the date of this bid. These project references shall contain the same information required in Paragraph B above. Contractor must also provide a list of key installation personnel, their hire dates, and a resume of their experience. Key installation personnel shall include at least one foreman and two journey level installers or technicians. By submitting the names of

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these personnel, Contractor is committing them to the execution of the project outlined in this specification.

#### 1.04 DEFINITIONS

- A. Main Distribution Facility (MDF): The MDF is the location, within a building or complex of buildings, where the entire telecommunications system originates. It may include: The physical location, enclosure, wire and cable management hardware, termination hardware, distribution hardware, and equipment racks. ANSI/TIA/EIA-569-A refers to the room housing the MDF as the "Equipment Room".
- B. Intermediate Distribution Facility (IDF): The IDF is the location in a building where a transition between the backbone or vertical riser system and the horizontal distribution system occurs. It may include: The physical location, enclosure, wire and cable management hardware, termination hardware, distribution hardware, and equipment racks. The IDFs provide the interface location between fiber distribution cable (backbone) and station cable (horizontal distribution).
- C. Backbone Pathway: The Backbone Pathway consists of a series of conduits or chases which connect the MDF to IDFs or IDFs to IDFs. It generally houses the vertical or backbone system.
- D. Backboard: Backboard generally refers to the plywood sheeting lining the walls of telecommunications facilities. Backboard may also refer to the entire wall-mounted assembly, including wire management, wiring blocks, and equipment racks. In this case, the term Backboard is fully interchangeable with SBB or TTB and the equipment required to fulfill the Scope of Work below.

## 1.05 SYSTEM DESCRIPTION

A. The data communications system shall consist of active hub equipment, a fiber optics backbone and twisted pair copper work station cabling. The central location shall house an MDF and each of the other locations shall house an IDF. Each fiber optics cable shall originate in the MDF and shall be terminated in its respective IDF. All fiber optic cables shall be enclosed in innerduct which shall be routed through a system of conduits and raceways. From each IDF one or more twisted-pair copper cables shall be routed to each data outlet location. These cables shall originate in an IDF and terminate in its respective data outlet location. The MDF and each IDF will house active data distribution equipment including but not limited to fiber hubs, data terminal controllers, local area network hubs, fiber optic transceivers, routers, and DSU/CSU devices. Unless specifically noted, active equipment is not within the scope of the work.

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#### 1.06 MANUFACTURER

A. Throughout this specification, manufacturers are cited, along with specific part numbers. These citations are for the purpose of establishing quality and performance criteria.

## 1.07 SUBMITTALS AND SUBSTITUTIONS

- A. The submission shall consist of five (5) major sections with each section separated with insertable index tabs. The first section shall be the "Index" which shall include the project title and address, name of the firm submitting the proposal and name of the Architect. Each page in the submission shall be numbered chronologically and shall be summarized in the index. The second section shall include a copy of the Contractor's valid C-7 California State Contractor's License, the information required in Section 1.2 above, and a list of instrumentation to be used for system testing. The third section shall contain the comparative specification listing, including a complete listing of the characteristics of the equipment in the specifications. The fourth section shall contain a complete, detailed satellite closet count, workstation, count, and bill-of-materials. Any Contractor failing to include all of the required information shall be deemed non responsive and may be disqualified, at the discretion of the Owner.
- B. For purposes of determining equality, technical and general information set forth on the respective data sheets by manufacturers named for each specified item shall be considered as part of these specifications and binding herein. Any proposed equal item offered shall be substantiated fully to prove equality. The Owner reserves the right to require a complete sample of any proposed equal item and may, if necessary, request a sample tested by and a copy of the test results by an independent testing laboratory to prove equality. The decision of the Owner regarding equality of proposed equal items will be final.

#### 1.08 FUNCTION AND OPERATION

- A. The intended function of the data communications cable system is to transmit data signals from a central location to several individual data outlet locations.
- B. The multimode fiber optics cable system shall be capable of transmitting signals with a bandwidth per the performance parameters of the specified cable. The cumulative signal loss, through connectors, jumpers, couplers, and fiber cable, shall be no more than the manufacturer's stated dB loss based on cable length and 0.6 dB loss for each connector assembly.
- C. Work station cable, commencing at the wiring blocks, shall be installed in accordance with ANSI/TIA/EIA-568-B.1 standard and shall be capable of transmitting a signal at

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155 MBPS with acceptable performance in accordance with Category-6A, 6e performance requirements as specified in ANSI/TIA/EIA-568-B.2-1. The entire work station cable system, including wiring blocks, cable, and telecommunications outlets shall be tested for Category-6 compliance.

## PART 2 - PRODUCT AND INSTALLATION

#### 2.01 GENERAL

- A. Equipment shall be installed in accordance with the drawings and the manufacturer's requirements. General installation provisions are as follows:
  - Wiring Blocks and Wire Management Components: Where required, wiring blocks and wire management components shall be mounted to the plywood backboard. Each device shall be mounted such that its horizontal dimension is level. In cases where more than one device is mounted, they shall be aligned vertically. Each device shall be affixed to the plywood backboard by means of screws suitable for fastening to plywood. A minimum of four (4) of the mounting holes provided shall be utilized for fastening.
  - 2. Copper Cable: Where copper cable enters an IDF it shall be affixed to the backboard via "D" Rings and cable ties in accordance with the attached drawings. All cable shall be neatly bundled, combed, and tied. All cable runs, within the IDF shall be horizontal or vertical within the constraints of minimum cable bending radii.
  - 3. Labeling: With exception of work station cables, hand written labels are not acceptable. All labels shall be machine printed on clear or opaque tape, stenciled onto adhesive labels, or type written onto adhesive labels. The font shall be at least one-eighth inch (1/8") in height, block characters, and legible. The text shall be of a color contrasting with the label such that it may be easily read. If labeling tape is utilized, the font color shall contrast with the background. Patch panels shall exhibit workstation numbers, in sequential order, for all workstations served by the IDF.
  - 4. Each telecommunications outlet shall be labeled with its respective work station number (machine labels only). Workstation numbers shall be comprised of the Building Designator-The Room Number-The Station Number (for example A-205-2). Each workstation cable shall be neatly hand labeled, using permanent ink or other permanent labeling medium, at each end with its respective workstation number. Each copper backbone cable shall be machine labeled at each end with its respective IDF number. Each binder group shall be tied off with its respective identifying ribbon at each break-out point.
  - 5. For device floor boxes, the label shall be inside the box either on the back of the lid cover or adjacent to the device.

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## 2.02 WORK STATION CABLE & JACKS

- A. Description: From each IDF and MDF, provide data cable(s) to each work station (data/VOIP outlets) served.
  - 1. Product: 4 pair #24 or #23 UTP, Category-6e (data), 6, PVC jacket, third party verified to ANSI/TIA/EIA-568-B. Cables routed between floors or in air plenums shall be CMP plenum rated with same performance parameters. Shall be able to support 100/1000 MBPS TP-PMD/CDDI, 155 bps ATM. SYSTIMAX, Leviton, Ortronics and Panduit Guaranteed performance at 250 MHz:

a.	Attenuation	=	32.8 dB max.
b.	NEXT	=	38.3 dB min.
C.	ACR	=	5.5 dB min.
d.	PS NEXT		= 36.3 dB min
e.	PS ACR	=	3.5 dB min.
f.	ELFEXT	=	20.8 dB min.
g.	PS ELFEXT	=	17.8 dB min.
h.	Return Loss	=	17.3 dB min.

- 2. Required Accessories and Quantities (Hard Wall Locations):
  - a. Wall Plate: Single gang and multi-gang, with designation windows, with blank fillers.
  - b. Category-6e Jacks.
  - c. Miscellaneous: Provide appropriate modules with appropriate connectors for other system devices.
- 3. At other than wall installations (i.e., raceways, floor boxes, etc.) provide Category-6 jacks to fit application.
- B. Installation: Installation shall be conducted in accordance with guidelines established by the product manufacturer and industry standards. Wall plates shall be mounted such that their vertical dimension is plumb. Each wall plate shall be labeled with its respective work station number. Each modular mounting frame shall be labeled with its respective work station number.

## 2.03 INTERMEDIATE DISTRIBUTION FACILITIES (IDF)

- A. Description: Existing IDF cabinet.
  - 1. Products and Quantities:

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- Modular Patch Panels: Rack mounted. Up to 24 ports per rack space (1.75"), T568B configuration, in 12 or 24 port increments. One (1) port for each workstation served with a minimum of 12 spare ports is required. Minimum (1) 24 port patch panel. Provide as many patch panels as necessary to service all workstation cables plus the required spare count. CPI, Cooper/B-Line and Panduit.
- b. Wiring Blocks.
- 2. Required Accessories and Quantities:
  - a. Wire Management: One set for each patch panel.
  - b. "D" Rings: Provide and install sufficient quantities of 2" and 3" "D" rings, at 12 inches on center on wall/backboard.
  - c. Modular patch cords. Length as required.
- B. Installation: Installation shall be conducted in accordance with manufacturer's recommendations, industry standards, and this specification. Installation includes complete assembly and mounting of the fiber interconnect equipment, dressing the fiber and copper cables, complete assembly and mounting of the equipment rack, ground bus bar (grounded to nearest grounding system) and mounting of the wiring blocks.
- 2.04 TESTING AND DOCUMENTATION
  - A. Testing: Contractor shall test each pair of twisted-pair copper cable. The Owner reserves the right to have a representative present during all or a portion of the testing process. If the Owner elects to be present during testing, test results will only be acceptable when conducted in the presence of the Owner.
    - 1. Workstation Cable: Each workstation cable shall be tested from the Jack Panel to the data outlet to ANSI/TIA/EIA-568-B.2-1 Category-6e, 6A performance standards.
      - a. Test Equipment: HP Wirescope 350, Microtest Omniscanner-2 or equivalent. Must meet level III compliance in accordance with ANSI/TIA/EIA-568-B.
      - b. Tests: Signal Attenuation, Noise, Near End Cross-talk (NEXT), ELFEXT, Power sum NEXT, ACR, Return Loss, Cable Length, Propagation Delay and Delay Skew.
      - c. Test Criteria: The system shall be tested to Category-6e, 6A compliance. The test path shall include workstation jacks, station cables, and jack panels (Permanent Link Configuration). Where adapter (patch) cables are specified, the tests shall include the patch cables also (Channel

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Configuration). The owner reserves the right to have cables replaced and retested if performance parameters are not met.

- B. Documentation: Contractor shall provide documentation to include test results and asbuilt drawings.
  - 1. Work Station Cable: The results of the work station cable tests shall be provided in the form of print-outs from the test equipment.
  - 2. As-Built Drawings: Provide reproducible vellum as-builts, full size indicating each outlet location and designation. Show IDF/MDF locations and cable designations terminated.

### 2.05 ACCEPTANCE

A. Acceptance of the Data Communications System, by Owner, shall be based on the results of testing, functionality, and the receipt of documentation. With regard to testing, all fiber segments and all workstation data cables must meet the criteria established. With regard to functionality, Contractor must demonstrate to Owner that specified data signals can be successfully transmitted, bi-directionally, from the MDF/IDF to and from some number of individual data outlets. The number of outlet locations to be tested shall be determined by Owner. With regard to documentation, all required documentation shall be submitted to Owner.

# PART 3 - EXECUTION

## 3.01 DIVISION OF WORK

- A. Contractor shall install the data communications system as described in the preceding. Installation shall result in a functional system. The Scope of Work includes:
  - 1. All necessary conduit and raceway.
  - 2. Necessary trenching, backfill, replacement of landscape material, repair of damage to utilities or structures, replacement of asphalt and base, and replacement or repair to concrete flat work incidental to conduit or raceway installation.
  - 3. Provide and install all equipment.
  - 4. Supply and install all material discussed in this specification.
  - 5. Test and document system, upon completion.
  - 6. Supply and install all material necessary, whether or not discussed in this specification, to result in a complete and functional system.

# END OF SECTION

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### SECTION 28 31 00 - FIRE ALARM DETECTION SYSTEM

#### PART 1 - GENERAL

#### 1.01 DESCRIPTION

- A. This section of the specification includes the furnishing, installation, connection and testing of the microprocessor controlled, intelligent reporting fire alarm equipment required to form a complete, operative, coordinated system. It shall include, but not be limited to, alarm initiating devices, alarm notification appliances, auxiliary control devices and wiring as shown on the drawings and specified herein.
- B. The fire alarm system shall comply with requirements of NFPA Standard No. 72 for Local Protected Premises Signaling Systems except as modified and supplemented by this specification. The system field wiring shall be supervised either electrically or by software-directed polling of field devices.
  - 1. The Secondary Power Source of the fire alarm control panel will be capable of providing at least 24 hours of backup power with the ability to sustain 15 minutes in alarm and evacuation at the end of the backup period.
- C. The fire alarm system shall be manufactured by an ISO 9001 certified company and meet the requirements of BS EN9001: ANSI/ASQC Q9001-1994.
- D. The FACP and peripheral devices shall be manufactured or supplied 100% by a single U.S. manufacturer (or division thereof).
- E. Underwriters Laboratories Inc. (UL) USA:
  - 1. No. 38 Manually Actuated Signaling Boxes
  - 2. No. 50 Cabinets and Boxes
  - 3. No. 864 Control Units for Fire Protective Signaling Systems
  - 4. No. 268 Smoke Detectors for Fire Protective Signaling Systems
  - 5. No. 268A Smoke Detectors for Duct Applications
  - 6. No. 346 Waterflow Indicators for Fire Protective Signaling Systems
  - 7. No. 464 Audible Signaling Appliances
  - 8. No. 521 Heat Detectors for Fire Protective Signaling Systems
  - 9. No. 1971 Visual Notification Appliances
- F. The installing company shall employ NICET (minimum Level II Fire Alarm Technology) technicians on site to guide the final check-out and to ensure the systems integrity.

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## 1.02 SCOPE

- A. A fire alarm detection system shall be installed in accordance to the project specifications and drawings.
- B. Basic Performance:
  - 1. Initiation Device Circuits (IDC) shall be wired Class B (NFPA Style B) as part of an addressable device connected by the SLC Circuit.
  - 2. Notification Appliance Circuits (NAC) shall be wired Class B (NFPA Style Y) as part of an addressable device connected by the SLC Circuit.
  - 3. All circuits shall be power-limited, per UL864 requirements.
  - 4. A single ground fault or open circuit on the system Signaling Line Circuit shall not cause system malfunction, loss of operating power or the ability to report an alarm.
  - 5. Alarm signals arriving at the main FACP shall not be lost following a primary power failure or outage of any kind until the alarm signal is processed and recorded.
- C. Basic System Functional Operation: When a fire alarm condition is detected and reported by one of the system initiating devices, the following functions shall immediately occur:
  - 1. The system Alarm LED on the FACP shall flash.
  - 2. A local sounder with the control panel shall sound.
  - 3. A backlit 80-character LCD display on the FACP shall indicate all information associated with the fire alarm condition, including the type of alarm point and its location within the protected premises.
  - 4. In response to a fire alarm condition, the system will process all control programming and activate all system outputs (alarm notification appliances and/or relays) associated with the point(s) in alarm. Additionally, the system shall send events to a central alarm supervising station via either dial-up over PSTN or Internet or Intranet via PSDN or virtual private network.

## 1.03 SUBMITTALS

#### A. General:

- 1. Two copies of all submittals shall be submitted to the Architect/Engineer for review.
- 2. All references to manufacturer's model numbers and other pertinent information herein is intended to establish minimum standards of performance, function and quality. Equivalent compatible UL-listed equipment from other manufacturers

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may be substituted for the specified equipment as long as the minimum standards are met.

- 3. For equipment other than that specified, the contractor shall supply proof that such substitute equipment equals or exceeds the features, functions, performance, and quality of the specified equipment.
- B. Shop Drawings:
  - 1. Sufficient information, clearly presented, shall be included to determine compliance with drawings and specifications.
  - 2. Include manufacturer's name(s), model numbers, ratings, power requirements, equipment layout, device arrangement, complete wiring point-to-point diagrams, and conduit layouts.
  - 3. Show annunciator layout, configurations, and terminations.
- C. Manuals:
  - 1. Submit simultaneously with the shop drawings, complete operating and maintenance manuals listing the manufacturer's name(s), including technical data sheets.
  - 2. Wiring diagrams shall indicate internal wiring for each device and the interconnections between the items of equipment.
  - 3. Provide a clear and concise description of operation that gives, in detail, the information required to properly operate the equipment and system.
- D. Software Modifications:
  - 1. Provide the services of a qualified technician to perform all system software modifications, upgrades or changes. Response time of the technician to the site shall not exceed 4 hours.
  - 2. Provide all hardware, software, programming tools and documentation necessary to modify the fire alarm system on site. Modification includes addition and deletion of devices, circuits, zones and changes to system operation and custom label changes for devices or zones. The system structure and software shall place no limit on the type or extent of software modifications on-site. Modification of software shall not require power-down of the system or loss of system fire protection while modifications are being made.

## 1.04 GUARANTY

A. All work performed and all material and equipment furnished under this contract shall be free from defects and shall remain so for a period of at least one (1) year from the

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date of acceptance. The full cost of maintenance, labor and materials required to correct any defect during this one year period shall be included in the submittal bid.

## 1.05 MAINTENANCE

- A. Maintenance and testing shall be on a semi-annual schedule or as required by the local AHJ. A preventive maintenance schedule shall be provided by the contractor describing the protocol for preventive maintenance. The schedule shall include:
  - 1. Systematic examination, adjustment and cleaning of all detectors, manual fire alarm stations, control panels, power supplies, relays, waterflow switches and all accessories of the fire alarm system.
  - 2. Each circuit in the fire alarm system shall be tested semiannually.
  - 3. Each smoke detector shall be tested in accordance with the requirements of NFPA 72 Chapter 10.
- B. As part of the bid/proposal, include a quote for a maintenance contract to provide all maintenance, tests, and repairs described below. Include also a quote for unscheduled maintenance/repairs, including hourly rates for technicians trained on this equipment and response travel costs for each year of the maintenance period. Submittals that do not identify all post contract maintenance costs will not be accepted. Rates and costs shall be valid for the period of five (5) years after expiration of the guaranty.

## 1.06 POST CONTRACT EXPANSIONS

- A. The contractor shall have the ability to provide parts and labor to expand the system specified, if so requested, for a period of five (5) years from the date of acceptance.
- B. As part of the submittal, include a quotation for all parts and material, and all installation and test labor as needed to increase the number of intelligent or addressable devices by ten percent (10%). This quotation shall include intelligent smoke detectors, intelligent heat detectors, addressable manual stations, addressable beam detectors, addressable monitor modules and addressable control modules equal in number to one tenth of the number required to meet this specification (list actual quantity of each type).
- C. The quotation shall include installation, test labor, and labor to reprogram the system for this 10% expansion. If additional FACP hardware is required, include the material and labor necessary to install this hardware.

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## 1.07 APPLICABLE STANDARDS AND SPECIFICATIONS

- A. The specifications and standards listed below form a part of this specification. The system shall fully comply with the latest issue of these standards, if applicable.
  - 1. National Fire Protection Association (NFPA) USA:
    - a. No. 13 Sprinkler Systems
    - b. No. 70 National Electric Code (NEC)
    - c. No. 72 National Fire Alarm Code
    - d. No. 101 Life Safety Code
    - e. No. 38 Manually Actuated Signaling Boxes
    - f. No. 217 Smoke Detectors, Single and Multiple Stations
    - g. No. 228 Door Closers–Holders for Fire Protective Signaling Systems
    - h. No. 268 Smoke Detectors for Fire Protective Signaling Systems
    - i. No. 268A Smoke Detectors for Duct Applications
    - j. No. 346 Waterflow Indicators for Fire Protective Signaling Systems
    - k. No. 464 Audible Signaling Appliances
    - I. No. 521 Heat Detectors for Fire Protective Signaling Systems
    - m. No. 864 Control Units for Fire Protective Signaling Systems
    - n. No. 1481 Power Supplies for Fire Protective Signaling Systems
    - o. No. 1610 Central Station Burglar Alarm Units
    - p. No. 1638 Visual Signaling Appliances
    - q. No. 1971 Visual Signaling Appliances
    - r. No. 2017 General-Purpose Signaling Devices and Systems
    - s. CAN/ULC S524-01 Standard for Installation of Fire Alarm Systems
  - 2. The FACP shall be ANSI 864, 9th Edition Listed. Systems listed to ANSI 864, 8th edition (or previous revisions) shall not be accepted.
  - 3. The system and its components shall be Underwriters Laboratories, Inc. listed under the appropriate UL testing standard as listed herein for fire alarm applications and the installation shall be in compliance with the UL listing.
  - 4. Local and State Building Codes.
  - 5. All requirements of the Authority Having Jurisdiction (AHJ).

#### 1.08 APPROVALS

- A. The system shall have proper listing and/or approval from the following nationally recognized agencies:
  - 1. FM Factory Mutual
  - 2. MEA Material Equipment Acceptance (NYC)
  - 3. CSFM California State Fire Marshal

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PART 2 - PRODUCTS

## 2.01 EQUIPMENT AND MATERIAL, GENERAL

- A. All equipment and components shall be new, and the manufacturer's current model. The materials, appliances, equipment and devices shall be tested and listed by a nationally recognized approvals agency for use as part of a fire protective signaling system, meeting the National Fire Alarm Code.
- B. All equipment and components shall be installed in strict compliance with manufacturers' recommendations. Consult the manufacturer's installation manuals for all wiring diagrams, schematics, physical equipment sizes, etc., before beginning system installation.
- C. All equipment shall be attached to walls and ceiling/floor assemblies and shall be held firmly in place (e.g., detectors shall not be supported solely by suspended ceilings). Fasteners and supports shall be adequate to support the required load.
- D. All equipment must be available "over the counter" through the Security Equipment Distributor (SED) market and can be installed by dealerships independent of the manufacturer.
- 2.02 CONDUIT AND WIRE
  - A. Conduit:
    - 1. Conduit shall be in accordance with The National Electrical Code (NEC), local and state requirements.
    - 2. Where required, all wiring shall be installed in conduit or raceway. Conduit fill shall not exceed 40 percent of interior cross sectional area where three or more cables are contained within a single conduit.
    - 3. Cable must be separated from any open conductors of power, or Class 1 circuits, and shall not be placed in any conduit, junction box or raceway containing these conductors, per NEC Article 760-29.
    - 4. Wiring for 24 volt DC control, alarm notification, emergency communication and similar power-limited auxiliary functions may be run in the same conduit as initiating and signaling line circuits. All circuits shall be provided with transient suppression devices and the system shall be designed to permit simultaneous operation of all circuits without interference or loss of signals.
    - 5. Conduit shall not enter the fire alarm control panel, or any other remotely mounted control panel equipment or backboxes, except where conduit entry is specified by the FACP manufacturer.
    - 6. Conduit shall be 3/4 inch (19.1 mm) minimum.

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## B. Wire:

- 1. All fire alarm system wiring shall be new.
- 2. Wiring shall be in accordance with local, state and national codes (e.g., NEC Article 760) and as recommended by the manufacturer of the fire alarm system. Number and size of conductors shall be as recommended by the fire alarm system manufacturer, but not less than 18 AWG (1.02 mm) for Initiating Device Circuits and Signaling Line Circuits, and 14 AWG (1.63 mm) for Notification Appliance Circuits.
- 3. All wire and cable shall be listed and/or approved by a recognized testing agency for use with a protective signaling system.
- 4. Wire and cable not installed in conduit shall have a fire resistance rating suitable for the installation as indicated in NEC 760 (e.g., FPLR).
- 5. Wiring used for the multiplex communication circuit (SLC) shall be twisted and support a minimum wiring distance of 10,000 feet when sized at 12 AWG. The design of the system shall permit use of IDC and NAC wiring in the same conduit with the SLC communication circuit. Shielded wire shall not be required.
- 6. All field wiring (with exception of external communications Ethernet) shall be electrically supervised for open circuit and ground fault.
- 7. The fire alarm control panel shall be capable of T-tapping NFPA Style 4 (Class B) Signaling Line Circuits (SLCs). Systems which do not allow or have restrictions in, for example, the amount of T-taps, length of T-taps etc., is not acceptable.
- C. Terminal Boxes, Junction Boxes and Cabinets: All boxes and cabinets shall be UL listed for their use and purpose.
- D. The fire alarm control panel shall be connected to a separate dedicated branch circuit, maximum 20 amperes. This circuit shall be labeled at the main power distribution panel as FIRE ALARM. Fire alarm control panel primary power wiring shall be 12 AWG. The control panel cabinet shall be grounded securely to either a cold water pipe or grounding rod. The control panel enclosure shall feature a quick removal chassis to facilitate rapid replacement of the FACP electronics.
- 2.03 MAIN FIRE ALARM CONTROL PANEL
  - A. Existing Gamewell/FCI E3
- 2.04 SYSTEM COMPONENTS
  - A. See Fire Alarm Equipment Schedule on Drawings.

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## 2.05 BATTERIES

- A. Upon loss of Primary (AC) power to the control panel, the batteries shall have sufficient capacity to power the fire alarm system for required standby time (24 or 60 hours) followed by 15 minutes of alarm and evacuation.
- B. The batteries are to be completely maintenance free. No liquids are required. Fluid level checks for refilling, spills, and leakage shall not be required.
- C. If necessary to meet standby requirements, external battery/charger systems may be used.

### PART 3 - EXECUTION

### 3.01 INSTALLATION

- A. Installation shall be in accordance with the NEC, NFPA 72, local and state codes, as shown on the drawings, and as recommended by the major equipment manufacturer.
- B. All conduit, junction boxes, conduit supports and hangers shall be concealed in finished areas and may be exposed in unfinished areas. Smoke detectors shall not be installed prior to the system programming and test period. If construction is ongoing during this period, measures shall be taken to protect smoke detectors from contamination and physical damage.
- C. All fire detection and alarm system devices, control panels and remote annunciators shall be flush mounted when located in finished areas and may be surface mounted when located in unfinished areas.
- D. Manual pull stations shall be suitable for surface mounting or semi flush mounting as shown on the plans, and shall be installed not less than 42 inches (1067 mm), nor more than 48 inches (122 mm) above the finished floor.

## 3.02 TEST

- A. The service of a competent, NICET level II technician shall be provided to technically supervise and participate during all of the adjustments and tests for the system. All testing shall be in accordance with NFPA 72, Chapter 10.
- B. Before energizing the cables and wires, check for correct connections and test for short circuits, ground faults, continuity, and insulation.

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- C. Close each sprinkler system flow valve and verify proper supervisory alarm at the FACP.
- D. Verify activation of all waterflow switches.
- E. Open initiating device circuits and verify that the trouble signal actuates.
- F. Open and short signaling line circuits and verify that the trouble signal actuates.
- G. Open and short notification appliance circuits and verify that trouble signal actuates.
- H. Ground all circuits and verify response of trouble signals.
- I. Check presence and audibility of tone at all alarm notification devices.
- J. Check installation, supervision, and operation of all intelligent smoke detectors using the walk test.
- K. Each of the alarm conditions that the system is required to detect should be introduced on the system. Verify the proper receipt and the proper processing of the signal at the FACP and the correct activation of the control points.
- L. When the system is equipped with optional features, the manufacturer's manual shall be consulted to determine the proper testing procedures. This is intended to address such items as verifying controls performed by individually addressed or grouped devices, sensitivity monitoring, verification functionality and similar.

## 3.03 FINAL INSPECTION

A. At the final inspection, a minimum NICET Level II technician shall demonstrate that the system functions properly in every respect.

## 3.04 INSTRUCTION

- A. Instruction shall be provided as required for operating the system. Hands-on demonstrations of the operation of all system components and the entire system including program changes and functions shall be provided.
- B. The contractor or installing dealer shall provide a user manual indicating "Sequence of Operation."

## END OF SECTION

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#### EARTHWORK SECTION 31 0000 R221551X01

### PART 1 - GENERAL

## 1.1 SUMMARY

- A. Section Includes:
  - 1. Engineered fill materials.
  - 2. Imported engineered fill material.
  - 3. Landscape backfill material'
  - 4. Aggregate base.

### 1.2 RELATED REQUIREMENTS

- A. Section 01 5000, Temporary Facilities and Controls.
- B. Section 01 5713, Erosion Control.
- C. Section 01 8113, Sustainable Design Requirements, for CAL-Green [and Collaborative for High Performance Schools (CHPS)] general requirements and procedures.
- D. Section 31 2333, Trenching and Backfilling.
- E. Section 32 1200, Asphalt Concrete Paving.
- F. Section 32 1600, Site Concrete.
- G. Section 33 0000, Utilities
- H. Section 33 4000, Storm Drainage Utilities.

## 1.3 REFERENCES AND STANDARDS

- A. California Building Code (CBC), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).
- B. California Green Building Standards Code (CAL Green), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).
- C. Local Jurisdiction: Any work within the street, highway or right-of-way shall be performed in accordance with the requirement of the governmental agencies having jurisdiction, and shall not begin until all of those governing authorities have been notified.
- D. ASTM International (ASTM):
  - 1. D698-00 Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5 lb (2.49 Kg) Rammer and 12 inch (304.8 mm) Drop.
  - 2. D1556-00 Test Method for Density of Soil in Place by the Sand-Cone Method.

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- 3. D1557-02e2 Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb. (4.54 Kg) Rammer and 18 inch (457 mm) Drop.
- 4. D3017-05 Test Methods for Moisture Content of Soils and Soil-Aggregate Mixture by Nuclear Methods (Shallow Depth).
- 5. D422-63(2007) e1 Test Method for Particle Size Analysis of Soil.
- 6. D4318-05 Test Method for Liquid Limit, Plastic Limit, and Plasticity Limit.
- E. CALTRANS Standard Specifications Section 17.
- F. CAL-OSHA, Title 8, Section 1590 (e).
- G. Site survey: Included in the drawings, was prepared by Warren Consulting Engineers, and is the basis for data regarding current conditions. While the survey is deemed generally accurate, there exists discrepancies and variations due to elapsed time, weather, etc. Existing dirt grades may vary 0.2 ft. from that shown.

## 1.4 ADMINISTRATION REQUIREMENTS

- A. Submittal Procedures:
  - 1. Action Submittals and Informational Submittals shall be submitted in accordance with Section 01 3300, Submittal Procedures.
  - 2. Closeout Submittals shall be submitted in accordance with Section 01 7700, Closeout Procedures.
  - 3. Sustainable Design Submittals shall comply with the additional requirements of Section 01 8113, Sustainable Design Requirements.
- B. Site Visitation: All bidders interfacing with existing conditions shall visit the site prior to bid to verify general conditions of improvements. Discrepancies must be reported prior to the bid for clarification.

# 1.5 ACTION SUBMITTALS

A. Provide supplier's descriptive literature for all products to demonstrate compliance with specified attributes.

## 1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Contractor / Installer.

## 1.7 CLOSEOUT SUBMITTALS

A. Guarantee: Submit subcontractor's guarantee.

## 1.8 QUALITY ASSURANCE

A. Contractor / Installer shall have been in business for five (5) years providing/finishing similar size projects and complexity.

- B. Contractor shall be solely responsible for all subgrades built. Failures resulting from inadequate compaction or moisture content are the responsibility of the contractor. Contractor shall be solely responsible for any and all repairs.
- C. The representatives of the Owner's testing lab will not act as supervisor of construction, nor will they direct construction operations. Neither the presence of the Owner's testing lab representatives nor the testing by the Owner's testing lab shall excuse the contractors or subcontractors for defects discovered in their work during or following completion of the project. Correcting of inadequate compaction or moisture content is the sole responsibility of the contractor.
- D. Use only new materials and products, unless existing materials or products are specifically shown otherwise on the Drawings to be salvaged and re-used.
- E. All materials, components, assemblies, workmanship and installation are to be observed by the Owner's Project Inspector. Work not so inspected is subject to uncovering and replacement.
- F. Tests (See Part 3, Article "Testing and Observation" for Compaction Testing).

## 1.9 DELIVERY, STORAGE AND HANDLING

A. Transport, store and handle in strict accord with the local jurisdiction.

## 1.10 FIELD CONDITIONS

A. Excavation dewatering may be necessary. Contractor shall provide any and all tools, equipment and labor necessary for excavation dewatering no matter what the source. Dewatering shall be continuous until all site utilities are installed and backfilled.

## 1.11 EXISTING SITE CONDITIONS

- A. Contractor shall acquaint himself with all site conditions. If unknown active utilities are encountered during work, notify Architect promptly for instructions. Failure to notify will make Contractor liable for damage to these utilities arising from Contractor's operations subsequent to discovery of such unknown active utilities.
- B. Existing civil, mechanical and electrical improvements are shown on respective site plans to the extent known. Should the Contractor encounter any deviation between actual conditions and those shown, he is to immediately notify the Architect before continuing work.

## 1.12 ON SITE UTILITY VERIFICATION AND REPAIR PROCEDURES

- A. Ground-breaking requirements:
  - 1. All underground work performed by a Contractor must be authorized by the District's Construction Manager or the Low Voltage Consultant prior to start of construction.
  - 2. The Contractor is to obtain and keep the original School's construction utility site plans on site during all excavation operations. Contractor can contact the District's

Construction Manager, Facilities Manager, or the Low Voltage Consultant to procure the drawings.

- B. Underground Utility Locating:
  - 1. The contractor shall hire an Underground Utility Locating Service to locate existing underground utility pathways in areas effected by the scope of work for excavation.
  - 2. Contractor must use an underground utility locator service with a minimum of 3 years experience. The equipment operator must have demonstrated experience. Contact Norcal Underground Locating (800/986-6722) or Precision Locating (800/577-7324)
  - 3. The Underground Utility Locator Service must have the use of equipment with the ability to locate by means of inductive clamping, induction, inductive metal detection, conductive coupling, or TransOnde (Radiodetection) to generate signals, passive locating (free scoping) for "hot" electric, and metal detector.
  - 4. The Underground Utility Locator Service must be able to locate existing utilities at a depth of at least 72".
  - 5. The Underground Utility Locator Service must be able to locate but are not limited to locating the following types of utility pathways:
    - a. All conduit pathways containing 110 volt or greater 50-60Hz electrical wire.
    - b. All conduit pathways containing an active cable TV system.
    - c. All conduit pathways containing wire or conductor in which a signal can be attached and generated without damaging or triggering the existing systems.
    - d. All empty conduit pathways or pipe in which a signal probe or sonde (miniature transmitter) can be inserted.
    - e. All conduit pathways containing non-conductive cables or wires in which a signal probe or sonde (miniature transmitter) can be inserted.
    - f. All plastic and other nonconductive water lines in which a TransOnde Radiodetection) or other "transmitter" can be applied to create a low frequency pressure waive (signal) without damaging or triggering the existing systems.
    - g. All copper or steel waterlines and plastic or steel gas lines.
  - 6. All markings made by the Underground Utility Locator Service or other shall be clear and visible.
  - 7. The contractor shall maintain all markings made by Underground Utility Locator Service or other throughout the entire length of the project.
  - 8. The Underground Utility Locator Service shall provide the contractor with two sets of maps showing the location of utilities and average depth. They will be referenced to permanent buildings. Contractor will deliver one copy to the district at no additional charge.
  - 9. Contractor is responsible to contact Underground Service Alert (U.S.A. 800/227-2600) and receive clearance prior to any excavation operations.
  - 10. Contractor shall inform the (District's Construction Manger)(Architect)(Owner) no later than five (5) days prior to the date scheduled for the utility locator service to be on site.

#### 1.13 **PROTECTION**

- A. Adequate protection measures shall be provided to protect workmen and passers-by on and off the site. Adjacent property shall be fully protected throughout the operations. Blasting will not be permitted. Prevent damage to adjoining improvements and properties both above and below grade. Restore such improvements to original condition should damage occur. Replace trees and shrubs outside building area disturbed by operations.
- B. In accordance with generally accepted construction practices, the Contractor shall be solely and completely responsible for working conditions at the job site, including safety of all persons and property during performance of the work. This requirement shall apply continuously and shall not be limited to normal working hours.
- C. Any construction review of the Contractor's performance conducted by the Geotechnical Engineer is not intended to include review of the adequacy of the Contractor's safety measures, in, on, or near the construction site.
- D. Provide shoring, sheeting, sheet piles and or bracing to prevent caving, erosion or gullying of sides of excavation.
- E. Surface Drainage: Provide for surface drainage during period of construction in manner to avoid creating nuisance to adjacent areas. The contractor shall make a reasonable effort on a daily basis to keep all excavations and the site free from water during entire progress of work, regardless of cause, source, or nature of water.
- F. Adjacent streets and sidewalks shall be kept free of mud, dirt or similar nuisances resulting from earthwork operations.
- G. The site and adjacent influenced areas shall be watered as required to suppress dust nuisance. Dust control measures shall be in accordance with the local jurisdiction.
- H. Trees: Carefully protect existing trees that are to remain. Provide temporary irrigation as necessary to maintain health of trees.

## 1.14 SEASONAL LIMITS

- A. No fill material shall be placed, spread or rolled during unfavorable weather conditions. When work is interrupted by rains, fill operations shall not be resumed until field tests indicate that moisture content and density of fill are satisfactory.
- B. Excessively wet fill material shall be bladed and aerated per Article "Subgrade Preparation".

#### 1.15 TESTING

- A. General: Refer to Section 01 4523 TESTING AND INSPECTION SERVICES, AND STRUCTURAL TESTS AND INSPECTIONS LIST, DSA-103.
- B. Geotechnical Engineer: Owner is retaining a Geotechnical Engineer to determine compliance of fill with Specifications, and to direct adjustments in fill operations. Costs

of Geotechnical Engineer will be borne by Owner; except those costs incurred for retests or re-inspection will be paid by Owner and backcharged to Contractor.

- 1. If Contractor elects to process or mine onsite materials for use as Suitable Fill, Aggregate Sub Base, Aggregate Base, Rock, Crushed Rock or sand the cost of all testing of this material shall be paid for by the Contractor.
- 2. Testing of import fill for compliance with Department of Toxic Substance Control (DTSC) shall be paid for by the Contractor.

# PART 2 - PRODUCTS

## 2.1 MATERIALS

- A. Engineered Fill Materials: All fill shall be of approved local materials supplemented by imported fill if necessary. "Approved" local materials are defined as local soils tested and approved by Geotechnical Engineer free from debris, and concentrations of clay and organics; and contain rocks no larger than 3-inches in greatest dimension. The soil and rock should be thoroughly blended so that all rock is surrounded by soil. This may require mixing of the soil and rock with a dozer prior to placement and compaction. Clods, rocks, hard lumps or cobbles exceeding 3-inches in final size shall not be allowed in the upper 12 inches of any fill. Native clay or clayey soils will not be permitted within the upper 12 inches of building pad areas or paved areas.
- B. Imported Engineered Fill Material: Imported fill may be required to complete work. Proposed import fill material shall meet the above requirements; shall be similar to the native soils. Import fill shall meet the above requirements; shall have plasticity index of 15 or less; an Expansion Index of 20 or less; be free of particles greater than three-inch (3") in largest dimension; be free of contaminants and have corrosion characteristics within the acceptable limits. <u>All import fill material shall be tested and approved by Soils Engineer prior to transportation to the site.</u> Proposed fill material shall comply with DTSC guidelines to include Phase 1 environmental site assessment and related tests. Refer to the October 2001 DTSC Information Advisory for clean imported fill material.
  - 1. DTSC TESTING: Site work contractor is to coordinate testing with an analytical lab, hired by the owner, licensed by the State of California for the DTSC testing. The costs associated with testing will be paid by the contractor.
  - 2. DTSC testing shall include documentation as to the previous land use, location, and history. Soils shall be analyzed for all compounds of concern to ensure the imported soil is uncontaminated and acceptable. Testing shall be performed per the recommendations included in DTSC Imported Fill Advisory http://www.dtsc.ca.gov/Schools/upload/SMP FS Cleanfill-Schools.pdf). Soils shall be tested prior to import to the project site.
  - 3. Lab shall determine geographically which tests and analysis comparison will be appropriate for the testing. (CAM 17 / Title 22); (RWQCB) Regional Water Quality Control Board; or (OEHHA) Office of Environmental Health Hazard Assessment.
  - 4. Frequency of testing shall be conducted in accordance with DTSC's Imported Fill Advisory as follows;

Fill Material Sample Schedule				
Area Of Individual Borrow Area	Sampling Requirements			
2 Acres or less	Minimum of 4 samples			
2 to 4 Acres	Minimum of 1 sample every ½ acre			
4 to 10 Acres	Minimum of 8 samples			
Greater than 10 Acres	Minimum of 8 locations with 4 subsamples per location			

Volume of Borrow Area Stockpile	
Up to 1,000 Cubic Yards	1 sample per 250 cubic yards
1,000 to 5,000 Cubic Yards	4 samples for the first 1000 cubic yards + 1 sample per each additional 500 cubic yards
Greater than 5,000 Cubic Yards	12 samples for the first 5,000 cubic yards + 1 sample per each additional 1,000 cubic yards

- 5. Reports/ Documentation
  - a. Results of the testing analysis shall be sent to the Owner; Architect; Project Inspector, Project Civil Engineer, DTSC, and DSA. Letter shall reference DSA file and application numbers.
- C. Landscape Backfill Material:
  - 1. The top 3" of native topsoil stripped from the site may be used for landscape backfill material.
- D. Water: Furnish all required water for construction purposes, including compaction and dust control. Water shall be potable.
- E. Aggregate Base: Provide Class 2 3/4" Aggregate Base conforming to standard gradation as specified in Cal Trans Standard Specifications, Section 26,-1.02A.

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### PART 3 - EXECUTION

#### 3.1 INSPECTION LAYOUT AND PREPARATION

- A. Prior to installation of the work of this Section, carefully inspect and verify by field measurements that installed work of all other trades is complete to the point were this installation may properly commence
- B. Layout all work, establish grades, locate existing underground utilities, set markers and stakes, setup and maintain barricades and protection facilities; all prior to beginning actual earthwork operations. Layout and staking shall be done by a licensed Land Surveyor or Professional Civil Engineer.
- C. Verify that specified items may be installed in accordance with the approved design.
- D. In event of discrepancy, immediately notify Owner and the Architect. Do not proceed in discrepant areas until discrepancies have been fully resolved.

### 3.2 PERFORMANCE

- A. GENERAL:
  - 1. General: Do all grading, excavating and cutting necessary to conform finish grade and contours as shown. All cuts shall be made to true surface of subgrade.
  - 2. Archaeological Artifacts: Should any artifacts of possible historic interest be encountered during earthwork operations, halt all work in area of discovery and immediately contact the Architect for notification of appropriate authorities.
  - Degree of Compaction: Percentage of maximum density, hereinafter specified as degree of compaction required, means density equivalent to that percentage of maximum dry density determined by ASTM D1557 Compaction Test method, and such expressed percentage thereof will be minimum acceptable compaction for specified work.
  - 4. Moisture Content: Moisture content shall be as noted below and as called for on the plans. Moisture content shall be maintained until subgrade is covered by surfacing materials.

# 3.3 DEMOLITION, DISPOSAL AND DISPOSITION OF UNDESIRABLE MAN-MADE FEATURES

A. All other obstructions, such as abandoned utility lines, septic tanks, concrete foundations, and the like shall be removed from site. Excavations resulting from these removal activities shall be cleaned of all loose materials, dish shaped, and widened as necessary to permit access for compaction equipment. Areas exposed by any required over-excavation should be scarified to a depth of 12", moisture-conditioned to near optimum moisture content, and recompacted to at least 90% of the maximum dry density.

## 3.4 TESTING AND OBSERVATION

A. All grading and earthwork operations shall be observed by the Geotechnical Engineer or his representative, serving as the representative of the Owner.

- B. Field compaction tests shall be made by the Geotechnical Engineer or his representative. If moisture content and/or compaction are not satisfactory, Contractor will be required to change equipment or procedure or both, as required to obtain specified moisture or compaction. Notify Geotechnical Engineer at least 48 hours in advance of any filling operation.
- C. Earthwork shall not be performed without the notification or approval of the Geotechnical Engineer or his representative. The Contractor shall notify the Geotechnical Engineer at least two (2) working days prior to commencement of any aspect of the site earthwork.
- D. If the Contractor should fail to meet the compaction or design requirements embodied in this document and on the applicable plans, he shall make the necessary readjustments until all work is deemed satisfactory, as determined by the Geotechnical Engineer or Architect/Engineer.
- E. After each rain event Geotechnical Engineer shall test fill material for optimum moisture. Do not place any fill material until desired moisture is achieved.

## 3.5 CLEARING AND GRUBBING

A. Prior to grading, remove all debris off-site. Remove trees and brush including the root systems. Holes resulting from tree and brush removal should be prepared and backfilled in accordance with paragraphs 3.7, 3.8, 3.9, and 3.10. This may require deepening and/or widening the holes to adequately remove disturbed soil and provide room for compaction equipment. Strip the surface of all organics. Strippings meeting the requirements of Section 32 9000 may be used in landscape areas only.

## 3.6 CUTTING

- A. Building pads that are located within a cut/fill transition area will have to be overexcavated to provide a semi-uniform fill beneath the building pad. The portions of building pads located in cut areas shall be overexcavated to provide no more than 1 foot difference in fill placed in the same building pad.
- B. Do all cutting necessary to bring finish grade to elevations shown on Drawings.
- C. When excavation through roots is necessary, cut roots by hand.
- D. Carefully excavate around existing utilities to avoid unnecessary damage. The contractor shall anticipate and perform hand work near existing utilities as shown on the survey, without additional claims or cost.

## 3.7 STRUCTURAL EXCAVATION

- A. General: Excavate to bear on firm material at contract depth shown on Structural Drawings.
- B. Footings: All footing excavations shall be of sufficient width for installation of formwork, unless earth will retain its position during concreting. All portions of footings above grade must be formed. In the event that footings are placed against earth, footing widths below

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grade shall be increased 2 inches from those shown on Drawings and positive protection shall be provided for top corners of trench.

C. Unsuitable Ground: Any errors in structural excavation, soft ground, or clay soils found when excavating shall be reported to Architect. In no case shall work be built on any such soft or clayey unsuitable surface without direction from the Architect. Restore excavations to proper elevation with engineered fill material compacted to 90% of dry density.

## 3.8 SUBGRADE PREPARATION

- A. Grade compact and finish all subgrades within a tolerance of 0.10' of grades as indicated on Drawings and so as not to pool water. Subgrade within building pads and concrete walks shall be within 0.05' of grades indicated.
- B. After clearing, grubbing and cutting, subsurface shall be plowed or scarified to a depth of at least 12", until surface is free from ruts, hummocks or other uneven features. Moisture condition to optimum moisture content and recompact to at least 90% of the maximum dry density as determined by ASTM Test Method D1557. If the existing soils are at a water content higher than specified, the contractor shall provide multiple daily aerations by ripping, blading, and/or discing to dry the soils to a moisture content where the specified degree of compaction can be achieved. After seven consecutive working days of daily aerations, and the moisture content of the soil remains higher than specified, the contractor shall notify the architect. If the existing soils have a moisture content lower than specified, the contractor shall scarify, rip, water and blade existing soil to achieve specified moisture content. The contractor shall make proper allowance in schedule and methods to complete this work.
- C. After subgrade for fill within building pad area or within paved areas has been cleared, plowed and scarified, it shall be disked or bladed until uniform and free from large clods, brought to optimum moisture content and compacted to not less than 90% of maximum dry density, as determined by ASTM Test Method D1557, and such expressed percentage thereof will be minimum acceptable density for specified work.
- D. Subgrade in areas to receive landscaping shall be compacted to (90%).
- E. Where Contractor over-excavates building pads through error, resulting excavation shall be recompacted as engineered fill at Contractor's expense.

## 3.9 PLACING, SPREADING AND COMPACTING FILL MATERIAL IN BUILDING PAD AND PAVEMENT AREAS

- A. Selected fill material shall be placed in layers which, when compacted, shall not exceed 6 inches in compacted thickness. Each layer shall be spread evenly and thoroughly mixed to insure uniformity in moisture content.
- B. Selected fill material shall be moisture-conditioned to specified moisture content. Selected fill material shall be unfrozen. When moisture content of fill material is below that specified, add water until proper moisture content is achieved. When moisture

content is above that specified, aerate by blading or other methods mentioned in 3.08 B until moisture content is satisfactory.

- C. After each layer has been placed, mixed and spread evenly, it shall be thoroughly compacted to a minimum of 90% as determined by the ASTM D1557 Compaction Test. Compact each layer over its entire area until desired density has been obtained.
- D. Recompaction of Fill in Trenches and Compaction of Fill Adjacent to Walls: Where trenches must be excavated, backfill with material excavated. Place in lifts that when compacted do not exceed 6", moisture conditioned to optimum) moisture content, and compact to a minimum of 90% relative compaction in building pad and paved areas, and to 90% relative compaction in landscape areas.
- E. Jetting of fill materials will not be allowed.

### 3.10 FINAL SUBGRADE COMPACTION

- A. Building Pads: Upper 12" of all final building pad subgrades shall be uniformly compacted at specified moisture content to at least 90% of maximum dry density, as determined by ASTM D1557 Compaction Test, regardless of whether final subgrade elevation is attained by filling, excavation, or is left at existing grade. After acceptance of final compaction test, contractor shall maintain the required moisture content of subgrade until concrete flatwork is placed.
- B. Concrete Paved Areas: Upper 12" of all final subgrades supporting concrete flatwork sections shall be brought to specified moisture content and shall be uniformly compacted to not less than 90% of maximum dry density, regardless of whether final subgrade elevation is attained by filling, excavation, or is left at existing grade. After acceptance of final compaction test, contractor shall maintain the required moisture content of subgrade until concrete flatwork is placed.
- C. Asphalt Paved Areas: Upper 6" of all final subgrades supporting pavement sections shall be brought to specified moisture content and shall be uniformly compacted to not less than 95% of maximum dry density, regardless of whether final subgrade elevation is attained by filling, excavation, or is left at existing grade. After acceptance of final compaction test, contractor shall maintain the required moisture content of subgrade until concrete flatwork is placed.
- D. Other Fill and Backfill: Upper 12" of all other final subgrades or finish grades shall be compacted to 90% of maximum dry density.
- E. Gravel Fill: Do not place compacted gravel fill until after underground work and foundations are in place. Compact gravel fill with vibratory plate or similar equipment to preclude settlement.

# 3.11 PLACING, SPREADING, AND COMPACTION OF LANDSCAPE BACKFILL MATERIALS

- A. All landscaped areas shall receive topsoil. After subgrade under landscape area has been scarified and brought to 85% maximum dry density, top soil shall be placed evenly to depth of 12" at 85% of maximum dry density.
- B. Project Inspector must verify that materials are uniformly spread to minimum depth specified.

### 3.12 SLOPE CONSTRUCTION

A. Cut slopes shall be constructed to no steeper than 4:1 (horizontal:vertical). Fill slopes shall be constructed to no steeper than 4:1 (horizontal:vertical). Prior to placement of fill on an existing slope the existing slope shall be benched. The benches shall be in a ratio of 2 horizontal to 1 vertical. The face of the fill slopes shall be compacted as the fill is placed, or the slope may be overbuilt and then cut back to the design grade. Compaction by track walking will not be allowed.

### 3.13 FINISH GRADING

- A. At completion of project, site shall be finished graded, as indicated on Drawings. Finish grades shall be "flat graded" to grades shown on the drawing. Mounding of finish grades will not be allowed unless otherwise directed on the landscape drawings. Tolerances for finish grades in drainage swales shall be +-0.05'. Tie in new and existing finish grades. Leave all landscaped areas in finish condition for lawn seeding. Landscaped planters shall be graded uniformly from edge of planter to inlets. If sod is used for turf areas the finish grade on which it is placed shall be lowered to allow for sod thickness.
- B. All landscape areas shall be approved by Architect prior to any planting.

## 3.14 SURPLUS MATERIAL

A. Excavated material not required for grading or backfill shall be removed from site at contractor's expense.

#### 3.15 CLEANING

- A. Refer to Section 01 7700.
- B. Remove from fill all vegetation, wood, form lumber, casual lumber, and shavings, in contact with ground; buried wood will not be permitted in any fill.

## END OF SECTION

## PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section Includes: General requirements for the following.
  - 1. Site excavation and backfilling for the removal of underground utilities and structures.
  - 2. Removal and capping off of underground utilities.
  - 3. Removal and disposal of waste and debris.

## 1.2 RELATED REQUIREMENTS

- A. Section 31 0000, Earthwork.
- B. Section 31 2333, Trenching and Backfilling.

#### 1.3 **REFERENCES AND STANDARDS**

- A. California Building Code (CBC), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).
- B. California Green Building Standards Code (CALGreen), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).

#### 1.4 **DEFINITIONS**

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

#### 1.5 ADMINISTRATIVE REQUIREMENTS

- A. Submittal Procedures:
  - 1. Informational Submittals shall be submitted in accordance with Section 01 3300, Submittal Procedures.
- B. Pre-Site Clearing Meeting: Conduct at project site, between Contractor, Architect and Owner's Project Inspector, issues relating to existing condition of site, including procedures to be following in removing existing above and below grade improvements.

- 1. Notify participants not less than 5 business days prior to date established for meeting.
- 2. Meeting may be included as an agenda item at the Pre-construction Meeting if agreeable to the Owner.

## 1.6 INFORMATIONAL SUBMITTALS

- A. Contractor's Report describing damage to existing site improvements to remain.
- B. Record of Pre-Site Clearing Meeting.

#### 1.7 MATERIALS OWNERSHIP

- A. Items of interest or value to Owner that may be encountered during site clearing, and not previously removed by Owner prior to Contractor commencing site clearing work, remain Owner's property.
  - 1. Carefully remove and salvage each item or object in a manner to prevent damage and deliver promptly to Owner.
  - 2. Coordinate with the Owner who will establish special procedures for removal and salvage.
- B. Existing site improvements that are to be removed and re-installed under this Contract, where noted on the Drawings, shall remain the property of the Owner. Contractor shall be responsible for careful removal and storage of items to be reinstalled and will be responsible for replacing items that are damaged, as determined by the Architect, at no expense to the Owner.

## 1.8 QUALITY ASSURANCE

- A. Minimum requirements herein shall govern, except that local, state, federal codes and ordinances shall govern when their requirements are in excess hereof.
- B. Obtain and pay for permits, bonds, licenses, and other governing approvals required for site clearing and removal work.
- C. Clearing and removal work shall be accomplished in strict accordance with all local and state building codes, requirements and regulations including but not limited to noise abatement, dust control, classification of disposal materials, etc.
- D. Work within street or highway right-of-way shall be done in accordance with the requirements of the governmental agencies having jurisdiction and shall not begin until these governing authorities have been notified.

#### 1.9 FIELD CONDITIONS

A. An attempt has been made to show all existing structures, utilities, drives, pavements, curbs, walks, and similar improvements in their approximate location on the survey and/or Contact Drawings.

- 1. However, others that are not shown may exist and may be found upon visiting the site or during the clearing and removal work.
- 2. It is the responsibility of the Contractor to accurately locate existing facilities and to determine their extent. If such facilities obstruct the progress of the work and are not indicated to be removed or relocated, they shall be removed or relocated only as approved by the Owner.
- 3. Report existing site elements not shown on the Drawings to the Architect so that the proper dispensation of that element may be made.
- B. Natural features, existing structures, existing landscaping, existing utilities, and other items which are indicated to remain on the Drawings and Specifications shall be protected and shall not be defaced or damaged.
- C. Restore to its present condition pavement in the public right-of-way that is disturbed by the site clearing work. Pavement restoration work in public rights-of-way shall be performed to the full satisfaction of the governmental agencies having local jurisdiction.
- D. Hazardous Materials: If hazardous materials are encountered, do not disturb and immediately notify Owner and Architect.

## 1.10 ENVIRONMENTAL REQUIREMENTS

- A. Noise producing activities shall be held to a minimum. Internal combustion engines and compressors, and other motorized equipment shall be equipped with mufflers to reduce noise to a minimum. Comply with governing noise abatement ordinances.
- B. Keep areas within the clearing and removal area sufficiently dampened to prevent dust from rising due to clearing or removal operations. Comply with pollution control ordinances.
- C. Trucks leaving the site shall do so in such a manner that debris, vegetation, mud and earth will not be deposited on adjacent street pavements. Debris, vegetation, mud or earth deposited on street pavements shall be promptly removed by Contractor to the satisfaction of governing authorities.
- D. Clearing and removal operations shall be performed in a manner such as to prevent wash-off of soils from the site into streams and/or storm drainage systems.
  - 1. Appropriate sedimentation ponds, dikes, silt fences, collars, and filter media shall be employed to insure compliance with these requirements.
  - 2. Where a specific statute governs these procedures, such statute shall be complied with in its entirety.

#### 1.11 **PROTECTION AND SHORING**

- A. Provide, erect and maintain temporary barriers and security devices as required.
- B. Protect existing structures, utilities and appurtenances to remain.
  - 1. Prevent movement or settling.
  - 2. Provide bracing and shoring as required.

#### SITE CLEARING SECTION 31 1000 22-1551.01

- C. Protect existing structures, utilities and landscaping indicated on the Drawings to remain.
- D. Tree and Shrub Protection:
  - 1. Trees, shrubs, and other vegetation indicated to remain shall be protected during the entire progress of the Work. This includes protection of the root system.
  - 2. Trees shall be fenced if they are located in or near an area being used for material storage or subject to damage by traffic during construction.
  - 3. Low hanging branches and unsound or unsightly branches on trees or shrubs designated to remain shall be removed. Trimmings shall be done by skilled workmen and in accordance with good tree surgery practices.
- E. Damage done by Contractor to existing structures, pipe lines, utilities, landscaping, and other existing site improvements indicated to remain, and not noted in the Contractors Report on the status of existing improvements to remain, shall be repaired by at its expense in a manner acceptable to the Owner of the damaged property.
- F. Provide temporary shoring, bracing, and maintenance thereof required for the completion of clearing and removal work.
  - 1. Contractor shall work in coordination with local and State codes to insure the provisions of adequate bracing, shoring, temporary cross-over for pedestrian and vehicular traffic including guard rails, lamps, warning signs and flags as required by agencies having jurisdiction as directed by the Owner
  - 2. Remove temporary provisions when necessity for protection ceases.

#### 1.12 DRAINAGE MAINTENANCE

- A. During the course of clearing and removal operations, existing drainage ways, both into and from the Project area, shall be rerouted as required or maintained in a functional condition.
- B. During the clearing and removal operation, the exposed areas of subgrade shall be maintained in a condition compatible with positive drainage of the work area. Failure to maintain such drainage shall be considered adequate cause for the Owner to order temporary suspension of the work.
- C. If it should become necessary to stop work for indefinite periods, Contractor shall make the necessary provisions to prevent damage or deterioration of the work already performed.
  - 1. Provide suitable and functional drainage by installing ditches, filter drains, temporary cut-off lines, and similar methods and erect temporary protective structures where necessary.
  - 2. Embankments shall be back-bladed and suitably sealed to protect against adverse weather conditions.

## PART 2 - PRODUCT

## 2.1 DESIGN AND PERFORMANCE CRITERIA

- A. Furnish materials, labor, equipment, and services necessary and incidental for the completion of the site clearing and removal work as shown on the Drawings and as specified.
- B. Onsite and offsite work included consists of but is not limited to the following:
  - 1. Removal of existing sidewalks, drives, curbs, pavement, trees, shrubs, irrigation, and other features as shown on the Drawings.
  - 2. Removal and capping off or relocation of existing underground utilities, and underground structures as indicated on the Drawings.
  - 3. Removal from site and disposal of waste, debris and unusable material.
  - 4. Backfill of open excavations created by the removal of underground utilities, underground structures, and other existing below grade improvements.

# 2.2 MATERIALS

A. Materials used to backfill excavations, trenches, holes, pits, and depressions caused by utility, underground structure and foundations removal shall meet the requirements for fill material and compaction indicated in Section 31 0000, Earthwork, and Section 31 2333, Trenching and Backfilling.

## PART 3 - EXECUTION

## 3.1 EXAMINATION

- A. Visit the site so that a full understanding of the difficulties and restrictions attending complete clearing of the site and removal of underground utilities is obtained. Verify the location of all pertinent items.
- B. Verify with sewer department, water department, gas company, electric company, cable, and other utility companies that existing utilities, services and overhead lines have been deactivated and abandoned prior to beginning removal work.

## 3.2 PREPARATION

- A. Cut drainage swales and provide temporary grading to carry storm water away from clearing area. No storm water will be permitted to stand in open excavations.
- B. Contact "USA North" at 811 or 800-642-2444 to locate underground utilities prior to beginning clearing and removal work.
- C. Notify all affected utility companies and local authorities and agencies prior to beginning the work.
- D. Identify and tag existing trees and other landscaping designated to remain.

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- E. Identify and locate a permanent stockpile area for topsoil. Verify with Owner and refer to the Drawings for fill soil stockpile area. Coordinate with landscape contractor.
- F. Identify and locate a waste area for temporary storage of removed materials. Materials shall not be buried or burned on the site as a means of disposal.

## 3.3 SITE CLEARING

- A. Contractor shall be responsible for clearing, grubbing, removing and disposing of trash and debris and for clearing and stockpiling all topsoil which are within the designated limits of the property, easements and roadway rights-of-way, unless otherwise indicated on the Drawings.
- B. Prior to rough grading, storage of construction materials, or the installation of temporary construction facilities, strip areas as indicated on the Drawings to be occupied by site improvements.
- C. Contractor shall be responsible for removal of sidewalks, pavements, curbs and gutters, exterior slabs and sidewalks indicated to be removed on the Drawings.
- D. Contractor shall be responsible for removal of all underground utilities, underground structures, etc., according to plans.
- E. Cease cleaning and removal operations immediately if any existing structure or utility appears in danger. Notify Owner and Architect. Do not resume operations until directed.
- F. Broken construction material, trash and debris, tree slash, sidewalks, curbs, and other materials from demolished improvements will be considered "waste" and shall be removed from the site.
  - 1. "Waste" material shall be removed from the site as soon as possible and shall not be allowed to accumulate. Short-term storage of removed material shall be restricted to designated "waste" areas as directed by the Owner.
  - 2. No burning or burying of "waste" material on the site will be permitted as a means of disposal.
- G. Continuously dampen all clearing and removal areas to prevent dust from rising during work operations. Provide hoses and/or water trucks as required.

## 3.4 FIELD QUALITY CONTROL

A. The Owner will retain an independent inspection firm or contact local officials and inspectors at locations where local building codes require special inspections.

## 3.5 CLEAN UP

A. Material designated for removal and not designated to be turned over to the Owner or reinstalled, shall become the property of the Contractor and salvage value therefrom will accrue to the Contractor.

# **END OF SECTION**

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### PART 1 - GENERAL

### 1.1 SUMMARY

- A. Section Includes:
  - 1. Trench backfill materials.

### 1.2 RELATED REQUIREMENTS

- A. Section 01 5000, Temporary Facilities and Controls.
- B. Section 01 8113, Sustainable Design Requirements, for CAL-Green [and Collaborative for High Performance Schools (CHPS)] general requirements and procedures.
- C. Section 31 0000, Earthwork.
- D. Section 33 0000, Utilities
- E. Section 33 4000, Storm Drainage Utilities.

#### 1.3 REREENCES AND STANDARDS

- A. California Building Code (CBC), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).
- B. California Green Building Standards Code (CAL Green), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).
- C. California Plumbing Code (CPC), edition as noted on the drawings.

## 1.4 ADMINISTRATIVE REQUIREMENTS

- A. Submittal Procedures:
  - 1. Action Submittals and Informational Submittals shall be submitted in accordance with Section 01 3300, Submittal Procedures.
  - 2. Closeout Submittals shall be submitted in accordance with Section 01 7700, Closeout Procedures.
  - 3. Sustainable Design Submittals shall comply with the additional requirements of Section 01 8113, Sustainable Design Requirements.
- B. Coordination:
  - 1. General Contractor shall coordinate work as herein specified, in accordance with drawings and as required to complete scope of work with all related trades.
#### TRENCHING AND BACKFILLING SECTION 31 2333 R221551X01

#### 1.5 ACTION SUBMITTALS

A. Provide supplier's descriptive literature for all products to demonstrate compliance with specified attributes:

#### 1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For contractor / Installer.

#### 1.7 CLOSEOUT SUBMITTALS

A. Guarantee: Submit subcontractor's guarantee.

#### 1.8 QUALITY ASSURANCE

- A. Contractor / Installer shall have been in business for five (5) years providing/finishing similar size projects and complexity.
- B. Use only new materials and products, unless existing materials or products are specifically shown otherwise on the Drawings to be salvaged and re-used.
- C. All materials, components, assemblies, workmanship and installation are to be observed by the Owner's Project Inspector. Work not so inspected is subject to uncovering and replacement.

# 1.9 DELIVERY, STORAGE AND HANDLING

A. Transport, store and handle in strict accord with the local jurisdiction.

#### 1.10 FIELDCONDITIONS

- A. Contractor shall acquaint himself with all existing site conditions. If unknown active utilities are encountered during work, notify Architect promptly for instructions. Failure to notify will make Contractor liable for damage to these utilities arising from Contractor's operations subsequent to discovery of such unknown active utilities.
- B. Trench dewatering may be necessary. Contractor shall provide any and all tools, equipment and labor necessary for trench dewatering no matter what the source. Dewatering shall be continuous until all site utilities are installed and backfilled.

#### 1.11 **PROTECTION**

A. Adequate protection measures shall be provided to protect workers and passers-by on and off the site. Adjacent property shall be fully protected throughout the operations. Blasting will not be permitted. Prevent damage to adjoining improvements and properties both above and below grade. Restore such improvements to original condition should damage occur. Replace trees and shrubs outside building area disturbed by operations. Repair all trenches in grass areas with new sod (seeding not permitted) and "stake-off" for protection.

- B. Contractor shall be solely and completely responsible for working conditions at the job site, including safety of all persons and property during performance of the work. This requirement shall apply continuously and shall not be limited to normal working hours.
- C. Any construction review of the Contractor's performance conducted by the Architect or Owner is not intended to include review of the adequacy of the Contractor's safety measures, in, on or near the construction site.
- D. Provide shoring, sheeting, sheet piles and or bracing to prevent caving, erosion or gullying of sides of excavation.
- E. Surface Drainage: Provide for surface drainage during period of construction in manner to avoid creating nuisance to adjacent areas. Keep all excavations free from water during entire progress of work, regardless of cause, source or nature of water.
- F. Adjacent streets and sidewalks shall be kept free of mud, dirt or similar nuisances resulting from earthwork operations.
- G. The site and adjacent influenced areas shall be watered as required to suppress dust nuisance.
- H. Trees: Carefully protect existing trees which are to remain.

# 1.12 TRENCH SAFETY PROVISIONS

- A. General Contractor shall be solely responsible for safety design, construction and coordination with agencies having jurisdiction. If such plan varies from shoring system standards established by Construction Safety Orders, plan shall be prepared by registered civil or structural engineer.
- B. Nothing herein shall be deemed to allow use of shoring, sloping or protective system less effective than that required by Construction Safety Orders of California State Division of Industrial Safety.
- C. When trenching through paved surface, provide steel trench plates to cover open trenches daily until trenches are backfilled.

## 1.13 SEASONAL LIMITS

- A. No backfill material shall be placed, spread or rolled during unfavorable weather conditions. When work is interrupted by heavy rains, full operations shall not be resumed until field tests indicate that moisture content and density of fill are satisfactory.
- B. Material above optimum moisture shall be processed per Section 31 0000, Part 3, Article "Subgrade Preparation".

#### 1.14 TESTING

A. General: Refer to Section 31 0000, Part 1, Article "Testing" and Part 3, Article "Testing and Observation".

#### PART 2 - PRODUCTS

#### 2.1 MATERIALS

- A. Backfill materials: Pipeline and conduit trench backfill as shown on the plans and as specified below.
  - 1.  $\frac{3}{4}$  inch crush rock.
  - 2. Native Materials: Soil native to Project Site, free of wood, organics, and other deleterious substances. Rocks shall not be greater than 3-inches.
  - 3. Sand: Fine granular material, free of organic matter, mica, loam or clay.
  - 4. Lean Mix Concrete: 3 sacks of cement per yard plus sand.
  - 5. Class 2 aggregate base, <sup>3</sup>/<sub>4</sub>" rock, per Caltrans Section 26-1.02B
  - 6. Controlled Density Fill: 3 sack slurry backfill.
- B. Water: Furnish all required water for construction purposes, including compaction and dust control. Water shall be potable.
- C. Provide other bedding and backfill materials as described and specified in Section 33 0000, Section 33 4000 and Divisions 22 and 26.

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

#### 3.1 EXAMINATION

- A. Verification of Conditions:
  - 1. Examine areas and conditions under which work is to be performed.
  - 2. Identify conditions detrimental to proper or timely completion of work and coordinate with General Contractor to rectify.

#### 3.2 INSTALLATION

A. Perform work in accordance with pipe manufacturer's recommendations, as herein specified and in accordance with drawings.

#### 3.3 TRENCHING

- A. Make all trenches open vertical construction with sufficient width to provide free working space at both sides of trench around installed item as required for caulking, joining, backfilling and compacting; not less than 12 inches wider than pipe or conduit diameter, unless otherwise noted.
- B. Carefully excavate around existing utilities to avoid unnecessary damage. The contractor shall anticipate and perform hand work near existing utilities as shown on the survey, without additional claims or cost.
- C. Trench straight and true to line and grade with bottom smooth and free of edges or rock points.

- D. Where depths are not shown on the plans, trench to sufficient depth to give minimum fill above top of installed item measured from finish grade above the utility as follows:
  - 1. Sewer pipe: depth to vary
  - 2. Storm drain pipe:

depth to vary 36 inches

4. Water pipe – Domestic Supply: 30 inches

# 3.4 BACKFILL

3.

A. Pipe Trench Backfill is divided into two zones:

Water pipe - Fire Supply:

- 1. Bedding: Layer of material directly under the pipe upon which the pipe is laid.
- 2. Pipe Zone: Backfill from the top of the bedding to 12 inches (compacted) over the top of the pipe.
- B. Bedding and Initial Backfill:
  - 1. Type of material for Bedding and Initial Backfill shall be as required by Drawings.
  - 2. Compaction of Bedding and Initial Backfill shall be achieved by vibratory plate as necessary to consolidate material.
  - 3. Backfill shall be brought up at substantially the same rate on both sides of the pipe and care shall be taken so that the pipe is not floated or displaced. Material shall not be dropped directly on pipe.
- C. Backfill Compaction:
  - 1. Backfill shall be placed in layers which, when compacted shall not exceed 6 inches in thickness. Each layer shall be spread evenly and thoroughly mixed to insure uniformity. Do not backfill over, wet, frozen or soft subgrade surfaces. Employ a placement method that does not disturb or damage foundation walls, perimeter drainage, foundation damp-proofing, waterproofing or protective cover.
  - 2. When moisture content of fill material is below that required to achieve specified density, add water until proper moisture content is achieved. When moisture content is above that required, aerate by blading or other methods until specified moisture content is met; see Section 31 0000, Part 3, Article "Subgrade Preparation".
  - 3. After each layer has been placed, mixed and spread evenly, it shall be thoroughly compacted to 90% of maximum dry density while at specified moisture content. Compact each layer over its entire area until desired density has been obtained.
  - 4. Compaction: All backfill operations shall be observed by the Inspector of Record and/or Geotechnical Engineer. Field density tests shall be made to check compaction of fill material. If densities are not satisfactory, Contractor will be required to change equipment or procedure or both, as required to obtain specified densities. Notify Inspector and Architect at least 24 hours in advance of any operation.
- D. Backfill in Areas Previously Lime or Cement Treated

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1. Where trenching occurs in areas that have been lime or cement treated, class 2 aggregate bases or approved controlled density backfill material shall be used for the top 12-inches minimum of the trench or thickness shall match the depth of treated material.

#### 3.5 TRENCH AND SITE RESTORATION

A. Finished surface of trenches shall be restored to a condition equal to, or better than the condition as existed prior to excavation work.

#### 3.6 **PROTECTION**

- A. Protect existing surfaces, structures, and utilities from damage. Protect work by others from damage. In the event of damage, immediately repair or replace to satisfaction of Owner.
- B. Repair existing landscaped areas to as new condition. Replant trees, shrubs or groundcover with existing materials if not damaged or with new materials if required. Replace damaged lawn areas with sod, no seeding will be permitted.
- C. Replace damaged pavement with new compatible matching materials. Concrete walks to be removed to nearest expansion joint and entire panel replaced. Asphalt to be cute neatly and replaced with new materials.
- D. Any existing materials removed or damaged due to trenching to be returned to new condition.

#### 3.7 SURPLUS MATERIAL

A. Remove excess excavated material, unused materials, damaged or unsuitable materials from site.

# 3.8 CLEANING

- A. Refer to Section 01 7700.
- B. Contractor will keep the work areas in a clean and safe condition so his rubbish, waste, and debris do not interfere with the work of others throughout the project and at the completion of work.
- C. After completion of work in this section, remove all equipment, materials, and debris. Leave entire area in a neat, clean, acceptable condition.

# END OF SECTION

# PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section Includes:
  - 1. Aggregate.
  - 2. Asphalt paving.
  - 3. Seal coat.
  - 4. Wood headers and stakes.
  - 5. Pavement marking.
  - 6. Precast concrete bumpers.

# 1.2 RELATED REQUIREMENTS

- A. Section 01 5000, Temporary Facilities and Controls.
- B. Section 31 0000, Earthwork.
- C. Section 31 2333, Trenching and Backfilling.
- D. Section 33 0000, Utilities.
- E. Section 33 4000, Storm Drainage Utilities.

# 1.3 **REFERENCES AND STANDARDS**

- A. California Building Code (CBC), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).
- B. California Green Building Standards Code (CAL Green), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).
- C. Local Jurisdiction: Any work within the street, highway or right-of-way shall be performed in accordance with the requirement of the governmental agencies having jurisdiction, and shall not begin until all of those governing authorities have been notified.
- D. ASTM International (ASTM):
  - 1. D698-00 Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5 lb (2.49 Kg) Rammer and 12 inch (304.8 mm) Drop.
  - 2. D1556-00 Test Method for Density of Soil in Place by the Sand-Cone Method.
  - 3. D1557-02 Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb. (4.54 Kg) Rammer and 18 inch (457 mm) Drop.
  - 4. D6628-16 Standard Specification for Color of Pavement Marking Materials.
  - 5. D3017-05 Test Methods for Moisture Content of Soils and Soil-Aggregate Mixture by Nuclear Methods (Shallow Depth).

- 6. D4318-05 Test Method for Liquid Limit, Plastic Limit, and Plasticity Limit.
- E. CALTRANS Standard Specifications.
- F. CAL-OSHA, Title 8, Section 1590 (e).

#### 1.4 ADMINISTRATION REQUIREMENTS

- A. Submittal Procedures:
  - 1. Action Submittals and Informational Submittals shall be submitted in accordance with Section 01 3300, Submittal Procedures.
  - 2. Closeout Submittals shall be submitted in accordance with Section 01 7700, Closeout Procedures.
  - 3. Sustainable Design Submittals shall comply with the additional requirements of Section 01 8113, Sustainable Design Requirements.

#### 1.5 ACTION SUBMITTAS

A. Provide supplier's descriptive literature for all products to demonstrate compliance with specified attributes.

#### 1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Contractor / Installer.
- B. Sustainable Design:
  - 1. General
    - a. Submit information necessary to establish and document compliance with the California Green Building Standards Code.
    - b. Sustainable design submittals are in addition to other submittals.
  - 2. The following information shall be provided:
    - a. Adhesives and Sealants: Evidence of compliance that products meet maximum VOC content limits specified in Section 01 6116.
    - b. Paints and Coatings: Evidence of compliance that products meet maximum VOC content limits specified in Section 01 6116.

#### 1.7 CLOSEOUT SUBMITTALS

A. Guarantee: Submit subcontractor's guarantee.

# 1.8 QUALITY ASSURANCE

- A. Contractor / Installer shall have been in business for five (5) years providing/finishing similar size projects and complexity.
- B. Contractor shall be solely responsible for all subgrades built. Any repairs resulting from inadequate compaction is the responsibility of the contractor.

- C. The representatives of the Owner's testing lab will not act as supervisor of construction, nor will they direct construction operations. Neither the presence of the Owner's testing lab representatives nor the testing by the Owner's testing lab shall excuse the contractors or subcontractors for defects discovered in their work during or following completion of the project. Correcting inadequate compaction is the sole responsibility of the contractor.
- D. Use only new materials and products, unless existing materials or products are specifically shown otherwise on the Drawings to be salvaged and re-used.
- E. All materials, components, assemblies, workmanship and installation are to be observed by the Owner's Project Inspector. Work not so inspected is subject to uncovering and replacement.
- F. Contractor shall provide verification that asphalt mix temperature meets the requirements of this specification at time of application.
- G. Tests (See Part 1, Article "Testing").

# 1.9 DELIVERY, STORAGE AND HANDLING

A. Transport, store and handle in strict accord with the local jurisdiction.

# 1.10 FIELD CONDITIONS

- A. Environmental Requirements:
  - 1. Base Course: Do not lay base course on muddy subgrade, during wet weather, or when atmospheric temperature is below 40 degrees F.
  - 2. Asphalt Surfacing: Do not apply asphaltic surfacing on wet base, during wet weather, or when atmospheric temperature is below 50 degrees F.

# 1.11 EXISTING SITE CONDITIONS

A. Contractor shall acquaint himself with all site conditions. If unknown active utilities are encountered during work, notify Architect promptly for instructions. Failure to notify will make Contractor liable for damage to these utilities arising from Contractor's operations subsequent to discovery of such unknown active utilities.

# 1.12 **PROTECTION**

- A. Adequate protection measures shall be provided to protect workmen and passers-by on and off the site. Adjacent property shall be fully protected throughout the operations. Blasting will not be permitted. Prevent damage to adjoining improvements and properties both above and below grade. Restore such improvements to original condition should damage occur. Replace trees and shrubs outside building area disturbed by operations.
- B. In accordance with generally accepted construction practices, the Contractor shall be solely and completely responsible for working conditions at the job site, including safety of all persons and property during performance of the work. This requirement shall apply continuously and shall not be limited to normal working hours.

- C. Any construction review of the Contractor's performance conducted by the owner's representative is not intended to include review of the adequacy of the Contractor's safety measures, in, on, or near the construction site.
- D. Surface Drainage: Provide for surface drainage during period of construction in manner to avoid creating nuisance to adjacent areas. The contractor shall make a reasonable effort on a daily basis to keep all excavations and the site free from water during entire progress of work, regardless of cause, source, or nature of water.
- E. Adjacent streets and sidewalks shall be kept free of mud, dirt or similar nuisances resulting from earthwork operations.
- F. The site and adjacent influenced areas shall be watered as required to suppress dust nuisance. Dust control measures shall be in accordance with the local jurisdiction.

#### 1.13 SEASONAL LIMITS

A. No fill material shall be placed, spread or rolled during unfavorable weather conditions. When work is interrupted by rains, fill operations shall not be resumed until field tests indicate that moisture content and density of fill are satisfactory.

#### 1.14 TESTING

- A. General: Refer to Section 01 4523 TESTING & INSPECTION SERVICES AND STRUCTURAL TESTS AND INSPECTIONS LIST, DSA-103.
- B. Geotechnical Engineer: Owner is retaining a Geotechnical Engineer to determine compliance of fill with Specifications, and to direct adjustments in fill operations. Costs of Geotechnical Engineer will be borne by Owner; except those costs incurred for retests or re-inspection will be paid by Owner and backcharged to Contractor.

# PART 2 - PRODUCTS

#### 2.1 DESIGN AND PERFORMANCE CRITERIA

- A. Sustainable Design:
  - 1. VOC emissions for field-applied adhesives, sealants, and sealant primers must comply with limits specified in Section 01 6116.
  - 2. VOC emissions for field-applied paints and coatings must comply with limits specified in Section 01 6116.

# 2.2 MATERIALS

- A. Sterilant: Soil sterilizer shall be CIBA GEIGY's Pramatol 25-E, Treflan EC or Thompson-Hayward Casoron.
  - 1. Soil sterilizer shall be applied in strict accordance with manufacturer's instructions.

- B. Base Course Aggregate: State Specifications, Section 26, Class 2 aggregate base (3/4" max.).
- C. Asphalt Binder: Steam-refined paving asphalt conforming to State Specifications, Section 92, viscosity grade PG 64-10. Asphalt binder additives for HMA per Caltrans approved list of manufacturers.
- D. Liquid Asphalt Tack Coat: Per CALTRANS section 94.
- E. Surface Course Aggregate: Mineral aggregates for Type "B" asphalt concrete, conforming to State Specifications 39-2.02, Type B, ½" maximum, medium gradient. 3/8" maximum gradient at Playcourt.
- F. Seal Coat: shall be a pre-mixed asphalt emulsion blended with select fillers and fibers such as:
  - 1. "Park-Top No. 302", Western Colloid Products.
  - 2. "Overcoat", Reed and Gram.
  - 3. "Drivewalk", Conoco Oil.
- G. Wood Headers and Stakes: Pressure treated.
- H. Pavement Marking: Colors as directed by Architect. Colors of painted traffic stripes and pavement markings must comply with ASTM D6628.
  - 1. Waterborne traffic line colors white, yellow and red, State specification PTWB-01R3.
  - 2. Waterborne traffic line for the international symbol of accessibility and other curb markings blue, red and green, Federal specification TT-P-1952F.
- I. Precast Concrete Bumpers: 3000 psi at 28 day minimum strength; 48" length unless otherwise indicated; provide with steel dowel anchors and concrete epoxy.
- J. Pavement Epoxy; K-Lite; Ktepx-590; Ennis Epoxy HPS2 or an approved equal.
- K. Crack Filler; QPR model CAR08, 10oz asphalt crack filler; Star STA-FLEX Trowel Grade crack filler or approved equal.
- L. Reclaimed Asphalt Paugment (RAP). HMA Type A or Type B may be produced using RAP providing it does not exceed 15% or the aggregate blend.

#### 2.3 MIXES

- A. General: Plant mixed conforming to State Specifications, Section 39, Type B, ½" maximum, medium grading. 3/8" maximum grading shall be used at hardcourt.
- B. Temperature of Hot Mix Asphalt: Not less than 275 degrees F nor more than 325 degrees F when added to aggregate.

- C. Temperature of Hot Mix Aggregate: Not less than 250 degrees F nor more than 325 degrees F when asphalt is added.
- D. Temperature of Hot Mix Asphalt Concrete: Asphalt shall be not less than 285 degrees at time of application, nor more than 350 degrees. Asphalt not meeting the required temperature shall not be used.
- E. Temperature of Warm Mix Asphalt: Mixing and placement; per the approved manufactures heat range recommendations for mixing and placement.

# PART 3 - EXECUTION

#### 3.1 EXAMINATION

A. Conditions of Work in Place: Subsurfaces which are to receive materials specified under this Section shall be carefully examined before beginning work hereunder, and any defects therein shall be reported, in writing, to the Architect. Work shall not be started until such defects have been corrected. Starting of work shall imply acceptance of conditions as they exist.

# 3.2 **PREPARATION**

A. Sub-Grade: Clean, shape and compact to hard surface free from elevations or depressions exceeding 0.05' in 10' from true plan. Compact per Section 31 0000. Compaction and moisture content shall be verified immediately prior to placement of aggregate base. Proof roll subbase in presence of geotechnical engineer prior to placement of aggregate base.

# 3.3 INSTALLATION

- A. Headers:
  - 1. General: Install as edging to asphalt paving, except where adjoining existing pavement, concrete curbs, walks or building.
  - 2. Existing Headers: Remove existing headers where new paving will join existing. Saw cut existing asphalt to provide clean edge.
  - 3. Lines and Levels: Install true to line and grade. Cut off tops of stakes 2-inches below top of header so they will not be visible on completion of job.
- B. Asphalt Paving:
  - 1. Base Course: Install in accord with State Specifications, Section 26. Compact to relative compaction of not less than 95%, ASTM D1557. The material shall be deposited on the subgrade in such a manner as to provide a uniform section of material within five percent tolerance of the predetermined required depth. Deposition will be by spreader box or bottom dump truck to prevent segregation of the material. The material so deposited on the subgrade shall have sufficient moisture which, in the opinion of the Architect is adequate to prevent excessive segregation. It shall then be immediately spread to its planned grade and cross

section. Undue segregation of material, excessive drifting or spotting of material will not be permitted. If in the opinion of the site geotechnical engineer, the material is unsuitably segregated, it shall be removed or completely reworked to provide the desired uniformity of the material.

- a. Moisture content and compaction of base material shall be tested immediately prior to placement of asphalt paving.
- 2. Sterilant: Apply specified material at manufacturer's recommended rate. Applicator of sterilant material shall be responsible for determining location of all planter areas. Apply specified material over entire base course area just prior to application of asphalt. Follow manufacturer's printed directions.
- 3. Liquid Asphalt Tack Coat: Apply as "tack coat" to all vertical surfaces of existing paving, curbs, walks, and construction joints in surfacing against which paving is to be placed.
- 4. Asphalt Concrete Surface Course:
  - a. Comply with State Specifications, 39-6 except as modified below.
    - 1) Final gradation shall be smooth, uniform and free of ruts, humps, depressions or irregularities, with a minimum density of 91% of the theoretical maximum specific gravity determined by California Test Method #309. Maximum variation 1/8 inch in 10' when measured with steel straightedge in any one direction. Test paved areas for proper drainage by applying water to cover area. Correct portions that do not drain properly by patching with plant mix. In no case shall accessible parking spaces or loading and unloading areas exceed 2% slope in any direction.
    - 2) Asphalt material shall be delivered to the project site in a covered condition to maintain acceptable temperature.
- 5. Placement and adjustment of Frames, Covers, Boxes and Grates: The Contractor shall set and adjust to finish grade all proposed and existing frames, covers, boxes, and grates of all manholes, drop inlets, drain boxes, valves, cleanouts, electrical boxes and other appurtenant structures prior to placement of asphaltic concrete.
- 6. Water Testing: All paved areas shall be water tested, to check drainage, in the presence of the project inspector prior to placement of seal coat. The surface of asphalt paving shall not vary more than 1/8 inch above or below the grade established on the plans. If variations in grade are present, they will be corrected by overlaying paving and/or pavement removal and replacement as directed by the Architect.
- 7. Patching: Cut existing paving square and plumb at all edges to be joined by new paving. In trenches; grind existing asphalt on each side of trench 3" wide x ½ the depth of the section. Apply tact coat to vertical surfaces before installing new work. Warp carefully to flush surface, with seal over joints, and feather edge. Sawcut, remove and patch existing paving where cutting is necessary for installation of piping or conduits under Divisions 15, 16 and 33.
- 8. Seal Coat:
  - a. Seal coat shall be applied no sooner than 30 days from time of asphalt placement.

- b. Surface Preparation: surface shall be clean of all dirt, sand, oil or grease. Hose down entire area with a strong jet of water to remove all debris. Remove soft, loose, or otherwise damaged areas of asphalt concrete to full depth of damage and replace with compacted asphalt concrete as specified herein. Minor holes and imperfections may be patched using hot mix asphalt or mastic using sand/SS-1-H. Use wire brush for removal of oil and grease; prime with shellac or synthetic resin as recommended by manufacturer of pavement sealer material.
- c. Seal Coat Seal Application: Thoroughly mix materials in the presence of the onsite inspector. Failure to do so will be cause for rejection. Apply in accordance with manufacturer's written instructions.
  - a. The minimum application rate for each applied coat shall be 30gals per 1000 sq. ft. Two coats of sealcoat will be required.
  - b. Clean-Up and Precautions: As recommended by pavement sealer material manufacturer.
- d. Clean-Up and Precautions: As recommended by pavement sealer material manufacturer.
- C. Pavement Marking: painted pavement markings shall be done only after the seal coat has thoroughly dried. On clean surfaces to be painted with traffic paint of dust, dirt, grime, oil, rust or other contaminants which will impair the quality of work or interfere with proper bond of paint coats. Surfaces shall be cleaned to the extent and by whatever means that will satisfactorily accomplish the purpose without damage to asphalt concrete. Provide measured layouts, temporary markings, templates, and other means necessary to provide required marking. Prepare and apply paint in accordance with manufacturer's instructions; paint shall be applied by spray and shall achieve complete coverage free from voids and thin spots. Where indicated on the Drawings, paint parking stall strips, lettering, arrows, accessible symbols, playground markings, game striping, maps, etc. on concrete paving or asphalt concrete paving. Paint stripes shall be 4 inches wide (except otherwise indicated) and applied with two (2) coats of herein specified Traffic Line Paint; white (except as otherwise specified or indicated).
  - 1. International Accessible Symbol: Symbol shall be white figures on a blue background. Blue shall be equal to color No. 15090 in Fed. Std. 595c. Lines and symbols shall be accurately formed and true to line and form; lines shall be straight and uniform in width. Painted edges shall be clean cut and free from raggedness, and corners shall be cut sharp and square. Tolerances: Apply striping within a tolerance 1/2 inch in 50 feet. Apply markings and striping to widths indicated with a tolerance of 1/4 inch on straight sections and 1/2 inch on curved sections.
- D. Colors: As directed by Architect
- E. Precast Concrete Bumpers: Install where shown, using steel dowels, and epoxy applied for length to wheel stop without damage to bumpers or asphalt concrete paving.

# 3.4 CLEANING

A. Upon completion of work of this Section promptly remove from the working area all scraps, debris and surplus material of this Section.

B. Clean excess material from surface of all concrete walks and utility structures.

# **END OF SECTION**

# PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section Includes:
  - 1. Concrete curbs and gutters.
  - 2. Concrete pavement, sidewalks and ramps.
  - 3. Steel reinforcing for flatwork and curbs.
  - 4. Truncated domes.

# 1.2 RELATED REQUIREMENTS

- A. Section 01 4523, Testing & Inspection Services.
- B. Section 03 1000, Concrete Forming & Accessories.
- C. Section 03 2000, Concrete Reinforcing.
- D. Section 03 3000, Cast-in-Place Concrete.
- E. Section 09 9623, Graffiti-Resistant Coatings.
- F. Division 31, Earthwork.
- G. Section 32 1200, Asphalt Concrete Paving.

# 1.3 **REFERENCES AND STANDARDS**

- A. California Building Code (CBC), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).
- B. California Green Building Standards Code (CALGreen), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).
- C. American Concrete Institute (ACI):
  - 1. 117: Specification for Tolerances for Concrete Construction and Materials and Commentary.
  - 2. 211.1: Standard Practice for Selecting Proportions for Normal, Heavyweight and Mass Concrete.
  - 3. 301: Specifications for Structural Concrete.
  - 4. 302.1R: Guide to Concrete Floor and Slab Construction.
  - 5. 305R: Guide to Hot Weather Concreting.
  - 6. 306R: Guide to Cold Weather Concreting.
  - 7. 308R: Guide to External Curing of Concrete.
  - 8. 318: Building Code Requirements for Structural Concrete and Commentary.

- 9. 347R: Guide to Formwork for Concrete.
- D. ASTM International (ASTM):
  - 1. A615/A615M: Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
  - 2. A706/A706M: Standard Specification for Deformed and Plain Low-Alloy Steel Bars for Concrete Reinforcement.
  - 3. C33/C33M: Standard Specification for Concrete Aggregates.
  - 4. C94/C94M: Standard Specification for Ready-Mixed Concrete.
  - 5. C143/C143M: Standard Test Method for Slump of Hydraulic-Cement Concrete.
  - 6. C150C150M: Standard Specification for Portland Cement.
  - 7. C260/C260M: Standard Specification for Air-Entraining Admixtures for Concrete.
  - 8. C309: Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
  - 9. C330/C330M: Standard Specification for Lightweight Aggregates for Structural Concrete.
  - 10. C494/C494M: Standard Specification for Chemical Admixtures for Concrete.
  - 11. C618: Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete.
  - 12. C920: Standard Specification for Elastomeric Joint Sealants.
  - 13. C1107/C1107M: Standard Specification for Packaged Dry, Hydraulic Cement Grout (Non-Shrink).
  - 14. C1315: Standard Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete.
  - 15. D1751: Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).
  - 16. D5893/D5893M: Standard Specification for Cold Applied, Single Component, Chemically Curing Silicone Joint Sealant for Portland Cement Concrete Pavements.
- E. Concrete Reinforcing Steel Institute (CRSI):
  - 1. Manual of Standard Practice.
  - 2. Placing Reinforcing Bars.
- F. State of California, Department of Transportation (Caltrans):
  - 1. Division of Engineering Services:
    - a. California Test 342: Method of Test for Surface Skid Resistance with the California Portable Skid Test.
  - 2. Standard Specifications.
    - a. Section 51, Concrete Structures.
    - b. Section 52, Reinforcement.
    - c. Section 73, Concrete Curbs and Sidewalks.

- d. Section 90, Concrete.
- G. US Government General Services Administration (GSA/SAE):
  - 1. GSA/SAE AMS-STD-595A: Colors Used In Government Procurement.

#### 1.4 ADMINISTRATIVE REQUIREMENTS

- A. Submittal Procedures:
  - 1. Action Submittals shall be submitted in accordance with Section 01 3300, Submittal Procedures.
  - 2. Closeout Submittals shall be submitted in accordance with Section 01 7700, Closeout Procedures.
  - 3. Sustainable Design Submittals shall comply with the additional requirements of Section 01 8113, Sustainable Design Requirements.

#### 1.5 ACTION SUBMITTALS

- A. Shop Drawings: Joint pattern layout for walks and pavement.
- B. Product Data:
  - 1. A complete list of materials proposed to be used for the site concrete work including, but not limited to, sand, gravel, admixtures, surface treatments, coloring agents, sealers, cast-in-place accessories, forming and curing products, concrete mix designs, reinforcing materials, joint materials, curing materials, and detectable warning surface.
  - 2. Manufacturer's descriptive literature for products proposed for use. Include installation instructions, and maintenance instructions.
- C. Concrete Mix Design: The Contractor shall submit three copies of each proposed mix design for each class of concrete in accordance with ACI 301, Sections 3.9 "Proportioning on the Basis of Previous Field Experience or Trial Mixture," or 3.10 "Proportioning Based on Empirical Data." The Contractor shall submit a separate mix design for concrete to be placed by pumping, in addition to the mix design for concrete to be placed by pumping.
  - 1. The following information shall be included in the concrete mix design:
    - a. Proportions of cement, fine and coarse aggregate, and water.
    - b. Water-cement ratio, 28-day compressive design strength, slump, and air content.
    - c. Type of cement and aggregate.
    - d. Special requirements for pumping.
    - e. Range of ambient temperature and humidity for which design is valid.
    - f. Special characteristics of mix, which require precautions in mixing, placing, or finishing techniques to achieve specified finished product.
  - 2. Do not begin concrete production until mixes have been reviewed and approved by Engineer.

a. Review of mix design by the Architect and Engineer shall in no way relieve the subcontractor of his responsibility for the performance of the concrete.

#### 1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For manufacturer
- B. Delivery tickets as specified for ready-mixed concrete.
- C. Sustainable Design:
  - 1. General:
    - a. Submit information necessary to establish and document compliance with the California Green Building Standards Code.
    - b. Sustainable design submittals are in addition to other submittals.
  - 2. The following information shall be provided:
    - a. Adhesives and Sealants: Evidence of compliance that products meet maximum VOC content limits specified in Section 01 6116.
    - b. Paints and Coatings: Evidence of compliance that products meet maximum VOC content limits specified in Section 01 6116.

# 1.7 CLOSEOUT SUBMITTALS

A. Guarantee: Submit subcontractor's guarantee.

# 1.8 QUALITY ASSURANCE

- A. Qualifications:
  - 1. Manufacturer of ready-mixed concrete products shall meet ASTM C94/C94M requirements for production facilities and equipment.
- B. Design, erect, support, brace and maintain formwork and shoring to safely support all loads that might be applied until such loads can be carried by concrete.
- C. The Contractor shall perform work in accordance with ACI 301.
- D. Use only new materials and products.
- E. Single-Source Responsibility: Use materials and products of one manufacturer whenever possible.
- F. Materials, components, assemblies, workmanship and installation are to be observed by the Owner's Project Inspector. Work not so inspected is subject to uncovering and replacement.
- G. Testing to determine compliance with the work of this Section will be the responsibility of the Contractor.

- 1. Cement and reinforcing shall be tested in accordance with CBC Section 1910A. Testing of reinforcing may be waived in accordance with Section 1910A.2 when approved by the Engineer and DSA.
- 2. Testing will be performed by an independent testing and inspecting agency in accordance with Section 01 4523, Testing and Inspection Services, and paid for by the Owner.
- 3. Refer to Article FIELD QUALITY CONTROL in Part 3 of this Section for additional requirements.
- 4. Cost of retests and coring due to low strength or defective concrete will be paid by the Owner and back-charged to the Contractor.
- H. Sieve analysis from testing laboratories identifying rock/sand percentages within the concrete mix; or class 2 aggregate base shall have the current Project name and Project location identified on the report. Outdated analytical reports greater than 90 days old will not be accepted.

# 1.9 DELIVERY, STORAGE AND HANDLING

- A. Deliver undamaged products to job in manufacturer's sealed containers and/or original bundles with tags and labels intact.
- B. Store materials in protected, dry conditions off of ground and in areas so as to not interfere with the progress of the Work.
- C. Transport, store and handle in strict accordance with the manufacturer's written recommendations.
- D. Store cement in weather tight building, permitting easy inspection and identification. Protect from dampness. Lumpy or stale cement will be rejected.
- E. Aggregates: Prevent excessive segregation, or contamination with other materials or other sizes of aggregate. Use only one supply source for each aggregate stock pile.

# 1.10 FIELD CONDITIONS

- A. Make and be responsible for all field dimensions necessary for proper fitting, slopes, and completion of work. Report discrepancies to Architect before proceeding.
- B. Do not place concrete during rain without adequate protection.
- C. The Contractor shall conform to ACI 306R when mixing and placing concrete during cold weather. Provide sufficient protection when daily temperatures drop below 40 degrees F.
- D. The Contractor shall conform to ACI 305R when mixing and placing concrete during hot weather. When air temperature exceeds 100 degrees F adjust concrete mix with retarding admixture in design mix, and adequately test and take additional measures as directed by concrete supplier.

- E. The Contractor shall maintain access for vehicular and pedestrian traffic as required for other construction activities. Use temporary striping, flagmen, barricades, warning signs, and warning lights as required.
- F. Placing in hot weather: Comply with ACI 305R. Concrete shall be delivered, placed and finished in a sufficiently short period of time to avoid surface dry checking.
  - 1. Concrete shall not exceed 85 degrees F at time of placement.
  - 2. Concrete shall be kept wet continuously after tempering until implementation of curing compound procedure in accordance with this specification.
  - 3. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 pounds per square foot per hour, before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- G. Placing in Cold Weather: Comply with ACI 306R. Protect from frost or freezing. No antifreeze admixtures are permitted.
  - 1. When placing concrete during freezing or near-freezing weather, mix shall have temperature of at least 50 degrees F but not more than 90 degrees F.
  - 2. Concrete shall be maintained at temperature of at least 50 degrees F for not less than 72 hours after placing or until it has thoroughly hardened.
  - 3. Provide necessary thermal coverings for any flat work exposed to freezing temperatures.

# PART 2 - PRODUCTS

# 2.1 DESIGN AND PERFORMANCE CRITERIA

- A. Contractor shall comply with requirements applicable to this Section for concrete materials, admixtures, bonding materials, curing materials, surface sealers and others as required.
- B. Concrete walking surfaces shall have a coefficient of friction not less than 0.30 and will be subject to testing to verify compliance as specified in Article FIELD QUALITY CONTROL.
  - 1. The coefficient of friction will be measured by California Test 342 before pavement is opened to public traffic, but not sooner than 7 days after concrete placement.
  - 2. Contractor shall notify the Architect and Project Inspector of pavement having a coefficient of friction less than 0.30.
- C. Sustainable Design:
  - 1. VOC emissions for field-applied adhesives, sealants, and sealant primers must comply with limits specified in Section 01 6116.
  - 2. VOC emissions for field-applied paints and coatings must comply with limits specified in Section 01 6116.

# 2.2 FORMING MATERIALS

- A. Form Material: Steel, wood, or other suitable material of size and strength to resist movement during concrete placement and to retain horizontal and vertical alignment until removal. Use straight forms, free of distortion and defects. Use flexible spring steel forms or laminated boards to form radius bends as required. The forms shall be of a depth equal to the depth of curbing or sidewalk, and so designed as to permit secure fastening together at the tops. Coat forms with non-staining type coating that will not discolor or deface surface of concrete.
  - 1. Concrete Exposed to View: 5/8-inch minimum APA B-B Plyform, steel or "Sonotube" forms by Sunoco, 888-875-8754, or equal.
  - 2. Concrete Concealed from View: 5/8-inch minimum APA B-B Plyform, steel or 1 x 8 DF, Number 2 Grade or better.
- B. Form Ties: Snap off metal of fixed length, leaving no metal within 1-1/2 inches of surface and no fractures, spalls or other surface defects larger than 1 inch diameter; manufactured by Burke, Dayton Superior, or equal.
- C. Spreaders: Metal. Wood is not permitted.
- D. Form Coating: Coat forms with non-staining material that will not discolor or deface surface of concrete or leave any residue on concrete that would interfere with surface coating as approved by the Architect.
- E. Chamfer Strips: Rigid polyvinyl chloride, 3/4-inch x 3/4-inch, in maximum possible lengths, manufactured by Burke, Greenstreak, Vulco, or equal.

#### 2.3 REINFORCING MATERIALS

- A. Reinforcement Bars: New billet steel deformed bars conforming to requirements of ASTM A615/A615M or ASTM A706/A706M; Grade 60.
  - 1. Bars for dowels installed through expansion joints or construction joints to existing sidewalks or concrete features shall be smooth or if deformed shall be sleeved on one end for slippage.
- B. Reinforcing Supports: Galvanized metal chairs or spacers or metal hangers, accurately placed 3 feet on center each way, staggered, with each support securely fastened to steel reinforcement in place.
  - 1. Bottom bars in footings may be supported with 3-inch concrete blocks with embedded wire ties.
  - 2. Concrete supports without wire ties will not be allowed.

# 2.4 CONCRETE MATERIALS

- A. Cement: Portland cement in accordance with ASTM C150/C150M, Type II, low alkali.
- B. Concrete Aggregates: Graded from coarse to fine in accordance with ASTM C33/C33M.

- 1. Normal Weight Aggregates: Clean and free from deleterious coatings, clay balls, roots, and other extraneous materials, and in conformance with ASTM C33/C33M, except as otherwise specified. Combined grading shall meet limits of ASTM C33/C33M.
  - a. Size: Not be larger than one-fifth of the narrowest dimension between forms, or larger than three-fourths of the minimum clear spacing between reinforcing bars.
- 2. Lightweight Aggregates:
  - a. General: Durable particles suitably processed, washed and screened without adherent coatings, free of materials with deleterious reactivity to alkali in cement, and conforming to ASTM C330/C330M.
  - b. Fine aggregate shall be natural sand, or sand prepared from stone or gravel, with grains free of silt, loam and clay.
- C. Water: Potable, clean, and in accordance with ASTM C94/C94M, free from injurious amounts of oil, acids, alkalis, salts, scale, organic materials or other deleterious matter, and in compliance with ACI 318 Section 26.4.1.3.
- D. Fly Ash: Western Fly Ash, conforming to ASTM C618 for Class N or Class F materials and in accordance with CBC Section 1903A.6.
  - 1. Class C is not permitted.
  - 2. Proportions: Not more than 15 percent (by weight) may be substituted for portland cement.

# 2.5 ADMIXTURES

- A. Water Reducing Admixture: Admixture to improve placing, reduce water cement ratio and ultimate shrinkage; "WRDA 64" by GCP Applied Technologies, or equal conforming to ASTM C494/C494M and ACI 318 Section 3.6.
  - 1. Water reducing admixture may be used subject to prior approval by the Architect, Engineer, and the Testing Lab.
  - 2. Proposed product and quantity shall be included in original design mix.
- B. Air-Entraining Admixture: "Daravair 1000" by GCP Applied Technologies or equal conforming to ASTM C260 and ACI 318, section 26.4.1.4.
  - 1. Proportion air entraining concrete to attain specified minimum 28-day compressive strength.
  - 2. Total air entrainment in concrete shall be not less than 4 percent or more than 6 percent of the volume of concrete.
- C. Glare Reduction Colorant: Concentrated pigment dispersions designed to permanently color concrete; "Chromix L10 Base-Black" by Sika Corporation, or equal. *Was within 2.2 H.1*

# 2.6 CURING MATERIALS

A. Clear Curing Compound: Water-based membrane-forming concrete curing compound in accordance with ASTM C309 and C1315; "Aqua Resin Cure Clear" by Burke CO, "1100" by W.R. Meadows, or equal.

#### 2.7 ADDITIONAL MATERIALS AND COMPONENTS

- A. Concrete Bonding Agent: The following, or equal, conforming to ASTM C1059/C1059M.
  - 1. "Weld-Crete" by Larson Products Corporation, 800-633-6668.
  - 2. "Daraweld C" by GCP Applied Technologies, 877-423-6491.
- B. Patching Mortar: One-component, trowel applied, migrating-corrosion-inhibitor enhanced, polymer-modified, shrinkage-compensated, fiber reinforced, micro-silica enhanced, cementitious repair mortar for horizontal, vertical, and overhead applications; "Meadow-Crete GPS" by W.R. Meadows, or equal.
- C. Non-Shrink Grout: Premixed, non-metallic, no chlorides, non-staining and non-shrinking conforming to ASTM C1107/C1107M; "MasterFlow 713" by Master Builders Solutions, a division of BASF, 800-433-9517, or equal.
- D. Drainage Rock Base: 3/4-inch aggregate size conforming to Class 2 Aggregate Base as defined in Caltrans Standard Specifications Section 26, or equal clean free-draining gravel or crushed rock as recommended by the Geotechnical Engineer.
- E. Expansion Joint Material: Preformed 3/8-inch fiber material, with bituminous binder manufactured for use as concrete expansion joint material and conforming to ASTM D1751 and approved by Architect.
  - 1. Furnish joint fillers in one-piece lengths for full width being placed, wherever possible. Where more than one length is required, lace or clip joint-filler sections together.
- F. Joint Sealant for Expansion Joints in Concrete: Weather and UV resistant, single component, cold applied silicone sealant, Type S, conforming to ASTM D5893/D5893M; ASTM C920, Grade P, Class 25, Use T.
  - 1. Self-Leveling: "DOWSIL 890-SL Silicone Joint Sealant" by Dow Chemical Company, or equal.
  - 2. At Slopes Exceeding 5 Percent: Non-sagging; "DOWSIL 888 Silicone Joint Sealant" by Dow Chemical Company, or equal.
  - 3. Color: As standard with manufacturer.
- G. Pre-Formed Plastic Expansion Joint Caps: Polystyrene, with removable tops; "Snap Cap" by W. R. Meadows, Tex-Trude expansion caps, or equal.
- H. Truncated Domes: Vitrified Polymer Composite (VPC) cast-in-place detectable/tactile warning surface tiles complying with Americans with Disabilities Act (ADA) and the California Code of Regulations (CCR) Title 24, Part 2, Chapter 11B; "Armor-Tile", "Access Tile Tactile Systems," or equal.

- 1. Color: Shall be yellow and approximate 33538 of GSA/SAE AMS-STD-595A in accordance with CBC Section 11B-705.1.1.3.1.
- I. Traffic Paint for Accessibility Striping at Stairs: VOC compliant, water-based, vinyl acrylic copolymer fast drying emulsion and specifically formulated as a traffic marking paint; "Setfast" with "Duckback" abrasive additive by Sherwin-Williams, "SAFE-STRIDE" by Wooster Products, Inc., or equal.
  - 1. Colors: As selected by Architect. Yellow

#### 2.8 CONCRETE DESIGN AND CLASS

- A. Designed Strength and Classes of Concrete: The following mixes are not applicable to concrete items exceeding 4 feet in height above the adjacent grade.
  - 1. Class "B": Concrete shall have 1 inch maximum size aggregate, shall have 3000 pounds per square inch minimum at 28 day strength with a maximum water to cementitious ratio no greater than 0.50.
    - a. Location of Use: Exterior slabs, including walks, vehicular paved surfaces, manhole bases, poured-in-place drop inlets, curbs, valley gutters, curb and gutter, and other concrete of like nature.
  - 2. Class "D" concrete of 1 inch maximum size aggregate shall have 3500 pounds per square inch 28 day strength with a maximum water to cementitious materials ratio of 0.55.
    - a. Location of Use: Footings and retaining walls not attached to buildings, and planter walls, monument signs, and other site concrete not described for use in Class "B".
- B. Slump Limits: Provide concrete, at point of final discharge of proper consistency as tested in accordance with ASTM C143/C143M with slumps of 4 inches, plus or minus 1 inch.
- C. Mix Design: Concrete shall be designed for strength in accordance with provisions of CBC Section 1905A.
  - 1. Should the Contractor desire to pump concrete, a modified mix design will need to be submitted for review.
  - 2. Fly ash may be used in concrete to improve workability in amounts up to 15 percent of the total cementitious weight.
- D. Air Entrainment: Provide at concrete paving / flatwork, including concrete ramps and stairs in accordance with local jurisdiction minimum requirements, but no less than 3 percent of the volume of concrete.
- E. Glare Reduction Additive:
  - 1. General:
    - a. Provide at exterior concrete slabs, walks, ramps, stairs, including bleachers, and other exposed flatwork to eliminate glare.

- b. Omit glare reduction colorant where color hardener, integral color, and stain treatment of concrete are scheduled.
- 2. Quantity: As required to match approved sample but not exceed 2 pounds of colorant per cubic yard of concrete.
- 3. Add colorant to mix in accordance with manufacturer's printed instructions.
- F. Coloring Agent:
  - 1. Quantity: Add pigment as required to result in hardened concrete color consistent with approved sample but not exceeding maximum dosage per sack of cement as recommended by manufacturer based on total cementitious materials of mix design.
  - 2. Add pre-mixed colorant bags to mix in accordance with manufacturer's printed instructions.

# 2.9 MIXING OF CONCRETE

- A. Conform to requirements of CBC Chapter 19A.
- B. Concrete shall be mixed until there is uniform distribution of material and mass is uniform and homogenous; mixer must be discharged completely before the mixer is recharged.
- C. Concrete shall be Ready-Mixed Concrete: Mix and deliver in accordance with the requirements set forth in ASTM C94/C94M and ACI 301. Batch Plant inspection may be waived in accordance with CBC Section 1705A.3.3, when approved by the Project Engineer and DSA.
  - 1. Furnish batch certificates for each batch discharged and used in the work.
  - 2. Approved Testing Laboratory shall check the first batching at the start of the work and furnish mix proportions to the Licensed Weighmaster.
  - 3. Licensed Weighmaster shall identify materials as to quantity and to certify to each load by ticket.
  - 4. Delivery tickets are to accompany each truck and shall be kept in the job superintendent's file. Delivery tickets must indicate the following information or be subject to rejection:
    - a. Name of Project.
    - b. Supplier of concrete.
    - c. Truck identity and ticket serial number.
    - d. Date of delivery.
    - e. Brand of cement.
    - f. Cement content.
    - g. Strength classification.
    - h. Batching time.
    - i. Point of deposit.
    - j. Total amount of water.
    - k. Weight of aggregate.

- I. Daily temperature.
- m. Number of cubic yards in load.
- n. Admixture content.
- o. Name of Contractor.
- p. Name of driver.
- q. Time loaded and first mixing of concrete.
- r. Reading of revolution counter.
- s. Color additive.
- 5. Ticket shall be transmitted to Project Inspector by truck driver with load identified thereon. Project Inspector will not accept load without load ticket identifying mix and will keep daily record of pours, identifying each truck, its load and time of receipt, and will transmit two copies of record to DSA.
- 6. At end of project, Weighmaster shall furnish affidavit to DSA on form satisfactory to DSA, certifying that all concrete furnished is in conformance with proportions established by mix designs.
- 7. Placement of concrete shall occur as rapidly as possible after batching and in a manner which will assure that the required quality of the concrete is maintained. In no case may concrete be placed more than 90 minutes from batch time.
  - a. When air temperature is between 85 and 90 degrees F, reduce maximum batching to discharge time from 90 minutes to 75 minutes.
  - b. When air temperature is above 90 degrees F, reduce maximum batching to discharge time to 60 minutes.
- 8. Water may be added to the mix only if neither the maximum permissible watercement ratio nor the maximum slump is exceeded.
  - a. The quantity of water used for each batch shall be accurately measured.
  - b. In no case shall more than 10 gallons of water be added to a full 9-yard load, or 1 gallon per yard on remaining concrete within the drum, providing load tag indicates at time of mixing at plant an allowance for additional water.

# PART 3 - EXECUTION

# 3.1 EXAMINATION

- A. Confirm general layout, grade, and joint pattern layout with the Architect prior to placing concrete.
- B. Verify that gradients and elevations of the base are correct, and that the base is dry.
- C. Contractor shall report in writing to the Architect prevailing conditions that will adversely affect satisfactory execution of the work of this Section.
  - 1. Do not proceed with work until unsatisfactory conditions have been corrected.
- D. Forms and reinforcements are subject to approval by the Project Inspector as specified in Article FIELD QUALITY CONTROL.

# 3.2 **PREPARATION**

- A. Remove frost, water, and other foreign materials from form surfaces, reinforcement, and embedded items against which concrete will be placed.
- B. When the ambient temperature necessitates the use of cold or hot weather concreting, make provisions in advance of concrete placement.
- C. Before placing concrete, clean tools and equipment, and remove debris from areas to receive concrete.
- *D.* Clean reinforcing and other embedded items of coatings, oil, mud and soil that may impair bond with concrete.
- E. Slab-On-Grade: After subgrade has been approved by Geotechnical Engineer, install specified drainage rock base material to thickness shown. Rock base shall be implemented and compacted in accordance with the Geotechnical Report and recommendations of the Geotechnical Engineer.

#### 3.3 INSTALLATION – FORMWORK

- A. Form material shall be straight, true, sound and able to withstand deformation due to loading and effects of moist curing. Materials which have warped or delaminated, or require more than minor patching of contact surfaces, shall not be reused.
- B. Build forms to shapes, lines, grades and dimensions indicated. Construct formwork to maintain tolerances required by ACI 301. Forms shall be substantial, tight to prevent leakage of concrete, and properly braced and tied together to maintain position and shape. Butt joints tightly and locate on solid backing. Chamfer corners where indicated. Form bevels, grooves and recesses to neat, straight lines. Construct forms for easy removal without hammering, wedging or prying against concrete.
- C. Space clamps, ties, hangers and other form accessories so that working capacities are not exceeded by loads imposed from concrete or concreting operations.
- D. Build openings into vertical forms at regular intervals if necessary to facilitate concrete placement, and at bottoms of forms to permit cleaning and inspection.
- E. Build in securely braced temporary bulkheads, keyed as required, at planned locations of construction joints.
- F. Before placement of reinforcing steel, coat faces of all forms to prevent absorption of moisture from concrete and to facilitate removal of forms. Apply specified material in conformance with manufacturer's written directions.
  - 1. Seal all cut edges.
  - 2. Before re-using form material, inspect, clean thoroughly, and recoat.
- G. Slope tie-wires downward to outside of wall.
- H. Brace, anchor and support all cast-in items to prevent displacement or distortion.

- I. During and immediately after concrete placing, tighten forms, posts and shores. Readjust to maintain grades, levels and camber.
- J. Concrete Paving, Curbs, Curb and Gutters, Ramps:
  - 1. Expansion Joints: Install at locations indicated, and so that maximum distance between joints is 20 feet for exterior concrete unless otherwise shown. Expansion joint material shall be full depth of concrete section. Recess for snap cap and sealant when required.
  - 2. Curbs, Valley Gutter, and Curb & Gutter: Install expansion joints at 60 feet on center, except when placing adjacent to concrete walks, the expansion joints shall align with the expansion joints shown for the concrete walks. Expansion joint material shall be full depth of concrete section. Recess for snap cap and sealant when required.
  - 3. Isolation Joints: 3/8-inch felt between walls and exterior slabs or walks so that paved areas are isolated from all vertical features, unless specifically noted otherwise on plans.
  - 4. Exterior Concrete Paving: Install expansion joints at 20 feet on center maximum, both directions, unless shown otherwise on plans.
  - 5. Ramps: Whether shown or not, all ramps shall have control joints and expansion joints.
    - a. Control joints on ramps shall be aligned and placed in between the vertical posts for the handrails. The curbs, if required shall have control joints that align with the handrail posts.
    - b. Expansion joints shall be placed at the upper, intermediate, and bottom landings.
- K. Inspection: Refer to Article FIELD QUALITY CONTROL.

# 3.4 INSTALLATION – REINFORCING

- A. General: Reinforcing shall be accurately placed at locations indicated on the drawings within required tolerances and providing required clearances. Reinforcement shall be secured prior to placement of concrete such that tolerances and clearances are maintained. Coverage shall be in accordance with Section 1907A.7 of the CBC.
  - 1. Reinforcement must be in place before concreting is begun.
  - 2. Keep a person on the job to maintain position of reinforcing as concrete is placed.
  - 3. All expansion and construction joints in concrete shall have dowels of size and spacing as shown on the Drawings, or as approved by Architect.
  - 4. Give notice whenever pipes, conduits, sleeves, and other construction interferes with placement; obtain method of procedure to resolve interferences.
- B. Additional reinforcing steel shall be placed around all utility boxes, valve boxes, manhole frames and covers that are located within the concrete placements.
  - 1. The bars shall be placed so that there will be a minimum of 1-1/2-inch clearance and a maximum of 3-inch clearance. The reinforcing steel shall be placed middepth of concrete slab.

- C. At right angles or intersections of concrete walks, additional 2 feet x 2 feet #5, 90 degree bars shall be added at all inside corners for additional crack control. The bars shall be placed 2 inches from concrete forms and supports, at mid-depth of slab.
- D. Reinforcing steel shall be adequately supported by approved devices on centers close enough to prevent any sagging.
- E. Placing Tolerances:
  - 1. In accordance with ACI 301 or CRSI/WCRSI Recommended Practice for Placing Reinforcing Bars, unless otherwise shown.
  - 2. Clear distance between parallel bars in a layer shall be no less than 1 inch, the maximum bar diameter shall not exceed 1-1/2 times the maximum size of coarse aggregate.
- F. Splices:
  - 1. General: Unless otherwise shown on drawings, splice top reinforcing at midspan between supports, splice bottom reinforcing at supports, and stagger splices. Bar laps shall be wired together. Reinforcing steel laps shall be as follows:
    - a. Length of Lap Splices in Concrete:
      - 1) No. 4 bar: 24 inches minimum.
      - 2) No. 5 Bar: Not less than 62 bar diameters.
      - 3) No. 6 Bar: 56 inches minimum.
      - 4) No. 7 Bars and Larger: Not less than 93 bar diameters.
    - b. All splices shall be staggered at 5 feet minimum from adjacent splices.
- G. Inspection: Refer to Article FIELD QUALITY CONTROL.

# 3.5 PLACING OF CONCRETE – GENERAL

- A. Adjacent finish surfaces shall be protected at all times during the concrete pour and finishing. Verify that all formwork is tight and leak-proof before concrete is poured. Finish work defaced during the concrete pour and finishing shall be replaced at no extra cost to Owner.
- B. Remove wood chips, sawdust, dirt, loose concrete and other debris just before concrete is to be poured. Use compressed air for inaccessible areas. Remove all standing water from excavations.
- C. Transport concrete from mixer to place of final deposit as rapidly as practicable by methods which will prevent separation or loss of ingredients. Deposit as close as practicable in final position to avoid re-handling or flowing. Partially hardened concrete must not be deposited in work. Concrete shall not be wheeled directly on top of reinforcing steel.
- D. Keep excavations free of standing water, but moisture condition sub-grade before concrete placement.

- E. Placing: Once started, continue concrete pour continuously until section is complete between predetermined construction joints. Prevent splashing of concrete onto adjacent forms or reinforcement and remove such accumulation of hardened or partially hardened concrete from forms or reinforcement before work proceeds in that area. Free fall of concrete shall not to exceed 4'-0" in height. If necessary, provide lower openings in forms to inject concrete and to reduce fall height.
- F. Remove form spreaders as placing of concrete progresses.
- G. Place footings as monolithic and in one continuous pour.
- H. Compacting: Concrete shall be compacted by mechanical vibrators.
  - 1. Concrete shall be thoroughly worked around reinforcement and embedded fixtures and into corners of forms.
  - 2. Vibrating shall not be applied to concrete which has already begun to initially set or be continued so long as to cause segregation of materials.

# 3.6 REMOVAL OF FORMS

- A. Remove without damage to concrete surfaces.
  - 1. Sequence and timing of form removal shall insure complete safety of concrete structure.
  - 2. Forms shall remain in place for not less than the following periods of time. These periods represent cumulative number of days during which temperature of air in contact with concrete is 60 degrees F and above.
    - a. Vertical Forms of Foundations, Walls and All Other Forms Not Covered Below: 5 days.
    - b. Concrete Paving Edge Screeds or Forms: 7 days.
  - 3. Concrete shall not be subjected to superimposed loads (structure or construction equipment) until it has attained its full design strength and not for a period of at least 21 days after placing. Concrete systems shall not be subjected to construction loads in excess of design loads.
- B. Patching: Install specified patching mortar per manufacturer's recommendations. Repairs to defective concrete which affect the strength of any structural concrete member or component are subject to approval by the architect and DSA.

# 3.7 CONCRETE PAVING

- A. Concrete paving shall be formed and finished to required line and grades true and flat with a maximum tolerance of 1/8-inch in 10 feet for flatness and to slopes indicated.
- B. Concrete vibrator shall be used to assist concrete placement. Contractor shall have spare concrete vibrator on site during concrete placement.
- C. Thoroughly water and soak the concrete paving subgrade as required to achieve required moisture content prior to the concrete pour.

- 1. Provide damming as required to keep water within the formed area and to allow for proper saturation of the subgrade.
- 2. Remove standing water before concrete placement.
- D. Construction Joints:
  - 1. Keep exposed concrete face of construction joints continuously moist from time of initial set until placing of concrete; thoroughly clean contact surface by chipping entire surface not earlier than 5 days after initial pour to expose clean hard aggregate solidly embedded, or by approved method that will assure equal bond, such as green cutting.
  - 2. If contact surface becomes contaminated with soil, sawdust or other foreign matter, clean entire surface and re-chip entire surface to assure proper adhesion.

# 3.8 FINISHING

- A. Concrete Paving: Finish surface as required by ACI 302.1R using manual and vibrating screeds to place concrete level and smooth.
  - 1. Under no circumstances shall water be added to the top surface of freshly placed concrete.
  - 2. Use "jitterbugs" or other special tools designed for the purpose of forcing the course aggregate below the surface leaving a thick layer of mortar 1 inch in thickness.
  - 3. After tamping the concrete, wood float surface to a true and even plane.
  - 4. After floating with a wood bull float, make 2 passes with a steel Fresno trowel to start sealing the concrete surface.
  - 5. While concrete is still wet but sufficiently hardened to bear a persons' weight on knee boards, start troweling with a steel hand trowel or a machine trowel in larger areas. Use sufficient pressure to bring moisture to surface.
  - 6. After surface moisture has disappeared, finish concrete utilizing steel, hand or power trowel.
  - 7. Completed surface shall be free from trowel marks, depressions, ridges or other blemishes. Tolerance for flatness shall be 1/8-inch in 10 feet.
  - 8. Provide final finish as follows, unless otherwise indicated:
    - a. Medium Broom Finish: Typical finish to be used at all exterior walks, stairs and ramps. Brooming direction shall run perpendicular to slope to form non-slip surface.
- B. Curb Finish: Steel trowel.
- C. Joints and Edges:
  - 1. Mark-off exposed joints, where indicated, with 1/4-inch radius x 1 inch deep jointer or edging tool. Joints shall be clean, cut straight and parallel or square with respect to concrete walk edge.

- 2. Tool edges of control joints, walk edges, and wherever concrete walk adjoins other material or vertical surfaces. Expansion joints shall be constructed as detailed on plans.
- 3. The expansion joints shall be full depth as shown in the Drawings. Failure to do so will result in non-compliance and shall be immediately machine cut by the Contractor at its expense.

# 3.9 CURING

- A. Formed Concrete:
  - 1. Keep forms and top on concrete between forms continuously wet until removal of forms, 7 days minimum.
  - 2. Maintain exposed concrete in a continuous wet condition for 14 days following removal of forms.
- B. Concrete Paving, Curb, Curb and Gutter, Valley Gutter:
  - 1. Cure utilizing curing compound. If applicable, the Contractor shall verify that the approved curing compound is compatible with the approved colorant system.
  - 2. Curing compound shall be applied in a wet puddling application. Spotty applications shall be reason for rejection and possibly concrete removal and replacement at the contractor's expense with no compensation from the Owner.
- C. No curing compound shall be applied to areas scheduled to receive resilient track surface including, curbs, ramps, runways, and similar items.

# 3.10 DEFECTIVE CONCRETE

- A. General:
  - 1. Determination of defective concrete shall be made by the Architect or Engineer whose opinion shall be final in identifying areas to be replaced, repaired or patched.
  - 2. As directed by Architect, cut out and replace defective concrete.
    - a. Defective concrete shall be removed from the site.
    - b. No patching is to be done until surfaces have been examined by Architect and permission to begin patching has been provided.
    - c. Permission to patch an area shall not be considered waiver of right by the Owner to require removal of defective work, if patching does not, in opinion of Architect, satisfactorily restore quality and appearance of surface.
    - d. Remove and replace concrete if repair to an acceptable condition is not feasible.
- B. Defective Concrete Is:
  - 1. Concrete that does not match the approved mix design for the given installation type.
  - 2. Concrete not meeting specified 28-day strength.

- 3. Concrete which contains rock pockets, voids, spalls, transverse cracks, exposed reinforcing, or other such defects which adversely affect strength, durability or appearance.
- 4. Concrete which is incorrectly formed, out of alignment or not plumb or level, or outside of the maximum tolerance for flatness and slopes indicated.
- 5. Concrete containing embedded wood or debris.
- 6. Concrete having large or excessive patched voids which were not completed under Architect's direction.
- 7. Concrete not containing required embedded items.
- 8. Concrete with excessive shrinkage, transverse cracking, crazing, curling; or defective finish.
- 9. Concrete that is unsuitable for placement or has set in truck drum for longer than 90 minutes from the time it was batched.
- 10. Concrete where expansion joint filler that is not isolating the full depth of the concrete section, and not recessed as required for backer rod and sealant where required.
- 11. Concrete that is excessively wet or excessively dry and will not meet the minimum or maximum slump required per mix design.
- 12. Finished concrete with oil stains from equipment use, and or rust spots that cannot be removed.
- 13. Concrete with control joints (weakened planed joints) that do not meet the required minimum depth shown on the drawings.
- 14. Concrete not meeting slip-resistance requirements.
- C. Flatwork: The Owner reserves the right to survey the flatwork, to determine if flatwork is outside of the maximum tolerance for flatness and slopes as indicated.
  - 1. If the flatwork is found to be out of tolerance, then the Contractor is required to replace concrete at no additional expense to the Owner.
  - 2. Determination of flatwork flatness, surveying and remedial work must be completed far enough in advance so that the project schedule is maintained, delays are avoided, and the new flatwork or flatwork repairs are properly cured.
  - 3. The Contractor will be responsible for reimbursing the Owner for costs associated with re-surveying to verify compliance of work remediated by the Contractor.

# 3.11 INSTALLATION OF TRUNCATED DOMES

- A. General:
  - 1. Comply with manufacturer's installation instructions as summarized in the Article.
  - 2. Verify concrete to receive embedded truncated dome tiles is within the slump range recommended by tile manufacturer to permit placement without mix causing tiles to float.
  - 3. Maintain factory-installed plastic sheeting during installation process to prevent splashing of concrete onto the finished surface of the tile.

- 4. If necessary to ensure that adjacent tiles are flush to each other during the installation process, bolt tiles together using 1/4 inch or equivalent hardware or other methods recommended by tile manufacturer.
- B. The concrete shall be poured and finished true and smooth to the required dimensions and slope prior to the tile placement. Immediately after finishing concrete, the electronic level should be used to check that the required slope is achieved.
- C. Installing Tiles:
  - 1. Install tiles into fresh concrete using techniques that will eliminate air voids under the tile.
    - a. Holes in the tile perimeter allow air to escape during the installation process.
    - b. Allow concrete to flow through holes in embedment flanges on underside of tile to lock tile solidly into the cured concrete.
  - 2. Tiles shall be placed true and square.
  - 3. Tiles shall be tamped or vibrated into the fresh concrete to ensure that the field level of the tile is flush to the adjacent concrete surface to permit proper water drainage and eliminate tripping hazards between adjacent finishes.
- D. Immediately after placement, the tile elevation shall be checked with the elevation and slope permitting water drainage, to ensure that the field surface of the tile is flush with the surrounding concrete, and that no ponding is possible on the tile.
- E. While concrete is still workable, a 3/8 inch radius edging tool shall be used to create a finished edge of concrete, then a steel trowel shall be used to finish the concrete around the tile's perimeter, flush to the field level of the tile.
- F. If necessary, adjust tile before the concrete sets. Use two suitable weights of 25 pounds each if necessary to ensure solid contact of the underside of tile to concrete.
- G. During and after the tile installation and the concrete curing stage, prohibit walking, leaning, or placing of other external forces on tile that may rock the tile causing a void between the underside of tile and concrete.
- H. After concrete is cured, remove factory-applied protective plastic wrap and concrete that may have bled under the plastic following procedures recommended by the tile manufacturer.
- I. Protect tiles after installation and during remainder of construction period.
- J. Prior to Owner acceptance, clean tiles complying with manufacturer's procedures for cleaning of tile surface.

# 3.12 SEALANT

- A. Apply sealant in compliance with manufacturer's instructions, using hand guns or pressure equipment with proper nozzle size, on clean, dry, properly prepared substrates.
- B. Force sealants into joint against sides of joint to make uniform. Avoid pulling of the sealant from the sides. Fill sealant space completely with sealant.

- C. Finished joints shall be straight, uniform, smooth, and neatly finished.
- D. Remove any excess sealant from adjacent surfaces of joints utilizing the manufacturer's recommended solvent and cleaning processes. Leave the work in a neat, clean condition.

#### 3.13 FIELD QUALITY CONTROL

- A. Inspection of Forms and Reinforcing:
  - 1. Approval of forms and reinforcing steel must be received from Project Inspector prior to pouring concrete.
  - 2. Notice of readiness to place first pour shall be given to Project Inspector, DSA, Architect, and Engineer not less than 48 hours prior to placement of concrete to allow for inspection.
  - 3. Pouring of concrete shall not proceed prior to completing requested adjustments to forms and reinforcing and without approval of Project Inspector.
- B. Testing of Concrete:
  - 1. Frequency and Samples for Testing:
    - a. Four identical cylinder samples for strength tests of each class of concrete placed each day shall be taken not less than once a day, or not less than once for each 50 cubic yards of concrete, or not less than once for each 2,000 square feet of surface area for slabs or walls.
    - b. In addition, samples for strength tests for each class of concrete shall be taken for seven-day tests at the beginning of the concrete work or whenever the mix or aggregate is changed.
  - 2. Testing:
    - a. Slump: Each truck's concrete shall be tested for slump before concrete is placed.
    - b. Strength:
      - Tests for strength will be conducted by Testing Agency on one cylinder at 7 days and two cylinders at 28 days. The fourth remaining cylinder will be available for testing at 56 days if the 28-day cylinder test results do not meet the required design strength.
      - 2) On a given project, if the total volume of concrete is such that the frequency of specified testing would provide less than five strength tests for a given class of concrete, tests shall be made from at least five randomly selected batches or from each batch if fewer than five batches are used.
- C. Slip-Resistance Testing: Owner's Testing Agency will perform testing on flatwork to verify compliance with specified slip-resistance.
  - 1. The coefficient of friction will be measured by California Test 342 before pavement is opened to public traffic, but not sooner than 7 days after concrete placement
  - 2. Where paving is determined to have a coefficient of friction less than 0.30, Contractor is to repair and/or replace these surfaces at no cost to Owner.

#### 3.14 CLEANING

- A. Upon completion of work of this Section promptly remove from the working area all scraps, debris and surplus material of this Section.
- B. Clean excess material from surface of all concrete walks and utility structures.
- C. Power wash concrete surfaces to remove stains, dried mud, tire marks, and rust spots.
- D. Comply with any additional requirements of additive manufacturer for colored concrete.

# 3.15 **PROTECTION**

- A. Graffiti-resistant Coating:
  - 1. Surface Preparation: Prepare concrete surface to receive graffiti-resistant coating specified in Section 09 9623, Graffiti-Resistant Coatings, where indicated.
  - 2. Concrete must be clean, dry, and free of efflorescence and dust.
- B. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.
- C. In the event of damage during construction, make all repairs and replacements necessary to the approval of the Architect, at no additional cost to the Owner.

# END OF SECTION
# PART 1 - GENERAL

## 1.1 SUMMARY

- A. Section Includes:
  - 1. Chain link fences
  - 2. Gates and gate hardware.
  - 3. Privacy slats.

# 1.2 RELATED REQUIREMENTS

- A. Section 01 6116, Volatile Organic Compound (VOC) Restrictions, for VOC limits pertaining to adhesives, sealants, fillers, primers, and coatings.
- B. Section 32 1600, Site Concrete.

# 1.3 REFERENCES AND STANDARDS

- A. California Building Code (CBC), edition as noted on the drawings, as adopted by the California Division of the State Architect (DSA).
- B. California Green Building Standards Code (CAL Green), edition as noted on the drawings, as adopted by the California Division of the State Architect (DSA).
- C. Chain Link Fence Manufacturers' Institute (CLFMI):
  - 1. Products Manual.
- D. ASTM International (ASTM):
  - 1. A153: Zinc Coating (Hot Dip) on Iron and Steel Products.
  - 2. A392: Zinc Coated Steel Chain Link Fence Fabric.
  - 3. A653/A653M: Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
  - 4. A780/A 780M: Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.
  - 5. C33/C33M: Standard Specification for Concrete Aggregates.
  - 6. C94: Ready-mixed Concrete.
  - 7. C150/C150M: Standard Specification for Portland Cement.
  - 8. F668: Poly Vinyl Chloride (PVC) Coated Steel Chain Link Fence Fabric.
  - 9. F934: Standard Colors for Poly Vinyl Chloride (PVC) Coated Chain Link.
  - 10. F969: Standard Practice for Construction of Chain-Link Tennis Court Fence.
  - 11. F1083: Pipe, Steel, Hot-Dipped Zinc Coated (Galvanized) Welded, for Fence Structures.

#### CHAIN LINK FENCES AND GATES SECTION 32 3113 22-1551.01

#### 1.4 ADMINISTRATIVE REQUIREMENTS

- A. Submittal Procedures:
  - 1. Action Submittals and Informational Submittals shall be submitted in accordance with Section 01 3300, Submittal Procedures.
  - 2. Closeout Submittals shall be submitted in accordance with Section 01 7700, Closeout Procedures.
  - 3. Sustainable Design Submittals shall comply with the additional requirement of Section 01 8113, Sustainable Design Requirements.

## 1.5 ACTION SUBMITTALS

- A. Shop Drawings: Submit showing all parts, connections and anchorages, adjacent materials, fully dimensioned and noted. Indicate plan layout, spacing of components, post foundation dimensions, hardware anchorage and schedule of components.
- B. Products Data: Submit list and complete descriptive data of all products proposed for use. Include manufacturer's specifications, published warranty or guarantee, installation instructions, and maintenance instructions.
- C. Samples:
  - 1. Chain-link fabric, approximately 12 inches square, in selected color.
  - 2. Hardware and fittings if requested by Architect.

## 1.6 INFORMATIONAL SUBMITTALS

- A. Sample of manufacturer's warranty.
- B. Sustainable Design:
  - 1. General:
    - a. Submit information necessary to establish and document compliance with the California Green Building Standards Code.
    - b. Sustainable design submittals are in addition to other submittals.
  - 2. The following information shall be provided:
    - a. Paints and Coatings: Evidence of compliance that products meet maximum VOC content limits specified in Section 01 6116.

# 1.7 CLOSEOUT SUBMITTALS

A. Warranty/Guarantee: Submit executed warranty and Subcontractor's guarantee.

# 1.8 QUALITY ASSURANCE

- A. Use only new materials and products, unless existing materials or products are specifically shown otherwise on the Drawings to be salvaged and re-used.
- B. Use materials and products of one manufacturer whenever possible.

C. All materials, components, assemblies, workmanship and installation are to be observed by the Owner's Project Inspector. Work not so inspected is subject to uncovering and replacement.

# 1.9 DELIVERY, STORAGE AND HANDLING

- A. Deliver undamaged products to job in manufacturer's sealed containers and/or original bundles with tags and labels intact.
- B. Store materials in protected, dry conditions off of ground and in areas so as to not interfere with the progress of the work.
- C. Transport, store and handle in strict accord with the manufacturer's written recommendations.

# 1.10 FIELD CONDITIONS

A. Make and be responsible for all field dimensions necessary for proper fitting and completion of work. Report discrepancies to Architect before proceeding.

## 1.11 WARRANTY

A. Manufacturer: In addition to the Contractor's and Subcontractor's Guarantee, furnish Owner with manufacturer's fully executed written warranty for chain link fencing against defects in materials and workmanship, including the following:

# PART 2 - PRODUCTS

## 2.1 DESIGN AND PERFORMANCE CRITERIA

- A. Industry Standards: Materials and installation shall conform to the requirements of the Chain Link Fence Manufacturers Institute (CLFMI) "Product Manual."
- B. Regulatory Requirements: Pedestrian gates and related hardware shall comply with applicable codes, including provisions for accessibility required by CBC and the Americans with Disabilities Act "Designs for Accessible Design." Comply with the most stringent.
- C. Use new components free from defects affecting service and appearance.
- D. Sizes specified or shown are minimum.
- E. Provide ferrous material except as otherwise indicated or specified.
- F. Sustainable Design:
  - 1. VOC emissions for field-applied paints and coatings must comply with limits specified in Section 01 6116.

#### CHAIN LINK FENCES AND GATES SECTION 32 3113 22-1551.01

#### 2.2 WORKMANSHIP

A. Galvanizing: Hot dip galvanize ferrous materials after fabrication. Repair zinc coating damaged in shop or during field erection by re-coating with hot repair compound, Re Galv, Galvalloy, Galveweld-alloy, or equal, applied in accord with manufacturer's recommendations.

#### 2.3 MATERIALS

- A. Galvanized Fabric: Steel wire with no less than 1.20 ounce of zinc coating per square foot (Class 1) of surface area and complying with ASTM A 392.
  - 1. Typical:
    - a. Wire Diameter: 9 gage, coated size.
    - b. Mesh Opening: 2 inches.
  - 2. Edges: Knuckle fabric at bottom and at top selvage.
  - 3. Fabric widths shall be one piece.
- B. Pre-Woven Privacy Slats: Extruded high density polyethylene (HDPE), color pigments, and ultra violet (UV) inhibitors uniquely styled for mechanical insertion into chain link wire during weaving process; PDS Fence Products by Pexco, 800-755-7528, or equal.
  - 1. Width: 3-1/2 inches and 5 inches.
  - 2. Color: As selected by Architect.
- C. Standard Privacy Slats: Extruded high density polyethylene (HDPE), color pigments, and ultra violet (UV) inhibitors; PDS "Bottom Lock" slats by Pexco, 800-755-7528, or equal.
  - 1. Size: As recommended by manufacturer for mesh opening size.
  - 2. Color: As selected by Architect from manufacturer's standard colors. Allow up to 8 options minimum.
  - 3. Slats shall provide 95 percent privacy.
- D. Security Fabric: 16 gauge galvanized sheet metal in conformance with ASTM A653/A653M, 1.3 pounds per square foot, with round hole perforations; McNichols item number 1431141638 as specified and the basis of design, or equal.
  - 1. Perforations shall be 3/16" holes on a 1/4" stagger.
  - 2. Open Area: 51 percent.
  - 3. Finish: Prime and paint as specified in Section 09 9100, Painting, prior to installation.
- E. Security Fabric U-Edging: 14 gauge. galvanized hot rolled U shaped edging, 1 inch tall face x 3/8 inch opening width; McNichols quality U-Edging, item number 4003801410 as specified and the basis of design, or equal.
- F. Round Steel Pipe Fence Framework:

- 1. Round steel pipe and rail, Schedule 40 standard weight pipe, in accordance with ASTM F1083, 1.8 oz/sq. ft (550 g/sq. m) hot dip galvanized zinc exterior and 1.8 oz/sq. ft (550 g/sq. m) hot dip galvanized zinc interior coating.
  - a. Regular Grade: Minimum steel yield strength 30,000 psi (205 MPa)
  - b. High Strength Grade: Minimum yield strength 50,000 psi (344 MPa)
- G. Line Posts:
  - 1. Without Slats or Windscreen: Regular Grade.
    - a. To 8'-0" High Maximum: 2-3/8 inch outside diameter pipe at 3.65 pounds per linear foot.
    - b. 8'-1" to 10'-0" High Maximum: 2-7/8 inch outside diameter pipe at 5.79 pounds per linear foot.
    - c. 10'-1" to 12'-0" High Maximum: 4-1/2 inch outside diameter pipe at 10.79 pounds per linear foot.
  - 2. With Slats or Windscreen: High Strength Grade.
    - a. To 8'-0" High Maximum: 4 1/2 inch outside diameter pipe at 9.11 pounds per linear foot.
    - b. 8'-1" to 10'-0" High Maximum: 5-9/16 inch outside diameter pipe at 14.62 pounds per linear foot.
    - c. 10'-1" to 12'-0" High Maximum: 5-9/16 Inch outside diameter pipe at 14.62 pounds per linear foot.
- H. End, Corner and Pull Posts: End, corner and pull posts shall also comply with gate post requirements, where occurs.
  - 1. Without Slats or Windscreen: Regular Strength.
    - a. To 8'-0" High Maximum: 2-7/8 inch outside diameter pipe at 5.79 pounds per linear foot.
    - b. 8'-1" to 10'-0" High Maximum: 4 inch outside diameter pipe at 9.11 pounds per linear foot.
    - c. 10'-1" to 12'-0" High Maximum: 5-9/16 inch outside diameter pipe at 14.62 pounds per linear foot.
  - 2. With Slats or Windscreen: High Strength Grade.
    - a. To 8'-0" High Maximum: 4-1/2 inch outside diameter pipe at 10.79 pounds per linear foot.
    - b. 8'-1" to 10'-0" High Maximum: 5-9/16 inch outside diameter pipe at 14.62 pounds per linear foot.
    - c. 10'-1" to 12'-0" High Maximum: 6-5/8 inch outside diameter pipe at 18.97 pounds per linear foot.
- I. Gate Posts, Single Leaf: Gate posts shall also comply with End, Corner and Pull Post requirements.
  - 1. To 6 Feet Wide: 2-7/8 inch outside diameter pipe at 5.79 pounds per linear foot.
  - 2. 6 Feet to 12 Feet Wide: 4-1/2 inch outside diameter pipe at 10.79 pounds per linear foot.

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- 3. 12 Feet. to 18 Feet Wide: 6-5/8 inch outside diameter pipe at 18.97 pounds per linear foot.
- J. Post caps: Cast or malleable iron ball or acorn shape; with opening for top rail.
- K. Top Rail, Bottom Rails, and Braces: 1-5/8" outside diameter pipe at 2.27 pounds per linear foot., or 1-5/8 inch x 1-1/4 inch roll formed section, 14 gauge.
  - 1. Brace Assembly:
    - a. Equally spaced between top rail and bottom fabric selvage and run from end, gate, or corner post to first line posts with suitable malleable iron fittings.
    - b. Truss from line post to end, gate, or corner post with 3/8 inch round rod.
- L. Wire Ties: Specified spacing is minimum. Manufacturer's standard procedure may require more ties.
  - 1. Tying Fabric to Posts: 9 gauge steel wire spaced 12 inches on center.
  - 2. Tying Fabric to Rails and Braces: 9 gauge steel wire spaced 24 inches on center.
- M. Bands: 14 gauge x 1 inch wide steel spaced 15 inches on center. for securing stretcher bars to end and gate posts.
  - 1. Bands may be used in conjunction with special fitting for securing rails to end and gate posts.
  - 2. Chamfer to ease projecting edges of bands.

# 2.4 GATES

- A. Frames:
  - 1. Gate Leaves to 6 Feet Wide: 1-5/8 inch outside diameter pipe at 2.27 pounds per linear foot.
  - 2. Gate Leaves Over 6 Feet Wide: 2 inch outside diameter pipe at 2.72 pounds per linear foot.
  - 3. Provide additional horizontal and vertical pipe or tube as necessary to assure proper gate operation and attachment of fabric and hardware.
- B. Diagonal Bracing: Provide adjustable length 3/8 inch truss rods on non-welded gate frames and welded gate frames where corner rigidity is insufficient to insure no sag.
- C. Fabric: As specified for fence.
- D. Gate Assembly:
  - 1. Weld or assemble gate frame with malleable or pressed steel fittings and rivets to provide rigid connections.
  - 2. Install fabric with stretcher bars at vertical edges, which may also be used at top and bottom edges.
  - 3. Securely attach stretcher bars and fabric to frame on all sides at 15 inches on center.

- 4. Attach hardware with rivets or by other means which will provide security against removal.
- E. Gate Hardware:
  - 1. General: Hardware at disabled accessible gates shall meet accessibility, including mounting, of the ADA and CBC. Comply with the most stringent.
  - 2. Hinges: Malleable iron, pressed or forged steel, non-liftoff type, easy noiseless operation and long wear, offset to permit 180 degree gate opening.
    - a. Provide 1-1/2 pair hinges for each leaf over 6 feet nominal height.
    - b. Ball and socket hinges not acceptable.
  - 3. Fork Latch: Malleable iron, drop fork latch which permits operation of the gate from either side, with padlock eye provided as integral part of latch.
  - 4. Panic / Lever Hardware: At gates to receive panic hardware or lever locksets, provide galvanized iron lockset boxes, backing plates or mounting plates as required for permanent, vandal resistant mounting.
  - 5. Kick Plates: 10 inches tall x width of gate x 14 gauge minimum, smooth uninterrupted surfaced, galvanized steel.
    - a. Mount on the bottom edge of gate at the push side. Mount on both sides at two-way swing gates.
    - b. Bottom edge of plate shall be not more than 3 inches above the top of the walk.
    - c. Plate shall be welded to the fence frame and shall allow the gate to be opened by a wheelchair footrest without creating a trap or hazardous condition.
    - d. Provide at pedestrian gates that are within the disabled accessible path of travel
  - 6. Gate Stop and Holder: Malleable iron.
    - a. Stop shall automatically engages gate frame and holds it in open position.
    - b. Provide at vehicle gates.
  - 7. Double Gates: Provide cane bolt and ground set keeper with locking device and padlock eyes designed as integral part of latch, requiring one padlock for locking both leaves.
- F. Rolling Gate Hardware:
  - 1. Front Wheels: 8 inch diameter solid rubber double wheel.
  - 2. Rear Wheels: 5 inch diameter pressed steel wheel, top and bottom.
  - 3. Rolling Gate Rear Wheel Tracks: 1.25 NPS (1.66 inch outside diameter, 0.14 inch wall thickness, 2.27 pounds per foot).
  - 4. Latch: "Rolo Latch" with eye for padlock.

# 2.5 ADDITIONAL MATERIALS AND COMPONENTS

A. Galvanizing Repair: Zinc coating damaged in shop or during field erection shall be by re-coated using a hot repair compound; "Regalv" repair stick by Rotometals, San Leandro, CA, or equal, applied in accordance with manufacturer's recommendations.

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- B. Concrete:
  - 1. Materials:
    - a. Portland cement, ASTM C 150.
    - b. Aggregate: ASTM C33.
    - c. Water: Potable and free from substances harmful to concrete.
  - 2. Mix materials to obtain low slump concrete with 28 day compressive strength of 2,500 psi.
    - a. Maximum Size Aggregate: 1-1/2 inch.
    - b. Re-tempering not permitted.

# PART 3 - EXECUTION

# 3.1 INSTALLATION

- A. General:
  - 1. Execute work in accord with best trade practice for industrial fence installations.
  - 2. Make welds neat and secure, grind off excess exposed metal.
  - 3. Securely set posts plumb in alignment at proper depth and height, and rigid bracing where needed; install fabric under tension and securely tie to posts, rails and braces.
  - 4. Gates shall move freely without sag.
- B. Setting Posts:
  - 1. General: Space posts as indicated but not more than 10 feet on center.
  - 2. Pour and tamp concrete leaving no voids.
    - a. Check posts for vertical and top alignment and hold in position.
    - b. Dome top of concrete and trowel smooth to shed water away from post.
    - c. Align posts in footings as follows:
  - 3. Without Slats or Windscreen: Footings for End, corner and pull posts shall also comply with gate post requirements, where occurs.
    - a. Line Posts to 8'-0" High Maximum: 1'-0" diameter, 3'-3" minimum embedment.
    - b. End, Corner and Pull Posts to 8'-0" High Maximum: 1'-0" diameter, 4'-3" minimum embedment.
    - c. Line Posts 8'-1" to 10'-0" High Maximum: 1'-0" diameter, 3'-9" minimum embedment.
    - d. End, Corner and Pull Posts 8'-1" to 10'-0" High Maximum: 1'-6" diameter, 5'-3" minimum embed.
    - e. Line Posts 10'-1" to 12'-0" High Maximum: 1'-6" diameter, 5'-0" minimum embedment.

- f. End, Corner and Pull Posts 10'-1" to 12'-0" High Maximum: 1'-6" diameter, 6'-0" minimum embed.
- 4. With Slats or Windscreen:
  - a. Line Posts to 8'-0" High Maximum: 1'-6" diameter, 5'-3" minimum embedment.
  - b. End, Corner and Pull Posts to 8'-0" High Maximum: 1'-6" diameter, 5'-6" minimum embedment.
  - c. Line Posts 8'-1" to 10'-0" High Maximum: 1'-6" diameter, 6'-0" minimum embedment.
  - d. End, Corner and Pull Posts 8'-1" to 10'-0" High Maximum: 1'-6" diameter, 6'-0" minimum embed.
  - e. Line Posts 10'-1" to 12'-0" High Maximum: 1'-6" diameter, 6'-9" minimum embedment.
  - f. End, Corner and Pull Posts 10'-1" to 12'-0" High Maximum: 2'-0" diameter, 7'-0" minimum embed.
- 5. Single Leaf Gates: Footings for gate posts shall also comply with End, Corner and Pull Post requirements.
  - a. To 6 Feet Wide: 12 inch diameter, 36 inch embedment.
  - b. 6'-1" wide to 12 Feet Wide: 16 inch diameter, 48 inch minimum embedment.
  - c. 12'-1" wide to 18'-0" wide: 24 inch diameter, 54 inch minimum embedment.
- C. Where posts occur adjacent to structures or other work where concrete foundations may conflict with post footing, block out to allow post installation or use off-set post. Hold post 4 inches clear from face of structure.
- D. Fabric: Leave about 1-1/2 inches between ground and bottom barbs.
  - 1. Pull fabric taut and tie to posts, rails.
  - 2. Install fabric on security side of fence.
  - 3. Fabric shall remain under tension after pulling force is released.
- E. Gates:
  - 1. Install gates plumb, level and secure, with full swing or slide without interference.
  - 2. Install ground set items in substantial concrete mass for adequate anchorage.
- F. Tie Wires:
  - 1. Install with one tight turn to hold fabric firmly to frame.
  - 2. Bend ends of wire inward to prevent hazard to persons or apparel.
- G. Fasteners:
  - 1. Install nuts for tension band and hardware bolts on side of fence opposite fabric side.
  - 2. Spoil ends of bolts to prevent removal of nuts.

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## 3.2 ADJUSTING

- A. Repair exposed zinc coatings damaged in shop or during field erection using specified repair system and in compliance with ASTM A 780,
- B. Adjust gated hardware for smooth operation and lubricate where necessary.

# END OF SECTION

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# PART 1 - GENERAL

## 1.1 SUMMARY

- A. Section Includes:
  - 1. All-welded decorative metal fences and gates.
  - 2. Gate hardware.
  - 3. Shop finishing.

# 1.2 RELATED REQUIREMENTS

- A. Section 01 6116, Volatile Organic Compound (VOC) Restrictions; for VOC limits pertaining to adhesives, sealants, fillers, primers, and coatings.
- B. Section 09 9100, Painting; additional requirements for field-applied coatings.
- C. Section 32 1600, Site Concrete.

## 1.3 **REFERENCES AND STANDARDS**

- A. California Building Code (CBC), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).
- B. California Green Building Standards Code (CAL Green), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).
- C. ASTM International (ASTM):
  - 1. A 500/A 500M: Standard Specification for Cold-Formed Welded Carbon and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
  - 2. A 513/A 513M: Standard Specification for Electric-Resistance-Welded Carbon and Alloy Steel Mechanical Tubing.
  - 3. A 123: Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
  - 4. A 153: Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
  - 5. A 384: Practice for Safeguarding Against Warpage and Distortion During Hot-Dip Galvanizing of Steel Assemblies.
  - 6. D 6386: Practice for Preparation of Zinc (Hot-Dip Galvanized) Coated Iron and Steel product and Hardware Surfaces for Painting.
  - 7. D 7396: Standard Guide for Preparation of New, Continuous Zinc-Coated (Galvanized) Steel Surfaces for Painting.

# 1.4 ADMINISTRATIVE REQUIREMENTS

A. Submittal Procedures:

- 1. Action Submittals shall be submitted in accordance with Section 01 3300, Submittal Procedures.
- 2. Closeout Submittals shall be submitted in accordance with Section 01 7700, Closeout Procedures.
- 3. Sustainable Design Submittals shall comply with the additional requirement of Section 01 8113, Sustainable Design Requirements.
- B. Coordinate installation of anchorages. Furnish setting drawings, diagrams, templates, and directions for installing anchorages, including sleeves, inserts, anchor bolts, and items with integral anchors, to be embedded in concrete.

# 1.5 ACTION SUBMITTALS

- A. Shop Drawings: Submit showing all parts, connections and anchorages, adjacent materials, fully dimensioned and noted.
  - 1. Indicate plan layout, spacing of components, locations and sizes of support structures, post foundation dimensions, hardware anchorage and schedule of components.
  - 2. Provide evidence that mounting plates, lock boxes, and similar items have been sized, located and coordinated properly with the finish hardware supplier and installer where applicable.
- B. Product Data: Submit list and complete descriptive data of all products and finishes proposed for use. Include manufacturer's specifications, published warranty or guarantee, installation instructions, and maintenance instructions.
- C. Samples: Typical frame member, 12 inches long, finished as specified.

# 1.6 INFORMATION SUBMITTALS

- A. Sample of manufacturer's warranty.
- B. Sustainable Design:
  - 1. General:
    - a. Submit information necessary to establish and document compliance with the California Green Building Standards Code.
    - b. Sustainable design submittals are in addition to other submittals.
  - 2. The following information shall be provided:
    - a. Paints and Coatings: Evidence of compliance that products meet maximum VOC content limits specified in Section 01 6116.

# 1.7 CLOSEOUT SUBMITTALS

A. Warranty/Guarantee: Submit executed warranty and extended Contractor guarantee.

# 1.8 QUALITY ASSURANCE

- A. Use only new materials and products.
- B. Use materials and products of one manufacturer whenever possible.
- C. All materials, components, assemblies, workmanship and installation are to be observed by the Owner's Project Inspector. Work not so inspected is subject to uncovering and replacement.

## 1.9 DELIVERY, STORAGE AND HANDLING

- A. Deliver undamaged products to job in manufacturer's sealed containers and/or original bundles with tags and labels intact.
- B. Store materials in weather protected, dry conditions off of ground and in areas so as to not interfere with the progress of the work.
- C. Transport, store and handle in strict accord with the manufacturer's written recommendations.

## 1.10 FIELD CONDITIONS

A. Make and be responsible for all field dimensions necessary for proper fitting and completion of work. Report any discrepancies to Architect before proceeding.

#### 1.11 WARRANTY AND GUARANTEE

- A. Manufacturer:
  - 1. In addition to the Contractor's and Subcontractor's Guarantee, furnish Owner with manufacturer's fully executed written commercial warranty for specified coating materials against defects and the following:
    - a. Manufacturer's available warranty for specified hardware.
  - 2. Contractor shall be responsible to assure manufacturer's requirements for access and inspection of the work, surface preparation, and coating application are performed to meet coating manufacturer's requirements for providing specified warranty.
- B. Contractor: In addition to its standard Guarantee under the Contract, furnish Owner a special extended written 5-year guarantee, cosigned by installer, agreeing to repair or replace decorative metal fences and gates that fails to perform as required within guarantee period as a result of failure of materials or installation workmanship at no additional cost to the Owner.

#### PART 2 - PRODUCTS

# 2.1 DESIGN AND PERFORMANCE CRITERIA

A. General:

- 1. Use new components free from defects affecting service and appearance.
- 2. Sizes specified or shown shall be considered minimum size.
- 3. If modifications to designs indicated are proposed in order to meet code requirements, indicate them as such on shop drawing submittals. Work with Architect to arrive at an acceptable design that is sufficiently similar to the design indicated.
- B. Structural Performance of Railing Assemblies and Guardrails:
  - 1. Top Rails of Guards:
    - a. Uniform load of 50 pounds/foot applied in any direction.
    - b. Concentrated load of 200 pounds applied in any direction.
    - c. Uniform and concentrated loads need not be assumed to act concurrently.
  - 2. Infill of Guards:
    - a. Concentrated load of 50 pounds applied horizontally on an area of 1 square foot.
    - b. Infill load and other loads need not be assumed to act concurrently.
- C. Industry Standards:
  - 1. Comply with "Metal Rail Manual" of National Ornamental and Miscellaneous Metals Association (NOMMA).
- D. Sustainable Design:
  - 1. VOC emissions for field-applied paints and coatings must comply with limits specified in Section 01 6116.

# 2.2 DECORATIVE METAL FENCING

- A. General:
  - 1. Assembly: Fence shall be all-welded construction. No mechanical fasteners or connectors are permitted.
  - 2. Tubing for Fence Pickets, Rails and Posts: ASTM A 500 or ASTM A 513, hot-rolled or cold-rolled steel tubing depending on size.
    - a. Steel tubing for fence pickets shall have a minimum yield strength of 33 ksi. All other tubing to be 50 ksi.
    - b. Steel shall not be pre-galvanized or pre-coated prior to the hot-dip preparation and coating process.
    - c. Steel shall be hot dipped galvanized before fabrication as specified.
- B. Fence Components: Deliver to the project site prefabricated.
  - 1. Fence panels and gate assemblies shall be shop welded and delivered to the project site prefabricated. Shop coat weld joints, scratches and other areas where hot-dip galvanized coating was removed or damaged with specified galvanized metal repair primer.

- 2. Pickets: 3/4-inch square, 16-gauge tubular steel, spaced as indicated on the drawings.
- 3. Rails and Gate Frame: 1-1/2-inch square, 14-gauge tubular steel, spaced as indicated on the drawings. For gate leafs over 6'-0" and less than 12'-0" wide, increase gate frame to 2-inch square.
- 4. Intermediate Rail: 1-1/2-inch x 3/4 inch, 14-gauge tubular steel, spaced as indicated on the drawings.
- 5. Line Posts & Roller Posts: 3-inch square, 11-gauge tubular steel.
- 6. Corner and End Posts: 4-inch square, 11-gauge tubular steel.
- 7. Gate Posts: 4-inch square, 11-guage tubular steel where gate leaf is 6'-0" or less in width. Use 6-inch square, 3/8"-thick wall, tubular steel post where gate leaf width is greater than 6'-0" and less than 12'-0".
- C. Fittings and Accessories:
  - 1. General: Provide all necessary fittings and accessories as required for a complete fence system.
  - 2. Post Caps: Pressed steel, pyramid style as supplied by King Architectural Metals or approved equal. Weld all around to top of post and hot-dip as one assembly.
  - 3. Security Screen: 16-gauge, galvanized and perforated steel sheet with 1/8-inch holes staggered at 3/16-inches on center. Provide as a part of the fabricated gate or fence panel assembly, hot-dip galvanized.

# 2.3 GALVANIZING

- A. Hot-dip galvanize interior and exterior surfaces of all steel fence components.
  - 1. Fence components shall include pickets, horizontal rails, perimeter gate frame, posts, post caps, fittings, plates, astragals, lock box, security screen, accessories and appropriate hardware, and other components as shown in assembly.
  - 2. Hot dip galvanizing is not to be provided at exit devices or lever hardware.
- B. Surface Preparation Prior to Galvanizing: In accordance with SSPC Specification SP-10, "Near White Blast Cleaning."
- C. Comply with ASTM A153 for galvanizing of iron and steel hardware.
- D. Comply with ASTM A123 for galvanizing of assembled steel products and rolled, pressed, and forged-steel shapes, plates, bars, and strips 1/8 inch thick and heavier.
- E. Newly galvanized items shall not be water quenched or chromate quenched after galvanizing if they are scheduled to receive a paint coating.

# 2.4 PROTECTIVE PAINT COATINGS

- A. General:
  - 1. Comply with manufacturer's preparation and application instructions for each coating and NAAMM's "Metal Finishes Manual for Architectural and Metal

Products" for recommendations for applying and designating finishes. Manufacturer's instructions shall govern in event of conflict.

- 2. Coatings shall be shop-applied to the greatest extent possible, including galvanized items, except surfaces and edges to be field welded.
- 3. Corrosion Control: Prevent galvanic action and other forms of corrosion by insulating metals from direct contact with incompatible materials.
- 4. Steel members shall be protected and be free of corrosion when ready to receive field-applied finish coatings. Apply coatings before rusting occurs.
- 5. Metal shall be degreased.
- 6. Finish exposed fasteners to match adjacent metal.
- B. Products:
  - 1. Galvanized Metal Repair Compound: "ZRC Galvalite", single component, high zinc dust content (zinc rich) repair compound for iron, steel and galvanized metal by ZRC Worldwide, or equal.
  - 2. Finish Paints:
    - a. General:
      - Materials specified are from PPG Industries, Inc. and are intended to establish standard of quality for the specified coating system. Coatings of equal quality, appearance, and performance and offering the same or better warranty as specified will be considered by the Architect.
      - 2) Coating Color: Each coat shall be applied in a different color or shade from the preceding coat to aid in determining the uniformity, mil thickness and coverage of the coating.
    - b. First Coat: "Amerlock 2 VOC" Self-priming Epoxy Coating, 4.0 to 8.0 mils DFT.
    - c. Second and Third Coats: "Pitthane Ultra" Acrylic Aliphatic Urethane, 2.5 mils DFT per coat.
      - 1) Color: As selected by Architect from full range of manufacturer's standard colors.
    - d. Do not exceed manufacturer's recommended total system thickness.
    - e. Paint additives are prohibited unless specified and approved by the Architect or the coating manufacturer.
- C. Surface Preparation Galvanized Surfaces:
  - 1. General: Surfaces shall be cleaned and profiled prior to receiving applied coatings in accordance with ASTM D 6386 or ASTM D 7396 for sheet products.
    - a. Methods shall be selected based on age of galvanized coating, condition of surface and specified paint coating.
    - b. High spots and rough edges shall be smoothed out.
    - c. Care shall be taken not to damage the zinc coating.

- 2. Cleaning: Surface shall be prepared in accordance with SSPC SP-1 followed by application of pre-paint conditioner.
- 3. Comply with the additional requirements of the following:
  - a. Recommendations included in the AGA document "Duplex Systems: Painting Over Hot Dip Galvanized Steel."
  - b. Procedures required by the coating manufacturer.
- 4. Repair hot-dipped galvanized coating damaged in shop or during field erection/welding by coating with specified galvanized metal repair primer applied in accordance with manufacturer's recommendations.
- D. Priming:
  - 1. Surface Preparation: As specified.
  - 2. Apply air-dried primer after cleaning and pretreatment, to provide a minimum dry film thickness.
  - 3. Apply primer within 8 hours of preparation of surface or sooner if necessary to prevent rusting.
- E. Preparation:
  - 1. Before a surface is coated, it shall be cleaned carefully of all dust, dirt, mud, grease, oil, loose rust and other contaminants.
  - 2. Galvanized surfaces shall be prepared and repaired as specified.
  - 3. Immediately prior to painting, the prepared surface shall be inspected for compliance with the manufacturer's specified degree of surface preparation and requirements for warranty including subsequent inspection between coats.
  - 4. Prepared, galvanized steel shall be coated within 8 hours of proper and accepted preparation.
- F. Field Application of Coatings:
  - 1. Materials shall be delivered to the job site in the original and unopened containers, plainly marked with the proper designation of the product, as well as the name of the manufacturer.
    - a. Coating materials at the job site shall be subject to inspection.
    - b. Materials shall be stored in a clean, dry, well ventilated place, protected from sparks, flame, direct rays of the sun, and excessive heat or cold.
    - c. The Contractor shall be solely responsible for the protection and safety of the materials stored at the job site.
  - 2. Application Conditions:
    - a. Exterior painting shall only take place when good weather conditions prevail.
    - b. Painting shall not be undertaken during foggy or misty conditions or when precipitation is imminent.
    - c. The temperature of the surface to be painted shall be at least 5-degrees F above the dew point. When substrate temperatures are high, care shall be taken during paint application to prevent formation of voids, pin holes, and

bubbles due to the rapid evaporation of solvent. These requirements also apply during the curing stage of the coatings.

- 3. Protection of Surrounding Area:
  - a. Surrounding area and surfaces not to be painted shall be protected during cleaning, preparation and painting operations.
  - b. Drifting of overspray shall be controlled and contained during painting operations so that finish is contained to the work only.
- 4. Comply with the additional requirements specified in Section 09 9100, Painting.
- G. Curing Time: The manufacturer's required minimum or maximum curing time between coats shall be strictly adhered to. Applicator shall verify curing times with manufacturer.
- H. Application and Repair: The application shall leave no sags, runs or holidays. Damage, imperfections or holes in any coat shall be cleaned and repaired to conform to manufacturer's requirements in order to maintain the warranty prior to final inspection.

# PART 3 - EXECUTION

## 3.1 EXAMINATION

- A. Examine the conditions under which the fencing is to be installed and advise the General Contractor of any conditions detrimental to the proper and timely completion of the work. Work shall not proceed until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.
- B. The Contractor shall take field measurements for this work and notify the Architect of any discrepancies between plan and field dimensions.

# 3.2 INSTALLATION

- A. Install all-welded metal fencing system as indicated on the Drawings, reviewed submittals, and in accordance with industry standard and best practices.
- B. Upon receipt at job site, materials shall be checked to ensure that no damage occurred during handling or shipping. Contractor shall repair or replace material at no additional cost to the Owner.
- C. Fence Posts:
  - 1. Dig post holes in firm, undisturbed compacted soil.
  - 2. For fence posts and gate posts where gate leaf is 6'-0" or less in width, footing shall be no less than 12-inches in diameter and 3'-6" deep with posts set 6-inches above bottom of excavation.
  - 3. For gate posts where gate leaf is greater than 6'-0" and less than 12'-0" wide, footing shall be no less than 18-inches in diameter and 4'-6" deep with posts set 6- inches above bottom of excavation.
  - 4. Set fence posts a maximum of 8'-0" on center. Dimensions vary when going up or down grades.

- D. Install all posts and panel sections plumb and level in accordance to plans in a workmanlike manner.
- E. At slopes, step panel sections to accommodate grade changes. Do not slope panel sections.
- F. Gates:
  - 1. Install plumb, level and secure for a full opening without interference.
  - 2. Install hardware not previously installed in shop and adjust hardware for smooth operation.
  - 3. Install in-ground sleeves flush to grade at both closed and open positions to accept cane bolts.
- G. Field Welding:
  - 1. Comply with applicable AWS specification for procedures of manual shielded metal arc welding, for appearance and quality of welds and for methods used in correcting welding work.
  - 2. Weld connections shall be limited to locations where fabrication cannot be shop welded because of shipping size limitations or conditions of installation.
  - 3. Grind exposed welded joints smooth and restore finish to match finish of adjacent surfaces.
- H. Field Finishing: Provide painted finish utilizing preparation, coatings, and application process specified in Part 2.

# **END OF SECTION**

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## PART 1 - GENERAL

## 1.1 SUMMARY

- A. Section Includes:
  - 1. Domestic water piping system.
  - 2. Fire protection piping systems.
  - 3. Sewer piping system

## 1.2 RELATED REQUIREMENTS

- A. Section 01 5000, Temporary Facilities and Controls.
- B. Section 31 0000, Earthwork.
- C. Section 31 2333, Trenching and Backfilling.
- D. Section 31 3100, Soil Treatment.
- E. Section 32 1600, Site Concrete.

#### 1.3 REFERENCES AND STANDARDS

- A. California Building Code (CBC), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).
- B. California Green Building Standards Code (CAL Green), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).
- C. California Plumbing Code, (CPC), edition as noted on the Drawings.
- D. California State Health and Safety Code Section 116875, Lead Free Public Water Systems.
- E. Local Jurisdiction: Any work within the street, highway or right-of-way shall be performed in accordance with the requirement of the governmental agencies having jurisdiction, and shall not begin until all of those governing authorities have been notified.
- F. ASTM International (ASTM):
  - 1. D422-63: Test Method for Particle Size Analysis of Soil.
  - 2. D698-00: Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5 lb (2.49 Kg) Rammer and 12 inch (304.8 mm) Drop.
  - 3. D1556-00: Test Method for Density of Soil in Place by the Sand-Cone Method.
  - 4. D1557-02:Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb. (4.54 Kg) Rammer and 18 inch (457 mm) Drop.
  - 5. D3017-05: Test Methods for Moisture Content of Soils and Soil-Aggregate Mixture by Nuclear Methods (Shallow Depth).

- 6. D4318-05: Test Method for Liquid Limit, Plastic Limit, and Plasticity Limit.
- G. CALTRANS Standard Specifications.
- H. CAL-OSHA, Title 8, Section 1590 (e).
- I. NFPA 13, 24 and 25, latest editions.

# 1.4 ADMINISTRATIVE REQUIREMENTS

- A. Submittal Procedures:
  - 1. Action Submittals and Informational Submittals shall be submitted in accordance with Section 01 3300, Submittal Procedures.
  - 2. Closeout Submittals shall be submitted in accordance with Section 01 7700, Closeout Procedures.
  - 3. Sustainable Design Submittals shall comply with the additional requirements of Section 01 8113, Sustainable Design Requirements.

# 1.5 ACTION SUBMITTALS

- A. Provide supplier's descriptive literature for all products to demonstrate compliance with specified attributes.
- B. Substitution: Provide all data of proposed material being submitted as a substitution. Provide comparison with specified product data and identify all differences. Failure to provide comparison will be reason for rejection.

# 1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For contractor / installer.
- B. Provide sieve analysis from accredited testing lab on pipe bedding material. Analysis shall have a current date not older than project contract signing date.
- C. Sustainable Design:
  - 1. General:
    - a. Submit information necessary to establish and document compliance with the California Green Building Standards Code.
    - b. Sustainable design submittals are in addition to other submittals.
  - 2. The following information shall be provided:
    - a. Adhesives and Sealants: Evidence of compliance that products meet maximum VOC content limits specified in Section 01 6116.
    - b. Paints and Coatings: Evidence of compliance that products meet maximum VOC content limits specified in Section 01 6116.

# 1.7 CLOSEOUT SUBMITTALS

A. Guarantee: Submit subcontractor's guarantee.

B. Water Sterilization Test Report.

## 1.8 QUALITY ASSURANCE

- A. Contractor / Installer shall have been in business for five (5) years providing/finishing similar size projects and complexity.
- B. Contractor shall be solely responsible for all subgrades built. Any repairs resulting from inadequate compaction or incorrect grades will be the responsibility of the contractor.
- C. The representatives of the Owner's testing lab will not act as supervisor of construction, nor will they direct construction operations. Neither the presence of the Owner's testing lab representatives nor the testing by the Owner's testing lab shall excuse the contractors or subcontractors for defects or deficiencies discovered in their work during or following completion of the project. Correcting inadequate compaction is the sole responsibility of the contractor.
- D. Use only new materials and products, unless existing materials or products are specifically shown otherwise on the drawings to be salvaged and re-used.
  - 1. Sun damaged or discolored PVC pipe will be rejected.
- E. All materials, components, assemblies, workmanship and installation are to be observed by the Owner's Project Inspector. Work not so inspected is subject to uncovering and replacement.

#### 1.9 FEES, PERMITS, AND UTILITY SERVICES

- A. Obtain and pay for permits and service charges required for installation of Work. Arrange for required inspections and secure written approvals from authorities having jurisdiction.
- B. Upon completion of work within right-of-way, provide copies of written final approval to the Architect.

### 1.10 DELIVERY, STORAGE AND HANDLING

- A. Transport, store and handle in strict accord with the local jurisdiction and manufacturer's written recommendations
- B. Deliver undamaged products to job in manufacturer's sealed containers and/or original bundles with tags and labels intact.

# 1.11 EXISTING SITE CONDITIONS

- A. Contractor shall acquaint himself with all site conditions. If unknown active utilities are encountered during work, notify Architect promptly for instructions. Failure to notify will make Contractor liable for damage to these utilities arising from Contractor's operations subsequent to discovery of such unknown active utilities.
- B. Existing civil, mechanical and electrical improvements are shown on respective site plans to the extent known. Should the Contractor encounter any deviation between

actual conditions and those shown, he is to immediately notify the Architect before continuing work.

## 1.12 **PROTECTION**

- A. Adequate protection measures shall be provided to protect workmen and passers-by on and off the site. Adjacent property shall be fully protected throughout the operations. Blasting will not be permitted. Prevent damage to adjoining improvements and properties both above and below grade. Restore such improvements to original condition should damage occur. Replace trees and shrubs outside building area disturbed by operations.
- B. In accordance with generally accepted construction practices, the Contractor shall be solely and completely responsible for working conditions at the job site, including safety of all persons and property during performance of the work. This requirement shall apply continuously and shall not be limited to normal working hours.
- C. Any construction review of the Contractor's performance conducted by the Geotechnical Engineer is not intended to include review of the adequacy of the Contractor's safety measures, in, on, or near the construction site.
- D. Provide shoring, sheeting, sheet piles and or bracing to prevent caving, erosion or gullying of sides of excavation.
- E. Surface Drainage: Provide for surface drainage during period of construction in manner to avoid creating nuisance to adjacent areas. The contractor shall make a reasonable effort on a daily basis to provide pumps and all equipment necessary to keep all excavations and the site free from water during entire progress of work, regardless of cause, source, or nature of water.
- F. Adjacent streets and sidewalks shall be kept free of mud, dirt or similar nuisances resulting from earthwork operations.
- G. The site and adjacent influenced areas shall be watered as required to suppress dust nuisance. Dust control measures shall be in accordance with the local jurisdiction.
- H. Trees: Carefully protect existing trees that are to remain. Provide temporary irrigation as necessary to maintain health of trees.

#### 1.13 SEASONAL LIMITS

A. No fill material shall be placed, spread or rolled during unfavorable weather conditions. When work is interrupted by rains, fill operations shall not be resumed until field tests indicate that moisture content and density of fill are satisfactory.

# 1.14 RECORD DRAWINGS

- A. Keep a daily record of all pipe placed in ground, verified by Project Inspector.
- B. Upon completion of this Contract, furnish one tracing showing all outside utility lines, piping, etc., installed under this Contract. Locate and dimension all work with reference to permanent landmarks.

- C. All symbols and designations used in preparing "RECORD" drawings shall match those used in Contract drawings.
- D. Properly identify on as-builts and provide dimensions for all stubs for future connections. Provide concrete markers 6" dia. 12" deep, flush with finish grade at the ends of all stubbed pipes.
- E. Provide record drawings per Section 01 3300.

# PART 2 - PRODUCTS

# 2.1 MATERIALS - GENERAL

- A. Provide each item listed herein or shown on drawings of quality noted or approved equal. All material shall be new, full weight, standard in all respects and in first-class condition. Insofar as possible, all materials used shall be of same brand or manufacture throughout for each class of material or equipment. Materials shall be of domestic manufacture and shall be tested within Continental United States.
- B. Grade or quality of materials desired is indicated by trade names or catalog numbers stated herein.
- C. Dimensions, sizes, and capacities shown are minimum and shall not be changed without permission of Architect.
- D. All materials in this section used for any public water system or domestic water for human consumption shall be lead free.
  - 1. For the purposes of this section, "lead free" means not more than 0.2 percent lead when used with respect to solder and flux and not more than 8 percent when used with respect to pipes and pipe fittings.
  - 2. All pipe, pipe or plumbing fitting or fixtures, solder, or flux shall be certified by an independent American National Standards Institute (ANSI) accredited third party, including, but not limited to, NSF International, as being in compliance with this section.
- E. All materials used for fire system piping shall be UL and FM approved.

# 2.2 VALVE BOXES

A. Provide at each valve or cock in ground a Christy, Brooks, or equal to Christy G05CT, concrete valve box with cover marked for service, domestic water shall be marked "Water" and fire supply shall be marked "Fire". Furnish extension handles for each size square nut valve, and provide "fork" handle for each size of "wheel handle" valve as required. Do not locate valve boxes in walk, or covered passages, curbs, or curb & gutters, unless necessary. If valve location is within concrete or asphalt paved surface valve box shall be as detailed on plans for such condition. Provide valve box extensions as required to set bottom of valve box to bottom of piping in which valve is installed. Provide Owner with set of special wrenches and/or tools as required for operation of valves.

#### 2.3 PIPES AND FITTINGS

- A. Sanitary Sewer: PVC sewer pipe and fittings with Ring-Tite joints, ASTM D3034 SDR35.
- B. Domestic water Lines 3 1/2" and smaller: Type K copper tubing, hard temper, with wrought copper fittings. Schedule 80 PVC, ASTM D 1784, ASTM D 1785.
- C. Water lines 4" and larger: AWWA C-900 Class 150/DR18 with rubber gasket joints.
- D. Fire lines 4" and larger: AWWA C-900 Class 200/DR14 with rubber gasket joints.
- E. Solder: Lead Free. 95/5; 95% Tin / 5% Antimony.
- F. Ductile Iron Pipe; AWWA Class 51, Cement Lined
- G. Ductile Iron Pipe Fittings; AWWA C110, C153, Ebba Iron, Star Romac, Sigma, or approved equal.
- H. PVC Mechanical Fittings; Ebba Iron, Star; Romac; Sigma or approved equal.
- I. Ductile Iron Pipe/PVC C-900 Pipe Restrained Fittings; Ebba Iron # 3800 Mega Coupling, Ebba Iron 1100CH Split Restrained Harness for pipe couplings. StarGrip Series 4000.
- J. Ductile Iron Pipe/PVC C900, C905 Restrained Degreedand Blind Cap Fittings,;
- K. Mega Lug; Sigma; Romac; or an approved equal
- L. Mechanical Fitting Bolts; Bolts and nuts shall be carbon steel with a minimum 60,000 psi tensile strength conforming to ASTM A 307, Grade A. Bolts shall be standard ANSI B1.1 Class 2A course threads. Nuts shall conform to ASTM A 563 and be standard ANSI B1.1, Class 2A course thread. All bolts and nuts shall be zinc coated.
- M. Fasteners Anti-Rust Coatings; After assembly, coat all fasteners with an Asphaltic Bituminous coatings conforming to latest edition NFPA 24.
- N. Ductile Iron Pipe Wrap; 8 mil polyethylene pipe wrap conforming to ANSI/AWWA C105/A21.5 standards.
- O. Pipe Insulation; Pipe exposed to atmospheric conditions ½" thru 4" NPT; Johns Manville rigid fiberglass insulation, Micro Lok HP; Owens Corning Fiberglas SSL II; Conforming to ASTM C 612, Type 1A or type 1B.
- P. Aluminum field applied pipe insulation jacket; comply with ASTM B209, ASTM C1729, ASTM C1371 Manufacturers; Childers Metals; ITW Insulation Systems Aluminum Jacketing; or an approved equal.
  - 1. Finish shall be flat mill finish
  - 2. Factory Fabricated Fitting Covers; 45 and 90 degree elbows, tee's, valve covers, end caps, unions, shall be of the same thickness and finish of jacket.
  - 3. The fittings shall be composed of 2-pieces
  - 4. Adhesives; per the manufacturers requirements

- 5. Joint Sealant; shall be silicone, and shall be aluminum in color.
- Q. Sewer Forced Main; HDPE, DR 11, color gray with green stripe by JM Eagle or approved equal.

## 2.4 SANITARY SEWER MANHOLES

A. Shall be constructed as shown on plan details.

## 2.5 CLEANOUTS

- A. Cleanouts of same diameter as pipe up to 8" in size shall be installed in all horizontal soil and waste lines where indicated and at all points of change in direction. Cleanouts shall be located not less than 18" from building so as to provide sufficient space for rodding. No horizontal run over 100 feet shall be without cleanout whether shown on drawings or not.
- B. All cleanout boxes shall be traffic rated with labeled lid, Christy G05CT or approved equal. Lid shall be vandal proof with stainless steel screws

## 2.6 UNIONS

- A. Furnish and install one union at each threaded or soldered connection to equipment and 2 unions, one on each side of valves on pipes  $\frac{1}{2}$ " to 3".
- B. Locate unions so that piping can be easily disconnected for removal of equipment or valve. Provide type specified in following schedule:

Type of Pipe Union

Steel Pipe:	150 lb. Screwed malleable ground joint, brass, brass-to-iron seat, black or galvanized to match pipe.
Copper tubing:	Brass ground joint with sweat connections.
PVC Sch 80 pipe:	PVC union, FIPT X FIPT

#### 2.7 VALVES

- A. Provide valves as shown and other valves necessary to segregate branches or units. Furnish valves suitable for service intended. Valves shall be properly packed and lubricated. Valves shall be non-rising stem. Place unions adjacent to each threaded or sweat fitting valve. Install valves with bonnets vertical. All valves shall be lead free.
- B. Valves ½" thru 2"; shall be made of bronze, full size of pipe and lead free. Nibco S-113-FL Series; American G-300 Series; Matco 511 FL Series; Apollo 102T-FL Series. Brass valves of brass parts within valves will not be accepted.
- C. Valves, 2 ½" thru 3" shall be class 150; Shall be made of bronze, full size of pipe; Jenkins Fig. 2310 J; Lunkinheimer Fig. 2153; Crane Fig. 437; Stockham Fig. B-128.

D. Valves, Flanged; 4" thru 12" Ductile Iron Resilient Wedge Gate Valve; Nibco F 609 RW; American 2500 Series; Kennedy 8561; Mueller 2360 Series.

## 2.8 FIRE HYDRANTS

A. Clow 960 Factory Painted or per Local Jurisdiction Requirements, or an approved equal, 36" minimum bury, two 2-1/2" hose nozzles, one 4-1/2" pumper nozzle, intermediate section to serve as break-off flange with check valve. Hydrant shall conform to, and installation shall comply with the Local Jurisdiction.

## 2.9 TAPPING SLEEVE

A. Shall be used on pipe sizes 6" thru 12" and shall be made with stainless steel material including stainless steel bolts. Flanges shall be ductile iron or high carbon steel. Gaskets shall seal full circumference of pipe. Shall be manufactured for operating pressure of 200 psi, and shall pass test pressure of 300 psi. Romac SST series; Smithblair 662; Mueller H304; Ford "FAST" tapping sleeve.

# 2.10 SERVICE SADDLES

A. Shall be used on pipe size 2" thru 4". Body shall be made from ductile iron with epoxy coating or bronze. Cascade Style CSC-1; A.Y. McDonald model 3891 AWWA/3892 FNPT; Smith-Blair #317; Ford S70, S71, S90, (style B).

#### 2.11 TRACER WIRE

A. No. 10 THW solid copper wire. Solder all joints

# PART 3 - EXECUTION

#### 3.1 DRAWINGS AND COORDINATION

- A. General arrangement and location of piping, etc., are shown on Drawings or herein specified. Install work in accord therewith, except for minor changes that may be necessary on account of other work or existing conditions. Before excavation, carefully examine other work that may conflict with this work. Install this work in harmony with other craft and at proper time to avoid delay of work.
- B. Verify invert elevations at points of connection to existing systems prior to any excavation. If invert elevations differ from that shown on drawings, notify Architect immediately.
- C. In advance of construction, work out minor changes if conflicts occur with electrical or mechanical. Relocate services to suit actual conditions and work of other trades to avoid conflict therewith. Any adjustments or additional fittings to make adjustments shall not be cause for additional costs to the owner.
- D. Execute any work or apparatus shown on drawings and not mentioned in specifications, or vice versa. Omission from Drawings or Specifications of any minor details of

construction, installation, materials, or essential specialties does not relieve Contractor of furnishing same in place complete.

E. Graded pipes shall take precedence. If conflict should occur while placing the domestic water and fire service piping, the contractor shall provide any and all fittings necessary to route the water lines over such conflicting pipes at no additional costs to the owner.

# 3.2 ACCESS

A. Continuously check for clearance and accessibility of equipment or materials specified herein to be placed. No allowance of any kind shall be made for negligence on part of Contractor to foresee means of installing his equipment or materials into proper position.

# 3.3 EXCAVATING AND BACKFILLING

- A. Excavation and Bedding:
  - 1. General: Trench straight and true to line and grade with bottom smooth and free of irregularities or rock points. Trench width to be a minimum of 12" wider than outside diameter of pipe. Follow manufacturer's recommendations for use of each kind and type of pipe.
  - 2. Bedding: Provide a bedding as noted on drawing details for the full length of the pipe. Bedding shall have a minimum thickness beneath the pipe of 4" or 1/8 the outside diameter of the pipe, which ever is greater. Provide bell holes and depressions for pipe joints only of size required to properly make joint.
  - 3. If the trenches for the site utilities falls within areas to be lime treated, the piping shall be installed prior to any lime treatment operations, providing the elevation of the piping is below the treatment section.
    - a. If trenching is necessary in areas that have been previously lime treated the contractor shall backfill the trench with class 2 aggregate base, with minimum section equal to the lime treated section and compacted to 95%.
- B. Laying of Pipe:
  - 1. General: Inspect pipe prior to placing. Sun damaged pipe will be rejected. Set aside any defective or damaged material. Do not place pipe in water nor place pipe when trenches or weather are unsuitable. Lay pipe bell upgrade, true to line and grade.
    - a. Sewer pipe shall be laid in strict conformity to the prescribed line and grade, with grade bars set and each pipe length checked to the grade line. Three consecutive points on the same rate of slope shall be used at all times to detect any variation from a straight grade. In any case of discrepancy, work shall be stopped and the discrepancy immediately reported to the Owner's Representatives. In addition, when requested by the Owner's Representative, a string line shall be used in the bottom of the trench to insure a straight alignment of the sewer pipe between manholes. The maximum deviation from grade shall not be in excess of 1/4 inch. In returning the pipe to grade, no more than 1/4" depression shall result.

- b. The Contractor shall expose the end of existing pipe to be extended, for verification of alignment and elevation, prior to trenching for any pipe which may be affected. All costs of such excavation and backfill shall be included in the price paid for the various items of work.
- c. A temporary plug, mechanical type shall be installed on sewer pipe at the point of connection to existing facilities. If connecting to a public facility the plug shall conform to the requirements of the local jurisdiction. This plug shall remain in place until the completion of the balling and flushing operation.
- 2. Bell and Spigot Joints: Lubricate inside of bells and outside of spigots with soap solution. Wedge joints tight. Bell of bell and spigot pipe to be pointed upgrade.

# C. Backfilling:

- 1. General: Do not start backfill operations until required testing has been accomplished.
- 2. Compaction and Grading: Remainder of backfill shall be in accordance with Section 31 2333 TRENCHING AND BACKFILLING.
- 3. If trenching in area previously lime or cement treated backfill top of trench section, same depth as lime or cement treatment with Class 2 Aggregate Base compacted to 95% minimum relative compaction.

## 3.4 INSTALLATION OF WATER PIPING

- A. Immediately cap or plug ends of, and opening in, pipe and fittings to exclude dirt until final connections made. Use reducing fittings where any change in pipe size occurs. Bushings shall not be used.
- B. General: Should existing conditions or other work prevent the running of pipes or the setting of equipment at the points indicated by drawings, changes as authorized by the Architect shall be made without additional cost to the Owner.
- C. All bolts used on mechanical fittings shall be thoroughly coated with an asphaltic bituminous coating conforming to 2007 NFPA 10.3.5.2 and 10.8.3.5.
- D. All buried metal shall be incased with 8 mil polyethylene wrap so that no soil is in contact with metal. Ends of polyethylene wrap shall be taped to provide seal with pipe.
- E. Do not install water lines in same trench with non-metallic sewer lines unless bottom of water pipe at all points is at least 12" above top of sewer line and water line is placed on solid shelf excavated at one side of common trench with a minimum of 12 inch horizontal separation.
- F. Under no circumstance shall a fitting be located directly under a structural footing without prior approval from the Architect.
- G. In locations where existing domestic pipe is rerouted, the new pipe shall be assembled using restrained fittings at all joints including factory pipe joints. Tapped restrained blind flanges shall be temporarily installed at each end of the assembled pipes until testing and chlorination is completed and approved.

## 3.5 CLOSING IN OF UNINSPECTED WORK

A. Do not allow or cause work installed to be covered up or enclosed before it has been inspected, tested, and approved. Should work be enclosed or covered up before it has been approved, uncover work at own expense. After it has been inspected, tested and approved, make repairs necessary to restore work of other contractors to condition in which it was found at time of cutting.

#### 3.6 CARE AND CLEANING

- A. Repair or replace broken, damaged, or otherwise defective parts, materials, and work. Leave entire work in new condition satisfactory to Architect. At completion, carefully clean and adjust equipment, fixtures and trim that are installed as part of this work. Leave systems and equipment in satisfactory new operating condition.
- B. Drain and flush piping to remove grease and foreign matter.
- C. Sewer piping shall be balled and flushed.
- D. Clean out and remove surplus materials and debris resulting from the work, including surplus excavated material.
- E. Flush fire service piping in the presence of the project inspector. Flushing shall be continued for a sufficient time as necessary to ensure all foreign material has been removed. Flow rate shall be equal to site fire flow requirements.

#### 3.7 SEWER INTERNAL INSPECTIONS

A. Upon completion of construction and prior to final inspection, the Contractor shall clean the entire new pipeline of all dirt and debris. Any dirt or debris in previously existing pipes or ditches in the area, which resulted from the new installation, shall also be removed. Pipes shall be cleaned by the controlled balling and flushing method. Temporary plugs shall be installed and maintained during cleaning operations at points of connection to existing facilities to prevent water, dirt, and debris from entering the existing facility.

#### 3.8 TEST OF PIPING

- A. Pressure Test piping at completion of roughing-in, in accord with following schedule, and show no loss in pressure or visible leaks after minimum duration or four (4) hours at test pressures indicated.
- B. Chlorination tests shall be performed after all fixtures and any required mechanical devices are installed and the entire system is complete and closed up.
- C. In cases where new domestic water piping is assembled for re-routing of existing domestic water pipe, the contractor shall perform the following testing prior to connecting the new water pipe to the existing system.
  - 1. The pipe shall be pressure tested and per the test schedule.
  - 2. The pipe shall be pressure tested down within the trench.

- 3. The contractor shall dig a temporary ditch below the existing pipe to drain to a sump that is lower than the bottom of the trench and to the side of the trench. The sump shall be 30% larger than the total volume of water within the testing pipe assembly.
- 4. After pressure testing and chlorination has taken place and accepted, the contractor shall drain the pipe into the sump and pump the sump out as it is filling.
- 5. The temporary test fittings at each end of the pipe assembly shall be removed and the final restrained couplings installed.
- 6. The existing piping shall be cut and the water within the pipe shall drain below the pipe to the temporary sump. Pump the sump as it is being filled up. Take extreme caution not to contaminate the existing pipe with any contaminates within the trench.
- 7. Before making the final coupling connections, the restrained couplings at each end of the new pipe shall be thoroughly swabbed inside the fitting with a solution of chlorine mixed with water at a rate of 1part chlorine to 4 parts potable water.
- 8. After final connections are made, a visual inspection shall be made after fittings are wiped off. If after 1 hr, no noticeable drips are noted the pipe can be backfilled.
- 9. The contractor shall flush all water piping affected by chlorination until it is within acceptable levels approved by certified testing lab.

## TEST SCHEDULE

System Tested	Test Pressure PSIG Test With
Public Water Mains	Per local jurisdiction requirements.
Private Domestic Water Piping:	150 Lbs. Water 4 hrs.
Fire Protection Piping:	200 Lbs. Water pressure, 4 hrs duration with no pressure loss.
Sanitary Sewer Piping:	Sewer system shall be tested for leakage per local jurisdiction requirements.

D. Testing equipment, materials, and labor shall be furnished by contractor.

## 3.9 WATER SYSTEM STERILIZATION

- A. Public Water Mains: Shall be flushed and disinfected per the local jurisdiction requirements
- B. Clean and disinfect all site water systems connected to the domestic water systems in accordance with AWWA Standard C651 and as required by the local Building and Health Department Codes, and EPA.
  - 1. Clean and disinfect industrial water system in addition to the domestic water system.
  - 2. Disinfect existing piping systems as required to provide continuous disinfection upstream to existing valves. At Contractors option, valves may be provided to isolate the existing piping system from the new piping system.
- C. Domestic water sterilization shall be performed by a licensed "qualified applicator" as required by CAL-EPA Pesticide Enforcement Branch for disinfecting and sterilizing drinking water.
- D. Disinfecting Agent: Chlorine product that is a registered product with Cal-EPA for use in California potable water lines, such as Bacticide, CAL-EPA Registration No. 37982-20001.
- E. Contractor to provide a 1" service valve connected to the system at a point within 2'-0" of its junction with the water supply line. After sterilization is complete Contractor to provide cap at valve.
- F. Sterilization Procedure to be as follows:
  - 1. Flush pipe system by opening all outlets and letting water flow through the system until clear water flows from all outlets.
  - 2. Inject disinfecting agent to provide a minimum chlorine residual concentration of at least 50 parts per million (ppm) of free chlorine at each outlet.
  - 3. Provide sign at all outlets which reads "Water Sterilization in Progress Do not operate". Remove signs at conclusion of test.
  - 4. Close all outlets and valves, including valve connecting to water supply line and 1" service valve. Retain treated water in pipe for a minimum of twenty-four hours. Should chlorine residual at pipe extremities be less than 50 PPM at this time, pipe shall be re-chlorinated. As an option, the water systems may be filled with a water-chlorine solution containing a minimum of 200 PPM of chlorine and allowed to stand for three hours.
  - 5. After chlorination, flush lines of chlorinated water and refill from domestic supply. Continue flushing until residual chlorine is less than or equal to 0.2 ppm, or a residual the same as that of the test water.

- G. Chemical and bacteriological tests shall be conducted by a state-certified laboratory and approved by the local authorities having jurisdiction.
- H. Submit written report to Health Department as required by State Regulations. Provide a copy of report to Architect prior to completion of project.
- I. The costs of sterilization and laboratory testing shall be paid for by the contractor.

# 3.10 CLEANING

A. Upon completion of work of this Section promptly remove from the working area all scraps, debris and surplus material of this Section.

# **END OF SECTION**

## PART 1 - GENERAL

## 1.1 SUMMARY

- A. Summary Includes:
  - 1. Storm drainage piping systems.

## 1.2 RELATED REQUIREMENTS

- A. Section 01 5000, Construction Facilities and Controls.
- B. Section 31 0000, Earthwork.
- C. Section 31 2333, Trenching and Backfilling.
- D. Section 32 1200, Asphalt Concrete Paving.
- E. Section 32 1600, Site Concrete

## 1.3 **REFERENCES AND STANDARDS**

- A. California Building Code (CBC), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).
- B. California Green Building Standards Code (CAL Green), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).
- C. California Plumbing Code, (CPC), edition as noted on the Drawings.
- D. Local Jurisdiction: Any work within the street, highway or right-of-way shall be performed in accordance with the requirement of the governmental agencies having jurisdiction, and shall not begin until all of those governing authorities have been notified.
- E. ASTM International (ASTM):
  - 1. D 422-63 Test Method for Particle Size Analysis of Soil.
  - 2. D698-00 Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5 lb (2.49 Kg) Rammer and 12 inch (304.8 mm) Drop.
  - 3. D1556-00 Test Method for Density of Soil in Place by the Sand-Cone Method.
  - 4. D1557-02 Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb. (4.54 Kg) Rammer and 18 inch (457 mm) Drop.
  - 5. D 3017-05 Test Methods for Moisture Content of Soils and Soil-Aggregate Mixture by Nuclear Methods (Shallow Depth).
  - 6. D 4318-05 Test Method for Liquid Limit, Plastic Limit, and Plasticity Limit.
- F. CALTRANS Standard Specifications.

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G. CAL-OSHA, Title 8, Section 1590 (e).

# 1.4 ADMINISTRATIVE REQUIREMENTS

- A. Submittal Procedures:
  - 1. Action Submittals and Informational Submittals shall be submitted in accordance with Section 01 3300, Submittal Procedures.
  - 2. Closeout Submittals shall be submitted in accordance with Section 01 7700, Closeout Procedures.
  - 3. Sustainable Design Submittals shall comply with the additional requirements of Section 01 8113, Sustainable Design Requirements.

# 1.5 ACTION SUBMITTALS

- A. Provide supplier's descriptive literature for all products to demonstrate compliance with specified attributes.
- B. Substitution: Provide all data of proposed material being submitted as a substitution. Provide comparison with specified product data and identify all differences. Failure to provide comparison will be reason for rejection.

# 1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: Contractor / installer.
- B. Provide sieve analysis from accredited testing lab on pipe bedding material. Analysis shall have a current date not older than project contract signing date.
- C. Sustainable Design:
  - 1. General:
    - a. Submit information necessary to establish and document compliance with the California Green Building Standards Code.
    - b. Sustainable design submittals are in addition to other submittals.
  - 2. The following information shall be provided:
    - a. Adhesives and Sealants: Evidence of compliance that products meet maximum VOC content limits specified in Section 01 6116.
    - b. Paints and Coatings: Evidence of compliance that products meet maximum VOC content limits specified in Section 01 6116.

# 1.7 CLOSEOUT SUBMITTALS

A. Guarantee: Submit subcontractor's guarantee.

# 1.8 QUALITY ASSURANCE

A. Contractor / Installer shall have been in business for five (5) years providing/finishing similar size projects and complexity.

- B. Contractor shall be solely responsible for all subgrades built. Any repairs resulting from inadequate compaction are the responsibility of the contractor.
- C. The representatives of the Owner's testing lab will not act as supervisor of construction, nor will they direct construction operations. Neither the presence of the Owner's testing lab representatives nor the testing by the Owner's testing lab shall excuse the contractors or subcontractors for defects discovered in their work during or following completion of the project. Correcting inadequate compaction is the sole responsibility of the contractor.
- D. Use only new materials and products, unless existing materials or products are specifically shown otherwise on the Drawings to be salvaged and re-used.
  - 1. Sun damaged or discolored PVC pipe will be rejected.
- E. All materials, components, assemblies, workmanship and installation are to be observed by the Owner's Project Inspector. Work not so inspected is subject to uncovering and replacement.

# 1.9 DELIVERY, STORAGE AND HANDLING

- A. Transport, store and handle in strict accord with the local jurisdiction and manufacturer's written recommendations
- B. Deliver undamaged products to job in manufacturer's sealed containers and/or original bundles with tags and labels intact.

# 1.10 EXISTING SITE CONDITIONS

- A. Contractor shall acquaint himself with all site conditions. If unknown active utilities are encountered during work, notify Architect promptly for instructions. Failure to notify will make Contractor liable for damage to these utilities arising from Contractor's operations subsequent to discovery of such unknown active utilities.
- B. Existing civil, mechanical and electrical improvements are shown on respective site plans to the extent known. Should the Contractor encounter any deviation between actual conditions and those shown, he is to immediately notify the Architect before continuing work.

### 1.11 **PROTECTION**

- A. Adequate protection measures shall be provided to protect workmen and passers-by on and off the site. Adjacent property shall be fully protected throughout the operations. Blasting will not be permitted. Prevent damage to adjoining improvements and properties both above and below grade. Restore such improvements to original condition should damage occur. Replace trees and shrubs outside building area disturbed by operations.
- B. In accordance with generally accepted construction practices, the Contractor shall be solely and completely responsible for working conditions at the job site, including safety of all persons and property during performance of the work. This requirement shall apply continuously and shall not be limited to normal working hours.
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- C. Any construction review of the Contractor's performance conducted by the Geotechnical Engineer is not intended to include review of the adequacy of the Contractor's safety measures, in, on, or near the construction site.
- D. Provide shoring, sheeting, sheet piles and/or bracing to prevent caving, erosion or gullying of sides of excavation.
- E. Surface Drainage: Provide for surface drainage during period of construction in manner to avoid creating nuisance to adjacent areas. The contractor shall make a reasonable effort on a daily basis to provide pumps and all equipment necessary to keep all excavations and the site free from water during entire progress of work, regardless of cause, source, or nature of water.
- F. Adjacent streets and sidewalks shall be kept free of mud, dirt or similar nuisances resulting from earthwork operations.
- G. The site and adjacent influenced areas shall be watered as required to suppress dust nuisance. Dust control measures shall be in accordance with the local jurisdiction.
- H. Trees: Carefully protect existing trees that are to remain.

## 1.12 SEASONAL LIMITS

A. No fill material shall be placed, spread or rolled during unfavorable weather conditions. When work is interrupted by rains, fill operations shall not be resumed until field tests indicate that moisture content and density of fill are satisfactory.

### 1.13 TESTING

- A. General: Refer to Section 01 4523 Testing and Inspection Services, and Structural Tests and Inspections List, DSA-103.
- B. Geotechnical Engineer: Owner is retaining a Geotechnical Engineer to determine compliance of fill with Specifications, and to direct adjustments in fill operations. Costs of Geotechnical Engineer will be borne by Owner; except those costs incurred for retests or re-inspection will be paid by Owner and backcharged to Contractor.

### 1.14 RECORD DRAWINGS

- A. Keep a daily record of all pipe placed in ground, verified by Project Inspector.
- B. Upon completion of this Contract, furnish one tracing showing all outside utility lines, piping, etc., installed under this Contract. Locate and dimension all work with reference to permanent landmarks.
- C. All symbols and designations used in preparing "RECORD" drawings shall match those used in Contract drawings.
- D. Properly identify all stubs for future connections, as to location and use, by setting of concrete marker at finished grade in the manner suitable to Architect.

### PART 2 - PRODUCTS

## 2.1 MATERIALS

- A. Pipe: Use one of the following, unless noted on the Drawings otherwise.
  - 1. Polyvinyl Chloride Pipe (PVC): SDR35 conforming to ASTM D3034 with elastomeric joints conforming to ASTM D3212 for pipe to 12". Sun damaged pipe will be rejected.
  - 2. High density polyethylene pipe (HDPE): The pipe shall be corrugated exterior/smooth interior pipe. 12" to 60" maximum diameter shall conform to AASHTO M294, water tight per ASTM D3212 with water tight gasket fittings.
- B. Perforated Pipe (for subdrains): Shall be ADS N12 pipe, 2 hole, ASTM F 405, AASHTO M 252; PCV ASTM D3034 SDR-35 storm drain pipe
- C. Manhole: Shall be as shown on the drawing details.
- D. Drop Inlet: Shall be as shown on the drawing details.
- E. Curb Inlet: Shall be as shown on the drawing details.
- F. Mortar: For pipe connections to concrete drainage structures, conform to ASTM C270 type N mortar. Place within one half hour after adding water.
- G. Crushed Rock: Imported washed crushed rock. Minimum 100% passing 3/4 inch sieve.
- H. Trench drain: Polycast, Polydrain or equal and as shown on drawings.
- I. Area Drains: Shall be as shown on the drawing details.
- J. Floor Drains: Shall be as shown on the drawing details.
- K. Clean-outs: Shall be as shown on the drawing details.
- L. Planter drains: Shall be as detailed on the drawing details.
- M. Filter Fabric: Mirafi 140N.

#### PART 3 - EXECUTION

## 3.1 INSPECTION LAYOUT AND PREPARATION

- A. Prior to installation of the work of this Section, carefully inspect and verify by field measurements that installed work of all other trades is complete to the point were this installation may properly commence
- B. Layout all work, establish grades, locate existing underground utilities, set markers and stakes, setup and maintain barricades and protection facilities; all prior to beginning

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actual earthwork operations. Layout and staking shall be done by a licensed Land Surveyor or Professional Civil Engineer.

- C. Verify that specified items may be installed in accordance with the approved design.
- D. In event of discrepancy, immediately notify Owner and the Architect. Do not proceed in discrepant areas until discrepancies have been fully resolved.

### 3.2 EXCAVATION AND BACKFILLING

- A. General: Installation shall be in strict conformance with referenced standards, the manufacturer's written directions, as shown on the drawings and as herein specified.
- B. Verify invert elevations at points of connection to existing systems prior to any excavation. If invert elevations differ from that shown on drawings, notify Architect immediately.
- C. Excavation and Bedding:
  - 1. General: Trench straight and true to line and grade with bottom smooth and free of irregularities or rock points. Trench width in accordance with pipe manufacturer's recommendations and as per the drawings. Follow manufacturer's recommendations for use of each kind and type of pipe.
  - 2. Bedding: Provide bedding as detailed on plans for the full length of the pipe. Bedding shall have a minimum thickness beneath the pipe of 4" or 1/8 the outside diameter of the pipe, which ever is greater. Provide bell holes and depressions for pipe joints only of size required to properly make joint.
  - 3. If the trenches for the site drainage fall within areas to be lime treated, the piping shall be installed prior to any lime treatment operations.
    - a. If additional piping is added to previously lime treated areas, the contractor shall backfill the trench with class 2 aggregate base and compact to 95%.
- D. Laying of Pipe:
  - 1. General: Inspect pipe prior to placing. Set aside any defective or damaged material. Do not place pipe in water nor place pipe when trenches or weather are unsuitable. Lay pipe upgrade, true to line and grade.
  - 2. Bell and Spigot Joints: Lubricate inside of bells and outside of spigots with soap solution or as recommended by manufacture. Wedge joints tight. Bell of bell and spigot pipe to be pointed upgrade.
  - 3. Pipe shall be bedded uniformly throughout its length.
  - 4. Pipe elevation shall be within 0.02 feet of design elevation as shown on plans.
  - 5. Off Site Work: All work beyond the property lines shall be done in strict conformance with the requirements of the governing agency.
- E. Backfilling:
  - 1. General: Do not start backfill operations until required testing has been accomplished.

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- Trenches and Excavations: Backfill with material as detailed on plans, filling both sides of the pipe at the same time, carefully tamping to hold pipe in place without movement. Refer to Section 31 2333 – TRENCHING AND BACKFILLING for fill above this layer.
- F. Grouting of Pipes: Grout pipes smooth and water tight at drop inlet, manholes, and curb inlets. Grout back side of hood at curb inlets all grouting shall be smooth and consistent.
- G. Off Site Work: All work beyond the property lines shall be done in strict conformance with the requirements of the local agency.
- H. Cutting and Patching: Remove and replace existing surface features per applicable specification section (i.e. asphaltic concrete or concrete paving) where pipe is installed in areas of existing improvements.

# 3.3 TOLERANCES

- A. Storm Drain structure grates
  - 1. In landscape and lawn areas +- 0.05'.
  - 2. In sidewalk and asphalt pavement +-0.025'.
  - 3. In curb and gutter application +-0.0125'.
- B. Cleanout Boxes and Lids
  - 1. In landscape areas; 0.10 higher than surrounding finish grade, +-0.05'.
  - 2. In sidewalks and asphalt pavement; Flush with surrounding finish grade, +-0.025'.

# 3.4 DEWATERING

A. Contractor to provide trench dewatering as necessary, no matter what the source is, at no additional cost to the owner.

# 3.5 FLUSHING

A. The Contractor shall thoroughly ball and flush the storm drain system to remove all dirt and debris. Discharge water to an approved location.

# 3.6 CLEANING

- A. Upon completion of work of this Section promptly remove from the working area all scraps, debris and surplus material of this Section.
- B. Clean the dirt, rocks, and debris from the drop inlets and storm drain manholes.

# END OF SECTION