



# **GROSSMONT UNION HIGH SCHOOL DISTRICT**

## **VALHALLA BATTERY INVERTER REPLACEMENT CN-2559**

**BID AND CONTRACT DOCUMENTS**

**June 21, 2021**

**Rian Pinson, Purchasing Director**

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# **GROSSMONT UNION HIGH SCHOOL DISTRICT**

## **VALHALLA BATTERY INVERTER REPLACEMENT CN-2559**

**SECTION 00020  
NOTICE TO CONTRACTORS  
CALLING FOR BIDS**

**DOCUMENT 00020  
NOTICE INVITING BIDS  
PURSUANT TO THE CALIFORNIA UNIFORM PUBLIC CONSTRUCTION COST  
ACCOUNTING ACT (PCC 22000 et seq.)**

**NOTICE IS HEREBY GIVEN** that the Governing Board of the Grossmont Union High School District ("District") is inviting qualified and experienced contractors to submit sealed bids for the construction project described below.

**VALHALLA BATTERY INVERTER REPLACEMENT  
CN-2559**

**PLACE FOR SUBMITTING BIDS:** Bids must be delivered to the District at the following location: **Grossmont Union High School District Bond Trailer, 9600 ½ Milden Street, La Mesa, CA, 91942**

**BID DEADLINE:** Bids must be delivered to and received by the District at the location specified above as the place for submitting bids not later than the date and time specified below, at which time the District will publicly open and read all bids. Any bid received by the District after the Bid Deadline shall be returned to the bidder unopened. Bids must be received by the District no later than the following Bid Deadline: **July 14, 2021 at 2:00 pm**

**OBTAINING OFFICIAL BID DOCUMENTS:** Prospective bidders may secure a set of bid documents as of June 21, 2021 at <http://www.guhsd.net/Departments/Business-Services/Purchasing/Solicitations/index.html>

**SCOPE:** Replace battery inverter system at VHS central plant.

**REQUIREMENTS FOR BID:** Bids must be submitted on the Bid Form provided by the District and included in the bid documents. Each bid must strictly conform with and be responsive to this Notice Inviting Bids, the Instructions for Bidders, and other Contract Documents. The District reserves the right to reject any or all bids or to waive any irregularities or informalities in any bids or in the bidding. Except as provided in Public Contract Code Section 5100 *et seq.*, no bidder may withdraw a bid for a period of ninety (90) calendar days after the opening of the bids.

**DVBE:** This bid is subject to Disabled Veteran Business Enterprise requirements. Minority, women, and disabled veteran contractors are encouraged to submit bids. District is required to have 3% percentage each year. Bidder must provide a DVBE prime or subcontractor at 3% or complete the Good Faith Efforts package. Construction Manager will place DVBE ad. All paperwork due at time of bid.

**DIR REGISTRATION AND LABOR COMPLIANCE MONITORING:** Except as provided in Labor Code Section 1771.1(a), no Contractor or Subcontractor may be listed on a bid proposal for a public works project submitted on or after March 1, 2015, or perform work on a public works contract awarded on or after April 1, 2015, unless registered with the Department of Industrial Relations pursuant to California Labor Code Section 1725.5. This Project is subject to compliance monitoring and enforcement by the Department of Industrial Relations. Contractor and any Subcontractors engaging in work on the Project are required to review and comply with the provisions of the California Labor Code, Division 2, Part 7, Chapter 1, beginning with Section 1720, and the regulations of the Department of Industrial Relations implementing those provisions. These statutory and regulatory provisions contain specific requirements concerning,



for example, the determination and payment of prevailing wages, retention, inspection and auditing of payroll records, use of apprentices, payment of overtime compensation, and various penalties or fines which may be imposed for violations of the requirements of the chapter. Submission of a bid proposal constitutes the bidder's representation that it has thoroughly reviewed these statutory and regulatory requirements and agrees to bind every Subcontractor performing work on the Project to these requirements to the extent such requirements are applicable to the Subcontractor's work.

**REQUIRED BID SECURITY:** Each bid must be submitted with security in an amount not less than ten percent (10%) of the maximum bid amount as a guarantee that the bidder will enter into the proposed contract, if awarded to the bidder, and will provide the performance and payment bonds, insurance certificates and other documents described in the Contract Documents. Such security must be in one of the following forms: (1) a cashier's check made payable to the District; (2) a certified check made payable to the District; or (3) a bond made payable to the District in the form set forth in the Contract Documents. Any bond must have been issued by a California-admitted surety as defined in Code of Civil Procedure Section 995.120

**REQUIRED CONTRACTOR LICENSE:** The class(es) of California contractor's license(s) required in order to bid on and perform the contract for this Project is:

**B**

**MANDATORY PRE-BID CONFERENCE AND SITE VISIT:** The District will conduct a pre-bid conferences and site visits on **June 29, 2021 at 10:00 am** for the purpose of acquainting all prospective bidders with the bid documents and the work site. Attendance is mandatory, and any bidder that does not attend will be disqualified from work on the Project. The pre-bid conference(s) will begin **at the Valhalla Flag Pole, 1725 Hillsdale Road, 92019.**

**DISTRICT STANDARDS:** The District has made a finding that certain brand or trade names are necessary in order to maintain conformity among its campuses, compatibility with existing systems, and to streamline maintenance and parts storage. A copy of the resolution is incorporated in the bid documents under Specifications.

**PERFORMANCE AND PAYMENT BONDS:** The successful bidder will be required to provide both a performance bond and a separate payment bond, each in an amount equal to 100% of the total contract amount. The forms of the bonds are set forth in the Contract Documents and all bonds must be issued by a California-admitted surety as defined in California Code of Civil Procedure Section 995.120.

**PREVAILING WAGES:** The Project is a public work and the successful bidder and each of its subcontractors of any tier will be required to pay not less than the general prevailing rates of per-diem wages in the locality in which the work is to be performed for each craft or type of worker needed to execute the contract ("Prevailing Wages"). A copy of the per-diem rates of Prevailing Wages applicable to the Project is on file and available for review at the location specified above as the place for submitting bids, and a copy will be posted at the site of the Project. Wages can be found at <http://www.dir.ca.gov/OPRL/PWD/Index.htm>.

**SUBCONTRACTORS:** Bidder shall include the name, location of the place of business, and the California contractor license number of each subcontractor who will perform work or assist the bidder in completing the Project, pursuant to the Subletting and Subcontracting Fair Practices Act. An inadvertent error in listing the contractor license number shall not be grounds for filing a bid protest or grounds for considering a bid nonresponsive, assuming the corrected

contractor's license number is submitted by the bidder within twenty-four (24) hours after the bid opening and the corrected contractor's license number corresponds to the submitted name and location for that subcontractor.

District Contact: Rian Pinson, Director of Purchasing, [rpinson@guhsd.net](mailto:rpinson@guhsd.net)

Construction Estimate: \$250,000

Dated this 21 day of June, 2021

Clerk of the Governing Board  
Grossmont Union High School District,  
of San Diego County, California

# **GROSSMONT UNION HIGH SCHOOL DISTRICT**

## **VALHALLA BATTERY INVERTER REPLACEMENT CN-2559**

**SECTION 00100  
INSTRUCTIONS FOR  
BIDDERS**

(00100)  
**INSTRUCTIONS FOR BIDDERS**

**WARNING:** READ THESE INSTRUCTIONS FOR BIDDERS AND OTHER CONTRACT DOCUMENTS CAREFULLY. DO NOT ASSUME THAT THE DOCUMENTS ARE THE SAME AS SIMILAR DOCUMENTS YOU MAY HAVE SEEN, EVEN IF PREVIOUSLY PROVIDED BY THE DISTRICT.

1. **Review of Plans and Specifications.** Each bidder, at its own expense and prior to submitting its bid, shall thoroughly review and become familiar with all of the plans and specifications for the Project. A bidder is required to review the plans and specifications only in its capacity as a contractor, not as a licensed design professional. Each bidder must report to the District any errors or omissions in the plans and specifications revealed through such review.
2. **Examination of Project Site and Contract Documents.** Each bidder, at its own expense and prior to submitting its bid, shall visit the site of the Project and become fully acquainted with the conditions relating to the construction and labor so that the bidder fully understands the facilities, difficulties, and restrictions attending the execution of the work under the contract. Subject to District approval and evidence satisfactory to the District of adequate insurance coverage, any bidder that has attended the Mandatory Pre-Bid Conference specified in the Notice Inviting Bids, at its sole cost, may subsequently conduct additional site visits or inspections. These Instructions for Bidders do not constitute a comprehensive statement of all requirements applicable to the Project; therefore, each bidder shall thoroughly examine and become familiar with the drawings, specifications, form of agreement, forms of the required bonds, insurance endorsements and other "Contract Documents" defined in the Form of Agreement. A bidder's failure to obtain and/or thoroughly examine any drawing, specification, form, instrument, addendum or other contract document, or to visit the site and become acquainted with conditions there-existing, shall not relieve the bidder from any obligations with respect to its bid or the contract. The submission of a bid shall be taken as a representation and warranty by the bidder that it has complied with the requirements of this Section. At no time after submitting a bid may the bidder dispute, complain, or assert that there were any misunderstandings with regard to the nature or amount of work to be done in connection with the Project.
3. **Interpretation of Contract Documents.** If a bidder is in doubt as to the true meaning of any part of the Contract Documents, or finds discrepancies in or omissions from the drawings and specifications, the bidder may submit to the District a written request for an interpretation or correction thereof. The bidder submitting the request shall be responsible for its prompt delivery. Prior to the opening of bids, interpretations or corrections of the Contract Documents will be made only by addendum duly issued by the District. Copies of each addendum will be posted so that each contractor can obtain a copy. No person is authorized to provide any oral interpretation of any provision in the Contract Documents, and no oral interpretation shall be binding on the District. If discrepancies in or conflicts between the drawings and specifications are not addressed in any addenda, the bidder shall include in its bid the methods of construction and/or materials resulting in the higher bid amount.
4. **Ethics in Bidding.** The District expects each bidder to maintain high ethical standards with respect to bidding on the Project. Prior to the award of a contract for the Project, no

bidder shall disclose the amount of any prospective subcontractor's bid or proposal, or any element thereof, to any other prospective subcontractor. Bidders shall not engage in or permit the unethical and unfair practices commonly referred to as bid shopping (e.g., the bidder uses a subcontractor's proposal in attempts to obtain a lower-cost proposal from another subcontractor) and bid peddling (e.g., a subcontractor attempts to obtain a job by offering to work for less than the amount specified in another subcontractor's proposal). If the District determines prior to opening of bids that any bidder has violated any of the foregoing requirements or any other prohibitions set forth in the Subletting and Subcontracting Fair Practices Act (Public Contract Code Section 4100 *et seq.*), the District may reject the bidder's bid as non-responsive and report the bidder's actions to the Contractors State License Board.

5. **Contractor Licensing.** Each bidder must be properly licensed in the State of California and "in good standing" at the time of submitting its bid to the District. Failure to satisfy this requirement shall result in the bidder being deemed non-responsive and the bidder will be disqualified from work on the Project. Each bidder must clearly specify its California contractor's license number where indicated in the bid form. The bidder to which the District awards a contract for the Project must maintain the required license(s) specified in the Notice Inviting Bids throughout the duration of the Project.
6. **Listing Subcontractors.** As required pursuant to the Subletting and Subcontracting Fair Practices Act, each bidder shall submit with its bid a list of the names and locations of the places of business of each subcontractor that will perform work or labor or render service to the bidder in or about the Project, or that, under subcontract to the bidder, will specially fabricate and install a portion of the work, in an amount in excess of one-half of 1 percent of the total amount of the bidder's bid. A bidder may not list more than one subcontractor for any one portion of the work. A bidder that fails to list a subcontractor for any portion of the work represents that it is fully qualified to and shall perform such work using its own forces. If the bid documents require the bidder to submit alternate bids and the bidder intends to use different or additional subcontractors for the alternates, the bidder must submit a separate list of subcontractors for each such alternate. A bidder shall submit the lists of subcontractors only on the form included in the bid documents. In addition to providing the subcontractor lists, within one business day after the bids are opened, each bidder must provide the address, telephone number and contractor license number for each listed subcontractor.
7. **Use of Bid Form is Mandatory.** Each bid must be submitted on the Bid Form included in the bid documents. Changes in or additions to the Bid Form, recapitulations of the work for which the bid is submitted, alternative proposals, and other modifications of the Bid Form or any of the documents to be submitted with the bid are prohibited unless specifically called for in the Contract Documents.
8. **Preparing the Bid.** Bidders must fully and properly complete all information required to be included on the Bid Form. Amounts must be stated in both words and numerals where indicated. Prices, wording and notations must be in ink or typewritten. The signatures and/or initials of each person signing the bid and other documents to be submitted with the bid must be in permanent, preferably blue, ink.
9. **Correcting the Bid.** Bids may contain an erasure, interlineation, or other correction only if the correction does not result in any inconsistency or ambiguity and the correction is authenticated by affixing in the margin immediately opposite the correction the initials of

the person or persons signing the bid. In the event of inconsistency between words and numerals, words shall govern over numerals.

- (a) **Mandatory Forms to Include in Bid.** Each bidder shall complete and submit with its Bid Form each of the forms specified on the bid form, which are included in the bid documents. A bidder's failure to properly complete and submit any such mandatory form may render the bidder's bid non-responsive to the Notice Inviting Bids.
10. **Signing the Bid and Other Required Forms.** The Bid Form, bonds, subcontractors lists, contractor's certificates, attachments to the Agreement Form, guarantees and other documents requiring an original signature of the bidder must be signed in permanent, preferably blue, ink by a person or persons duly authorized to sign the document. The District may reject as non-responsive any Bid Form containing a stamped or mechanically-printed signature. Depending on whether the bidder is an individual or the type of business entity, signatures must comply with the following:
- (a) **Corporations:** If bidder is a corporation, each document shall set forth the legal name of the corporation and shall be signed by both the bidder's President and the bidder's Secretary or Assistant Secretary. Alternatively, the signature of other authorized officers or agents may be affixed to the document if the bidder has included with its bid a certified copy of the resolution of the corporate board of directors authorizing such officers or agents to sign the document. Such documents shall include the title of each such signatory below the signature and shall bear the corporate seal.
  - (b) **Limited Liability Companies:** If bidder is a limited liability company, each document shall set forth the true name of the company and the names of all members of the company, and all such members shall sign the document. Alternatively, the document may be signed by a managing member of the company if the bidder has included in its bid a certified copy of a statement of the limited liability company acknowledging the signatory as a managing member with authority to sign the document.
  - (c) **Partnerships:** If bidder is a partnership of any type, each document shall set forth the true name of the partnership and the names of all persons comprising the partnership, and all such persons shall sign the document. Alternatively, the document may be signed by a general partner of the partnership if the bidder has included in its bid a certified copy of a statement of the partnership acknowledging the signatory as a general partner with authority to sign the document.
  - (d) **Sole Proprietorships:** If the bidder is a sole proprietorship, each document must set forth the true name of the sole proprietorship and its owner, and such owner must sign the document. Alternatively, an agent of the owner may sign a document if the bidder has included in the bid a certified copy of a current and valid power-of-attorney authorizing the agent to sign the document.
  - (e) **Fictitious Names and Joint Ventures:** If the bidder is an entity using a fictitious business name or a joint venture of two or more other parties,

documents must satisfy the requirements set forth above for signatures on behalf of corporations and partnerships, as applicable. The signature on any document signed on behalf of any entity using a fictitious business name must so indicate in the signature block. Documents submitted by parties acting as joint venturers must so indicate in the signature block and must be signed by or on behalf of each and every joint venturer.

11. **Sealing and Marking the Bid.** The completed Bid Form and all additional documents and other materials to be submitted with the bid in accordance with the Contract Documents shall be enclosed in a sealed envelope. The bidder shall plainly and clearly mark the outside of the envelope with the bidder's name, address, telephone number, bidder's contractor's license number and the bid package for which the bid is submitted. No other information shall be apparent on the outside of the envelope. The District may reject any bid if the outside of the envelope is improperly or incompletely marked.
12. **Delivering the Bid.** For purposes of the Notice Inviting Bids and these Instructions for Bidders, any reference to the "Bid Deadline" shall mean the date and time specified as the Bid Deadline in the Notice Inviting Bids and any authorized extension thereto. Bids must be delivered to and received by the District at the location specified as the place for submitting bids and by the Bid Deadline. The clock located in the District Bond Trailer and designated as the official clock for bidding purposes shall be used in determining whether bids have been timely delivered and received by the District. Each bidder is solely responsible for ensuring that its bid is timely delivered to and received by the District. At no time will District telephones or facsimile machines be available for use by bidders. Any bid received by the District after the Bid Deadline will be returned to the bidder unopened.
13. **Submitting Bids for Multiple Bid Categories.** If the District is seeking bids for other bid categories related to the Project, bidders may submit bids for more than one bid category. However, the bid for each bid category must be complete unto itself and shall not be dependent on the award, price or some other conditional provision relative to any other separate bid category. No combination bids of any type will be accepted unless expressly permitted in the bid documents.
14. **Interest in More Than One Bid and Unqualified Bidders.** No person or entity shall submit or have any interest in more than one prime bid for the same work except to the extent the bid documents expressly call for alternate bids. The District will not accept more than one bid for the same work from any person or entity, under the same or different names. A reasonable belief by the District that any person or entity has an interest in more than one bid or has submitted more than one bid for the same work on the Project may result in the District rejecting all bids in which the bidder has an interest. A person or entity that has submitted a sub-bid or proposal to a bidder, or that has quoted prices of materials to a bidder, is not thereby disqualified from submitting a sub-bid or proposal to other bidders, but the person, firm or corporation is prohibited from submitting a prime bid for the same bid category. The District will not accept any combination bids unless expressly permitted in the bid documents. No person or business entity that has participated in the preparation of any contract specifications shall be permitted to bid on the Project, and any such bid received by the District shall be deemed non-responsive.
15. **Modifying a Bid.** Prior to the Bid Deadline, a bidder may modify its bid by submitting the written modification to the District, in a sealed envelope, which must be received by the District not later than the Bid Deadline. The envelope shall be marked in the same manner

as provided in these Instructions For Bidders for the original bid, but shall also include the words "Bid Modification" on the outside of the envelope. The District may reject any modified bid if the modification is not received by the District prior to the Bid Deadline or if it creates an ambiguity or inconsistency, including, without limitation, if the modified bid is unintelligible. In lieu of submitting a modification, a bidder may withdraw its original bid in accordance with these Instructions For Bidders and submit a new bid for the Project, in which case the outside of the sealed envelope shall be marked with the words "Superseding Bid" in addition to the other required information. The bidder must submit any modification or superseding bid in writing to the District via personal or other delivery. The District will not accept oral modifications or superseding bids, and will not accept any modifications or superseding bids sent via facsimile or electronic transmission. Any modification or superseding bid must be delivered to and received by the District prior to the Bid Deadline.

16. **Withdrawing a Bid.** A bidder may withdraw its bid at any time prior to the Bid Deadline, either personally or by written request received by the District prior to the Bid Deadline. In such event, the District shall return the withdrawing bidder's bid security upon request. Except as provided in Public Contract Code Section 5100 *et seq.*, in no event may a bidder withdraw its bid during the period after opening of bids that is specified in the Notice Inviting Bids.
17. **Requesting Substitution of Specified Item.** Unless the Contract Documents provide in any particular case that substitution is not permitted, if the Contract Documents call for any specific concern, material, product, thing or service, such specification shall be interpreted as if followed by the words "or equal." Unless provided otherwise in the Contract Documents, a bidder may offer in place of any item specified in the plans, drawings or other Contract Documents ("Specified Item") any material, process, article, *et cetera* that the bidder can demonstrate is materially equal or better in every respect to the Specified Item and that will completely accomplish the purpose of the Contract Documents. Requests for substitution must be made in writing on the Substitution Request form included in the bid documents or available from the District ("Request Form"). Each substitution request is subject to and must conform with the requirements of Sections 3.10.4.3, 3.10.4.4, and 3.10.4.5 of the General Conditions, including, without limitation, requirements for submitting documentation in support of the request. Substitution requests must be submitted to the District not later than the date located on the Bid Schedule specified in the Notice Inviting Bids. The District will not consider any substitution requests received after such date except to the extent provided in Section 3.10.4.2 of the General Conditions.

The bidder is solely responsible for establishing that a proposed substitution satisfies all requirements of the Contract Documents, including, without limitation, that the proposed substitute item is equal to or better than the Specified Item in all material respects. The bidder must provide with the Request Form, at a minimum, all information required in accordance with Section 3.10.4.4 of the General Conditions to substantiate the request. The District may at any time request any additional information regarding the proposed substitute item. The District, in consultation with the Architect and the Construction Manager as applicable, will decide whether to approve a substitution based on the information provided by the bidder. The District has the sole discretion to determine whether a proposed substitute item is equal to or better than a Specified Item. Any request for substitution that is granted by the District shall be documented and processed by means of a Change Order after execution of the contract. The District may condition its



approval of any substitution upon delivery to the District of an extended warranty or other assurances of adequate performance of the substitution. The bidder shall be responsible for and shall bear any and all risks, expenses and costs of delay arising from review or approval of a substitution by the DSA or other governmental agency.

SUBMISSION OF A SUBSTITUTION REQUEST AND SUBSTANTIATING DATA SHALL IN NO WAY OBLIGATE THE DISTRICT TO REVIEW THE REQUEST OR DATA PRIOR TO AWARD OF A CONTRACT FOR THE PROJECT. IF THE DISTRICT AWARDS A CONTRACT FOR THE PROJECT TO A BIDDER AND SUBSEQUENTLY REJECTS A SUBSTITUTION PROPOSED BY SUCH BIDDER, THE BIDDER MUST PROVIDE THE SPECIFIED ITEM IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, AT NO ADDITIONAL COST TO THE DISTRICT.

18. **District Waiver of Bid Irregularities.** The District, in accordance with applicable law, may waive any minor irregularity or informality in any bid or in the bidding.
19. **District Rejection of Irregular Bids.** The District will reject as non-responsive to the Notice Inviting Bids any bids containing irregularities that are not minor irregularities, including, by way of example and not as a limitation, bids that are materially incomplete, bids submitted on forms that have been materially altered, and bids that include any additions or conditional or alternate bids not called for or permitted in the bid documents. In addition, the District may reject as non-responsive to the Notice Inviting Bids any bid in which the bid amounts are obviously unbalanced or inconsistent. The District may, but is not required to, seek information from any bidder that may resolve an ambiguity in the bidder's bid.
20. **District Rejection of Non-Responsive Bids.** If a bid fails to conform to requirements set forth in the Notice Inviting Bids, these Instructions For Bidders, or any of the other Contract Documents (including, without limitation, if the District determines that the bid is unintelligible, internally inconsistent, or ambiguous), the District may reject the bid as not responsive to the Notice Inviting Bids. The District may, but is not required to, seek information from any bidder that may resolve an ambiguity in the bidder's bid.
21. **Bidder Evidence of Responsibility.** In determining whether a bidder is a "responsible" bidder, the District will consider, among other possible factors, the financial standing and general competency of the bidder with respect to the work being bid. If the District is considering awarding a contract for the Project to a bidder, the bidder, within two business days of the District's request, shall provide reasonable evidence of the bidder's construction experience, current and anticipated workload, organization available for the performance of the contract, any terminations from projects prior to completion, references for public works, financial resources, surety and insurance claims experience, stop notice and other legal proceedings, and other factors pertinent to determining the responsibility of the bidder.
22. **District Award of Contract.** In its discretion, the Governing Board may award a contract for the Project to a responsive bidder, or the Governing Board may reject all bids and may (but is not required to) rebid the Project. If the Governing Board awards a contract for the Project, the award will be to the responsible and responsive bidder with the lowest bid from among the bidders responsive to the Notice Inviting Bids. If two or more responsive and responsible bidders have submitted the same low bid, the District shall determine the lowest bidder by means of a coin toss or some other random method.

23. **Bidder Execution of Contract.** The bidder to which the District awards a contract for the Project shall **be sent a Preliminary Notice of Award and shall have ten (10)** calendar days after notification of the award to execute and deliver to the District the contract and all other documents required in accordance with the Contract Documents. If the bidder fails to execute and provide all such documents within that period, the bidder will forfeit the bid security submitted with its bid in accordance with the Notice Inviting Bids. In such event, the District may award the contract to the next lowest responsible and responsive bidder or release all bidders.
24. **Filing Bid Protests.** A bidder may protest the bidding process, another bid and/or the intended award of a contract for the Project only by filing a written protest with the District's Deputy Superintendent of Business Services in accordance with the procedures set forth in this Section. The District will not consider any verbal protests (e.g., by telephone) or any protests sent by electronic mail (e-mail). In order for a protest to be valid and be considered by the District the protest must:
- (a) be filed not later than 4:00 p.m. on the fifth business day following the opening of bids;
  - (b) clearly identify the bidder on whose behalf the protest is being filed, together with the name, address and telephone number of the person representing the bidder for purposes of the protest;
  - (c) clearly identify the specific bidding process, bid, or award of contract being protested;
  - (d) clearly identify and describe in detail the specific basis or bases for the protest and all facts relevant thereto and in support thereof;
  - (e) clearly identify all references to the specific portions of all documents relevant to the protest;
  - (f) clearly identify and describe in detail all arguments in support of the protest, including, not as a limitation, citations to all legal authorities; and
  - (g) be submitted with all documentation that is relevant to and supports the basis or bases underlying the protest.

If a protest filed by a bidder does not comply with each and every one of the foregoing requirements, the District will reject the protest as invalid. If a bidder files a valid protest, the District shall review the protest and all relevant information and documents and will provide written decision to the protesting bidder. In response to a protest, the Governing Board may decline to award a contract, may award a contract to a bidder other than as previously intended, or may award a contract to a bidder as previously intended despite the protest. Such action by the Governing Board shall be a condition precedent to the filing of any claim or demand and to the initiation of any action (legal or equitable) or other proceeding arising from the matter(s) protested.

COMPLIANCE WITH THE FOREGOING REQUIREMENTS IS MANDATORY. Each bidder that desires to protest must file a protest in accordance with the foregoing requirements, and no bidder may rely on a protest by another bidder as a means of satisfying such requirements. Compliance with the foregoing requirements is the sole and exclusive means of protesting the bidding process, any bid, and/or the intended award of a contract for the Project, and failure to so comply shall be deemed and construed as a waiver of any and all rights the bidder may have to pursue a claim, demand or action based on the bidding, any bids, and/or any contract awarded for the Project.

25. **Public Works Project.** The Project is a “public work” and “public project” within the meaning of, and, therefore, is subject to, various provisions of the Public Contract Code, Labor Code, Civil Code, and other legal requirements applicable to public works and public projects. The Contract Documents include various provisions relating to public works and public projects as provided by law, and each bidder must thoroughly review and become familiar with the Contract Documents as described above in these Instructions For Bidders. However, the provisions of the Contract Documents are not comprehensive statements of all requirements of law applicable to public works and public projects, and each bidder so acknowledges by submitting a bid for the Project. In addition, by submitting a bid for the Project, each bidder represents and warrants that it is familiar and knowledgeable with respect to all requirements of law applicable to public works and public projects generally and to the Project specifically.
26. **Subcontractor Eligibility and Licensing.** The bidder to which the District awards a contract for the Project shall in no event permit a subcontractor to perform any work in connection with the Project if that subcontractor is ineligible to work on a public works or public project. Each subcontractor that the bidder intends shall perform any work in connection with the Project must be licensed in accordance with law prior to commencing any work on the Project.
27. **Labor Compliance and Prevailing Wages.** The contract awarded for the Project is subject to the District’s labor compliance program. The bidder to which the District awards a contract for the Project, and each of that bidder’s subcontractors of any tier, shall be required to pay not less than the general prevailing rates of per-diem wages in the locality in which the work is to be performed for each craft or type of worker needed to execute the contract (“Prevailing Wages”). The successful bidder must retain copies of certified payrolls for a minimum of five years from the date of completion and submit the upon request of the District or its authorized agent. A copy of the per-diem rates of Prevailing Wages shall be posted at the site of the Project. Rates are available at <http://www.dir.ca.gov/dlsr/pwd/index.htm> . For projects bid after 1/12/12, contractors and subcontractors shall provide certified payroll records and any other required or requested labor compliance documentation to the Department of Industrial Relations’ Compliance Monitoring Unit (“CMU”), with a copy to the Facilities Department on or before the first business day of each month or in the manner required by the CMU. Failure to timely submit payroll records may result in debarment by the Labor Commissioner.
28. **Certified Payroll.** This project is subject to the requirements under SB 854, which include registration of all contractors, and the submission of certified payroll to the State of California. Additionally, GUHSD requires all contractors to submit their certified payroll into LCP Tracker software monthly, for District purposes.
29. **Apprenticeable Trades and Crafts.** Not later than two calendar days after receiving notice of the award of the contract for the Project, the bidder to which the District awards the contract must provide written notice to the District in regard to whether, as described in Labor Code Section 1777.5, workers in any apprenticeable trade or craft will be employed on the Project.
30. **Fingerprinting and Employee Background Checks.** In circumstances that may involve workers having more than limited contact with students, the District may require that all workers on the Project (including, without limitation, employees of the bidder and its

subcontractors) undergo criminal-history background checks requiring submission of fingerprints to the Department of Justice. The District may impose other requirements designed to protect students regardless of whether it requires such criminal-history background checks. The bidder to which the District awards a contract for the Project shall be responsible for compliance with any and all such requirements by its own forces and by its subcontracted forces.

31. **Anti-Discrimination Policy.** It is a policy of the District that, in connection with any work performed under contract, there shall be no discrimination against any prospective or active employee engaged in the work because of race, color, ancestry, national origin, religious creed, sex, age, or marital status. No bidder shall discriminate in violation of applicable law in preparing and submitting its bid for the Project. The bidder to which the District awards a contract for the Project will be required to comply with applicable federal and California laws prohibiting such discrimination and to require like compliance by any subcontractors employed on the Project by such bidder.
32. **Project Duration and Liquidated Damages.** The bidder to which the District awards a contract for the Project must complete the Project in accordance with the Contract Documents and within the time period specified in the Special Conditions. Failure of such bidder to fully complete the Project within such time period, or to complete any portion thereof in accordance with any applicable schedule for the Project, may result in the District assessing liquidated damages against the Contractor as provided in the Special Conditions.
33. **Construction Manager.** If the District uses a Construction Manager for the Project, the Construction Manager will be identified in the Special Conditions and the role of the Construction Manager will be as specified in detail in the General Conditions and is subject to provisions of the agreement between the District and the Construction Manager. The Construction Manager will be the District's representative during construction and close-out of the Project and will assist the District in the administration of the contract for the Project. In addition, the Construction Manager may assist the District with the bidding process for the Project. Communications from the District to bidders prior to award of a contract for the Project may be directed through the Construction Manager.
34. **Project Architect.** The Architect for the Project is identified in the Special Conditions, and the role of the Architect will be as specified in detail in the General Conditions and is subject to the provisions of the agreement between the District and the Architect. The Architect will be the District's representative during construction and close-out of the Project in accordance with Title 24 of the California Code of Regulations and provisions of the agreement between the District and the Architect. Communications from the District to bidders prior to award of a contract for the Project may be directed through the Architect.
35. **Badging.** Please see the Fingerprinting and Badging Procedures for the District requirements for all contractors on school sites. If your entity can not secure an ORI number and required paperwork by start of construction, your company will be responsible for paying associated costs for the required individuals to oversee this project.

# **GROSSMONT UNION HIGH SCHOOL DISTRICT**

## **VALHALLA BATTERY INVERTER REPLACEMENT CN-2559**

**SECTION 00200  
BID SCHEDULE**

## BID SCHEDULE

### VALHALLA BATTERY INVERTER REPLACEMENT CN-2559

Advertising Dates	June 21 and 28, 2021
Mandatory Pre-bid Conference & Sitewalk	June 29, 2021 at 10:00 am
Substitution Requests Due	July 2, 2021
Questions due from Bidders	July 2, 2021
<b>FINAL</b> Addendum to Bidders	July 8, 2021
<b>Open Bids</b>	<b>July 14, 2021 at 2:00 pm</b>
Protest Period Ends	July 21, 2021
<b>Preliminary</b> Notice of Award	July 22, 2021
<b>Governing Board – Bid Award</b>	<b>July 27, 2021</b>
Contract Submittals due to District	July 29, 2021
Preconstruction/LCP Meeting	TBD
Technical Submittals due to Architect	As requested by CM
Notice to Proceed	July 30, 2021
<b>Start Date:</b>	<b>August 2, 2021</b>
<b>Project Completion Date:</b>	<b>October 22, 2021</b>
Estimate:	\$250,000

# **GROSSMONT UNION HIGH SCHOOL DISTRICT**

## **VALHALLA BATTERY INVERTER REPLACEMENT CN-2559**

**SECTION 00300  
CONTRACT BID FORMS**

**(00300)**  
**BID FORM**

COMPANY NAME: \_\_\_\_\_

TO: Grossmont Union High School District, acting by and through its Governing Board, herein called the "District":

1. Pursuant to and in compliance with your Notice to Contractors Calling for Bids and the other documents relating thereto, the undersigned bidder, having thoroughly examined and familiarized himself with the terms of the contract, the local conditions affecting the performance of the contract and the cost of the work at the place where the work is to be done, and with the drawings and specifications and other contract documents, hereby proposes and agrees to perform, within the time stipulated, the contract, including all of its component parts, and everything required to be performed, and to provide and furnish any and all of the labor, materials, tools, expendable equipment, and all utility and transportation services necessary to perform the contract and complete in a workmanlike manner all of the work required in connection with the:

**VALHALLA BATTERY INVERTER REPLACEMENT**  
**CN-2559**

all in strict conformity with the drawings and specifications and other contract documents, including addenda nos. \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_, on file at the office of Assistant Superintendent, Business Services of District for the sum of:

**BASE BID:**

\_\_\_\_\_ Dollars and  
\_\_\_\_\_ Cents.

(\$\_\_\_\_\_). Said sums includes all applicable taxes and costs.

**ALLOWANCE(S):**

Allowances for work not included in the plans and specifications: (to be used at the direction of the District or its representative):

Unforeseen Demo	\$	5,000
Unforeseen Utilities	\$	5,000
<b>Total Allowances:</b>		<b>\$10,000</b>

**TOTAL EXTENDED BID PRICE (BASE + ALLOWANCE):**

\_\_\_\_\_ Dollars and  
\_\_\_\_\_ Cents.

(\$\_\_\_\_\_). Said sums includes all applicable taxes and costs. And is the basis for award.



2. It is understood that the District reserves the right to reject this bid and that this bid shall remain open and not be withdrawn for the period specified in the Notice to Contractors Calling for Bids.
3. The following forms are to be submitted with the bid. Failure to submit these forms may render the bid non-responsive:
  - a. Bid Security Form (bid bond) or Bid Guarantee Form (no bid bond) - 00410
  - b. Proposed Subcontractors Form (for listing subcontractors) – 00430
  - c. Non-Collusion Affidavit – 00480
  - d. Information Required of Bidder – 00490
  - e. Certification of Compliance with DVBE Policy (if applicable)- 00751
  - f. Bidder's Acknowledgment of Project Schedule and Phasing - 00752
  - g. Site Visit Certification - 00753
  - h. Acknowledgment of Bidding Practices Regarding Indemnity – 00754
  - i. DVBE and/or GFE – Attachment B
4. It is understood and agreed that bidder shall provide the addresses, telephone numbers, and license numbers of all listed subcontractors within one business day of bid opening or bidder's bid may be rejected as nonresponsive.
5. It is understood and agreed that if written notice of the acceptance of this bid is mailed, telegraphed, or delivered to the undersigned after the opening of the bid, and within the time this bid is required to remain open, or at any time thereafter before this bid is withdrawn, the undersigned will execute and deliver to the District a contract in the form attached hereto in accordance with the bid as accepted. The undersigned will also furnish and deliver to the District the Performance Bond and Payment Bond for Public Works as specified, all within **ten (10)** calendar days after receipt of the Preliminary Notice of Award. The work under the contract shall be commenced by the undersigned bidder, if awarded the contract, on the date to be stated in the District's Notice to the Contractor to Proceed, and shall be completed by the Contractor in the time specified in the contract documents.
6. Notice of acceptance or requests for additional information should be addressed to the undersigned at the address stated below:

**Owner**

Grossmont Union High School District  
Attn: Rian Pinson  
Director, Purchasing  
1100 Murray Drive  
El Cajon, CA 92020  
619-644-8051 Fax 619-460-0963  
[rpinson@guhdsd.net](mailto:rpinson@guhdsd.net)

**With Copies to:**

CW Driver  
Attn: Cole Edging

[cedging@cwdriver.com](mailto:cedging@cwdriver.com)

7. The names of all persons interested in the foregoing proposal as principals are as follows:

\_\_\_\_\_  
—  
\_\_\_\_\_  
—

\_\_\_\_ (IMPORTANT NOTICE: If bidder or other interested person is a corporation, state legal name of corporation, also names of the president, secretary, treasurer, and manager thereof; if a copartnership, state true name of firm, also names of all individual copartners comprising the firm; if bidder or other interested person is an individual, state first and last names in full.)

8. Bidder certifies that he is licensed in accordance with the law providing for the registration of Contractors, License No. \_\_\_\_\_, Expiration Date \_\_\_\_\_, class of license \_\_\_\_\_. Copy of bidders wallet license is **attached hereto**.

I, \_\_\_\_\_, the \_\_\_\_\_ of the bidder, hereby certify under penalty of perjury under the laws of the State of California, that all of the information submitted by the bidder in connection with this bid and all of the representations made herein are true and correct.

Executed on this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_ at  
County, California.

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

By

\_\_\_\_\_

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

**NOTE:** If bidder is a corporation, the legal name of the corporation shall be set forth above together with the signatures of authorized officers or agents and the document shall bear the corporate seal; if bidder is a partnership, the true name of the firm shall be set forth above together with the signature of the partner or partners authorized to sign contracts on behalf of the partnership; and if bidder is an individual, his or her signature shall be placed above.

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

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

Contact Person: \_\_\_\_\_

Contact E-mail: \_\_\_\_\_

Telephone: (    ) \_\_\_\_\_

Facsimile: (    ) \_\_\_\_\_

DIR Number: \_\_\_\_\_

# **GROSSMONT UNION HIGH SCHOOL DISTRICT**

## **VALHALLA BATTERY INVERTER REPLACEMENT CN-2559**

<b>SECTION 00400 BID DATA FORMS</b>
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Bidder shall submit its Bid data in accordance with the format shown on each of the following Bid Data Forms. Bidders shall prepare and use as many sheets as are necessary to adequately provide the information required. Bidder shall ensure that every page of its Bid Data Forms are properly identified with the Bidder's name and page number.

(00410)  
**BID BOND**

KNOW ALL MEN BY THESE PRESENTS:

THAT

\_\_\_\_\_, as  
Principal, and \_\_\_\_\_, as  
Surety, are held firmly bound unto the **GROSSMONT UNION HIGH SCHOOL DISTRICT**  
(hereinafter called the DISTRICT) in the sum of

\_\_\_\_\_ DOLLARS (\$\_\_\_\_\_), being not less than ten percent (10%) of the Total  
Bid Price; for the payment of which sum will and truly to be made, we bind ourselves, our heirs,  
executors, administrators, successors, and assigns, jointly and severally, firmly by these  
presents.

**WHEREAS**, said Principal has submitted a bid to the DISTRICT to perform all Work required for  
the \_\_\_\_\_ construction \_\_\_\_\_ of \_\_\_\_\_ the

\_\_\_\_\_ set forth in the Notice Inviting Bids and accompanying Bid Documents, dated \_\_\_\_\_.

NOW, THEREFORE, if said Principal is awarded a Contract for the Work by the DISTRICT and,  
within the time and in the manner required by the above- referenced Bid Documents, enters into  
the written form of Contract bound with said Bid Documents, furnishes the required bonds (one  
to guarantee faithful performance and the other to guarantee payment for labor and materials)  
furnishes the required insurance certificates and endorsements, and furnishes any other  
certifications as may be required by the Contract, then this obligation shall be null and void;  
otherwise it shall remain in full force and effect. In the event suit is brought upon this bond by  
the DISTRICT and judgment is recovered, said Surety shall pay all costs incurred by the  
DISTRICT in such suit, including reasonable attorneys' fees to be fixed by the court.

SIGNED AND SEALED, this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

\_\_\_\_\_  
Principal

\_\_\_\_\_  
Surety

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

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

(SEAL)

(SEAL)

**PROPOSED SUBCONTRACTORS FORM  
(00430)**

(00430)

## LIST OF PROPOSED SUBCONTRACTORS

In compliance with the "Subletting and Subcontracting Fair Practices Act," Sections 4100 through 4114 of the California Public Contract Code, and any amendments thereto, each Bidder shall provide the information requested below for each subcontractor who will perform work, labor or render service to Bidder in or about the construction of the Work in an amount in excess of one-half of one percent (greater than 0.5 %) of the Bidder's Total Bid Price, or, in the case of bids or offers for the construction of streets or highways, including bridges, in excess of one-half of 1 percent of the Contractor's total bid or ten thousand dollars (\$10,000), whichever is greater, and shall further set forth the portion of the Work which will be done by each subcontractor. Bidder shall list only one subcontractor for any one portion of the Work.

If the Bidder fails to specify a subcontractor for any portion of the Work to be performed under the Contract, it shall be deemed to have agreed to perform such portion itself, and shall not be permitted to subcontract that portion of the Work except under the conditions hereinafter set forth below.

Subletting or subcontracting of any portion of the Work in excess of one half of one percent (greater than 0.5%) of the Total Bid Price or, in the case of bids or offers for the construction of streets or highways, including bridges, in excess of one-half of 1 percent of the Contractor's total bid or ten thousand dollars (\$10,000), whichever is greater, for which no subcontractor was designated in the original bid shall only be permitted in cases of public emergency or necessity, and then only after Owner approval.

***List subcontractor name, location, license, and description, at time of bid. Within one business day after the bids are opened, each bidder must provide the address, DIR number and telephone number for each listed subcontractor unless such information is noted herein.***

[Duplicate Page if needed for listing additional subcontractors)

Name and Location  
of Subcontractor

Description of Work  
to be Subcontracted

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

\_\_\_\_\_

Address: \_\_\_\_\_

License No. \_\_\_\_\_

City & Zip: \_\_\_\_\_

Ph: \_\_\_\_\_ Fax: \_\_\_\_\_

DIR Number: \_\_\_\_\_

Name and Location  
of Subcontractor

Description of Work  
to be Subcontracted

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

\_\_\_\_\_

Address: \_\_\_\_\_

License No. \_\_\_\_\_

City & Zip: \_\_\_\_\_

Ph: \_\_\_\_\_ Fax: \_\_\_\_\_

DIR Number: \_\_\_\_\_

Name and Location  
of Subcontractor

Description of Work  
to be Subcontracted

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

\_\_\_\_\_

Address: \_\_\_\_\_

License No. \_\_\_\_\_

City & Zip: \_\_\_\_\_

Ph: \_\_\_\_\_ Fax: \_\_\_\_\_

DIR Number: \_\_\_\_\_

Name and Location  
of Subcontractor

Description of Work  
to be Subcontracted

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

\_\_\_\_\_

Address: \_\_\_\_\_

License No. \_\_\_\_\_

City & Zip: \_\_\_\_\_

Ph: \_\_\_\_\_ Fax: \_\_\_\_\_

DIR Number: \_\_\_\_\_

Name and Location  
of Subcontractor

Description of Work  
to be Subcontracted

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

\_\_\_\_\_

Address: \_\_\_\_\_

License No. \_\_\_\_\_

City & Zip: \_\_\_\_\_

Ph: \_\_\_\_\_ Fax: \_\_\_\_\_

DIR Number: \_\_\_\_\_

Name and Location  
of Subcontractor

Description of Work  
to be Subcontracted

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

\_\_\_\_\_

Address: \_\_\_\_\_

License No. \_\_\_\_\_

City & Zip: \_\_\_\_\_ Ph: \_\_\_\_\_ Fax: \_\_\_\_\_

DIR Number: \_\_\_\_\_



**NON-COLLUSION AFFIDAVIT  
(00480)**

(00480)

**NONCOLLUSION DECLARATION TO BE EXECUTED  
BY  
BIDDER AND SUBMITTED WITH BID**

The undersigned declares:

I am the \_\_\_\_\_ of \_\_\_\_\_, the party making the foregoing bid.

The bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation. The bid is genuine and not collusive or sham. The bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid. The bidder has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or to refrain from bidding. The bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the 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.

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

\_\_\_\_\_ day of \_\_\_\_\_

City of \_\_\_\_\_ State of \_\_\_\_\_

Signed: \_\_\_\_\_

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

**BIDDER INFORMATION FORMS  
(00490)**

**IMPORTANT NOTE:** This bid is not subject to pre-qualification. All Bidders, regardless of pre-qualification status, must complete the following Bidder Information Forms and submit them with their bid.

If you have submitted a bid to the Grossmont Union High School District within the prior three months and no changes have occurred, you may submit a copy of those Bidder Information forms with this bid.

(00490)

**INFORMATION REQUIRED OF BIDDER  
BY  
BIDDER AND SUBMITTED WITH BID**

**INFORMATION ABOUT BIDDER**

[Indicate not applicable ("N/A") where appropriate. Attach additional pages if necessary to allow for a complete response.]

NOTE: Where Bidder is a joint venture, pages shall be duplicated and information provided for all parties to the joint venture.

1.0 Name of Bidder: \_\_\_\_\_

2.0 Type, if Entity: \_\_\_\_\_

3.0 Bidder Address: \_\_\_\_\_

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

\_\_\_\_\_  
Telephone Number      Facsimile Number      Email (person resp. for contract)

4.0 How many years has Bidder's organization been in business as a Contractor? \_\_\_\_\_

5.0 How many years has Bidder's organization been in business under its present name?  
\_\_\_\_\_

5.1 Under what other or former names has Bidder's organization operated?:  
\_\_\_\_\_

6.0 If Bidder's organization is a corporation, answer the following:

6.1 Date of Incorporation: \_\_\_\_\_

6.2 State of Incorporation: \_\_\_\_\_

6.3 President's Name: \_\_\_\_\_

6.4 Vice-President's Name(s): \_\_\_\_\_

6.5 Secretary's Name: \_\_\_\_\_

6.6 Treasurer's Name: \_\_\_\_\_

7.0 If an individual or a partnership, answer the following:

7.1 Date of Organization: \_\_\_\_\_

7.2 Name and address of all partners (state whether general or limited partnership):  
\_\_\_\_\_

- 
- 8.0 If other than a corporation or partnership, describe organization and name principals:
- 
- 9.0 List other states in which Bidder's organization is legally qualified to do business.
- 
- 10.0 What type of work does the Bidder normally perform with its own forces?
- 
- 11.0 Has Bidder ever failed to complete any work awarded to it? If so, note when, where, and why:
- 
- 12.0 Within the last five years, has any officer or partner of Bidder's organization ever been an officer or partner of another organization when it failed to complete a contract? If so, attach a separate sheet of explanation:
- 
- 13.0 On a separate sheet, list the construction experience of the key individuals of Bidder's organization.
- 14.0 List Trade References:
- 
- 15.0 List Bank References (Bank, Branch Address, Account Number):
- 
- 16.0 Name of Bonding Company and Name and Address of Agent:
- 
- 17.0 Has your contractor's license ever been revoked? Yes No

If Yes, please explain:

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- 18.0 Has your firm or any of its owners and/or his/her firms ever been disqualified from, agreed/settled not to bid, or otherwise been prevented from bidding on, or completing public works projects? Yes No

If Yes, please explain:

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- 19.0 Has your firm or any of its owners, officers, or partners ever been found liable in a civil suit or found guilty in a criminal action for making false claims or material representation to any public agency? Yes No

If Yes, please explain:

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- 20.0 Has your firm ever been denied an award of a public works contract based on a finding by a public agency that your firm was not a responsible bidder? Yes No

If Yes, please explain:

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- 21.0 Has there been any occasion in which your firm was required to pay either back wages or penalties for failure to comply with the state's prevailing wage laws? Yes No

If Yes, please explain:

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- 22.0 Has your firm filed any stop payment notices/liens that were not resolved before a lawsuit was filed? Yes No

If Yes, please explain:

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- 23.0 Has your firm had more than three stop payment notices/liens filed against it on one project that were not resolved prior to completion of the project.? Yes No

If Yes, please explain:

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- 24.0 Has your firm (or any owner or any of its principals) ever defaulted on a contract forcing a Surety to suffer a loss? Yes No

If Yes, please explain:

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- 25.0 Has your firm been assessed any liquidated damages in the last five years?  
Yes No

If Yes, please explain:

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- 26.0 Has your firm failed to complete a contract within the specified time limits? Yes No

If Yes, please explain:

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- 27.0 Has your firm or any of the owners ever declared bankruptcy? Yes No

If Yes, please explain:

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- 28.0 Has your firm ever had insurance terminated by a carrier? Yes No

If Yes, please explain:

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29.0 Has OSHA/CALOSHA, EPA or any other governmental agency issued any citations against your firm?      Yes                      No

If Yes, please explain:

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30.0 Does your company safety program comply with all applicable laws?    Yes                      No

If No, please explain:

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31.0 Is your firm presently involved in any current/pending arbitration:    Yes                      No

If Yes, please explain:

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32.0 Is your firm involved in any current/pending litigation:                      Yes                      No

If Yes, please explain:

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33.0 Is your firm involved in any current/pending insurance claim:                      Yes                      No

If Yes, please explain:

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34.0 Have any complaints ever been filed against your firm with the Contractor's State License Board?                      Yes                      No

If Yes, please explain:

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**LIST OF CURRENT PROJECTS (Backlog)**

[Duplicate Page for additional current projects.]

<u>Project</u>	<u>Description of Bidder's Work</u>	<u>Completion Date</u>	<u>Estimated Magnitude (\$ m/hrs. etc.)</u>

**LIST OF COMPLETED PROJECTS - LAST THREE YEARS**

[Duplicate Page if needed for listing additional completed projects.]

Please list any school project first which are similar enough to demonstrate Bidder's ability to perform the required Work followed by all other projects in chronological order.

<u>Project Client</u>	<u>Bidder's Work</u>	<u>Description of Performance</u>	<u>Period of Time (m/hrs.etc.)</u>	<u>Magnitude</u>

**EXPERIENCE AND TECHNICAL QUALIFICATIONS QUESTIONNAIRE**

***Personnel:***

The Bidder shall identify the key personnel to be assigned to this project in a management, construction supervision or engineering capacity.

- List each person's job title, name and percent of time to be allocated to this project:

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2. Summarize each person's specialized education:

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3. List each person's years of construction experience relevant to the project:

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4. Summarize such experience:

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5. Give the name of the person responsible for onsite management of the project (e.g. Project Superintendent, Project Foreman, etc.):

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6. List last three project supervised by the person named in Item 5:

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7. List the name, address, and phone number of three references from the last three previous projects for the person named in Item. 5:

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Bidder agrees that personnel named in this Bid will remain on this Project until completion of all relevant Work, unless substituted by personnel of equivalent experience and qualifications approved in advance by the Owner.

***Additional Bidder's Statements:***

If the Bidder feels that there is additional information which has not been included in the questionnaire above, and which would contribute to the qualification review, it may add that information in a statement here or on an attached sheet, appropriately marked:

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**VERIFICATION AND EXECUTION**

These Contract Bid Forms shall be executed only by a duly authorized official of the Bidder:

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

Executed on this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

By: \_\_\_\_\_  
Type or Print Name

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Title

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

Subscribed and sworn to (or affirmed) before me on this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_,  
by \_\_\_\_\_, proved to me on the basis of satisfactory evidence to be the  
person(s) who appeared before me.

\_\_\_\_\_  
Notary Public in and for  
the State of California

Seal

My Commission Expires: \_\_\_\_\_

# **GROSSMONT UNION HIGH SCHOOL DISTRICT**

## **VALHALLA BATTERY INVERTER REPLACEMENT CN-2559**

**SECTION 00500  
SAMPLE AGREEMENT**

## AGREEMENT FORM

**This Agreement** is made this \_\_\_\_\_ by and between the Grossmont Union High School District ("District"), a California public school district, and \_\_\_\_\_ ("Contractor"). The District and the Contractor may be referred to herein individually as a "Party" and collectively as the "Parties."

In consideration of the rights and obligations attendant to this Agreement, the Parties agree as follows:

**Section 1. Scope of Work.** The Contractor shall furnish all labor, materials, equipment, tools, and utility and transportation services, and perform and complete all work necessary for full completion of all construction and services required in accordance with the "Contract Documents" defined and specified in Section 4 of this Agreement. The Contract Documents collectively set forth the complete understandings and agreements of the Parties (the "Contract") with respect to the construction project to which this Agreement applies ("Project"). The Project may be a portion of an overall project, i.e., the Contractor may be one of multiple prime contractors for such overall project. The Project to which this Agreement applies is described as follows:

### VALHALLA BATTERY INVERTER REPLACEMENT CN-2559

**Section 2. Time for Completion.** The Contractor shall mobilize and commence work on the Project on the date specified in the Notice to Proceed with construction issued by the District ("Notice to Proceed"). The District may defer issuance of a Notice to Proceed as provided in the "General Conditions" forming a part of the Contract. The Contractor shall complete the Project within the period specified in the Special Conditions and in accordance with the schedule for the Project developed by the District and/or the Construction Manager for the Project. Contractor shall refer to Section 01310 (Project Construction Schedule) for individual activity durations. By entering into this Agreement, the Contractor acknowledges that such each such duration and the total construction period are sufficient and reasonable for the size and scope of the Project.

**Section 3. Contract Price.** As full consideration for the full and faithful performance of the Contract by the Contractor, the District shall pay to the Contractor the total amount stipulated in the Contractor's bid for the Project of:

\_\_\_\_\_ Dollars and \_\_\_\_\_ Cents  
(\$\_\_\_\_\_) ("Contract Price").

The Contract Price is subject to increases and/or decreases as provided in the Contract Documents. The District shall pay the Contract Price to the Contractor in accordance with the General Conditions.

**Section 4. Component Parts of the Contract.** The Contract is composed of all of the documents specified below in this Section ("Contract Documents"), each of which is hereby incorporated as an operative and effective part of the Contract. The Parties intend that the Contract Documents are and shall be complementary and an integrated whole. Any requirement set forth in one Contract Document, but not in one or more of the others, shall be

interpreted as if set forth in or applicable to all. The Contract consists of the following Contract Documents:

Notice Inviting Bids  
Information for Bidders  
Agreement  
Escrow Agreement (optional)  
Performance Bond  
Payment Bond  
Listing of Subcontractors  
Non-Collusion Affidavit  
Workers' Compensation Certificate  
Information Required of Bidder  
Acknowledgment of Project Schedule and Phasing  
Acknowledgment of Bidding Practices Regarding Indemnity  
Site Visit Certification  
Guarantee  
Workers' Compensation/Employers Liability Endorsement  
General Liability Endorsement  
Automobile Liability Endorsement  
Contractor's Certificate Regarding Drug-Free Workplace  
Contractor's Certificate Regarding Alcohol and Tobacco  
Certification of Background Checks  
General Conditions  
Special Conditions  
Category Scope of Work  
Specifications  
Drawings  
DVBE Documentation (if applicable)  
Addenda Nos. \_\_\_\_, \_\_\_\_, \_\_\_\_, \_\_\_\_ and \_\_\_\_, as issued.

**Section 5. Provisions Required by Law.** Each and every provision required by law to be included in the Contract is hereby deemed to be so included, and the Contract shall be construed and enforced as if all such provisions are so included. If, for any reason, any provision is not included or incorporated into the Contract Documents in accordance with law, or is not correctly included or incorporated, then, upon request of either the District or the Contractor, they shall amend the Contract Documents to include or incorporate, or to correctly include or incorporate, such provision.

**Section 6. Third Party Beneficiaries.** Except to the extent provided by law (e.g., requirements for payment of prevailing wages to workers on the Project), no party other than the Parties may claim or assert any right or benefit arising from this Agreement or the Contract of which this Agreement is a part. Each provision of the Contract Documents shall be deemed and construed to benefit only the District and/or the Contractor unless and only to the extent the provision is included in the Contract specifically as a result of any law intended to benefit that third party ("Required Provision"). Provisions included in the Contract Documents that relate to or permissibly expand on any Required Provision, but are not necessary for compliance with the law providing for the Required Provision, are to be construed as being included in the Contract for the convenience of the Parties, and shall in no event be construed as benefiting any third party or as providing a basis for any claim, demand, action or other proceeding by a third party relating to the Contract.

**Section 7. Governing Law and Venue.** The Contract of which this Agreement is a part shall be governed by the laws of the State of California. Any action, arbitration or other proceeding arising from the Contract shall be initiated and conducted only in the County of San Diego, California.

**Section 8. Entire Agreement.** The Contract as defined in Section 1 of this Agreement, and as may be amended in accordance with the Contract Documents, constitutes the entire understanding and agreement of the Parties with respect to the Scope of Work described in Section 1 of this Agreement. The Contract supersedes and replaces all other oral or written agreements, understandings, negotiations, or discussions.

**Section 9. Due Authority of Signatories.** Each person signing this Agreement on behalf of a Party represents and warrants that he or she has been duly authorized by such Party to sign, and thereby bind such Party to, this Agreement.

**In witness whereof**, each Party has executed this Agreement by and through signature of its duly-authorized representative as set forth below.

**CONTRACTOR:**

\_\_\_\_\_

License No. \_\_\_\_\_

By \_\_\_\_\_

Title \_\_\_\_\_

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

**DISTRICT:**

Grossmont Union High School District

By \_\_\_\_\_  
Scott Patterson

Title Deputy Superintendent, Business  
Services

Date \_\_\_\_\_

Governing Board Date: \_\_\_\_\_

(Corporate Seal)

Contractors are required by law to be licensed and regulated by the Contractors' State License Board. Any questions concerning a contractor may be referred to the registrar of the board whose address is:

**Contractors' State License Board**  
**9821 Business Park Drive**  
**Sacramento CA 95827**  
**(916)255-3900; <http://www2.cscb.ca.gov/>**

(Business & Professions Code, section 7030)

## WORKERS' COMPENSATION CERTIFICATE

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:

1. By being insured against liability to pay compensation by one or more insurers duly authorized to write compensation insurance in this State.
2. 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 employees.

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

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

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

In accordance with Article 5 (commencing at section 1860), Chapter 1, Part 7, Division 2 of the Labor Code, the above certificate must be signed and filed with the awarding body prior to performing any work under this contract.



## LABOR COMPLIANCE

GUHSD is now utilizing *LCPTracker* to capture the necessary reporting required for public works projects.

Please complete the following for each project.

LCP Contact Name:

\_\_\_\_\_  
(This should be the name of the individual responsible for data entry into LCPTracker)

LCP Contact Phone Number:

\_\_\_\_\_

LCP Contact Email:

\_\_\_\_\_  
(This is where LCPTracker will send your user id and temporary password as well as any communication through the system such as edocuments, rejection notices, etc.)

Project Description/Contract No.:

\_\_\_\_\_

If your company is currently utilizing *LCPTracker* with another entity, please sign in and print a screen shot of your company's information and attach. To find this information, login, go to setup tab, and company information.

If you are a new user of *LCPTracker* we will need the following information to be provided.

Company Name:

\_\_\_\_\_

Federal Tax ID No.:

\_\_\_\_\_

Contractor's License No.:

\_\_\_\_\_

Contractor's 10-Digit Phone Number:

\_\_\_\_\_

Company Address:

\_\_\_\_\_

City, State, Zip:

\_\_\_\_\_

DIR No.:

\_\_\_\_\_

**Important Information:** Contractors and all lower-tier subcontractors and suppliers performing contract work are required to submit certified payrolls and labor compliance documentation electronically.

Electronic submittal will be a web-based system, accessed electronically on the internet at [lcptracker.com](http://lcptracker.com)

Contractor is responsible for managing and certifying all lower tier subcontractors and certified payroll submittals.

AGREEMENT

## ATTACHMENT A

Re: Labor Compliance Withholding

This letter serves as notification of withholding policies for contracts that fall under the Department of Industrial Relations (DIR) and California Labor Code §1776.

**California Labor Code §1776(h) states:** *"The contractor shall have 10 days in which to comply subsequent to receipt of written notice specifying in what respects the contractor must comply with this section. In the event that the contractor fails to comply within the 10-day period, he or she shall, as a penalty to the state or political subdivision on whose behalf the contract is made or awarded, forfeit one hundred (\$100) for each calendar day, or portions thereof, for each worker, until strict compliance is effectuated."*

Grossmont Union High School District's policy for withholding will apply to progress payments and one-time payments to contractors that are not compliant with California Labor Code §1776. The following are the withholding amount guidelines:

- **\$2,500** will be withheld per contractor and/or subcontractor for all progress payments that do not adhere to the labor code referenced above.
- If the amount required to be withheld exceeds the amount of the invoice, the invoice will be rejected and returned to the contracted entity for resubmission once all issues are resolved.
- For all subcontractors that are listed as a sub but have not yet started work on a contract, on a monthly basis the contractor must state whether that subcontractor has performed work so the District may determine whether there are any outstanding labor code issues for the sub. The contracted entity is at risk of a withholding amount of **\$2,500**, including this amount per sub, if this communication is not received.
- For all subcontractors that have started work on a contract, but did not perform work during the progress billing submitted during the period, a nonperformance payroll must be submitted or the contracted entity is at risk of a withholding amount of **\$2,500**, including this amount per sub, if this step is not completed.
- Once a withholding is placed it may remain in place until the following review cycle, which may be up to **30 days**. Regardless of the promptness of your ability to comply the review could take a few weeks.

We thank you for your work on our projects and for your continually adherence to labor code laws. Should you have any questions, please contact Kimberly Devine at 619-644-8137.

# **GROSSMONT UNION HIGH SCHOOL DISTRICT**

**VALHALLA BATTERY INVERTER REPLACEMENT  
CN-2559**

**SECTION 00600  
PERFORMANCE BOND**

(00600)

WHEREAS the **GROSSMONT UNION HIGH SCHOOL DISTRICT** (also herein "Obligee") has awarded to \_\_\_\_\_ (hereinafter "Contractor"), a contract for work consisting of but not limited to, furnishing all labor, materials, tools, equipment, services, and incidentals for the construction of the **VALHALLA BATTERY INVERTER REPLACEMENT CN-2559**:

Project and all other required structures and facilities within the rights-of-way, easements and permits;

WHEREAS, the Work to be performed by the Contractor is more particularly set forth in that certain contract for the said Public Work dated \_\_\_\_\_ (hereinafter the "Public Work Contract"); and

WHEREAS, the Contractor is required by said Public Work Contract to perform the terms thereof and to provide a bond both for the performance and guaranty thereof,

NOW,                      THEREFORE,                      we

\_\_\_\_\_, the undersigned Contractor, as Principal, and \_\_\_\_\_, a corporation organized and existing under the laws of the State of \_\_\_\_\_, and duly authorized to transact business under the laws of the State of California, as Surety, are held and firmly bound unto the **GROSSMONT UNION HIGH SCHOOL DISTRICT**

in                      the                      sum                      of

\_\_\_\_\_ dollars,

\$\_\_\_\_\_, said sum being not less than 100% of the total amount payable by the said Obligee under the terms of the said Public Work Contract, for which payment well and truly to be made, we bind ourselves, our heirs, executors and administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that if the Principal, his or its heirs, executors, administrators, successors or assigns, shall in all things stand to and abide by, and well and truly keep and perform the covenants, conditions and agreements in the said Public Work Contract and any alteration thereof made as therein provided, on his or their part, to be kept and performed at the time and in the manner therein specified, and in all respects according to their intent and meaning; and shall faithfully fulfill the one-year guarantee of all materials and workmanship; and indemnify and save harmless the Obligee, its officers and agents, as stipulated in the said Public Work Contract, then this obligation shall become null and void; otherwise it shall be and remain in full force and effect. In the event legal action is required to enforce the provisions of this agreement, the prevailing party shall be entitled to recover reasonable attorneys' fees in addition to court costs, necessary disbursements, and other damages.

In case legal action is required to enforce the provisions of this bond, the prevailing party shall be entitled to recover reasonable attorneys' fees in addition to court costs, necessary disbursements and other consequential damages.

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

IN WITNESS WHEREOF, we have hereto set our hands and seals this \_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

Principal/Contractor

By:

\_\_\_\_\_  
President

\_\_\_\_\_  
Surety

By:

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

The rate of premium on this bond is \_\_\_\_\_ per thousand.

The total amount of premium charged, \$\_\_\_\_\_.

(The above must be filled in by corporate surety.)

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

On this \_\_\_\_ day of \_\_\_\_\_, in the year \_\_\_\_\_, before me,  
\_\_\_\_\_, a Notary Public in and for said state, personally appeared  
\_\_\_\_\_, known to me (or proved to be on the basis of satisfactory  
evidence) to be the person whose name is subscribed to the within instrument as the Attorney-in-Fact of the  
\_\_\_\_\_ (surety) and acknowledged to me that he subscribed the name of  
the \_\_\_\_\_ (surety) thereto and his own name as Attorney-in-Fact.

\_\_\_\_\_  
Notary Public in and for said State

(SEAL)

My Commission expires \_\_\_\_\_.

CERTIFICATE AS TO CORPORATE PRINCIPAL

I, \_\_\_\_\_, certify that I am the  
\_\_\_\_\_ Secretary of the corporation named as principal to the  
within bond; that \_\_\_\_\_ who signed the said bond on behalf of  
the principal was then \_\_\_\_\_ of said corporation; that I know his  
signature, and his signature thereto is genuine; and that said bond was duly signed, sealed and attested for  
and in behalf of said corporation by authority of its governing Board.

(Corporate Seal)

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

NOTE: A copy of the power of attorney to local representatives of the bonding company may be attached hereto.

# **GROSSMONT UNION HIGH SCHOOL DISTRICT**

**VALHALLA BATTERY INVERTER REPLACEMENT  
CN-2559**

**SECTION 00610  
PAYMENT BOND**

**PAYMENT BOND  
(CALIFORNIA PUBLIC WORK)**

KNOW ALL MEN BY THESE PRESENTS:

THAT WHEREAS, the **Grossmont Union High School District** (hereinafter referred to as "Public Entity"), by action taken or a resolution passed \_\_\_\_\_, 20\_\_\_\_, has awarded to \_\_\_\_\_ (hereinafter designated as the "Principal") a contract for the work described as follows: \_\_\_\_\_ (the "Project"); and

WHEREAS, said Principal is required by Chapter 5 (commencing with Section 9550), of Title 3, Part 6, Division 4 of the California Civil Code to furnish a bond in connection with said contract;

NOW THEREFORE, we, the Principal and \_\_\_\_\_, as Surety, are held and firmly bound unto the Public Entity 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 bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH that if said Principal, its subcontractors, heirs, executors, administrators, successors or assigns, shall fail to pay (1) any of the persons named in Section 9100 of the California Civil Code, (2) amounts due under the Unemployment Insurance Code with respect to work or labor performed under the contract, or (3) for any amounts required to be deducted, withheld, and paid over to the Employment Development Department from the wages of employees of the contractor and its subcontractors pursuant to Section 13020 of the Unemployment Insurance Code, with respect to such work and labor, then the Surety will pay for the same, in an amount not exceeding the sum hereinabove specified, and also, in case suit is brought upon this bond, will pay such reasonable attorneys' fees as shall be fixed by the court as provided in California Civil Code sections 9550 et seq.

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

It is further stipulated and agreed that the Surety on this bond shall not be released from the obligation of this bond by any change, extension of time for performance, addition, alteration or modification in, to, or of any contract, plans, specifications, or agreement pertaining or relating to any scheme or work of improvement hereinabove described; nor by a change or modification to the terms of payment or an extension of time for payment pertaining to or relating to any scheme or work of improvement hereinabove described; nor by any rescission or attempted rescission of the contract, agreement, or bond; nor by any conditions precedent or subsequent in the bond purporting to limit the right of recovery of a claimant otherwise entitled to recover pursuant to the contract, agreement, or bond; nor by any fraud practiced by any person other than the claimant seeking to recover on the bond; and that this bond be construed most strongly against the Surety and in favor of all persons for whose benefit such bond is given, and under no circumstances shall Surety be released from liability to those for whose benefit such bond has been given, by reason of any breach of contract between the owner or Public Entity and original contractor or on the part of any obligee named in such bond, but the sole conditions of recovery shall be that the claimant is a person described in Article 1 (commencing with Section 8400) of Chapter 4 of Title 2, or in Section 9100, of the California Civil Code, and has not been paid the full amount of his claim; and that Surety does hereby waive notice of any such change, extension of time, addition, alteration or modification herein mentioned.

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

Principal \_\_\_\_\_

\_\_\_\_\_

By \_\_\_\_\_

[Attach required acknowledgments]

Surety \_\_\_\_\_

\_\_\_\_\_

By Attorney-in- Fact



Surety companies executing bonds must possess a certificate of authority from the California Insurance Commissioner authorizing them to write surety insurance defined in California Insurance Code section 105, and if the work or Project is financed, in whole or in part, with federal, grant or loan funds, Surety's name must also appear on the Treasury Department's most current list (Circular 570 as amended).

(Name and Address of Surety)	(Name and Address of agent or representative for service for service of process in California)
_____ _____  Telephone: _____	_____ _____  Telephone: _____

On this \_\_\_\_\_ day of \_\_\_\_\_, in the year \_\_\_\_\_, before me, \_\_\_\_\_, a Notary Public in and for said State, personally appeared \_\_\_\_\_, known to me to be the person whose name is subscribed within the instrument as the Attorney-in-Fact of the \_\_\_\_\_ (Surety) and acknowledged to me that he subscribed the name of the \_\_\_\_\_ (Surety) thereto and his own name as Attorney-in-Fact.

<div>_____ Notary Public in and for said State</div> <div>Commission expires: _____</div>	<div>(SEAL)</div>
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# **GROSSMONT UNION HIGH SCHOOL DISTRICT**

## **VALHALLA BATTERY INVERTER REPLACEMENT CN-2559**

**SECTION 00700  
GENERAL CONDITIONS**

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## DOCUMENT 00 7213

### GENERAL CONDITIONS

#### Section 1.1 ORGANIZATION

**1.1.1 Subdivisions.** The provisions of these General Conditions are organized based on a numbering system in which:

- (i) Parts (e.g., Part 3) may be subdivided into Sections (e.g., Section 3.1);
- (ii) Sections may be subdivided into Subsections (e.g., Subsection 3.1.1); and
- (iii) Subsections may be subdivided into Articles (e.g., Article 3.1.1.1).

**1.1.2 Captions and Headings.** Captions or headings for the Parts, Sections, Subsections and Articles of these General Conditions are provided for convenience of the reader and shall not be construed to define or limit such provisions.

**1.1.3 Lists.** Lists (i.e., enumerations of items) are set forth using Romanette symbols (i.e., i, ii, iii, iv, *et cetera*), and lists within lists are set forth using lower-case alpha characters (i.e., a, b, c, *et cetera*).

#### Section 1.2 DEFINITIONS

Capitalized terms and phrases are used in these General Terms for the convenience of the reader. Capitalized terms and phrases may be defined in the subsequent provisions of these General Terms or in other Contract Documents or, if not so defined, shall have the meanings ascribed to them as follows:

- (i) Action of the Governing Board is a vote of a majority of the Governing Board of the District ("Governing Board").
- (ii) Approval means written authorization through action of the Governing Board. In addition, the Governing Board has delegated to the Deputy Superintendent of Business Services the authority to approve certain modifications and Construction Change Directives where the aggregate sums of the modifications or Construction Change Directives do not exceed \$100,000 or 10% of the Contract Price, whichever is less. In no event shall the Deputy Superintendent of Business Services have authority to approve total Construction Change Directives or modifications to the Project exceeding 10% of the Contract Price without Governing Board approval.
- (iii) Architect means the architect, engineer, or other design professional under contract to the District for designing and performing general observation of the

construction and interpretation of the Drawings and Specifications for the Project, and the Architect is identified in the Special Conditions.

- (iv) As shown, as indicated, and as detailed refer to Drawings referenced in the Specification.
- (v) Construction Manager for the Project is the professional management consultant under contract to the District for management of the Project and assistance with administration of the Contract, and the Construction Manager is identified in the Special Conditions.
- (vi) Contract when used in these General Conditions shall be a reference to the Contract Documents as defined herein.
- (vii) Contract Documents consist of all documents that establish the entire understanding and agreement between the District and the Prime Contractor, and are identified in the Agreement. The Contract Documents are identified in the Agreement and include Modifications issued after execution of the Agreement. A Modification is a written amendment to the Contract signed by both parties, a Change Order, a Construction Change Directive, or a written order for a minor change in the Work issued by the Architect or Construction Manager. The Contract Documents collectively form the Contract. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a written Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind between the Architect or Construction Manager and Prime Contractor, between the District and any Subcontractor or sub-subcontractor, or between any persons or entities other than the District and the Prime Contractor.
- (viii) Prime Contractor is identified as such in the Agreement. The terms Contractor and Prime Contractor have the same meaning and are used interchangeably in the Contract Documents.
- (ix) Days means calendar days unless otherwise indicated.
- (x) Project Inspector or Inspector of Record is the individual retained by the District in accordance with Title 21 and Title 24 of the California Code of Regulations and who will be assigned to the Project.
- (xi) Drawings are graphic and pictorial portions of the Contract Documents prepared for the Project and approved changes thereto, wherever located and whenever issued, showing the design, location, and scope of the Work, generally including plans, elevations, sections, details, schedules, and diagrams as drawn or approved by the Architect.

- (xii) Emergency is a sudden, unexpected occurrence, involving a clear and imminent danger, demanding immediate action to prevent or mitigate loss of, or damage to, life, health, property, or essential public services. Emergency includes such occurrences as fire, flood, earthquake, or other soil or geologic movements, as well as such occurrences as riot, accident, or sabotage.
- (xiii) Locality in which the Work is performed means San Diego County.
- (xiv) Project is all construction and other work and services to be performed in accordance with the Contract Documents.
- (xv) Project Manual is the volume assembled for the Work which may include, among others, the Notice Inviting Bids, Instructions for Bidders, sample forms, General Conditions, Special Conditions, and Specifications.
- (xvi) Provide shall include "provide complete in place," that is "furnish and install."
- (xvii) Safety Orders are those issued by any city, county, State of California or federal agency with competent and corresponding jurisdiction.
- (xviii) Project Site means the grounds of the Project as defined in the Contract Documents and such adjacent lands as may be directly affected by the performance of the Work. "On-site" means the area bounded by the Project Site's legal description and "off site" means the area outside the Project Site's legal description.
- (xix) Specifications are that portion of the Contract Documents consisting of the written requirements for material, equipment, construction systems, instructions, quality assurance standards, workmanship, and performance of related services.
- (xx) Standards, rules, and regulations referred to are recognized printed standards and shall be considered as one and a part of the Contract Documents within limits therein specified. Applicable federal, State of California and local regulations are incorporated into the Contract Documents by reference.
- (xxi) Subcontractor means those having direct or indirect contracts with Prime Contractor and those who furnish labor, material or services for a special design according to Drawings and Specifications for the Work, but does not include those who merely furnish material not so worked.
- (xxii) Surety is the person, firm, or corporation that executes as surety the Prime Contractor's Performance Bond and Payment Bond and must be admitted and authorized to conduct business in the State of California.

(xxiii) Work means all labor, materials and equipment necessary for the Prime Contractor and its Subcontractors to fulfill all of the Prime Contractor's obligations pursuant to the Contract Documents, whether using its own forces or Subcontractors. Work includes the obligation of the Prime Contractor and each Subcontractor to visit the Project Site (a continuing obligation after commencing the Work), to fully acquaint and familiarize itself with existing conditions and the character of the operations to be carried out under the Contract Documents, and make such investigation as it may see fit so that it fully understands the facilities, physical conditions, and restrictions attending the Work under the Contract Documents. Work includes the obligation of the Prime Contractor and each Subcontractor to thoroughly examine and become familiar with the Drawings, Specifications, Summary Scope of Work, and associated bid documents.

(xxiv) Worker includes any laborer, mechanic or other worker.

### Section 1.3 CONTRACT DOCUMENTS

#### 1.3.1 **Correlation and Intent.**

**1.3.1.1** *Complementary and Inclusive.* The Contract Documents are complementary and are intended to include all items required for the proper execution and completion of the Work. All Contract Documents establish the Contract. Any item of Work shown or mentioned in one Contract Document, but not in others (including, without limitation, if an item is mentioned in the Specifications, but not shown on the Drawings, or shown on the Drawings and not mentioned in the Specifications) shall be provided by Prime Contractor as if shown or mentioned in both.

**1.3.1.2** *Coverage of the Drawings and Specifications.* The Drawings and Specifications generally describe the Work to be performed by Prime Contractor. Generally, the Specifications describe Work which cannot be readily indicated on the Drawings and indicate types, qualities, and methods of installation of the various materials and equipment required for the Work. It is not intended to mention every item of Work in the Specifications, which can be adequately shown on the Drawings, or to show on the Drawings all items of Work described or required by the Specifications even if they are of such nature that they could have been shown. All materials or labor for Work are shown on either the Drawings or the Specifications (or reasonably inferable therefrom as being necessary to complete the Work) shall be provided by the Prime Contractor to provide a complete Project. It is intended that the Work be of sound, quality construction, and the Prime Contractor shall be responsible for the inclusion of adequate amounts to cover installation of all items indicated, described, or implied in the portion of the Work to be performed by them.

**1.3.1.3** *Conflicts.* In the event there is a discrepancy in or inconsistency between the various Contract Documents, it is intended that the more stringent, higher quality, and greater quantity of Work shall apply.



**1.3.1.4**        *Conformance with Laws.* Each and every provision of law required by law to be inserted in the Contract shall be deemed to be inserted herein, and the Contract shall be read and enforced as though it were included herein, even if through mistake or otherwise any such provision is not inserted, or is not correctly inserted.

Before commencing any portion of the Work, Prime Contractor shall check and review the Drawings and Specifications for such portion for conformance and compliance with all laws, ordinances, codes, rules and regulations of all governmental authorities and public and municipal utilities affecting the construction and operation of the physical plant of the Project, all quasi-governmental and other regulations affecting the construction and operation of the physical plant of the Project, and other special requirements, if any, designated in the Contract Documents. Such checking shall include Title 21 and Title 24 of the California Code of Regulations, California Building Code, local utility, local water connection, local grading and all other applicable agencies. In the event Prime Contractor observes any violation of any law, ordinance, code, rule or regulation, or inconsistency with the Contract Documents, Prime Contractor shall, within five (5) days, notify Architect, Construction Manager and District in writing of same and shall ensure that any such violation or inconsistency shall be corrected in the manner provided hereunder prior to the construction of that portion of the Project.

The Prime Contractor shall bear all expenses of correcting Work done contrary to said laws, ordinances, rules, and regulations if the Prime Contractor performed same (1) without first consulting the Architect or Construction Manager for further instructions regarding said Work or (2) disregarded the Architect or Construction Manager's instructions regarding said Work.

**1.3.1.5**        *Ambiguity and Inconsistency.* Before commencing any portion of the Work, Prime Contractor shall carefully examine all Drawings and Specifications and other information given to Prime Contractor as to materials and methods of construction and other Project requirements. Prime Contractor shall, within five (5) days, notify Architect, Construction Manager and District in writing of any perceived or alleged error, inconsistency, conflict, ambiguity, or lack of detail or explanation in the Drawings and Specifications in the manner provided herein. If the Prime Contractor or its Subcontractors, material or equipment suppliers, or any of their officers, agents, and employees performs, permits, or causes the performance of any Work under the Contract Documents, which it knows or should have known to be in error, inconsistent, or ambiguous, or not sufficiently detailed or explained, Prime Contractor shall bear any and all costs arising therefrom including, without limitation, the cost of correction thereof without increase or adjustment to the Contract Price or the time for performance. If Prime Contractor performs, permits, or causes the performance of any Work under the Contract Documents prepared by or on behalf of Prime Contractor that is in error, inconsistent or ambiguous, or not sufficiently detailed or explained, Prime Contractor shall bear any and all resulting costs, including, without limitation, the cost of correction, without increase to or adjustment in the Contract Price or the time for performance.

### **1.3.2    Addenda and Deferred Approvals.**

**1.3.2.1**        *Addenda* are the changes in Drawings, Specifications and other Contract Documents that have been authorized in writing by the District, Architect or

Construction Manager, and which alter, explain, or clarify the Contract Documents. Addenda shall govern over all other Contract Documents. Subsequent addenda issued shall govern over prior addenda unless otherwise specified in the addenda.

**1.3.2.2**        *Deferred Approvals.* Contract Documents which require deferred approval items are meant to be for illustration purposes only. Prime Contractor is responsible for all deferred approval requirements set forth in the Contract Documents. Prime Contractor is responsible to comply with all laws, building codes, and regulations necessary to obtain all necessary approvals, including those required from the Division of the State Architect ("DSA") and the State Fire Marshall. Prime Contractor shall not be granted an extension of time for failure to obtain necessary approvals due to failure to comply with laws, building codes, and other regulations (including Title 24 of the California Code of Regulations). Prime Contractor shall schedule all deferred approval items in its progress schedule pursuant to Part 3. If Prime Contractor fails to include deferred-approval items in its schedule which results in a critical path delay, then Prime Contractor shall be subject to the assessment of liquidated damages.

### **1.3.3 Specification Interpretation.**

**1.3.3.1**        *Titles.* The Specifications are separated into titled Sections for convenience only and not to dictate or determine the trade or craft involved.

**1.3.3.2**        *As Shown, Et Cetera.* Where "as shown," "as indicated," "as detailed," or words of similar import are used, reference is made to the Drawings accompanying the Specifications unless otherwise stated. Where "as directed," "as required," "as permitted," "as authorized," "as accepted," "as selected," or words of similar import are used, the direction, requirement, permission, authorization, approval, acceptance, or selection by Architect is intended unless otherwise stated.

**1.3.3.3**        *General Conditions.* The General Conditions are a part of each and every Section of the Specifications.

**1.3.3.4**        *Abbreviations.* In the interest of brevity, the Specifications are written in an abbreviated form and may not include complete sentences. Omission of words or phrases such as "Prime Contractor shall," "shall be," *et cetera*, are intentional. Nevertheless, the requirements of the Specifications are mandatory. Omitted words or phrases shall be supplied by inference in the same manner as they are when a "note" occurs on the Drawings. In the interest of brevity, the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

**1.3.3.5**        *Plural.* Words in the singular shall include the plural whenever applicable or the context so indicates.

**1.3.3.6**        *Metric.* The Specifications may indicate metric units of measurement as a supplement to U.S. customary units. When indicated thus: 1" (25 mm), the

U.S. customary unit is specific, and the metric unit is nonspecific. When not shown with parentheses, the unit is specific. The metric units correspond to the "International System of Units" (SI) and generally follow ASTM E 380, "Standard for Metric Practice."

**1.3.3.7**      *Standard Specifications.* Any reference to standard specifications of any society, institute, association, or governmental authority is a reference to the organization's standard specifications, which are in effect at the date of the Prime Contractor's proposal unless directed otherwise. If applicable specifications are amended prior to completion of any part of the Work, the Prime Contractor may, if acceptable to Architect or Construction Manager, perform such Work in accordance with the amended specifications. The standard specifications, except as modified in the Specifications for the Project, shall have full force and effect as though printed in the Specifications. Architect will furnish, upon request, information as to how copies of the standard specifications referred to may be obtained.

#### **1.3.4 Rules of Document Interpretation.**

**1.3.4.1**      In the event of conflict within the Drawings, the following rules shall apply:

- (i)      General Notes, when identified as such, shall be incorporated into other portions of Drawings.
- (ii)      Schedules, when identified as such, are complementary with other notes and other portions of Drawings including those identified as General Notes.
- (iii)      Larger scale Drawings shall take precedence over smaller scale Drawings.
- (iv)      At no time shall the Prime Contractor base construction on scaled Drawings.

**1.3.4.2**      Specifications shall govern as to materials, workmanship, and installation procedures.

**1.3.4.3**      If Prime Contractor observes that Drawings and Specifications are in conflict, Prime Contractor shall, within five (5) days, notify the Architect or Construction Manager in writing for the purposes of obtaining an interpretation of the Contract Documents.

**1.3.4.4**      In the case of conflict or inconsistencies, the order of precedence shall be as follows:

- (i)      General Conditions govern over Drawings and Specifications.
- (ii)      Special Conditions govern over General Conditions.
- (iii)      The Agreement shall govern over the Special Conditions.

- (iv) In the case of disagreement or conflict between or within standards, Specifications, and Drawings, the more stringent, higher quality, and greater quantity of Work shall apply.

#### Section 1.4 OWNERSHIP AND USE OF CONTRACT DOCUMENTS

The Drawings, Specifications, and other Contract Documents for the Project are the property of the District and/or Architect pursuant to Education Code Section 17316. The Prime Contractor may retain one Contract record set. Neither the Prime Contractor nor any Subcontractor or material or equipment supplier shall own or claim a copyright in the Drawings, Specifications, and other documents prepared by the Architect. All copies except the Prime Contractor's record set shall be returned or properly accounted for upon completion of the Work. The Drawings, Specifications, and other documents prepared by the Architect, and copies thereof furnished to the Prime Contractor are not to be used by the Prime Contractor or any Subcontractor, sub-subcontractor, or material or equipment supplier on other projects or for additions to this Project outside the scope of the Work. The District and/or Architect hereby grant to the Prime Contractor, Subcontractors, sub-subcontractors, and material or equipment suppliers a limited license to use applicable portions of the Drawings, Specifications, and other documents prepared for the Project in the execution of their Work under the Contract Documents. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with this Project is not to be construed as publication in derogation of the District's property interest or other reserved right.

### **PART 2 DISTRICT**

#### Section 2.1 INFORMATION AND SERVICES REQUIRED OF THE DISTRICT

**2.1.1 Project Site Survey.** If necessary for the Work, the District will furnish upon request and at its expense a legal description of the Project Site and a land survey showing the boundaries of the Project Site. Prime Contractor shall be responsible for all surveys regarding location of construction, grading and site work. The Prime Contractor is responsible to perform underground utility locating, through the use of a locating service and potholing for existing utilities. The Prime Contractor shall produce a report of utilities located prior to beginning any excavations.

**2.1.2 Geotechnical Services and Soils Report.** When required by the scope of the Project, the District will furnish, at its expense, the services of geotechnical engineers or consultants when reasonably required and deemed necessary by the Architect or as required by local or State of California codes. Such services, with written reports and appropriate written professional recommendations, may include test boring, test pits, soil bearing values, percolation tests, air and water pollution tests, and ground corrosion and resistivity tests, including necessary operations for determining subsoil, air, and water conditions.

The Soils Report recommendations may be less restrictive than the Specifications. The Prime Contractor shall construct the earthwork and soil related portion of the Project as indicated in the Specifications. The Soils Report is supplementary to the Specifications and is for information purposes only and shall not be considered a part of the Contract Documents.

If a soils investigation report has been obtained from test holes at the Project Site, such report is available AS INFORMATION ONLY for the Prime Contractor's use in preparing its bid and Work under the Contract. The soils report is available at the Construction Manager's office for review. Any information obtained from such report or any other information given on Drawings as to subsurface soils conditions or to elevations of existing grades or elevations of underlying rock is approximate only.

THE DISTRICT DOES NOT WARRANT THE SOILS AT THE PROJECT SITE. ANY SOILS INVESTIGATION REPORT IS PROVIDED FOR PRIME CONTRACTOR'S INFORMATION ONLY. PRIME CONTRACTOR SHALL BE DEEMED TO HAVE CONDUCTED AN INDEPENDENT INVESTIGATION OF THE PROJECT SITE AND THE EXISTING SOILS CONDITIONS. THE DISTRICT DOES NOT WARRANT THE SOILS CONDITIONS OF THE PROJECT SITE, AND PRIME CONTRACTOR IS FULLY RESPONSIBLE FOR ASCERTAINING EXISTING CONDITIONS FOR PURPOSES OF DETERMINING CONSTRUCTION MEANS AND METHODS PRIOR TO COMMENCING CONSTRUCTION. THE SOILS INVESTIGATION REPORT IS NOT A CONTRACT DOCUMENT.

### **2.1.3 Utilities.**

**2.1.3.1** *Regional Notification Center.* Prime Contractor, except in an emergency, shall contact the appropriate regional notification center at least two (2) business days prior to commencing any excavation if the excavation will be conducted in an area or in a private easement which is known, or reasonably should be known, to contain subsurface installations other than the underground facilities owned or operated by the District, and obtain an inquiry identification number from that notification center. No excavation shall be commenced and carried out by the Prime Contractor unless such an inquiry identification number has been assigned to the Prime Contractor or any Subcontractor and the District has been given the identification number by the Prime Contractor. Any damages arising from failure to make appropriate regional notification shall be at the sole risk of Prime Contractor. Any delays caused by failure to make appropriate regional notification shall be at the sole risk of Prime Contractor and shall not be considered for extension of time pursuant to Section 8.4.

**2.1.3.2** *Utilities - Removal and Restoration.* The District has endeavored to determine the existence of utilities at the Project Site from the records of the District of known utilities in the vicinity of the Work. The positions of these utilities as derived from such records are shown in the Contract Documents.

No excavations were made to verify the locations shown for underground utilities. The service connections to these utilities may not be shown on the Drawings. It shall be the responsibility of the Prime Contractor to determine the exact location of all service connections. The Prime Contractor shall make its own investigations, including exploratory excavations, to determine the

locations and type of service connections, prior to commencing the Work which could result in damage to such utilities. The Prime Contractor shall immediately notify the District's representative as to any utility discovered by Prime Contractor in a different position than shown in the Contract Documents or which is not shown on the Contract Documents.

Prime Contractor shall coordinate its Work with all utilities, including, but not limited to electricity, water, gas and telephone and meet with said utilities prior to the start of any Work.

**2.1.3.3**        *Other Utilities.* In case it should be necessary to remove, relocate, or temporarily maintain a utility because of interference with the Work, the work on the utility shall be performed and paid for as follows:

When it is necessary to remove, relocate or temporarily maintain a service connection, the cost of which is not required to be borne by the owner thereof, the Prime Contractor shall bear all expenses incidental to the work on the service connection. The work on the service connection shall be done in a manner satisfactory to the owner thereof; it being understood that the owner of the service connection has the option of doing such work with its own forces or permitting the work to be done by the Prime Contractor.

When it is necessary to remove, relocate, or temporarily maintain a utility which is in the position shown on the Drawings, the cost of which is not required to be borne by the owner thereof, the Prime Contractor shall bear all expenses incidental to the work on the utility. The work on the utility shall be done in a manner satisfactory to the owner thereof; it being understood that the owner of the utility has the option of doing such work with its own forces or permitting the work to be done by the Prime Contractor.

When it is necessary to remove, relocate, or temporarily maintain a utility which is not shown on the Drawings or is in a position materially different from that shown on the Drawings and were it in the position shown on the Drawings would not need to be removed, relocated, or temporarily maintained, and the cost of which is not required to be borne by the owner thereof, the District will make arrangements with the owner of the utility for such work to be done at no cost to the Prime Contractor, or will require the Prime Contractor to do such work in accordance with Part 7 or will make changes in the alignment and grade of the Work to obviate the necessity to remove, relocate, or temporarily maintain the utility. Changes in alignment and grade will be ordered in accordance with Part 7 herein.

No representations are made that the obligations to move or temporarily maintain any utility and to pay the cost thereof is or is not required to be borne by the owner of such utility, and it shall be the responsibility of the Prime Contractor to investigate to find out whether said cost is required to be borne by the owner of the utility.

The right is reserved to governmental agencies and to owners of utilities to enter at any time upon any street, alley, right-of-way, or easement for the purpose of making changes in their property made necessary by the Work and for the purpose of maintaining and making repairs to their property.

## **2.1.4 Existing Utility Lines; Removal, Relocation.**

**2.1.4.1**      *Main or Trunkline Facilities.* If the Prime Contractor while performing the Contract discovers utility facilities not identified by the District in the Contract Documents, Prime Contractor shall, within one (1) day, notify the District and utility in writing.

The District has the responsibility to identify, with reasonable accuracy, main or trunkline facilities on the Drawings and Specifications. In the event that main or trunkline utility facilities are not identified with reasonable accuracy in the Drawings and Specifications and made a part of the Invitation to Bid, District shall assume the responsibility for their timely removal, relocation, or protection.

The owner of the public utility shall have the sole discretion to perform repairs or relocation work or permit the Prime Contractor to do such repairs or relocation work at a reasonable price.

The Prime Contractor shall exercise reasonable care and shall be compensated by the District for the actual verified field costs of locating and removing, relocating, protecting or temporarily maintaining such main or trunkline utility facilities not indicated with reasonable accuracy in the Drawings and Specifications, and for equipment in use on the Project necessarily idled during such work. This work shall be performed in accordance with Part 7 of these General Conditions.

Alternatively, District may make changes in the alignment and grade of the Work to obviate the need to remove, relocate, or temporarily maintain the utility, in accordance with Part 7 or District may make arrangements with the owner of the utility for such work to be done at no cost to the Prime Contractor.

The Prime Contractor shall not be assessed a forfeiture for delay in completion of the Project when such delay is caused by the failure of the District or the owner of the utility to provide for the removal, relocation, protection or temporary maintenance of all such main or trunkline facilities not indicated with reasonable accuracy.

Nothing herein shall preclude the District from pursuing any appropriate remedy against the utility for delays which are the responsibility of the utility.

Nothing herein shall be construed to relieve the utility from any obligation as required either by law or by contract to pay the cost of removal or relocation of existing utility facilities.

**2.1.4.2**      *Assessment.* This Subsection 2.1.4 shall not be construed to preclude assessment against the Prime Contractor for any other delays in completion of the Work. Nothing in this Subsection 2.1.4 shall be deemed to require the District to indicate the presence of existing service laterals or appurtenances whenever the presence of such utilities on the Project Site can be inferred from the presence of other visible facilities, such as buildings, or meter junction boxes on or adjacent to the Project Site.

**2.1.4.3 Notification.** If the Prime Contractor, while performing Work under the Contract, discovers utility facilities not identified by the District in the Contract Documents, the Prime Contractor shall, within one (1) day, notify the District and the utility in writing.

**2.1.5 Easements.** District shall secure and pay for easements for permanent structures or permanent changes in existing facilities, if any, unless otherwise specified in the Contract Documents.

## Section 2.2 DISTRICT'S RIGHT TO CARRY OUT THE WORK

**2.2.1 Prime Contractor Default.** If the Prime Contractor fails to perform the Work in accordance with the Contract Documents, the Prime Contractor shall be deemed to have defaulted or neglected to carry out the Work, including, but not limited to, circumstances in which the Prime Contractor:

- (i) Fails to supply adequate workers on the Project or any part thereof;
- (ii) Fails to supply a sufficient quantity of materials or to order materials in a timely manner;
- (iii) Fails to prepare and/or submit deferred-approval items or shop drawings in a timely manner;
- (iv) Fails to perform any provision of the Contract;
- (v) Fails to comply with safety requirements or creates an unsafe condition;
- (vi) Fails to comply with the critical path of any applicable Construction Schedule; or
- (vii) Fails to comply with the Subletting and Subcontracting Fair Practices Act, Public Contract Code Sections 4100 *et seq*; or
- (viii) In the case of bona fide emergency; or
- (ix) Failure to order materials in a timely manner.

**2.2.2 District Remedies.** If the Prime Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents, and fails (within a forty-eight (48) hour period after receipt of written notice or a shorter time period expressly stated in the written notice from the District in an emergency situation) to promptly commence and diligently continue correction of such default or neglect, the District may correct the deficiencies without prejudice to other remedies the District may have, including, without limitation, those set forth in Part 14, after providing forty-eight (48) hour written notice to Prime Contractor and Surety. If, during this forty-eight (48) hour period, Surety personally serves notice on the District that the Surety intends to perform such Work, District shall allow Surety seven (7) days to perform. In such case, the Prime Contractor will be invoiced the cost of correcting the deficiencies, including



compensation for additional services and expenses made necessary by such default or neglect. The invoice amount shall be deducted from the next payment due the Prime Contractor. If payments then or thereafter due the Prime Contractor are not sufficient to cover such amounts, the Prime Contractor shall pay the difference to the District.

### **PART 3 THE PRIME CONTRACTOR**

#### **Section 3.1    SUPERVISION AND CONSTRUCTION PROCEDURES**

**3.1.1 Prime Contractor.** The Prime Contractor shall continually supervise and direct the Work using the Prime Contractor's best skill and attention. The Prime Contractor shall be solely responsible for and have control over construction means, methods, techniques, and procedures; and shall coordinate all portions of the Work under the Contract, unless the Contract Documents give other specific instructions concerning these matters. The Prime Contractor shall not perform the Work without utilizing the Contract Documents or, where required, approved shop drawings, product data, or samples for any such portion of the Work. If any work is to be performed by contractors retained directly by the District, Prime Contractor shall be responsible for the coordination and sequencing of the work of those other contractors so as to avoid any impact on the Project schedule determined in accordance with Part 8. Specific duties of the Prime Contractor shall include those set out in Section 43 of Title 21 of the California Code of Regulations and Section 4-343 of Title 24 of the California Code of Regulations. These duties include, but are not limited to the following:

- (i) The Prime Contractor shall carefully study the Drawings, Specifications and other Contract Documents, and shall plan and schedule its operations well ahead of time. The Prime Contractor shall promptly report to the District any and all inconsistencies or time periods that appear to be in error in the Contract Documents. In no event shall any instruction by the District be construed to cause Work to be performed that does not conform with applicable law and the Contract Documents.
- (ii) The Prime Contractor shall carefully inspect the Project Site and shall plan and schedule its operations well ahead of time. The Prime Contractor must promptly report to the Construction Manager any local conditions that may adversely affect the Work. In no event shall any instruction by the Construction Manager or Architect be construed to cause Work to be performed that does not conform with applicable law and the Contract Documents.
- (iii) The Prime Contractor shall complete the Work in accordance with the approved Drawings and Specifications. If at any time it is discovered that Work is being done which is not in accordance with the approved Drawings and Specifications, the Prime Contractor shall correct the Work immediately. The Prime Contractor in no way is relieved of any responsibility by the activities of the District, Construction Manager, Architect, Project Inspector or DSA in the performance of their duties.

- (iv) The Prime Contractor shall not carry on Work except with the knowledge of the Project Inspector. Prime Contractor shall provide the Inspector of Record with a written punch-list prior to requesting that the Architect perform the final inspection.
- (v) The Prime Contractor shall make and submit to the office from time to time, verified reports as required in Section 36 of Title 21 and Section 4-366 of Title 24.
- (vi) The Prime Contractor shall fully comply with any and all reporting requirements of Education Code Sections 17315 et seq., in the manner prescribed by Title 24.
- (vii) The Prime Contractor shall perform quality control within its own forces and its Subcontractor forces.
- (viii) The Prime Contractor shall provide daily reports listing its and its Subcontractors' personnel, including and but not limited to trades, experience levels and any equipment or materials arriving on-site or installed on that date. The Prime Contractor shall attach the minutes and any sign-in or attendance sheet for any safety meetings conducted by the Prime Contractor to the daily report for that date.

**3.1.2 Prime Contractor Responsibility.** The Prime Contractor shall be responsible to the District for acts and omissions of the Prime Contractor's employees, Subcontractors, material and equipment suppliers, and their agents, employees, invitees, and other persons performing portions of the Work under direct or indirect contract with the Prime Contractor or any of its Subcontractors.

**3.1.3 Obligations not Changed by Architect's Actions.** The Prime Contractor shall not be relieved of obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Construction Manager or Architect in the administration of the Contract or by tests, inspections, or approvals required or performed by persons other than the Prime Contractor.

**3.14. Acceptance/Approval of Work.** The Prime Contractor shall be responsible to determine when any completed portions of the Work already performed under the Contract or provided pursuant to Part 6 are suitable to receive subsequent Work thereon.

## Section 3.2 SUPERINTENDENT

**3.2.1 Full Time Superintendent.** Unless personally present on the Project Site where the Work is being performed, the Prime Contractor shall keep on the Work at all times during its progress a competent construction Superintendent satisfactory to the District. The Superintendent shall be present on a full-time basis, shall be dedicated exclusively to the Project and shall not share superintendence duties with another project or job. The Superintendent shall not be replaced except with written consent of the District. The

Superintendent shall represent the Prime Contractor in its absence and shall be fully authorized to receive and fulfill any instruction from the Construction Manager, the Architect, the Project Inspector, the District or any other District representative. The Superintendent shall originate all Requests for Information and responses thereto shall be given to the Superintendent. No Work shall begin on any day by any Subcontractor or other person on the Project Site until the Superintendent has arrived, and no Work shall continue during the day after the Superintendent has departed from the Project Site. The Superintendent shall have authority to bind Prime Contractor through the Superintendent's acts. The Superintendent shall represent the Prime Contractor, and communications given to the Superintendent shall be binding on the Prime Contractor. Before commencing the Work, Prime Contractor shall give written notice to District, Construction Manager and Architect of the name and a Statement of Qualifications of such superintendent. If a superintendent proves to be unsatisfactory to Prime Contractor and ceases to be in its employ, Prime Contractor shall notify District, Construction Manager and Architect in writing. Such notice shall designate and seek approval of a replacement Superintendent. Prime Contractor shall provide a replacement superintendent approved by the District prior to performing additional Work.

**3.2.2 Staff.** Notwithstanding other requirements of the Contract Documents, the Prime Contractor and each Subcontractor shall: (1) furnish a competent and adequate staff as necessary for the proper administration, coordination, supervision, and superintendence of its portion of the Work; (2) organize the procurement of all materials and equipment so that the materials and equipment will be available at the time they are needed for the Work; and (3) keep an adequate force of skilled and fit workers on the job to complete the Work in accordance with all requirements of the Contract Documents.

**3.2.3 Right to Remove.** District shall have the reasonable right, but not the obligation, to require the removal from the Project of any superintendent, staff member, agent, or employee of any Prime Contractor, Subcontractor, material or equipment supplier.

### Section 3.3 LABOR AND MATERIALS

**3.3.1 Prime Contractor to Provide.** Unless otherwise provided in the Contract Documents, the Prime Contractor shall provide and pay for labor, material, equipment, tools, construction equipment and machinery, water, heat, air conditioning, utilities, transportation, and other facilities, services and permits necessary for proper execution and completion of the Work whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

**3.3.2 Quality.** Unless otherwise specified, all materials and equipment to be permanently installed in the Project shall be new and shall be of the highest quality or as specifically stated in the Contract Documents. The Prime Contractor shall, if requested, furnish satisfactory evidence as to kind and quality of all materials and equipment within ten (10) days of a written request by the District, including furnishing the District with bona fide copies of invoices for materials or services provided on the Project. All labor shall be performed by workers skilled in their respective trades, and shall be of the same or higher quality as with the

standards of other school construction. The Prime Contractor shall maintain an effective quality control mechanism such that rework or replacement of defective Work is kept at a minimum.

**3.3.3 Replacement.** Any work, materials, or equipment that does not conform with the requirements or standards set forth in the Contract Documents may be disapproved by the District, in which case, they shall be removed and replaced by the Prime Contractor at no additional cost or extension of time to the District.

**3.3.4 Discipline.** The Prime Contractor shall enforce strict discipline and good order among the Prime Contractor's and Subcontractors' employees, and other persons carrying out the Contract. The Prime Contractor shall not permit employment of unfit persons or persons not skilled in tasks assigned to them. As used in this Subsection, "unfit" includes any person who the District concludes is improperly skilled for the task assigned to that person, who fails to comply with the requirements of this Subsection or other applicable standards of behavior, or who creates safety hazards which jeopardize other persons and/or property.

**3.3.5 Employee Background Checks.** If this provision is made applicable as set forth in the Special Conditions, the Prime Contractor shall comply with all provisions of Education Code Section 45125.1. Pursuant to Education Code Section 45125.1, Prime Contractor shall conduct criminal background checks of all employees of Prime Contractor and its Subcontractors assigned to the Project Site, and, using the form included in the Contract Documents or provided by the District, shall certify that no such employees who have been convicted of serious or violent felonies (as specified in Education Code Section 45125.1) will have contact with pupils. As part of such certification, Prime Contractor must provide the District with a list of all employees providing services pursuant to the Contract. In performing the services required pursuant to the Contract, Prime Contractor shall not allow any of its or its Subcontractors' employees who are not included on the above-referenced list to enter onto or remain in the vicinity of the Project Site. The Prime Contractor's failure to comply with these requirements shall be deemed and construed to be a material breach of the Contract, upon which it may be terminated, at District's sole discretion, without any further compensation to Prime Contractor.

**3.3.6 Noise, Drugs, Tobacco, Alcohol, and Animals.** Prime Contractor shall prohibit and take all steps necessary to ensure that its and its Subcontractors' employees do not possess, consume, or work under the influence of any alcohol, tobacco or illegal drugs while on the Project Site. The Prime Contractor shall take all necessary steps to ensure that its and its Subcontractor's employees comply with all applicable District policies and directives relating to appearance and behavior on school sites and/or District property. The Prime Contractor shall prohibit and prevent its and its Subcontractor's employees from playing any radios, I-Pods, MP3 players or similar devices, or wearing any earplug or headphones for entertainment or other non-Work purposes while working on the Project. The Prime Contractor shall prohibit and prevent its employees and Subcontractor's employees from bringing any animal onto the Project.

**3.3.7 Delivery of Material.** Prime Contractor shall place orders for materials or equipment so that the Work may be completed in accordance with the Construction Schedule

for the Work as determined in accordance with Part 8 of these General Conditions. Prime Contractor shall, upon demand from the Architect or Construction Manager, furnish to the Architect or Construction Manager documentary evidence including, but not limited to, purchase orders, invoices, bills of materials, work orders and bills of lading, showing that orders have been placed.

**3.3.8 Liens and Other Security Interests of Subcontractors and Material Suppliers.** No material, supplies, or equipment for the Work shall be purchased subject to any chattel mortgage or under a conditional sale or other agreement by which an interest therein or in any part thereof is retained by seller or supplier. Prime Contractor warrants good title to all material, supplies, and equipment installed or incorporated in Work and agrees upon completion of all Work to deliver premises, together with all improvements and appurtenances constructed or placed thereon by it, to District free from any claims, security interests, liens, or charges. Prime Contractor further agrees that neither it nor any person, firm, or corporation furnishing any materials or labor for any Work covered by the Contract shall have any right to place a lien upon the premises or any improvement or appurtenance thereof, except that Prime Contractor may install metering devices or other equipment of a utility company or political subdivision, title to which is commonly retained by the utility company or political subdivision. In the event of installation of any such metering device or equipment, Prime Contractor shall advise District as to its owner within five (5) days of such installation in writing, prior to making the installation.

**3.3.9 Title to Materials.** The title to new materials or equipment for the Work of the Contract, and attendant liability for its protection and safety, shall remain with Prime Contractor until incorporated in the Work of the Contract and accepted by the District, Construction Manager and Architect; no part of said materials shall be removed from its place of storage, and Prime Contractor shall keep an accurate inventory of all said materials and equipment in a manner satisfactory to the District or its authorized representative.

**3.3.10 Assemblies.** For all material and equipment specified or indicated in the Drawings, the Prime Contractor shall provide all labor, materials, equipment, and services necessary for complete assemblies and complete working systems. Incidental items not indicated on the Drawings, nor mentioned in the Specifications, that can legitimately and reasonably be inferred to belong to the Work described, or be necessary in good practice to provide a complete assembly or system, shall be furnished as though itemized in the Contract Documents in every detail. In all instances, material and equipment shall be installed in strict accordance with each manufacturer's most recent published recommendations and specifications. Further, said assemblies shall be inspected and approved by the Inspector of Record prior to closing said assembly.

**3.3.11 Noise Control.** The Prime Contractor shall be responsible for the installation of noise reducing devices on construction equipment. Prime Contractor shall comply with the requirements of the city and county having jurisdiction with regard to noise ordinances governing construction sites and activities. Construction equipment noise is subject to the control of the Environmental Protection Agency's Noise Control Program (Part 204 of Title 40, Code of Federal Regulations). If school is in session at any point during the progress of the Project, and, in the District's reasonable discretion, the noise from such Work disrupts or

disturbs the students or faculty or the normal operation of the school, at the District's request, the Prime Contractor shall schedule the performance of all such Work around normal school hours or make other arrangements so that the Work does not cause such disruption or disturbance. In no event shall Prime Contractor have a right to receive additional compensation or an extension to the Contract Time as a result of any such rescheduling or the making of such arrangements. These controls shall be implemented during site preparation and construction.

#### Section 3.4 WARRANTY

The Prime Contractor warrants to the District, Construction Manager and Architect that material and equipment furnished under the Contract shall be of the highest quality and new unless otherwise required or permitted by the Contract Documents, that the Work shall be free from defects not inherent in the quality required or permitted, and that the Work shall conform with the requirements of the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. Prime Contractor's warranty to District includes, but is not limited to the following representations:

- (i) In addition to any other warranties provided elsewhere, Prime Contractor shall, and hereby does, warrant all Work and shall repair or replace any or all such Work, together with any other Work that may be damaged or displaced in so doing, that may prove defective in workmanship or materials within a two (2) year period from date of completion as determined in accordance with Public Contract Code Section 7107(c), without expense whatsoever to District, ordinary wear and tear, unusual abuse or neglect excepted. District will give notice of observed defects with reasonable promptness. Prime Contractor shall notify District upon completion of repairs.
- (ii) In the event of failure of Prime Contractor to comply with above mentioned conditions within forty-eight (48) hours after being notified in writing, District is hereby authorized to proceed to have defects repaired and made good at expense of Prime Contractor who shall pay costs and charges therefore immediately on demand.
- (iii) If, in the opinion of the District, defective Work creates a dangerous condition or requires immediate correction or attention to prevent further loss to the District, the District will attempt to give the notice required by this Section. If the Prime Contractor cannot be contacted or does not comply with the District's requirements for correction within a reasonable time as determined by the District, the District may, notwithstanding the provisions of this Section, proceed to make such correction or attention which shall be charged against Prime Contractor. Such action by the District will not relieve the Prime Contractor of the guarantee provided in this Section or elsewhere in the Contract Documents.

This Section does not in any way limit the guarantee on any items for which a longer warranty is specified or on any items for which a manufacturer gives a guarantee for a longer period. Prime

Contractor shall furnish District all appropriate guarantee or warranty certificates upon completion of the Project.

### Section 3.5 TAXES

Prime Contractor shall pay all applicable federal, State of California, and local taxes on all materials, labor, or services furnished by it, and all taxes arising out of its operations under the Contract Documents. District is exempt from Federal Excise Tax, and a Certificate of Exemption shall be provided upon request.

### Section 3.6 PERMITS, FEES AND NOTICES

**3.6.1 Payment.** The Prime Contractor shall verify that all permits and governmental fees, licenses, and inspections necessary for proper execution and completion of the Work which are necessary after execution of the Contract and are legally required by any authority having jurisdiction over the Project, except those required by the DSA, have been obtained. District shall be responsible for all testing and inspection as required by the DSA on-site or within the distance limitations set forth in Subsection 13.5.2, unless a different mileage range is specified in the Special Conditions.

**3.6.2 Compliance.** The Prime Contractor shall comply with and give notices required by any law, ordinance, rule, regulation, or lawful order of public authorities bearing on performance of the Work.

**3.6.3 Responsibility.** The Prime Contractor shall perform all Work in conformance with every applicable law, statute, ordinance, building code, rule and regulation. The Prime Contractor shall assume full responsibility for conformance with such requirements and shall bear the cost of any and all corrections or Project delays arising from any failure to so comply.

**3.6.4 Payment.** The Prime Contractor shall initiate and pursue the application process for obtaining all permits and licenses (including all required District signatures) necessary for the prosecution of the Work, including utility fees. District will reimburse Prime Contractor the actual documented cost of such permits and fees, with no overhead or profit added. No reimbursement will be allowed for fees associated with City or County business licenses, disposals, trucking, *et cetera*.

### Section 3.7 LABOR COMPLIANCE PROGRAM

**3.7.1 Contractor/Subcontractor Registration.** A Contractor or Subcontractor shall not be qualified to bid on, be listed on a bid proposal (subject to the requirements of Public Contract Code section 4104), or engage in the performance of any contract for public work unless currently registered and qualified to perform public work pursuant to Labor Code section 1725.5, except under the limited circumstances set forth in Labor Code section 1771.1(a). This requirement shall apply to any bid proposal submitted on or after March 1, 2015, and any contract for public work awarded on or after April 1, 2015. The District may not accept a bid or enter into a contract for a public works project with an unregistered contractor.

**3.7.2 Compliance Monitoring and Enforcement.** Pursuant to Labor Code section 1771.4, this Contract is subject to compliance monitoring and enforcement by the Department of Industrial Relations. Each Contractor and Subcontractor performing work on the Project shall be required to comply with the provisions of the California Labor Code, beginning with section 1720, and the regulations of the Department of Industrial Relations' Division of Labor Standards Enforcement (i.e., the Labor Commissioner), including, but not limited to, the standard provisions requiring payment of prevailing wages, maintenance and submission of certified payroll records, and the hiring of apprentices as appropriate. Unless otherwise specified, the Contractor shall be required to post job site notices regarding the requirements of this paragraph, as prescribed by regulation. For all new public works projects awarded on or after April 1, 2015, Contractor and each Subcontractor shall be required to furnish the records specified in Labor Code section 1776 directly to the Labor Commissioner at least monthly, or more frequently if specified in the Contract Documents, and in a format prescribed by the Labor Commissioner. This requirement shall apply to all projects, whether new or ongoing, on or after January 1, 2016.

**3.7.3 Posting.** Contractor shall be required to post a notice at the Project site in accordance with Title 8 of the California Code of Regulations, Section 16451.

#### Section 3.8 ABATEMENT SPECIFICATIONS

If applicable, Specifications for abatement of hazardous materials are set forth in the Special Conditions.

#### Section 3.9 DOCUMENTS AND SAMPLES AT THE PROJECT SITE

The Prime Contractor shall maintain at the Project Site for the District one current copy of the Uniform Building Code, Titles 19, 21 and 24 of the California Code of Regulations and one record copy of the Drawings, Specifications, Addenda, Change Orders, and other Modifications, in good order and marked currently to record changes and selections made during construction. In addition, the Prime Contractor shall maintain at the Project Site approved Shop Drawings, Product Data, Samples, and similar required submittals. These documents shall be available to the Architect or Construction Manager and shall be delivered to the Architect or Construction Manager for delivery to the District upon completion of the Work.

#### Section 3.10 SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

##### **3.10.1 Submittals Defined.**

**3.10.1.1 Shop Drawings.** The term "shop drawings" as used herein means drawings, diagrams, schedules, and other data, which are prepared by Prime Contractor, Subcontractors, manufacturers, suppliers, or distributors illustrating some portion of the Work, and includes: illustrations; fabrication, erection, layout and setting drawings; manufacturer's standard drawings; schedules; descriptive literature, instructions, catalogs, and brochures; performance and test data including charts; wiring and control diagrams; and all other drawings



and descriptive data pertaining to materials, equipment, piping, duct and conduit systems, and methods of construction as may be required to show that the materials, equipment, or systems and their position conform to the requirements of the Contract Documents. The Prime Contractor shall obtain and submit with shop drawings all seismic and other calculations and all product data from equipment manufacturers. "Product data" as used herein are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Prime Contractor to illustrate a material, product, or system for some portion of the Work. As used herein, the term "manufactured" applies to standard units usually mass-produced, and "fabricated" means items specifically assembled or made out of selected materials to meet individual design requirements. Shop drawings shall: establish the actual detail of all manufactured or fabricated items, indicate proper relation to adjoining Work, amplify design details of mechanical and electrical systems and equipment in proper relation to physical spaces in the structure, and incorporate minor changes of design or construction to suit actual conditions.

**3.10.1.2**      *Samples.* The term "samples" as used herein are physical examples furnished by Prime Contractor to illustrate materials, equipment, or quality and includes natural materials, fabricated items, equipment, devices, appliances, or parts thereof as called for in the Specifications, and any other samples as may be required by the Architect to determine whether the kind, quality, construction, finish, color, and other characteristics of the materials, *et cetera*, proposed by the Prime Contractor conform to the required characteristics of the various parts of the Work. All Work shall be in accordance with the approved samples.

**3.10.1.3**      *Prime Contractor's Responsibilities.* Prime Contractor shall obtain and shall submit all required shop drawings, samples, *et cetera*, in accordance with Prime Contractor's "Schedule for Submission of Shop Drawings and Samples" as required in the Specifications with such promptness as to cause no delay in its own Work or in that of any other Prime Contractor or Subcontractor but in no event later than thirty (30) days after Notice of Award. No extensions of time shall be granted to Prime Contractor or any Subcontractor because of its failure to have shop drawings and samples submitted in accordance with the schedule. Each Subcontractor shall submit all shop drawings, samples, and manufacturer's descriptive data for the review of the District, the Prime Contractor, Construction Manager and the Architect through the Prime Contractor. By submitting shop drawings, product data, samples, *et cetera*, the Prime Contractor represents that it has determined and verified all materials, field measurements, catalog numbers, related field construction criteria, and other relevant data in connection with each such submission, and that it has checked, verified, and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents, including the Construction Schedule. The submission of the shop drawings, product data, samples, *et cetera*, shall not deviate from the requirements of the Contract Documents including detailing and design intent which is specifically outlined in Contract Documents except as specifically authorized by the Construction Manager or the Architect or through an accepted substitution pursuant to Subsection 3.10.4. All deviations from the Contract Documents shall be narratively described in a transmittal accompanying the shop drawings. However, shop drawings shall not be used as a means of requesting a substitution, the procedure for which is defined in Subsection 3.10.4, "Substitutions." Review by District, Construction Manager and Architect shall not relieve the Prime Contractor or any Subcontractor

from its responsibility in preparing and submitting proper shop drawings in accordance with the Contract Documents. Any submission, which in Architect's opinion is incomplete, contains errors, or has been checked superficially will be returned unreviewed by the Architect for resubmission by the Prime Contractor. Prime Contractor shall stamp, sign, and date each submittal indicating its representation that the submittal meets all of the requirements of the Contract Documents and evidence Prime Contractor's review through execution of the following stamp to be placed on each shop drawing:

"The Prime Contractor has reviewed and approved the field dimensions and the construction criteria, and has also made written notation regarding any information in the shop drawings that does not conform to the Contract Documents. This shop drawing has been coordinated with all other shop drawings received to date by Prime Contractor and this duty of coordination has not been delegated to subcontractors, material suppliers, the Construction Manager, the Architect on this Project.

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Signature of Prime Contractor and Date"

**3.10.1.4** *Extent of Review.* In reviewing shop drawings, the Architect will not verify dimensions and field conditions. The Architect will review and approve shop drawings, product data, samples, *et cetera*, for aesthetics and for conformance with the design concept of the Work and the information in the Contract Documents. The Architect's review shall neither be construed as a complete check which relieves the Prime Contractor or any Subcontractor, manufacturer, fabricator, or supplier from responsibility for any deficiency that may exist or from any departures or deviations from the requirements of the Contract Documents unless the Prime Contractor has, in writing, called the Architect's attention to the deviations at the time of submission. The Architect's review shall not relieve the Prime Contractor or any Subcontractor from responsibility for errors of any sort in shop drawings or schedules, for proper fitting of the Work, coordination of the differing Subcontractor trades and shop drawings and Work which is not indicated on the shop drawings at the time of submission of shop drawings. Prime Contractor and Subcontractors shall be solely responsible for any quantities which may be shown on the submittals or Contract Documents.

### **3.10.2 Drawing Submission Procedure.**

**3.10.2.1** *Transmittal Letter and Other Requirements.* All shop drawings must be properly identified with the name of the Project and dated, and each lot submitted must be accompanied by a letter of transmittal referring to the name of the Project and to the Specification Section number for identification of each item clearly stating in narrative form, as well as "clouding" on the submissions, all qualifications, departures, or deviations from the Contract Documents. Shop drawings, for each section of the Work shall be numbered

consecutively and the numbering system shall be retained throughout all revisions. All Subcontractor submissions shall be made through the Prime Contractor. Each drawing shall have a clear space for the stamps of Architect and Prime Contractor.

**3.10.2.2** *Copies Required.* Each submittal shall be provided electronically as required to the Construction Manager who will post them to the project files so that all parties have access. Submittals shall include drawings or schedules, tables, cut sheets, *et cetera*, including fabrication, erection, layout and setting drawings, and such other drawings as required under the various Sections of the Specifications, until final acceptance thereof is obtained. Prime Contractor shall submit: (1) manufacturers' descriptive data for materials, equipment, and fixtures, including catalog sheets showing dimensions, performance, characteristics, and capacities; (2) wiring diagrams and controls; (3) schedules; (4) all seismic calculations and other calculations; and (5) other pertinent information as required by the District or Architect.

**3.10.2.3** *Corrections.* The Prime Contractor shall make all corrections required by Architect and shall resubmit, as required by Architect, corrected shop drawings or new samples until approved. Prime Contractor shall direct specific attention in writing or on resubmitted shop drawings to revisions other than the corrections required by the Architect on previous submissions. Professional services required for more than one (1) re-review of required submittals of shop drawings, product data, or samples are subject to charge to the Prime Contractor pursuant to Section 4.4.

**3.10.2.4** *Approval Prior to Commencement of Work.* No portion of the Work requiring a shop drawing or sample submission or other submittal shall be commenced until the submission has been reviewed by Prime Contractor and Architect and approved by Architect unless specifically directed in writing by the Architect. All such portions of the Work shall be in accordance with approved shop drawings and samples. Upon approval by the Architect, the Contractor shall provide two printed copies of the approved documents for use by the Construction Manager and the Inspector on site and any other copies needed on site for the Contractor and its Subcontractors to implement the approved products and procedures.

### **3.10.3 Sample Submissions Procedure.**

**3.10.3.1** *Samples Required.* In case a considerable range of color, graining, texture, or other characteristics are anticipated in finished products, a sufficient number of samples of the specified materials shall be furnished by the Prime Contractor to indicate the full range of characteristics which will be present in the finished products; and products delivered or erected without submittal and approval of a full range of samples shall be subject to rejection. Except for range samples, and unless otherwise called for in the various Sections of the Specifications, the Prime Contractor shall submit samples in duplicate. All samples shall be marked, tagged, or otherwise properly identified with the name of the submitting party, the name of the Project, the purpose for which the samples are submitted and the date, and shall be accompanied by a letter of transmittal containing similar information, together with the Specification Section number. Each tag or sticker shall have clear space for the review stamps of Prime Contractor and Architect.

**3.10.3.2**      *Labels and Instructions.* Each sample of materials shall be supplied with the manufacturer's descriptive labels and application instructions.

**3.10.3.3**      *Architect's Review.* The Architect will review and, if appropriate, approve submissions and will return them to the Prime Contractor with the Architect's stamp and signature applied thereto, indicating the timing for review and appropriate action in compliance with the Architect's (or District's) standard procedures.

**3.10.3.4**      *Record Drawings and Annotated Specifications.* The Prime Contractor shall prepare and maintain on a current basis an accurate and complete set of Record Drawings clearly showing all changes, revisions to Specifications and substitutions during construction, including, without limitation, field changes and the final location of all electrical and mechanical equipment, utility lines, ducts, outlets, structural members, walls, partitions, and other significant features, and Annotated Specifications showing clearly all changes, revisions, and substitutions during construction. A copy of such Record Drawings and Annotated Specifications shall be delivered to District in accordance with the Prime Contractor's approved Construction Schedule. In case a Specification allows Prime Contractor to elect one of several brands, makes, or types of material or equipment, the annotations shall show which of the allowable items the Prime Contractor has furnished. The Prime Contractor shall update the Record Drawings and Annotated Specifications as often as necessary to keep them current, but no less often than weekly. The Record Drawings and Annotated Specifications shall be kept at the Project Site and available for review and inspection by the District, the Construction Manager and the Architect. On completion of the Work and prior to Application for Final Payment, the Prime Contractor shall provide three (3) complete sets of Record Drawings and Annotated Specifications to the District, certifying them to be a complete and accurate reflection of the actual construction conditions of the Work.

**3.10.3.5**      *Equipment Manuals.* Prime Contractor shall obtain and furnish three (3) complete sets of manuals containing the manufacturers' instructions for maintenance and operation of each item of equipment and apparatus furnished under the Contract Documents and any additional data specifically requested under the various Sections of the Specifications for each division of the Work. The manuals shall be arranged in logical, sequential order, labeled, indexed, and placed in white-colored three-ring binders. The binders shall be tabbed and labeled on the spine with the project Title and bid number assigned. The binders shall also contain Subcontractor and vendor contact information. Upon completion of the Work, the Prime Contractor shall certify, by endorsement thereon, that each of the manuals is complete, accurate, and covers all of its Work. Prior to submittal of its Application for Final Payment, and as an additional condition to the approval by the Architect of the Application for Final Payment, the Prime Contractor shall deliver the binders, arranged in logical, sequential order, labeled, indexed, endorsed, to the Construction Manager, who shall review them for completeness, and submit them to the District through the Architect.

**3.10.3.6**      *District's Property.* All shop drawings, computer disks, annotated Specifications, samples and other submittals shall become the District's property upon receipt by the District or Architect.

### **3.10.4 Substitutions.**

**3.10.4.1**      *One Product Specified.* Unless the Specifications state that no substitution is permitted, whenever the Contract Documents indicate any specific article, device, equipment, product, material, fixture, patented process, form, method, or type of construction or any specific name, make, trade name, or catalog number, with or without the words “or equal,” such Specification shall be deemed to be used for the purpose of facilitating description of the material, process, or article desired and shall be deemed to be followed by the words “or equal.” Unless the Contract Documents provide otherwise, the Prime Contractor, to the extent provided in Section 3.10.4.3, may offer in place of any item specified in the Drawings or other Contract Documents (“Specified Item”) any material, process, article, *et cetera* that the Prime Contractor can demonstrate is materially equal or better in every respect to the Specified Item and that will completely accomplish the purpose of the Contract Documents.

**3.10.4.2**      *Commercially Unavailable Products.* If the Prime Contractor failed to request substitutions for products prior to the submission of its bid, and such products subsequently become commercially unavailable, the Prime Contractor may request a substitution for such commercially unavailable item. The decision to grant any such request is solely at the District’s discretion. The written approval of the District, consistent with the procedure for Change Orders, shall be required for the use of a proposed substitute material. The District may condition its approval of the substitution upon the delivery to District of an extended warranty or other assurances of adequate performance of the substitution as well as an equitable deduction in the Contract Price should the substituted item cost less than the Specified Item. The requesting party shall bear all risks of delay due to the approval of a requested substitution by the DSA or any other governmental agency having jurisdiction. All additional costs, all procurement and construction delays, and all costs for review by the Architect or its consultants shall be the responsibility of the Prime Contractor and shall be deducted from Prime Contractor’s pay request.

**3.10.4.3**      *Request Form and Procedures.* A request for substitution of a product, material or process in place of a Specified Item must in writing on the District’s Substitution Request Form (“Request Form”). Substitution requests made prior to the Prime Contractor submitting its bid for the Project shall be made in accordance with the procedures described in the Instructions for Bidders. Substitution requests made after the Prime Contractor submitted its bid may be made only in accordance with Subsection 3.10.4.2.

**3.10.4.4**      *Substantiating Data.* With its Request Form, a bidder must submit all documents relevant to whether the proposed substitution will or will not:

- (i) be equal to or better than the Specified Item with respect to quality and serviceability;
- (ii) entail no changes in detail, construction, and scheduling of related Work;
- (iii) be acceptable considering the required design and artistic effect;

- (iv) provide any cost disadvantage to the District;
- (v) require any excessive or more expensive maintenance, including adequacy and availability of replacement parts; and
- (vi) require any change of the Construction Schedule.

The documentation submitted must include any and all illustrations, specifications, and other data relevant to the request. Without limiting the generality of the foregoing, such documentation must include: (1) catalog and other information that describes the proposed substitute item and substantiates that it is equal or better in all material respects than the Specified Item; (2) a statement of the cost implications of the proposed substitute item, stating whether and why the substitution will reduce or increase the Contract Price; and (3) information regarding the durability and life cycle cost of the proposed substituted item. Such documentation also must include a signed affidavit from the Prime Contractor stating that the proposed substitute item is equal to or better than the Specified Item in all material respects. The District may reject a request for substitution that does not include the required affidavit and all substantiating data reasonably necessary for the District to determine whether to grant the substitution request. The District may at any time request that the Prime Contractor provide additional information relevant to any substitution request. If the Prime Contractor intentionally or negligently omits information relevant to the District's determination and such information is adverse to a finding of equality, the Prime Contractor will have breached its obligations pursuant to the Contract.

**3.10.4.5**      *District Determination.* After the District receives all evidence that the Prime Contractor intends will substantiate a request for substitution, the District will determine whether to grant the request for substitution. The decision whether a proposed substitution is equal to or better than a Specified Item shall be at the sole discretion of the District, after consultation with the Architect and the Construction Manager as applicable.

If the District denies the request for substitution of a Specified Item, the Prime Contractor shall provide the Specified Item without any additional cost or charge to the District.

If the District grants a request for substitution of a Specified Item, the substitution shall be documented and processed by means of a Change Order. The District may condition its approval of any substitution upon delivery to the District of an extended warranty or other assurances of adequate performance of the substitution. Any and all risks of delay due to approval by the DSA or any other governmental agency having jurisdiction shall be on the bidder.

If the District approves a proposed substitution, the Prime Contractor shall pay for all engineering and design services, including, without limitation, compensation to the Architect and affected engineers for their required time to process such substitution through the DSA, if required, and to make all changes and adjustments in materials or the Work of all trades directly or indirectly affected by the substituted item or items at no cost to the District.

**3.10.5 List of Manufacturers and Products Required.** The Prime Contractor shall require that, within fifteen (15) days of the date of execution of its subcontract, each Subcontractor prepare and submit to the Prime Contractor a comprehensive list of the manufacturers and products proposed for the Project, including information on materials, equipment, and fixtures required by the Contract Documents, as may be required for the Prime Contractor's or Architect's approval. Approval of the list of products shall not be construed as a substitute for the shop drawings, manufacturer's descriptive data, and samples, required by the Contract Documents, but rather shall be considered as a base from which more detailed submittals shall be developed for final review by the Prime Contractor and the Architect.

**3.10.6 Deferred Approvals.** Deferred approvals shall be submitted and processed pursuant to the requirements of Division 01 of the Specifications (Prime Contractor to verify). All deferred approvals shall be prepared by Prime Contractor or Prime Contractor's agent early enough so as to not delay the Project. Prime Contractor is aware that Title 21 California Code of Regulations Section 17(g) and Title 24 California Code of Regulations Section 4-317 have specific requirements for deferred approval as to governing agencies and as to the Architect for the Project. As a result, the Prime Contractor shall be solely responsible for any delay associated with the time for approval by applicable agencies, the Architect or Architect's consultants.

#### Section 3.11 INTEGRATION OF WORK

**3.11.1 Scope.** The Prime Contractor shall be responsible for cutting, fitting, or patching to complete the Work and to make all parts fit together properly. Prime Contractor shall be responsible for ensuring that all trades are coordinated and scheduled so as to ensure the timely and proper execution of the Work. When modifying existing Work or installing new Work adjacent to existing Work, Prime Contractor shall match, as closely as conditions at the Project Site and materials will allow, the finishes, textures, and colors of the original Work, refinishing existing Work at no additional cost to District. All cost caused by defective or ill-timed Work shall be borne by Prime Contractor. Prime Contractor shall be solely responsible for protecting existing Work on adjacent properties and shall obtain all required permits for shoring and excavations near property lines.

**3.11.2 Structural Members.** New or existing structural members and elements, including reinforcing bars and seismic bracing, shall not be cut, bored, or drilled except by written authority of the Architect. Work done contrary to such authority is at the Prime Contractor's risk and subject to replacement at its own expense without reimbursement under the Contract. The Prime Contractor shall be solely responsible for any delay associated with approval by applicable agencies, the Architect or Architect's consultants of any unauthorized Work.

**3.11.3 Subsequent Removal.** Permission to patch any areas or items of the Work shall not constitute a waiver of the District's or the Architect's right to require complete removal and replacement of the areas or items of the Work if, in the opinion of the Architect or the District, the patching does not satisfactorily restore quality and appearance of the Work or does not otherwise conform to the Contract Documents.

### Section 3.12 CLEANING UP

Prime Contractor at all times shall keep premises free from debris such as waste, dust, excess water, storm water runoffs, rubbish, and excess materials and equipment. Prime Contractor shall not leave debris under, in, or about the premises, but shall promptly remove same from the premises and dispose of it in a lawful manner. Should trash and debris become an identified hazard to students and staff, the Prime Contractor shall immediately remove such a hazard, after written notice from the Construction Manager. Upon failure to remove said hazard within 48 hours of written notice, The District will remove said hazard and issue a deductive change order to the Prime Contractor for the cost to perform such Work.

Prime Contractor shall remove rubbish and debris resulting from the Work on a daily basis. Prime Contractor shall maintain the structures and the Project Site in a clean and orderly condition at all times until acceptance of the Project by the District. Prime Contractor shall keep its access driveways and adjacent streets, sidewalks, gutters and drains free of rubbish, debris and excess water by cleaning and removal each day.

### Section 3.13 ACCESS TO WORK

The Prime Contractor shall provide the District, the Construction Manager, the Architect, and the Project Inspector access to the Work in preparation and progress wherever located. Prime Contractor shall provide safe and proper facilities for such access so that District's representatives may perform their functions.

### Section 3.14 ROYALTIES AND PATENTS

**3.14.1 Payment and Indemnity for Infringement.** Prime Contractor shall hold and save the District, Construction Manager and their respective officers, agents, and employees, the Architect, and the Architect's consultants harmless from liability of any nature or kind, including cost and expense, for or on account of any patented or unpatented invention, process, article, or appliance manufactured or used in the performance of the Contract, including its use by the District, unless otherwise specifically provided in the Contract Documents, and unless such liability arises from the sole negligence, or active negligence, or willful misconduct of the District, the Construction Manager, the Architect, or the Architect's consultants.

**3.14.2 Review.** The review by the Architect of any method of construction, invention, appliance, process, article, device, or material of any kind shall be for its adequacy for the Work and shall not be an approval for the use by the Prime Contractor in violation of any patent or other rights of any person or entity.

### Section 3.15 INDEMNIFICATION

**3.15.1 Indemnification of District.** Prime Contractor shall defend, indemnify and hold harmless District, Architect, Construction Manager, Project Inspector, the State of California and their officers, employees, agents and independent contractors (each a "District Indemnitee")



from all claims, demands, actions, liens, judgments, damages, losses, costs or expenses (including, without limitation, attorneys' fees), or other liabilities of any nature: (I) arising from death, personal injury or property damage that occurs in connection with the performance of the Work by the Prime Contractor or its Subcontractors; or (ii) arising from any act, omission, or breach by the Prime Contractor or any of its officers, employees, agents and Subcontractors in connection with the Work or performance of the Contract by the Prime Contractor or its Subcontractors. The foregoing shall include, without limitation, all claims, demands, actions, liens, judgments, damages, losses, costs or expenses, or other liabilities incurred by reason of:

- (i) Liability for (a) death or bodily injury to persons; (b) damage or injury to, loss (including theft), or loss of use of, any property; (c) any failure or alleged failure to comply with any provision of law or the Contract Documents; or (d) any other loss, damage or expense, sustained by any person, firm or corporation or in connection with the Work called for in the Contract Documents.
- (ii) Any bodily injury to or death of persons or damage to property caused by any act, omission or breach of Prime Contractor or any person, firm or corporation employed by Prime Contractor, either directly or by independent contract, including all damages or injury to, loss (including theft), or loss of use of, any property, sustained by any person, firm or corporation, including District, arising out of or in any way connected with Work covered by the Contract Documents, whether said injury or damage occurs either on or off District property.
- (iii) Any dispute between Prime Contractor and any Subcontractor, supplier, surety or other party, including, without limitation, any failure or alleged failure of the Prime Contractor (or any person hired or employed directly or indirectly by the Prime Contractor) to pay any Subcontractor or material suppliers of any tier or any other person employed in connection with the Work and/or filing of any stop payment notice or mechanic's lien claims.
- (iv) Breach of any warranty, express or implied.
- (v) Failure of the Prime Contractor or its Subcontractors to comply with any applicable governmental law, rule, regulation, or other requirement.
- (vi) Products installed in or used in connection with the Work.

**3.15.2 Defense of District.** Prime Contractor, at its own expense, cost, and risk, shall defend any and all claims, actions, suits, or other proceedings within the scope of Subsection 3.15.1 that may be brought or instituted against any District Indemnitee, and shall pay or satisfy any judgment that may be rendered against any such District Indemnitee in any such action, suit or other proceedings. Any defense of the District shall be by competent and experienced legal counsel reasonably satisfactory to the District, but selected, retained and compensated by the Prime Contractor.

**3.15.3 Limitation on Prime Contractor Liability.** Notwithstanding anything to the contrary, the Prime Contractor shall not be responsible pursuant to this Section 3.15 to the extent a claim, demand, action, lien, judgment, damage, loss, cost or expense, or other liability is the result of the active negligence or willful misconduct of the District.

**3.15.4 Subcontractor Indemnification of District.** Prime Contractor shall ensure that its contract with each Subcontractor contains provisions requiring the Subcontractor to defend, indemnify and hold harmless the District Indemnitees to the same extent as set forth in this Section.

## Section 3.16 RULES OF CONDUCT

**3.16.1 Personal Behavior.** Each person performing any of the Work or present on the Project Site, whether employed by Prime Contractor, any Subcontractor, Architect, engineer, Construction Manager, or other party, when on or at the Project Site, shall adhere to the following rules of conduct:

- (i) Professional and courteous conduct is expected and shall be displayed at all times.
- (ii) Interaction with students, staff, and/or other visitors is prohibited with the exception of designated administrators.
- (iii) The use of profanity and/or disparaging language shall not be tolerated.
- (iv) Employees of the Prime Contractor and all Subcontractors will be issued a badge by the District or designee, as an individual means of identification. The badge is to be worn at all times while on the District's property. The badge shall be visibly noticeable and located on the front of the individual's shirt. All badges are required to be returned to the District or designee at the completion of the project as part of the final pay application requirements.
- (v) Employees of the Prime Contractor and all Subcontractors shall remain in the immediate vicinity of his/her Work and shall not stray to other areas of the property that do not involve their company's scope of Work. All restroom facilities, including student and staff, are not to be used. The Prime Contractor is responsible for mobilizing to the Project Site its own portable restroom.
- (vi) All Prime Contractor and all Subcontractors vehicles must be parked each day in the designated area prior to the start of the school day and removed after the end of the school day. If for some unforeseen reason a vehicle needs to be removed during school hours, the vehicle shall have lights and flashers engaged, and a "spotter," provided by the Prime Contractor and/or Subcontractor, leading the vehicle off of the District's property. At no time shall the vehicle exceed 5 mph.

(vii) Each prime contractor shall provide and coordinate with the District's Construction Manager all traffic and pedestrian control for Contractor's own operations, including that of suppliers. Any special permits for this requirement will be the contractor's responsibility.

(viii) Each prime contractor shall budget a minimum of five man hours per week for site cleanup for the duration of the project, whether work is being performed or not.

(ix) The District's property is a drug-free workplace. This policy shall be strictly enforced.

(x) Alcoholic beverages are prohibited from being brought on or consumed on any portion of the District's property.

(xi) The use of any tobacco products on the District's property is strictly prohibited.

(xii) Any lewd, obscene or otherwise indecent acts, words, or behavior by any employee of the Prime Contractor or any Subcontractor shall not be tolerated.

(xiii) Employees of the Prime Contractor and all Subcontractors shall conform to a dress code whereby no clothing that contains violent, suggestive, derogatory, obscene, or racially based material may be worn. This interpretation will be made by the District or designee. Garments, accessories or personal grooming artifacts with slogans, graphics, or pictures promoting drugs, alcohol, tobacco, or any other controlled substances that are prohibited to minors shall not be allowed. Tank top/midriff shirts and shorts of any kind are not allowed while on the District's property.

**3.16.2 Communications.** The Prime Contractor and all Subcontractors are responsible for their own means of communication including, but not limited to, telephone, cell phone, and fax machine. At no time are the District's communication systems to be used.

**3.16.3 Vehicles.** All Prime Contractor and Subcontractors' personal vehicles, work vehicles and equipment are the responsibility of the individual owner and/or his or her company. Any damage that occurs to the vehicles and/or equipment while on the District's property is not the responsibility of the District and, therefore, any claims for damages will not be acknowledged.

**3.16.4 Access to Project Site.** Only personnel working on the Project will be allowed to enter the Project Site. No transient vendors, portable food service entities or others will be allowed to enter the campuses.

**3.16.5 Not Exclusive Requirements.** The rules of conduct set forth in this Section 3.16 are in addition to any other such requirements set forth elsewhere in the Contract Documents.

**3.16.6 Non-Compliance.** If any person at or on the Project Site by reason of the Prime Contractor or any of its Subcontractors fails to comply with any of the rules of conduct set forth in this Section 3.16 or elsewhere in the Contract Documents, upon direction by the District, the Prime Contractor shall immediately remove such person from the Project Site, and such person may not return to the Project Site without the express written consent of the District. The Prime Contractor's failure to comply with these provisions shall be deemed a breach of its obligations pursuant to the Contract.

## **PART 4 ADMINISTRATION OF THE CONTRACT**

### **Section 4.1 ADMINISTRATORS**

**4.1.1 Architect.** The Architect will be a District representative during all phases of the planning, design, bidding, construction and close-out of the Project. The Architect is charged with general observation of the Work and interpretation of the Contract Documents, as well as other duties set forth in the agreement between the District and the Architect. The Architect will advise the District regarding compliance with the Contract Documents and is authorized to stop the Work as the Architect determines necessary. Communications from the District to bidders prior to award of a contract for the Project may be directed through the Architect.

**4.1.2 Construction Manager.** If so indicated in the Special Conditions, the District has contracted for construction management services to be provided by the Construction Manager.

**4.1.2.1 *District Representative.*** The Construction Manager will be a District representative during all phases of the bidding, construction and close-out of the Project. The Construction Manager will advise and consult with the District. All communications from the Prime Contractor to the District or the Architect shall be directed through the Construction Manager. All communications to the Prime Contractor from the District or the Architect shall be directed through the Construction Manager except as determined by the District or as set forth in the District's agreements with the Construction Manager and/or the Architect.

**4.1.2.2 *Construction Manager Access.*** The Construction Manager shall at all times have access to the Work wherever it is in preparation and progress, whether on-site or off-site. The Prime Contractor shall provide facilities for such access so that the Construction Manager may perform its functions under the Contract Documents.

**4.1.2.3 *Construction Manager Responsibilities.*** The Construction Manager, under the direction of the District and in cooperation with the Architect, shall provide services in accordance with the agreement between the District and the Construction Manager, which services may include, but are not limited to:

- (i) Administrative, management and related services as required to coordinate the Work of the Prime Contractor with the work of any other contractors and with the activities and responsibilities of the Construction Manager, the District and the Architect, in efforts to ensure completion of the Project in accordance with the District's objectives for cost, time and quality.
- (ii) Scheduling and conducting pre-construction, construction, and progress meetings to discuss such matters as procedures, progress problems and scheduling.
- (iii) Determining whether the Work of the Prime Contractor is being performed in accordance with the requirements of the Contract Documents and endeavoring to guard against defects and deficiencies in the Work.
- (iv) Informing the District and the Architect of Work believed not to conform to Contract Documents.
- (v) Making recommendations to the Architect regarding any special inspection or testing of any Work that does not conform to the Contract Documents, whether or not such Work is then fabricated, installed or completed.
- (vi) Consulting with the Architect and District if the Prime Contractor requests interpretations of the meaning and intent of the Drawings and Specifications, and assisting in the resolution of questions that may arise.
- (vii) Receiving Certificates of Insurance from the Prime Contractor and its Subcontractors, and forwarding them to the District.
- (viii) In collaboration with the Architect, establishing and implementing procedures for expediting the processing and approval of shop drawings, product data, samples and other submittals.
- (ix) Receiving and reviewing all shop drawings, product data, samples and other submittals; coordinating those submittals with information contained in related documents; and transmitting the same to the Architect for review and approval.
- (x) Preparing, maintaining and monitoring the Project schedule and all critical path items.
- (xi) Ensuring Project Site clean-up and providing and removing temporary utilities, fencing, barricades, planking, sanitary facilities and similar temporary facilities on the Project Site.

**4.1.2.4 Construction Manager Authority.** In addition to any authority the Architect may have, the Construction Manager has the authority to reject Work that does not conform to the Contract Documents, and to require special inspection or testing. Whenever, in the Construction Manager's opinion, it is considered necessary or advisable for the implementation of the intent of the Contract Documents, the Construction Manager may require special inspection or testing of the Work whether or not such Work is then fabricated, installed or completed. The Construction Manager has the authority to suspend or stop the Work, in whole or in part, if the Prime Contractor fails to correct defective Work as required or fails to carry out the Work or to supply a sufficient amount of skilled labor or suitable materials or equipment in such a way that assures that the Work will be completed in accordance with the Contract Documents. The Construction Manager also has the authority to suspend the Work, in whole or in part, for such periods as the Construction Manager may deem necessary to coordinate the Work with the Work of the District or separate contractors or for conditions considered unfavorable for the suitable prosecution of the Work. The Prime Contractor and each of its Subcontractors shall immediately comply with the orders of the Construction Manager and, if the Work is stopped, shall not resume the Work until ordered by the Construction Manager.

**4.1.2.5 Limitations on Authority and Responsibility.** The District must approve all Change Orders, and the Construction Manager is not authorized to amend any of the Contract Documents or order any change to the Work if the change would require a Change Order. In no event shall the Construction Manager be responsible for constructions means, methods, techniques, and procedures employed by the Prime Contractor in the performance of the Contract, and the Construction Manager shall not be responsible for the failure of the Prime Contractor to carry out Work in accordance with the Contract Documents.

**4.1.3 Project Inspector.** The Project Inspector(s) employed by the District and approved by the Division of the State Architect shall provide continuous observation of the Work as described in more detail in Section 4.3 of these General Conditions.

**4.1.4 Replacement Representatives.** If the District terminates the Architect or Construction Manager, the District may appoint a replacement to perform the functions of the terminated professional. The status of the replacement Architect or Construction Manager under the Contract Documents shall be the same as that of the former Architect or Construction Manager.

## Section 4.2 ADMINISTRATION OF THE CONTRACT

**4.2.1 Status.** Pursuant to Title 24 and Title 21 of the California Code of Regulations and as required pursuant to the Field Act, Education Code 17280 *et seq.* the Construction Manager and the Architect will provide administration of the Contract Documents and the Work, and will be the District's representative during construction, as well as during the two (2) year period following the commencement of any warranties. The Construction Manager and the Architect will have authority to act on behalf of the District only to the extent provided in the Contract Documents.

**4.2.2 Architect's Site Visits.** The Architect will visit the Project Site at intervals necessary in the judgment of the Architect to become generally familiar with the progress and quality of the Work and to determine in general if the Work is being performed in accordance with the Contract Documents.

**4.2.3 Limitations of Construction Responsibility.** The Architect or Construction Manager shall not have control over, charge of, or be responsible for construction means, methods, techniques, procedures, fabrication, procurement, shipment, delivery, receipt, installation, or for safety precautions and programs in connection with the Work, since these are solely the Prime Contractor's responsibility under the Contract Documents. The Architect or Construction Manager shall not be responsible for the Prime Contractor's, Subcontractors', material or equipment suppliers', or any other person's failure to carry out the Work in accordance with the Contract Documents. The Architect or Construction Manager shall not have control over or charge of acts or omissions of the Prime Contractor, Subcontractors, their agents or employees, or any other persons or entities performing or supplying portions of the Work. The Prime Contractor shall not be relieved of obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect or Construction Manager in the Architect or Construction Manager's administration of the Contract Documents, or by tests, inspections, or approvals required or performed by persons other than the Prime Contractor.

**4.2.4 Communications Facilitating Contract Administration.** Except as otherwise provided in the Contract Documents or when direct communications are warranted by special circumstances, the District and the Prime Contractor shall communicate through the Construction Manager. Where direct communication is necessary between the District and the Prime Contractor, the District's communication shall be through the District's authorized designee. The Construction Manager shall be promptly informed, and shall receive copies of all written communications. Prime Contractor shall not rely upon any communication from the District that is not from the District's authorized designee. Communications by and with the Architect's consultants shall be through the Construction Manager. Communications by and with Subcontractors and material or equipment suppliers shall be through the Prime Contractor.

**4.2.5 Payment Applications.** The Construction Manager will review and make recommendations to the District regarding the amounts due the Prime Contractor on the Certificates for Payment pursuant to Part 9 and subject to the Project Inspector's approval and Architect or Construction Manager's observation.

**4.2.6 Rejection of Work.** In addition to the rights, duties, and obligations of the Project Inspector under this Part, the Architect or Construction Manager may recommend to the District that the District reject Work which does not conform to the Contract Documents. Whenever the Architect or Construction Manager considers it necessary or advisable to achieve the intent of the Contract Documents, the Architect or Construction Manager may recommend to the District that the District require additional inspection or testing of the Work in accordance with Section 13.5, whether or not such Work is fabricated, installed, or completed. However, neither this authority of the Architect or Construction Manager nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the

Architect or Construction Manager to the Prime Contractor, Subcontractors, material and equipment suppliers, their agents or employees, or other persons performing portions of the Work.

**4.2.7 Warranties Upon Completion.** The Architect and Construction Manager, in conjunction with the Project Inspector, will conduct field reviews of the Work to determine the date of completion, shall receive and forward to the District for the District's review and records written warranties and related documents required by the Contract and assembled by the Prime Contractor, and will issue a final Certificate for Payment when the Architect and Construction Manager believe the Work has been completed in compliance with the requirements of the Contract Documents and after receiving and filing the Contractor's DSA form 6. The handling by the Architect or Construction Manager of such warranties, maintenance manuals, or similar documents shall not diminish or transfer to the Architect or Construction Manager any responsibilities or liabilities required by the Contract Documents of the Prime Contractor or other entities, parties, or persons performing or supplying the Work.

The Construction Manager and the Architect will conduct a field review of the Prime Contractor's comprehensive list of items to be completed or corrected (final punch-list) and one (1) follow-up field review if required. The cost incurred by the District for further field reviews or the preparation of further punch-lists by the Architect or Construction Manager shall be invoiced to the Prime Contractor and deducted from the final payment.

**4.2.8 Interpretation.** The Architect will interpret and decide matters concerning performance and requirements of the Contract Documents. The Architect's decision in such matters is final for the purpose of the Prime Contractor proceeding with the Work.

**4.2.9 Additional Instructions.**

**4.2.9.1** *Typical Parts and Sections.* Whenever typical parts or sections of the Work are completely detailed on the Drawings, and other parts or sections which are essentially of the same construction are shown in outline only, the complete details shall apply to the Work which is shown in outline.

**4.2.9.2** *Dimensions.* Dimensions of Work shall not be determined by scale or rule. Figured dimensions shall be followed at all times. If figured dimensions are lacking on Drawings, Architect shall supply them on request. The Architect's decisions on matters relating to aesthetic effect will be final.

Section 4.3 PROJECT INSPECTOR

**4.3.1 General.** One or more Project Inspectors employed by the District and approved by the Division of the State Architect will be assigned to the Work in accordance with the requirements of Title 24 of the California Code of Regulations. The Project Inspector(s) duties are as specifically defined in Title 24.



**4.3.2 Project Inspector's Duties.** All Work shall be under the observation of the Project Inspector. The Project Inspector shall have unlimited access to any or all parts of the Work at any time. The Prime Contractor shall furnish the Project Inspector such information as may be necessary to keep the Project Inspector fully informed regarding progress and manner of Work and character of materials. The Prime Contractor shall forward inspection requests, in writing, forty-eight (48) hours in advance of any required inspections. Such observations shall not, in any way, relieve the Prime Contractor from responsibility for full compliance with all terms and conditions of the Contract, or be construed to lessen to any degree the Prime Contractor's responsibility for providing efficient and capable superintendence. The Project Inspector is not authorized to make changes in the Drawings or Specifications nor shall the Project Inspector's approval of the Work and methods relieve the Prime Contractor of responsibility for the correction of subsequently discovered defects, or from its obligation to comply with the Contract Documents.

**4.3.3 Project Inspector's Authority to Reject or Stop Work.** The Project Inspector shall have the authority to reject Work whenever provisions of the Contract Documents are not being complied with, and Prime Contractor shall instruct its Subcontractors and employees accordingly. In addition, the Project Inspector may stop any Work that poses a probable risk of harm to persons or property. The Prime Contractor shall instruct its employees, Subcontractors, material and equipment suppliers, *et cetera*, accordingly. The absence of any Stop Work order or rejection of any portion of the Work shall not relieve the Prime Contractor from any of its obligations pursuant to the Contract Documents.

**4.3.4 Project Inspector's Facilities.** The Construction Manager shall provide the Project Inspector with the temporary facilities as required under Division 1 of the Specifications.

**4.3.5 Testing Times.** The District will provide inspection and testing at its cost during the normal eight (8) hour day Monday through Friday (except holidays). Work by the Prime Contractor outside of the normal eight (8) hour day shall constitute an authorization from the Prime Contractor to the District to provide inspection and testing as required outside of the normal eight (8) hour day. Prime Contractor shall reimburse District for any additional costs associated with inspection and testing (including re-inspection and re-testing) outside the normal eight-hour day and for any retests caused by the Prime Contractor.

#### Section 4.4 ADDITIONAL CHARGES FOR PROFESSIONAL SERVICES

If at any time prior to the completion of the requirements under the Contract Documents, the District is required to provide or secure additional professional services for any reason by any act of the Prime Contractor, the Prime Contractor shall be invoiced by the District for any costs incurred for any such additional services, which costs shall be deducted from the next progress payment. Such invoicing shall be independent from any other District remedies and shall not be considered a waiver of any District rights or remedies. As an example, the District's remedy of assessing and collecting liquidated damages shall not preclude the District from obtaining reimbursement from the Prime Contractor and/or Surety for the cost of additional services incurred under this Section. If payments then or thereafter due to the Prime Contractor are not

sufficient to cover such amounts, the Prime Contractor shall pay the difference to the District. Additional services shall include, but shall not be limited to, the following:

- (i) Services made necessary by the default of the Prime Contractor.
- (ii) Services made necessary due to the defects or deficiencies in the Work of the Prime Contractor.
- (iii) Services required by failure of the Prime Contractor to perform according to any provision of the Contract Documents.
- (iv) Services in connection with evaluating substitutions of products, materials, equipment, and Subcontractors proposed by the Prime Contractor, and making subsequent revisions to Drawings and Specifications, and providing other documentation required (except for the situation where the specified item is no longer manufactured or available).
- (v) Services for evaluating and processing Claims submitted by the Prime Contractor in connection with the Work outside the established Change Order process.
- (vi) Services required by the failure of the Prime Contractor to prosecute the Work in a timely manner in compliance within the specified time of completion.
- (vii) Services in conjunction with the testing, adjusting, balancing and start-up of equipment other than the normal amount customarily associated for the type of Work involved.
- (viii) Services in conjunction with more than one (1) re-review of submittals of shop drawings, product data, samples, *et cetera*.

#### Section 4.5 CLAIMS AND LEGAL PROCEEDINGS

**4.5.1 Definition of Claim.** A "Claim" means a separate demand by the Prime Contractor for (i) time extension, (ii) payment of money or damages arising from Work done by or on behalf of the Prime Contractor pursuant to the Contract and payment of which is not otherwise expressly provided for or to which the claimant is not otherwise entitled, or (iii) an amount the payment of which is disputed by the District. A Claim involving a request or demand for extension of time may not be filed prior to the Prime Contractor complying with all requirements of Section 8.4 of these General Conditions.

**4.5.2 Mandatory Timeline for Filing Claim.** The Prime Contractor must submit a Claim within fourteen (14) calendar days of the date the Prime Contractor becomes aware or reasonably should have been aware of any basis for the Claim. If the Prime Contractor fails to submit a Claim within such fourteen (14) day period, the Prime Contractor shall be deemed to have forfeited and waived any and all rights to assert the Claim on any basis, or to initiate and

pursue file any legal action or other proceeding arising from any such basis. In addition, any Claim submitted after the District issues final payment to the Prime Contractor in accordance with the Contract Documents shall be null and void and will be rejected.

FAILURE TO SUBMIT A CLAIM WITHIN THE TIME PERIODS REQUIRED PURSUANT TO THIS ARTICLE SHALL RESULT IN FORFEITURE AND WAIVER BY THE PRIME CONTRACTOR OF ANY AND ALL RIGHTS TO ASSERT THE CLAIM ON ANY BASIS OR TO INITIATE AND PURSUE ANY LEGAL ACTION OR OTHER PROCEEDING RELATED THERETO.

**4.5.3 Claim Format.** Each Claim shall be set forth in the format and with the supporting documentation described as follows:

- (I) A cover letter including a summary of the factual basis for the Claim, the amount of the Claim, and a summary of the basis for the Claim, including the specific clause and Section under the Contract relevant to the Claim;
- (ii) An attachment to the cover letter setting forth detailed analyses, justifications, arguments and legal authorities supporting the Claim, with cross-references to documents submitted in support of the Claim; and
- (iii) All documents relevant to and/or supporting the Claim, including, by way of example and not as a limitation, any Specifications, Drawings, response to a Request for Interpretation, analysis of Claim cost, analysis of the affect on the critical path, a chronology of events and related correspondence, and/or daily reports and logs.

**4.5.4 Mandatory Certification of Claim.**

**4.5.4.1** *Submission with Claim.* The Prime Contractor must certify each Claim, in writing, by submitting the certification described in this Subsection 4.5.4 with the Claim. Such certification is a required element of each Claim and, if the Prime Contractor fails to submit the required certification, the Prime Contractor shall be deemed to have forfeited and waived any and all rights to assert the Claim on any basis, or to initiate and pursue file any legal action or other proceeding arising from any such basis.

FAILURE TO CERTIFY A CLAIM IN ACCORDANCE WITH THIS ARTICLE SHALL RESULT IN FORFEITURE AND WAIVER BY THE PRIME CONTRACTOR OF ANY AND ALL RIGHTS TO ASSERT THE CLAIM ON ANY BASIS OR TO INITIATE AND PURSUE ANY LEGAL ACTION OR OTHER PROCEEDING ARISING THEREFROM.

**4.5.4.2** *Content of Certification.* The certification to be submitted with each Claim must be in writing and must certify under penalty of perjury that:

- (i) The Prime Contractor has reviewed the Claim and it is filed in good faith;

- (ii) Supporting data are accurate and complete to the best of the Prime Contractor's knowledge and belief;
- (iii) The amount of the Claim accurately reflects, to the best of the Prime Contractor's knowledge and belief, the amount for which the District is liable; and
- (iv) The Prime Contractor is familiar with Government Code Sections 12650 *et seq.* and Penal Code Section 72 relating to false and fraudulent claims, and is aware that such claims may lead to substantial fines and/or imprisonment.

**4.5.4.3**      *Execution of Certification.* The Prime Contractor's authorized representative (determined as provided in Section 12 of the Instructions for Bidders) must sign the certification under penalty of perjury and have such signature notarized.

**4.5.5 Submitting the Claim.** After being prepared and certified in accordance with this Section 4.5, Claims must be delivered to the District, with copies thereof sent to the Architect and the Construction Manager, via personal delivery (signature of receiving person requested) or certified or registered U.S. Mail (postage pre-paid and signature of receiving person requested).

**4.5.6 Claims for \$375,000 or Less.** Each Claim within the scope of Public Contract Code Section 20104(b)(2) and for an amount less than or equal to \$375,000 shall be resolved in accordance with the procedures set forth in Public Contract Code Section 20104 *et seq.* ("PCC Claims Procedures"), as those may be amended from time to time, and the PCC Claims Procedures are incorporated herein by this reference. In summary, the PCC Claims Procedures specify requirements and procedures for filing a claim, for requesting additional information, and for responding to the claim, as well as for disputing the response to the claim. Different timelines and procedures apply for claims of less than \$50,000 and for claims of \$50,000 to \$375,000. In addition, the PCC Claims Procedures specify requirements for civil actions filed to resolve claims. The PCC Claims Procedures do not apply to tort claims or alter time periods for filing of tort claims in accordance with the Government Code. For additional information, the Prime Contractor shall refer to Public Contract Code Section 20104 *et seq.*

NOTHING IN THIS SUBSECTION 4.5.6 OR IN THE PCC CLAIMS PROCEDURES SHALL BE DEEMED OR CONSTRUED TO SUPERSEDE THE REQUIREMENTS OF SUBSECTIONS 4.5.2, 4.5.3, 4.5.4, OR 4.5.5 OF THESE GENERAL CONDITIONS, WHICH REMAIN APPLICABLE TO EACH AND EVERY CLAIM ARISING FROM THE WORK OR RELATING TO THE CONTRACT.

**4.5.7 Additional Information Relevant to Claim.** Except as expressly limited by the PCC Claims Procedures when those are applicable, at all times that a Claim is pending, the District, Architect or Construction Manager may request that the Prime Contractor provide additional information relevant to the Claim that the District reasonably believes is necessary or convenient for analysis or evaluation of the Claim. The Prime Contractor shall provide such additional information within fourteen (14) days of receiving the District's request, and any time

period in which the District is to respond to the Claim shall be extended by the amount of time required for the Prime Contractor to provide the requested information.

**4.5.8 Initial Review of Claim.** Except as expressly limited by the PCC Claims Procedures when those are applicable, the Architect and Construction Manager will review each Claim and take one or more of the following preliminary actions within twenty (20) days of receipt of the Claim: (i) request additional information; (ii) if necessary due to the complexity and/or number of issues, provide a schedule indicating when the Architect and Construction Manager expect to take action; (iii) recommend that the District reject the Claim in whole or in part, stating reasons for rejection; (iv) recommend that the District approve the Claim; or (v) suggest a compromise of the Claim. Regardless of whether a Claim is processed pursuant to the PCC Claims Procedures, the District may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim and request the surety's assistance in resolving the Claim. If the Architect and Construction Manager request additional information, the Prime Contractor shall provide such information in accordance with Subsection 4.5.7.

**4.5.9 Approval of Claim After Initial Review.** If the District accepts a recommendation to approve a Claim, the Architect and Construction Manager will provide notice to the Prime Contractor and will prepare or obtain and process a Change Order that appropriately documents the resolution of the Claim.

**4.5.10 Rejection of Claim After Initial Review.** If the District accepts a recommendation to reject a Claim, in whole or in part, the Architect and Construction Manager will provide notice to the Prime Contractor. If the District rejects the Claim in part only, the Architect and Construction Manager will prepare or obtain and process a Change Order that appropriately documents the partial resolution of the Claim. Subject to the provisions of Subsection 4.5.14, to the extent the District rejects a Claim, in whole or in part, without initiating informal efforts to resolve the Claim in accordance with Subsection 4.5.11, the Prime Contractor may pursue any remedy available to the Prime Contractor in accordance with the Contract.

**4.5.11 Informal Efforts to Resolve Claim.** Notwithstanding Subsection 4.5.10, in the sole discretion of the District, if the Architect and Construction Manager have recommended that the District reject a Claim, in whole or in part, the District may request that the Prime Contractor meet with the District, Architect and Construction Manager. The District also may request such meeting if the Architect and Construction Manager have suggested a compromise to a Claim. If so requested, the Prime Contractor shall so meet, and the meeting shall be held within ten (10) days of the District's request. The purpose of such meeting, in either case, will be to provide an opportunity for the parties to attempt to resolve the Claim on an informal basis. Except as expressly limited by the PCC Claims Procedures when those are applicable, if the District has requested such meeting, completion of the informal efforts to resolve the Claim shall be a condition precedent to any action, arbitration, or other legal proceeding arising from a Claim. The District and the Prime Contractor may bring to such meeting any documents or other materials related to the basis or bases for the Claim and any individual they believe necessary or convenient for purposes of the discussions. The individuals present at the meeting shall make good-faith efforts to resolve the Claim. If the District and the Prime Contractor are unable to resolve the Claim during the meeting, but agree that further informal efforts would be

productive, they may schedule additional meetings or discussions for purposes of continuing the efforts to resolve the Claim. If, not less than thirty (30) days after the initial meeting, either the District or the Prime Contractor concludes that additional informal efforts to resolve the Claim would be unavailing, it shall provide written notice to the other. In the event such written notice is given, neither the District nor the Prime Contractor shall be required to continue informal attempts to resolve the Claim.

**4.5.12 Documentation of Compromise.** If the District and Prime Contractor agree to compromise a Claim, the Architect and Construction Manager will prepare or obtain and process a Change Order that appropriately documents the resolution of the Claim.

**4.5.13 Architect Ruling if Fail to Resolve Claim.** Except as provided by the PCC Claims Procedures when those are applicable, if a Claim or portion thereof has not been resolved pursuant to Subsection 4.5.11, the Architect, in consultation with the Construction Manager, will rule on the unresolved Claim or portion thereof and provide it in writing to the District and the Prime Contractor. The Architect and Construction Manager shall issue its ruling within thirty (30) days of the notice given pursuant to Subsection 4.5.11 terminating informal efforts to resolve the Claim. The Architect's ruling shall specify its decision in regard to each basis for the Claim, as set forth in the Claim, and shall specify any change in the Contract Price and/or Contract Time. Regardless of whether issued pursuant to this Subsection or the PCC Claims Procedures, the Architect's ruling on a Claim shall be final. Subject to the provisions of Subsection 4.5.14, if the Prime Contractor disagrees with the Architect's ruling, the Prime Contractor may pursue any remedy available to the Prime Contractor in accordance with the Contract.

**4.5.14 Conditions Precedent to Further Proceedings.** Except as expressly limited by the PCC Claims Procedures when those are applicable, a rejection of a Claim, in whole or in part, pursuant to Subsection 4.5.10 or a ruling by the Architect on the Claim in accordance with Subsection 4.5.13, whichever applies, shall be required as a condition precedent to the initiation of any action, arbitration or other proceeding arising from the basis for the Claim. Such requirement applies to all matters arising from the execution and progress of the Work and/or the extent to which the Work has been completed. Notwithstanding the foregoing, such rejection or ruling shall not be a condition precedent to initiation of any such action, arbitration or other proceeding arising from the basis for the Claim if thirty (30) days has passed since the Prime Contractor provided written notice to the District, Architect and Construction Manager of, and within such thirty (30) day period they have failed to cure, any of the following occurrences: (i) the Architect and Construction Manager have failed to take any action in accordance with Subsection 4.5.8 or within any time limit specified in accordance with Subdivision (ii) of Subsection 4.5.8; (ii) the Architect and Construction Manager have failed to take any action within the extended time determined in accordance with Subsection 4.5.7; (iii) the Architect and Construction Manager have failed to take any action within an agreed time limit; (iv) the Claim relates to a stop payment notice not arising from any extra or changed work for which approval has not been provided; or (v) the District has the right and/or obligation to impose or assess remedies and/or penalties provided for by statute given the District's status as a public entity.

**4.5.15 No Right to Stop Work.** Neither the existence of any dispute, nor the initiation of any Claim or action, arbitration or other legal proceeding arising from the Claim, shall be a basis for stopping the Work, and the Prime Contractor shall promptly and diligently proceed and/or continue with all Work under the Contract or as required by the District despite the existence of any dispute or the filing of any Claim or legal proceeding, and the District shall continue to make any undisputed payments in accordance with the Contract. If a Claim is not resolved in accordance with the Contract, the Prime Contractor shall neither rescind the Contract nor stop the progress of the Work, and Prime Contractor's sole remedy shall be to initiate an action or other legal proceedings as permitted under Contract after the Project has been completed, but not before.

**4.5.16 Resolving Disputes Through Binding Arbitration.** The District and the Prime Contractor may agree to submit individual disputes or Claims to binding arbitration. The District and Prime Contractor shall agree on an arbitrator within thirty (30) days after agreeing to arbitration, but if they are unable to so agree, they shall request that the presiding judge of the Superior Court for the County of San Diego designate an arbitrator experienced in public construction. Each party to the arbitration shall pay its proportionate share of the cost of the arbitration. The arbitrator shall establish procedures and rules to be followed in conducting the arbitration, which, at a minimum, shall specify that the arbitrator shall adhere to and apply all substantive statutory, regulatory and case law that is applicable to the dispute. If a party petitions to confirm, correct, or vacate the award as provided by Chapter 4 of Title 9 of the Code of Civil Procedure (commencing with Section 1285), the prevailing party shall be entitled as part of its costs to reasonable attorneys' fees and expenses to be fixed by the Court. The surety for the Prime Contractor's performance bond and/or payment bond shall be made a party to any such arbitration and shall be fully bound by any decision of the arbitrator.

**4.5.17 Resolving Disputes in Court of Competent Jurisdiction.** If any Claim is not resolved in accordance with the procedures set forth in this Section 4.5, subject to compliance with all such procedures as required, the Claim may be submitted to a court of competent jurisdiction in the County of San Diego, for resolution through bench trial. No such action may be initiated until after the Project has been fully completed and accepted by the District, earlier completion as defined in Subsection (c) of Public Contract Code Section 7107, or termination of the Prime Contractor from the Project prior to completion; and any statutory limitation on filing of such action shall be tolled commencing with completion of all applicable procedures in accordance with this Section 4.5 and until the date an action may be filed as provided in this Subsection 4.5.17.

**4.5.18 Remedies Not Limited.** The rights and remedies available in accordance with this Contract are in addition to any rights and remedies available pursuant to applicable laws or regulations; provided that the exercise of any and all such rights and remedies are subject to procedural requirements made applicable by this Section 4.5.

## **PART 5 SUBCONTRACTORS**

### **Section 5.1    DEFINITIONS**

**5.1.1 Subcontractual Relations.** By appropriate agreement, written where legally required for validity, the Prime Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Prime Contractor by terms of the Contract Documents, and to assume toward the Prime Contractor all the same obligations and responsibilities assumed by Prime Contractor pursuant to the Contract Documents. Each subcontract agreement shall preserve and protect the rights of the District, the Construction Manager and the Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights. Where appropriate, the Prime Contractor shall require each Subcontractor to enter into similar agreements with sub-subcontractors. The Prime Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound. Upon written request of the Subcontractor, the Prime Contractor shall identify to the Subcontractor the terms and conditions of the proposed subcontract agreement, which may be at variance with the Contract Documents. Subcontractors shall similarly make copies of applicable portions of such documents available to their respective proposed sub-subcontractors.

**5.1.2 Subcontractor Licenses.** All Subcontractors must be properly licensed by the Contractors State License Board prior to commencing any work on the Project.

**5.1.3 Substitution of Subcontractor.** Substitution of Subcontractors shall be permitted only with District consent and as authorized under Public Contract Code Sections 4107 *et seq.* If the substituted subcontractor requests, District will conduct a hearing on the substitution. No substitution of a Subcontractor may result in any increase in the Contract Price or result in the granting of any extension of time for the completion of the Project. If project is subject to prequalification as identified by CA AB 1565 under the Notice to Bidders (Document 00020), all Mechanical, Electrical, and Plumbing ("MEP") and General Contractor ("A/B") subcontractors must be prequalified at the time of substitution before substituting another MEP or A/B prequalified subcontractor. Subcontractor must have a DIR number.

## **PART 6**

### **CONSTRUCTION BY DISTRICT OR BY SEPARATE CONTRACTORS**

#### **Section 6.1 DISTRICT RIGHT TO PERFORM CONSTRUCTION**

##### **6.1.1 Separate Contracts.**

**6.1.1.1** District reserves the right to let other contracts in connection with this Work. Prime Contractor shall afford other contractors reasonable opportunity for (i) introduction and storage of their materials; (ii) access to the Work; and (iii) execution of their work. Prime Contractor shall properly connect and coordinate its Work with the work of other contractors.

**6.1.1.2** If any part of Prime Contractor's Work depends on proper execution or results of any other contractor, the contractor shall inspect and within forty-eight



(48) hours or less, report to the Construction Manager and the Architect, in writing, any defects in such work that render it unsuitable for proper execution of Prime Contractor's Work. Prime Contractor will be held accountable for damages to District for that work which it failed to inspect or should have inspected. Prime Contractor's failure to inspect and report shall constitute its acceptance of other contractors' work as fit and proper for reception of its Work, except as to defects which may develop in other contractors' work after execution of Prime Contractor's Work.

**6.1.1.3** To ensure proper execution of its subsequent Work, Prime Contractor shall measure and inspect Work already in place and shall at once report to the Construction Manager and the Architect in writing any discrepancy between executed Work as built and the Contract Documents.

**6.1.1.4** Prime Contractor shall ascertain to its own satisfaction the scope of the Project and nature of any other contracts that have been or may be awarded by District in prosecution of the Project and the potential impact of such work on Prime Contractor's schedule.

**6.1.1.5** Nothing herein contained shall be interpreted as granting to Prime Contractor the exclusive occupancy at the Project Site. Prime Contractor shall not unreasonably hinder or delay any other contractor working on the Project Site. If performance of work by another contractor is likely to cause interference with Prime Contractor's performance of the Contract, District shall decide which contractor shall cease work temporarily and which contractor shall continue, or whether work can be coordinated so that contractors may proceed simultaneously.

**6.1.1.6** District shall not be responsible for any damages suffered or extra costs incurred by Prime Contractor resulting directly or indirectly from award or performance or attempted performance of any other contract or contracts at the Project, or caused by any decision or omission of District respecting the order of precedence in performance of contracts.

PRIME CONTRACTOR IS AWARE THAT THE WORK MAY BE SPLIT INTO SEVERAL PHASES AND MAY RELATE TO WORK PERFORMED UNDER SEPARATE CONTRACT. IF THE CONTRACT PROVIDES THAT THE WORK IS SPLIT INTO PHASES, THEN PRIME CONTRACTOR SHALL BE DEEMED TO HAVE MADE ALLOWANCE FOR ANY DELAYS OR DAMAGES WHICH MAY ARISE FROM COORDINATION WITH CONTRACTORS FOR OTHER PHASES. IF ANY DELAYS SHOULD ARISE FROM ANOTHER CONTRACTOR, PRIME CONTRACTOR'S SOLE REMEDY FOR DAMAGES, INCLUDING DELAY DAMAGES, SHALL BE AGAINST THE CONTRACTOR THAT CAUSED SUCH DAMAGE AND NOT THE DISTRICT. PRIME CONTRACTOR SHALL PROVIDE ACCESS FOR OTHER CONTRACTORS AS NECESSARY TO PREVENT DELAYS IN THEIR WORK.

**6.1.2 District's Right to Carry out the Work. See Section 2.2.**

**6.1.3 Designation as Prime Contractor.** If the District awards any separate contract for work on the Project Site, the term “Prime Contractor” as used in the contract documents for that separate contract shall mean the prime contractor identified under that separate contract.

**6.1.4 Prime Contractor Duties.** The Prime Contractor shall have overall responsibility to reasonably coordinate and schedule Prime Contractor’s activities with the activities of the District’s own forces and of each separate contractor with the Work of the Prime Contractor. The Prime Contractor shall participate with other separate contractors and the District in reviewing their construction schedules when directed to do so. Additionally, Prime Contractor shall coordinate with Construction Manager, Architect and Project Inspector to ensure timely and proper progress of Work. Failure to coordinate with other trade contractors and the Construction Manager shall not be grounds for time and cost related Claims.

## Section 6.2 PRESERVATION OF PROJECT SITE AND MATERIAL

The Prime Contractor shall ensure proper safety and storage of all materials, shall be responsible for the improvements, material and equipment on Project Site, and, to the extent relating to its Work, shall be responsible for the Project Site. All risk of loss or damage shall be borne by Prime Contractor during the Work until the date of Completion. The Prime Contractor shall carry adequate insurance in case of calamity and is not entitled to rely on the insurance requirements set forth in the Contract Documents as being adequate coverage in case of calamity.

## Section 6.3 DISTRICT’S RIGHT TO CLEAN UP

If a dispute arises among the Prime Contractor, separate contractors, and the District as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish as described in Section 3.12, the District may clean up and allocate the cost among those it determines are responsible.

# **PART 7 CHANGES IN THE WORK**

## Section 7.1 CHANGES

**7.1.1 No Changes Without Authorization.** There shall be no change whatsoever in the Drawings and Specifications, or in the Work without an executed Change Order, Construction Change Directive, or order by the Architect for a minor change in the Work as herein provided. District shall not be liable for the cost of any extra work or any substitutions, changes, additions, omissions, or deviations from the Drawings and Specifications unless the Governing Board has authorized the same and the cost thereof approved in writing by Change Order or executed Construction Change Directive. The Prime Contractor must submit requests for Change Orders a sufficient amount of time in advance of need in order to avoid delay while accommodating District approval procedures. Any extension of time associated with a change in the Work must be resolved at the time of issuance, and duly adjusted in writing in, the Change Order for such change. The provisions of the Contract Documents shall apply to all

such changes, additions, and omissions with the same effect as if originally embodied in the Drawings and Specifications. Notwithstanding anything to the contrary in this Part 7, all Change Orders shall be prepared and issued by the Architect and shall become effective when executed by the Governing Board, the Architect, the Prime Contractor, and, if necessary, the DSA.

Should any Change Order or Construction Change Directive result in an increase in the Contract Price, the cost of such Change Order or Construction Change Directive shall be agreed to, in writing, in advance by Prime Contractor and District and be subject to the monetary limitations set forth in Public Contract Code Section 20118.4. In the event that Prime Contractor proceeds with any change in Work without first notifying District and obtaining the Architect's and District's consent to a Construction Change Directive or a Change Order, Prime Contractor waives any Claim of additional compensation for such additional work.

PRIME CONTRACTOR UNDERSTANDS, ACKNOWLEDGES, AND AGREES THAT THE REASON FOR THE FOREGOING NOTICE REQUIREMENT IS SO THAT DISTRICT MAY HAVE AN OPPORTUNITY TO ANALYZE THE WORK AND DECIDE WHETHER THE DISTRICT SHALL PROCEED WITH THE CHANGE ORDER OR CONSTRUCTION CHANGE DIRECTIVE, OR ALTER THE PROJECT SO THAT SUCH CHANGE IN WORK BECOMES UNNECESSARY.

**7.1.2 Architect Authority.** The Architect will have authority to order minor changes in the Work not involving any adjustment in the Contract Price, extension of the Contract Time, or a change that is inconsistent with the intent of the Contract Documents. Such changes shall be effected by written Change Order and shall be binding on the District and the Prime Contractor. The Prime Contractor shall carry out such written orders promptly.

## **Section 7.2 CHANGE ORDERS**

A Change Order is a written instrument prepared by the Architect and signed by the District (as authorized by the Governing Board), the Prime Contractor, the Construction Manager, the Architect, and the DSA (if necessary), stating their agreement upon all of the following:

- (I) A description of a change in the Work;
- (ii) The amount of the adjustment in the Contract Price, if any; and
- (iii) The extent of the adjustment in the Contract Time, if any.

## **Section 7.3 CONSTRUCTION CHANGE DIRECTIVES**

**7.3.1 Definition.** A Construction Change Directive is a written order prepared by the Architect and signed by the District, the Construction Manager and the Architect, directing a change in the Work and stating a proposed basis for adjustment, if any, in the Contract Price or Contract Time, or both. The District may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions. If applicable, the Contract Price and Contract Time will

be adjusted as provided in the Construction Change Directive. In the case of a Construction Change Directive being issued, Prime Contractor must commence Work immediately or delays from failure to perform Construction Change Directive shall be the responsibility of Prime Contractor. Any dispute as to the sum of Construction Change Directive or timing of payment shall be resolved pursuant to Section 4.5.

**7.3.2 Use to Direct Change.** The District may issue a Construction Change Directive in the absence of agreement on the terms of a Change Order.

#### Section 7.4 REQUEST FOR INTERPRETATION

**7.4.1 Definition.** A Request for Interpretation or “RFI” is a written request prepared by the Prime Contractor requesting the Architect to provide additional interpretation necessary to clarify or amplify an item that the Prime Contractor believes is not clearly shown or called for in the Drawings or Specifications, or to address problems that have arisen under field conditions.

**7.4.2 Scope.** The RFI shall reference all the applicable Contract Documents including Specification Section, detail, page numbers, drawing numbers, and sheet numbers, *et cetera*. The Prime Contractor shall make suggestions and interpretations of the issue raised by the RFI. An RFI cannot modify the Contract Cost, Contract Time, or the Contract Documents.

**7.4.3 Response Time.** The Prime Contractor shall submit an RFI a sufficient amount of time in advance of need in order to avoid delay while accommodating the Architect’s approval procedures. The Architect will respond to an RFI within ten (10) days after receiving such request or within a reasonable time if due to the complexity and/or number of issues. If the Architect’s response results in a change in the Work, then such change shall be effected by a written Change Order or Construction Change Directive, if appropriate. If the Architect cannot respond to the RFI within a reasonable time, the Architect shall notify the Prime Contractor, with a copy to the Project Inspector and the District, of the amount of time that will be required to respond.

**7.4.4 Costs Incurred.** The Prime Contractor shall be responsible for any costs incurred for professional services, which shall be deducted from the next progress payment, if an RFI requests an interpretation or decision of a matter where the information sought is equally available to the party making such request. District, at its sole discretion, shall invoice Prime Contractor for all such professional services arising from this Part.

#### Section 7.5 REQUEST FOR PROPOSAL

**7.5.1 Definition.** A Request for Proposal or “RFP” is a written request prepared by the Architect requesting the Prime Contractor to submit to the District, the Construction Manager and the Architect an estimate of the effect of a proposed change on the Contract Price and the Contract Time.

**7.5.2 Scope.** An RFP shall contain adequate information, including any necessary Drawings and Specifications, to enable Prime Contractor to provide the cost breakdowns

required by Section 7.7. The Prime Contractor shall not be entitled to any Additional Compensation for preparing a response to an RFP, whether ultimately accepted or not.

#### Section 7.6 CHANGE ORDER REQUEST

**7.6.1 Definition.** A Change Order Request is a written request prepared by the Prime Contractor requesting that the District, the Construction Manager and the Architect issue a Change Order based upon a proposed change called for in an RFP or a Claim pursuant to Section 4.5.

**7.6.2 Changes in Price.** A Change Order Request shall include breakdowns per Section 7.7 to validate any change in Contract Price due to proposed change or Claim.

**7.6.3 Changes in Time.** A Change Order Request shall also include any additional time required to complete the Project. Any additional time requested shall not be the number of days to make the proposed change, but must be based upon the impact to the Project schedule. If Prime Contractor fails to request a time extension in a Change Order Request, then the Prime Contractor is thereafter precluded from requesting or claiming a delay.

#### Section 7.7 COST OF CHANGE ORDERS

**7.7.1 Scope.** Within ten (10) days after a request is made for a change that impacts the Contract Price, Contract Time or critical path, the Prime Contractor shall provide the District and the Architect with a written estimate of the effect of the proposed Change Order upon the Contract Price and the actual cost of construction, which shall include a complete itemized cost breakdown of all labor and material showing actual quantities, hours, unit prices, and wage rates required for the change, and the effect upon the Contract Time of such Change Order. Changes may be made by District by an appropriate written Change Order, or, at the District's option, such changes shall be implemented immediately upon the Prime Contractor's receipt of an appropriate written Construction Change Directive.

District may, as provided by law and without affecting the validity of the Contract, order changes, modification, deletions and extra work by issuance of written Construction Change Directives from time to time during the progress of the Project, Contract Price being adjusted accordingly. All such work shall be executed under conditions of the original Agreement except that any extension of time caused thereby shall be adjusted at time of ordering such change. District has discretion to order changes on a "time and material" basis with adjustments to time made after Prime Contractor has justified through documentation the impact on the critical path of the Project.

**7.7.2 Methods For Determining Cost.** The amount of the increase or decrease in the Contract Price resulting from a Change Order, if any, shall be determined at the sole discretion of the District based on one or more of the methods specified in this Subsection 7.7.2.

**7.7.2.1** *Lump Sum Proposal.* Acceptable lump sum proposal from the Prime Contractor properly itemized and supported by sufficient substantiating data to permit

evaluation. Estimates for lump sum proposals shall be limited to direct expenditures necessitated specifically by the subject extra work and shall be segregated into categories as set forth in Article 7.7.2.3. In addition, the Prime Contractor and Subcontractor will be paid a lump sum for overhead, profit, and bond. Such lump sum shall conform to the percentages outlined in Article 7.7.2.3(v). For added or omitted work by Subcontractors, the Prime Contractor shall furnish to the District the Subcontractors' detailed estimate of the cost for labor, material, and equipment, including the markup by the Subcontractor for overhead and profit. Such estimate of cost shall be signed by the Subcontractor. The same requirement shall apply to any sub-subcontractor or material supplier.

**7.7.2.2**      *Unit Pricing.* Unit prices contained in Prime Contractor's original bid and incorporated into Contract Documents or fixed by subsequent agreement between District and Prime Contractor. Unit prices shall include all necessary labor, material, overhead, profit, and applicable taxes.

**7.7.2.3**      *Time and material.* Calculated time spent and materials used, including direct costs for labor, material, and equipment rental plus markups for overhead and profit for Prime Contractor, Subcontractor, and sub-subcontractors as applicable. The following outline shall be utilized for all time and material and lump sum proposals:

- (i) Labor: attach itemized direct hourly rates in accordance with certified payroll records times total hours expended. Separately show dollar amount for employer-paid payroll taxes/insurance benefits. Enter total as direct labor time.
- (ii) Material: attach receipts, invoices, or itemized quantity and unit costs plus tax and delivery. Enter total as material item.
- (iii) Equipment: attach receipts, invoices or tear tickets indicating unit costs and total hours or loads charged (small tools with a value of less than \$500 are to be included in markup). Enter total as equipment rental time.
- (iv) SUBTOTAL [lines (i), (ii) and (iii)]
- (v) The allowance for the combined overhead and profit included in the total cost to the District shall be based on the following:
  - (a) Ten percent (10%) combined overhead and profit, of the total estimated costs of the extra work to be performed. All subcontracted work included within the total estimated costs shall not exceed ten percent (10%) combined overhead and profit of the work performed by the Subcontractor. This shall apply to all changes.
  - (b) All subcontracted work included within the total estimated costs shall not exceed ten percent (10%) combined overhead and profit of the work performed by the Subcontractor.

(c) The combined overhead and profit percentages are to include the following costs: home office overhead, off-site supervision, change order preparation, insurance, negotiation/research, time delays, project interference and disruption, additional guarantee and warranty durations, on-site supervision, additional temporary protection, additional construction facilities, additional material handling costs, additional safety equipment costs and small tools with a daily rental rate of less than \$250.00.

(vi) SUBTOTAL [lines (v) and (vi)]

(vii) PRIME CONTRACTOR'S BOND [not to exceed 1% of line (vi)]

(viii) TOTAL CHANGE ORDER REQUEST [lines (vi) and (vii)]

**7.7.3 Amount of Credit.** The amount of credit to be allowed by the Prime Contractor to the District for a deletion or change which results in a net decrease in the Contract Price shall be actual net cost, including amounts attributable to overhead, profit, bond premium, *et cetera*. When both additions and credits covering related work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

It is expressly understood that the value of such extra work or changes, as determined by any of the aforementioned methods, expressly includes any and all of the Prime Contractor's costs and expenses, both direct and indirect, resulting from additional time required on the project or resulting from delay, disruption, acceleration, interference, hindrance, or the like to the project.

**7.7.4 Deductive Change Orders.** Deductive Change Orders must be based on deductive alternates specified in the Prime Contractor's bid or determined in accordance with Subsections 7.7.2 and 7.7.3.

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

**7.7.6 Accounting Records.** With respect to portions of the Work performed by Change Orders and Construction Change Directives on a time-and-materials, unit-cost, or similar basis, the Prime Contractor shall keep and maintain cost-accounting records in accordance with generally-accepted standards and principles or as otherwise required by the District, which records shall be available to the District on the same terms as any other books and records the Prime Contractor is required to maintain under the Contract Documents.

**7.7.7 Disagreement on Change Order.** If the Prime Contractor and the District are unable to agree as to any adjustment in a Change Order to the Contract Price, Contract Time or other matter, the District may order the Prime Contractor to proceed with the change and the Prime Contractor shall then diligently commence and perform the changed Work. If the Prime Contractor desires to file a Claim for an increase in the Contract Price or any extension of the Contract Time, it must notify the District in accordance with Section 4.5 of these General Conditions, and no Claim will be valid unless filed in accordance with Section 4.5. The Prime Contractor shall proceed to execute the Work even though the adjustment may not have been agreed upon.

**7.7.8 Alteration to Change Order Language.** Prime Contractor shall not alter Change Orders or reserve time in Construction Change Directives. Prime Contractor shall execute finalized Change Orders and, if Prime Contractor disputes any adjustment to the Contract Price or Contract Time, may file a Claim in accordance with Section 4.5 of these General Conditions.

## **PART 8 TIME**

### **Section 8.1 DEFINITIONS**

**8.1.1 Contract Time.** Prime Contractor shall perform and complete all Work under the Contract Documents within the time period specified in the Agreement Form. Moreover, Contractor shall perform its Work in strict accordance with any completion schedule, Construction Schedule or Project milestones developed pursuant to the provisions of the Contract including, but not limited to the Project schedule set forth in the Specifications.

**8.1.2 Notice to Proceed.** District may give a Notice to Proceed at any time within two (2) months of the award of the Contract. Once Prime Contractor has received the notice to proceed, Prime Contractor shall complete the Work in the period of time referenced in the Contract Documents.

In the event that District desires to postpone the giving of the notice to proceed beyond this two (2) month period, it is expressly understood that with reasonable notice to the Prime Contractor, the giving of the date to proceed may be postponed by District. It is further expressly understood by Prime Contractor, that Prime Contractor shall not be entitled to any Claim of additional compensation as a result of the postponement of the giving of the notice to proceed

If the Prime Contractor believes that a postponement will cause a hardship to Prime Contractor, Prime Contractor may terminate the Contract with written notice to District within ten (10) days after receipt by Prime Contractor of District's notice of postponement. It is further understood by Prime Contractor that in the event that Prime Contractor terminates the Contract as a result of postponement by the District, the District shall only be obligated to pay Prime Contractor for the Work that Prime Contractor had performed at the time of notification of postponement. Should Prime 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 responsible bidder.



**8.1.3 Computation of Time.** Prime Contractor will only be allowed a time extension for unusually severe weather if it results in precipitation or other conditions which in the amount, frequency, or duration is in excess of the norm at the location and time of year in question as established by National Oceanic and Atmospheric Administration (NOAA) weather data and the Prime Contractor demonstrates that adverse weather conditions are the cause of the delay. The Prime Contractor shall allot not less than twenty-two (22) calendar days in its schedule for each winter weather period, which is defined as the months, in aggregate, of October, November, December, January, February and March. The weather days shall be shown on the schedule and if not used will become float days for the Project's use. The Prime Contractor will not be allowed a day-for-day weather delay when the Contract is bid for construction to occur during a period that normally includes inclement weather. A day-for-day extension will only be allowed for those days in excess of the norm. The Prime Contractor is expected to perform the Work seven (7) days per week (if necessary, irrespective of inclement weather), to maintain access, and to protect the Work under construction from the effects of inclement weather.

If the weather is unusually severe, in excess of the NOAA data norm and prevents the Prime Contractor from beginning work at the usual daily starting time, or prevents the Prime Contractor from proceeding with seventy-five percent (75%) of the normal labor and equipment force towards completion of the day's current controlling item on the accepted schedule for a period of at least five hours, and the crew is dismissed as a result thereof, the Construction Manager and the Architect will designate such time as unavoidable delay and grant one (1) calendar-day extension.

## Section 8.2 HOURS OF WORK

**8.2.1 Sufficient Forces.** The Prime Contractor and Subcontractors shall continuously furnish sufficient forces to ensure the prosecution of the Work in accordance with the Construction Schedule.

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

**8.2.3 Costs for After Hours Inspections.** If the Work is required by the Contract Documents to be done after-hours and results in the need for the Project Inspector's services outside the Project Inspector's regular working hours, the costs of any after-hour inspections shall be borne by the District. This includes school-wide testing periods.

If the District allows the Prime Contractor to do Work outside regular working hours for the Prime Contractor's convenience, the costs of any inspections required outside regular working hours shall be invoiced to the Prime Contractor by the District and deducted from the next Progress Payment.

If the Prime Contractor elects to perform Work outside the Project Inspector's regular working hours, costs of any inspections required outside regular working hours shall be invoiced to the Prime Contractor by the District and deducted from the next Progress Payment.

### Section 8.3 PROGRESS AND COMPLETION

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

**8.3.2 No Commencement without Insurance.** The Prime Contractor shall not commence operations on the Project or elsewhere prior to the effective date of insurance and bonds required by Part 11. The date of commencement of the Work shall not be changed by the effective date of such insurance. If Prime Contractor commences Work without insurance and bonds, all Work is performed at Prime Contractor's peril and shall not be compensable until and unless Prime Contractor secures bonds and insurance pursuant to the terms of the Contract Documents and subject to District Claim for damages.

**8.3.3 Expeditious Completion.** The Prime Contractor shall proceed expeditiously with adequate forces and shall achieve Completion within the Contract Time. Notification of inadequate work forces, by the Construction Manager, will necessitate the submission of a recovery schedule.

### Section 8.4 DELAYS

**8.4.1 Work in Conformance with Schedule.** The Work shall be commenced and shall be completed in conformance with the Construction Schedule. Construction delays caused by normal seasonal rainfall are included within the total number of calendar days specified and will not be considered as a reason for an extension of time. These conditions shall be wholly at the risk of the Prime Contractor. Liquidated damages may be assessed if any individual activity duration exceeds the time indicated for that activity on the Construction Schedule.

**8.4.2 Compensable Impacts.** A "Compensable Impact" is defined as a delay, disruption, interference, hindrance and/or acceleration of the Work that is (1) unreasonable under the circumstances involved; (2) not within the contemplation of the parties at the time of contracting; and (3) which is caused by one of the parties to the Contract Documents or is caused by some other person for whom one of the parties to the Contract Documents is responsible.

**8.4.2.1 District Responsible.** If the District causes or is responsible for a Compensable Impact, then the time period for completion of the Work shall be extended by the number of calendar days that the Prime Contractor experiences the Compensable Impact, provided that satisfactory evidence is presented to the District within fifteen (15) calendar days of the commencement of the Compensable Impact and provided that the Compensable Impact is neither caused, contributed to, or continued, by the fault or negligence of the Prime

Contractor, its Subcontractors, material suppliers or others reasonably and customarily under the Prime Contractor's and/or its Subcontractors' control. A time extension granted for the Work at one site shall not apply to any other site unless the time extension expressly states that to be the case. The extension of time, if allowed by the District, shall only be authorized by, and be contained in, a written Change Order.

**8.4.2.2**        *District Not Responsible.* The District and those acting on its behalf shall not be liable for any damages because of any delay or failure to deliver the Project Site to the Prime Contractor where the cause is beyond the control of and without the fault of the District, including but not limited to: an act of God or of a public enemy; act of Government; act of any quasi-governmental or publicly-regulated entity, including a utility, act of the Prime Contractor or the Prime Contractor's employee or agent; fire; flood; epidemic; quarantine restrictions; riot; strike; freight embargo; weather; or act of any third person or entity not subject to direct control of the District. The sole remedy of the Prime Contractor for any such delay or failure to furnish the Project Site shall be limited to an extension of time.

**8.4.2.3**        *Hazardous Materials.* In anticipation of, and in compliance with, Public Contract Code Section 7102, the parties acknowledge that certain site, and/or existing site improvements, conditions regarding any hazardous substance, including without limitation, asbestos and lead, may exist or be discovered during the project which may cause a delay, disruption, interruption, hindrance, and/or interference of the Work. Regarding contracts involving Work on existing structures, the Prime Contractor expressly acknowledges that it shall not be entitled to payment of liquidated or other damages by the District for a delay, disruption, interruption, hindrance, and/or interference of the Work of up to ninety (90) calendar days whenever such time is required in order to abate or remove from such structure(s) any hazardous material such as, but without limitation, asbestos or lead discovered at and/or in such sites. Further, Prime Contractor acknowledges and agrees that liquidated or other damages shall not be paid by the District for delays, disruptions, interruptions, hindrances, and/or interferences of the Work up to an including an additional ninety (90) calendar days, whenever such time is required to remove underground tanks, sumps, clarifiers, hoist cylinders, and/or other underground utilities existing at the Project Site.

**8.4.2.4**        *Liquidated Damages.* In anticipation of, and in compliance with, Public Contract Code Section 7102, and because it is agreed by the Prime Contractor and the District that actual damages are impracticable and extremely difficult to ascertain regarding consequential damages caused by Compensable Impacts, the Prime Contractor and the District each hereby establish the liquidated sum, as stated in the Special Conditions, per calendar day for each day of Compensable Impact that the other can prove to be caused by and/or the responsibility of the other. The parties expressly agree to be limited solely to these liquidated damages for all Compensable Impacts as defined in this Subsection 8.4.1, but also expressly agree that no party shall be entitled to recover liquidated or actual consequential damages that are caused by concurrent Compensable Impacts. The liquidated damage amount is agreed to be fair and reasonable compensation to each of the parties, even if the amount may not fully compensate the affected party. Prime Contractor is to refer to Section 01310 Construction Schedule for the duration of individual activities contained within the overall calendar day project requirement. Liquidated damages may be assessed by the District if any individual activity

duration exceeds the time indicated for that activity on the Construction Schedule. In the event any liquidated damages are not paid by the Prime Contractor, the Prime Contractor agrees that the District may deduct such amounts from any money due or to become due to the Prime Contractor under the Contract Documents. Nothing in this Subsection 8.4.1 alters, impairs, precludes, modifies and/or changes the Prime Contractor's or the District's ability to recover additional costs incurred if expressly provided for elsewhere in the Contract Documents. Nothing in this Subsection 8.4.1 alters, impairs, precludes, modifies and/or changes the Prime Contractor's obligation to include all costs, both direct and indirect, into a Change Order Proposal and/or Change Order, pursuant to the Contract Documents.

**8.4.2.5** *Change Order Work.* The Prime Contractor expressly acknowledges and agrees that Change Order work performed under the Contract Documents shall not be deemed to constitute a Compensable Impact to the Work or form the basis for claiming additional compensation based on theories including, but not limited to, acceleration, suspension, delay, or disruption to the project, and further acknowledges that a complete system of compensation for said Change Order work is provided for exclusively under the provisions of the Contract Documents pertaining to Change Order work.

**8.4.3 Excusable Delay.** The Prime Contractor shall not be charged for liquidated damages because of any delays in completion of Work that are not the fault or negligence of Prime Contractor or its Subcontractors, including acts of God, as defined in Public Contract Code Section 7105(b)(2), acts of enemy, epidemics and quarantine restrictions. Prime Contractor shall within five (5) calendar days of beginning of any such delay notify District in writing of causes of delay; thereupon District shall ascertain the facts and extent of delay and grant extension of time for completing Work when, in its judgment, the findings of fact justify such an extension. Extensions of time shall apply only to that portion of Work affected by delay, and shall not apply to other portions of Work not so affected.

No extended overhead, general conditions costs, impact costs, out-of-sequence costs or any other type of compensation, by any name or characterization, shall be paid to the Prime Contractor for any delay to any activity not designated as a critical path item on the latest approved Project schedule.

The Prime Contractor shall notify the Construction Manager and the Architect in writing of any anticipated delay and its cause, in order that the Construction Manager or the Architect may take immediate steps to prevent, if possible, the occurrence or continuance of delay, and may determine whether the delay is to be considered avoidable or unavoidable, how long it continues, and to what extent the prosecution and completion of the Work might be delayed thereby.

In the event the Prime Contractor requests an extension of Contract Time for unavoidable delay, such request shall be submitted in accordance with the provisions in the Contract Documents governing changes in Work. When requesting time, i.e., extensions, for proposed Construction Change Directives, Prime Contractor must submit full justification and documentation with the proposed Construction Change Directive. If the Prime Contractor fails to submit justification with the proposed Construction Change Directive it waives its right to a time extension at a later

date. Such justification must be based on the official Construction Schedule as updated at the time of occurrence of the delay or execution of Work related to any changes to the scope of Work. The justification must include, but is not limited to, the following information:

- (i) The duration of the activity relating to the changes in the Work and the resources (manpower, equipment, material, *et cetera*) required to perform these activities within the stated duration.
- (ii) Logical ties to the official Construction Schedule for the proposed changes and/or delay showing the activity/activities in the schedule whose start or completion dates are affected by the change and/or delay. (A fragment of any delay of over ten (10) days must be provided.)

The Prime Contractor and District understand and expressly agree that insofar as Public Contract Code Section 7102 may apply to changes in the Work or delays under the Contract, the actual delays and damages, if any, and time extensions are intended to, and shall provide, the exclusive and full method of compensation for changes in the Work and construction delays.

**8.4.4 Notice of Delay Required.** The Prime Contractor shall within five (5) calendar days of the beginning of any such delay notify the District in writing of causes of the delay with justification and supporting documentation. District will then ascertain the facts and extent of the delay and grant an extension of time for completing the Work when, in its judgment, the findings of fact justify such an extension. Extensions of time shall apply only to that portion of the Work affected by the delay and shall not apply to other portions of the Work not so affected. The sole remedy of Prime Contractor for extensions of time under Section 8.4 shall be an extension of the Contract Time at no cost to the District unless the delay is a Compensable Impact for which the District is responsible. Claims relating to time extensions shall be filed in accordance with applicable provisions of Section 4.5.

**8.4.5 No Compensation for Delays within Prime Contractor's Control.** Prime Contractor is aware that governmental agencies, such as the Department of General Services, gas companies, electrical utility companies, water districts and other agencies may have to approve Prime Contractor-prepared drawings or approve a proposed installation. Prime Contractor shall be deemed to have considered all possible delays and damages that might arise from any such approvals when submitting its bid for the Project. Thus, Prime Contractor is not entitled to file any Claim with the District for damages or delays arising from the delays caused by such agencies. Furthermore, the Prime Contractor has scheduled for such delays and is not entitled to an extension of time for delays caused by governmental agencies which Prime Contractor must obtain approvals from and, thus, Prime Contractor is not entitled to an extension of time.

PRIME CONTRACTOR SHALL ONLY BE ENTITLED TO COMPENSATION FOR DELAYS WHEN THE FOLLOWING CONDITIONS ARE MET: (1) THE DISTRICT IS RESPONSIBLE FOR THE DELAY; (2) THE DELAY IS UNREASONABLE UNDER THE CIRCUMSTANCES INVOLVED; AND (3) THE DELAY WAS NOT WITHIN THE CONTEMPLATION OF DISTRICT AND PRIME CONTRACTOR.

## **PART 9 PAYMENTS AND COMPLETION**

### **Section 9.1    CONTRACT PRICE**

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

### **Section 9.2    COST BREAKDOWN**

**9.2.1 Required Information.** On forms or software programs (e.g., Microsoft Project, Prolog, Expedition or Primavera) approved by the District, the Prime Contractor shall furnish the following:

- (i) Within ten (10) days of the award of the Contract, a detailed breakdown of the Contract Price (hereinafter "Schedule of Values") for the Project and Project Site;
- (ii) Within ten (10) days of the award of the Contract, the name, address, telephone number, facsimile number, California contractor license number, classification and monetary value of all subcontracts for parties furnishing labor, material, or equipment for completion of the Project.

**9.2.2 Approval Required.** The Construction Manager and the Architect shall review all submissions received pursuant to Subsection 9.2.1 in a timely manner. The Construction Manager and the Architect must approve all submissions.

### **Section 9.3    PROGRESS PAYMENTS**

**9.3.1 Payments to Prime Contractor.** Within thirty (30) days after approval of an undisputed and properly submitted application for payment by the Prime Contractor ("Application for Payment") completed in accordance with the Schedule of Values, Prime Contractor shall be paid a sum equal to ninety-five percent (95%) of the value of the Work performed (as certified by Construction Manager, Architect and Project Inspector and verified by Prime Contractor) up to the last day of the previous month, less the aggregate of previous payments. The value of the Work completed shall be Prime Contractor's best estimate. No inaccuracy or error in said estimate shall operate to release the Prime Contractor, or any surety upon any bond, from damages arising from such Work, or from the District's enforcement of each and every provision of the Contract Documents, and the District shall have the right subsequently to correct any error made in any estimate for payment.

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

Notwithstanding anything to the contrary stated above, the Prime Contractor may include in its Application for Payment the value of any structural Steele, mail order materials, G.F.R.C. panels and other such custom-made materials prepared specifically for the Project and unique to the Project so long as all of the following requirements are satisfied:

- (i) The aggregate cost of materials stored off-site shall not exceed Twenty-Five Thousand Dollars (\$25,000) at any time without the written approval of the District to be given or withheld in the District's sole discretion;
- (ii) Title to such materials shall be vested in the District as evidenced by documentation satisfactory in form and substance to the District, including, without limitation, recorded financing statements, UCC filings and UCC searches;
- (iii) With each Application for Payment, the Prime Contractor shall submit to the District a written list identifying each location where materials are stored off-site (which must be a bonded warehouse) and the value of the materials at each location. The Prime Contractor shall procure insurance satisfactory to the District (in its reasonable discretion) for materials stored off-site in an amount not less than the total value thereof;
- (iv) The consent of any Surety shall be obtained to the extent required prior to payment for any materials stored off-site;
- (v) Representatives of the District shall have the right to make inspections of the storage areas at any time; and
- (vi) Such materials shall be (1) protected from diversion, destruction, theft and damage to the reasonable satisfaction of the District; (2) specifically marked for use on the Project; and (3) segregated from other materials at the storage facility.

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

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

**9.3.4 Issuance of Certificate of Payment.** The Architect shall, within seven (7) days after receipt of an Application for Payment, either approve such payment or notify the Prime Contractor in writing of the Architect's reasons for withholding approval in whole or in part as provided in Section 9.6. The review of an Application for Payment by the Architect shall be based on the Architect's observations at the Project Site and the data comprising the

Application for Payment that the Work has progressed to the point indicated and that, to the best of the Architect's knowledge, information, and belief, the quality of the Work is in accordance with the Contract Documents. The foregoing representations are subject to (1) an evaluation of the Work for conformance with the Contract Documents, (2) results of subsequent tests and inspections, (3) minor deviations from the Contract Documents correctable prior to completion, and (4) specific qualifications expressed by the Architect. The issuance of a Certificate for Payment will further constitute a representation that the Prime Contractor is entitled to payment in the amount certified.

#### Section 9.4 APPLICATIONS FOR PROGRESS PAYMENTS

##### 9.4.1 **Procedure.**

**9.4.1.1** *Progress Payment Review Meeting.* Prior to submitting any Progress Payment Request and for the purpose of expediting the Progress Payment procedure, Prime Contractor shall meet with the District's Project Inspector and Construction Manager to review and discuss each proposed Progress Payment Request. District, Architect or Construction Manager has the discretion to require from Prime Contractor any of the following information with the Application for Payment:

- (i) Certified payroll covering the period of the previous Application for Payment;
- (ii) Unconditional waivers and releases from all Subcontractor/suppliers for which payment was requested under the previous Application for Payment; or
- (iii) Material invoices, evidence of equipment purchases, rentals and other support and details of costs.

**9.4.1.2** *Application for Progress.* On or before the fifth (5th) day of each calendar month during the progress of the Work, Prime Contractor shall submit to the Construction Manager and the Architect an itemized Application for Progress Payment for operations completed in accordance with the Schedule of Values. Should the Project involve multiple school sites, the Prime Contractor shall prepare a separate Progress Payment request for each school site. Such application(s) shall be notarized, if required, and supported by the following or such portion thereof as Architect requires:

- (i) The amount paid as of the date of the Application to the Prime Contractor, to all its Subcontractors, and all others furnishing labor, material, or equipment for its Contract;
- (ii) The amount being requested under the Application for Payment by the Prime Contractor on its own behalf and separately stating the amount requested on behalf of each of the Subcontractors and all others furnishing labor, material, and equipment under the Contract;



- (iii) The balance that will be due to each of such entities after said payment is made;
- (iv) A certification that the Record Drawings and Annotated Specifications are current;
- (v) Itemized breakdown of Work done for the purpose of requesting partial payment;
- (vi) The additions to and subtractions from the Contract Price and Contract Time;
- (vii) A summary of the retentions held;
- (viii) Material invoices, evidence of equipment purchases, rentals, releases and other support and details of cost as the District may require from time to time;
- (ix) The percentage of completion of the Prime Contractor's Work by line item; and
- (x) An updated Schedule of Values from the preceding Application for Payment.

**9.4.1.3** The District's Project Inspector shall sign the proposed Progress Payment Request as having reviewed the same. If any item submitted for payment is disputed during this review, Prime Contractor shall use its best efforts to resolve the disputed items with District's Project Inspector, Architect and Construction Manager before submitting the Progress Payment Request to Construction Manager. The Architect, District and Construction Manager specifically reserve the right to dispute any item submitted in Prime Contractor's Progress Payment Request regardless of whether an item was identified as disputed in the review process provided for herein.

**9.4.1.4** The billing process outlined in this Section shall supersede any other billing procedures contained in the Project Specifications. Based on billing percentages approved by the Architect and Project Inspector, the Prime Contractor billings will be generated by the Construction Manager's main office and faxed to the Prime Contractor. Upon receipt, the Prime Contractor is required to make five (5) copies of the billing, SITE sign all copies as indicated, and return the billings to the Construction Manager within three (3) days of the date received for further processing. Billings must be returned to the Construction Manager's office within the specified time frame. It is strongly recommended that Prime Contractor use one of the following delivery methods:

- (i) Hand delivery.
- (ii) Express mail (overnight) to street address.

- (iii) U.P.S. next day service.
- (iv) Federal Express next day service.

**9.4.1.5** The District shall have the right, if necessary for the protection of the District, to issue joint checks made payable to the Prime Contractor and Subcontractors and/or material or equipment suppliers. The joint check payees shall be responsible for the allocation and disbursement of funds included as part of any such joint payment. In no event shall any joint check payment be construed to create any contract between the District and any Subcontractor or sub-subcontractor, any obligation of the District to such party or right of such party against the District.

**9.4.1.6** Prime Contractor shall update record Drawings as required and failure to accomplish this will be grounds for delaying approval of Prime Contractor's Progress Payment Request.

#### **9.4.2 Prerequisites for Progress Payments.**

**9.4.2.1** *First Payment Request.* The following items, if applicable, must be completed before the first payment request will be accepted for processing:

Receipt by Architect of submittals due per Submittal Log by the date of Payment Request;

- (i) Submission of documents listed in Section 9.2 relating to Cost Breakdown;
- (ii) Submission and approval of Construction Schedule;
- (iii) List of all Subcontractors, with names, license numbers, telephone numbers, and scope of Work;
- (iv) All bonds and insurance endorsements; and
- (v) Subcontractor bonds, if required.

**9.4.2.2** *No Waiver Based on Payment.* Any payments made to Prime Contractor where criteria set forth in Article 9.4.2.1 have not been met shall not constitute a waiver of said criteria by District. Instead, such payment shall be construed as a good faith effort by District to resolve differences so Prime Contractor may pay its Subcontractors and suppliers, and any failure by the Prime Contractor to submit such items will constitute a breach of the Contract by Prime Contractor and may subject Prime Contractor to termination or other remedies under the Contract.

**9.4.2.3**      *Civil Code Sections 8132-8138 Waiver and Release.* As a condition precedent to payment of any progress payment due to the Prime Contractor, including the final payment, the Prime Contractor shall submit to the District:

(i) Duly executed conditional lien releases and waivers (in the form provided in Civil Code Sections 8132 [progress payment] and 8136 [final payment]) from the Prime Contractor and all Subcontractors and materials suppliers providing labor, services, materials or equipment in connection with the Work, whereby such entities or persons conditionally waive all lien and stop payment notice rights against the District, the Project and the Project Premises with respect to all payments to be made to them from such payment; and

(ii) Duly executed unconditional lien releases and waivers (in the form provided in Civil Code Sections 8134 [progress payment] and 8138 [final payment]) from Prime Contractor and all Subcontractors and materials suppliers providing labor, services, materials or equipment in connection with the Work, whereby such entities or persons unconditionally and irrevocably waive all lien and stop payment notice rights against the District, the Project and the Project Premises with respect to all payments made pursuant to previous applications for payment, to the extent not already covered by an unconditional release and waiver.

#### Section 9.5    WARRANTY OF TITLE

The Prime Contractor warrants title to all Work, including, without limitation, all materials and equipment. The Prime Contractor further warrants that all Work shall be free and clear of liens, claims, security interests, or encumbrances in favor of the Prime Contractor, Subcontractors, material and equipment suppliers, or other persons or entities making a claim by reason of having provided labor, materials, and equipment relating to the Work. Failure to keep Work free of liens, claims, security interests or encumbrances is grounds to make a claim against Prime Contractor's payment and performance bond to immediately remedy and defend.

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

The District will hold funds immediately upon validation of the Stop Payment Notice until either a Release of Stop Payment Notice or a Release Bond is received. If the Prime Contractor believes the Stop Payment Notice was filed in error or is not valid, then Prime Contractor may file a Contractor's Affidavit with the District. If none of these remedies are sought, the District will withhold the funds until they are released by court action or if the subcontractor does not follow through with a suit, or not less than ten (10) days after the filing of the Stop Notice; and not more than ninety (90) days after the expiration of the period within which Stop Notices may be filed and to provide for the District's reasonable cost of any litigation pursuant to the stop payment notice.

## Section 9.6 DECISIONS TO WITHHOLD PAYMENT

**9.6.1 Reasons to Withhold Payment.** The District may withhold payment in whole, or in part, to the extent reasonably necessary to protect the District if, in the District's opinion, the representations to the District required by Section 9.4 cannot be made. The District may withhold payment, in whole, or in part, to such extent as may be necessary to protect the District from loss because of, but not limited to:

- (i) Defective Work not remedied;
- (ii) Stop Payment Notices served upon the District;
- (iii) Liquidated damages assessed against the Prime Contractor;
- (iv) The cost of completion of the Contract if there exists reasonable doubt that the Work can be completed for the unpaid balance of any Contract Price or by the completion date;
- (v) Damage to the District or other Prime Contractor;
- (vi) Unsatisfactory prosecution of the Work by the Prime Contractor;
- (vii) Failure to store and properly secure materials;
- (viii) Failure of the Prime Contractor to submit on a timely basis, proper and sufficient documentation required by the Contract Documents, including, without limitation, acceptable monthly progress schedules, shop drawings, submittal schedules, schedule of values, product data and samples, proposed product lists, executed Construction Change Directives, and verified reports;
- (ix) Failure of the Prime Contractor to maintain record Drawings;
- (x) Erroneous estimates by the Prime Contractor of the value of the Work performed, or other false statements in an Application for Payment;
- (xi) Unauthorized deviations from the Contract Documents;
- (xii) Failure of the Prime Contractor to prosecute the Work in a timely manner in compliance with established progress schedules and completion dates;
- (xiii) Failure to properly pay prevailing wages as defined in Labor Code Section 1720 *et seq.*;
- (xiv) Failure to properly maintain or clean up the Project Site;
- (xv) Payments to indemnify, defend, or hold harmless the District;

(xvi) Any payments due to the District including but not limited to payments for failed tests, or utilities changes or permits;

(xvii) Failure to pay Subcontractor or suppliers as required by Subsection 9.8.1; or

(xviii) Failure to provide Subcontractor/supplier releases when requested.

**9.6.2 Reallocation of Withheld Amounts.** District may, in its discretion, apply any withheld amount to payment of outstanding claims or obligations as defined in Subsections 9.5 and 9.6.1. In so doing, District shall make such payments on behalf of Prime Contractor. If any payment is so made by District, then such amount shall be considered as a payment made under Contract by District to Prime Contractor and District shall not be liable to Prime Contractor for such payments made in good faith. Such payments may be made without prior judicial determination of claim or obligation. District will render Prime Contractor an accounting of such funds disbursed on behalf of Prime Contractor.

If Prime Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents or fails to perform any provision thereof, forty-eight (48) hours after providing written notice to the Prime Contractor, and without prejudice to any other remedy, the District may make good such deficiencies. The District shall adjust the total Contract Price by reducing the amount thereof by the cost of making good such deficiencies. If District deems it inexpedient to correct Work which is damaged, defective, or not done in accordance with Contract provisions, an equitable reduction in the Contract Price (of at least 150% of the estimated reasonable value of the nonconforming Work) shall be made therefor.

**9.6.3 Payment After Cure.** When the grounds for declining to approve payment are eliminated or otherwise resolved, payment shall be made for amounts withheld because of them. No interest shall be paid on any retainage or amounts withheld due to the failure of the Prime Contractor to perform in accordance with the terms and conditions of the Contract Documents.

## Section 9.7 NON-CONFORMING WORK

Prime Contractor shall promptly remove from premises all Work identified by District as failing to conform to the Contract whether incorporated or not. Prime Contractor shall promptly replace and re-execute its own Work to comply with the Contract without additional expense to District and shall bear the expense of making good all work of other contractors destroyed or damaged by such removal or replacement.

If Prime Contractor does not remove such Work which has been identified by District as failing to conform to the Contract Documents within a reasonable time, fixed by written notice, District may remove it and may store the material at Prime Contractor's expense. If Prime Contractor does not pay expenses of such removal within ten (10) calendar days' time thereafter, District may, upon ten (10) calendar days' written notice, sell such materials at auction or at private sale

and shall account for net proceeds thereof, after deducting all costs and expenses that should have been borne by Prime Contractor.

## Section 9.8 SUBCONTRACTOR PAYMENTS

**9.8.1 Payments to Subcontractors.** No later than ten (10) days after receipt, or pursuant to Business and Professions Code Section 7108.5 and Public Contract Code Section 7107, the Prime Contractor shall pay to each Subcontractor, out of the amount paid to the Prime Contractor on account of such Subcontractor's portion of the Work, the amount to which said Subcontractor is entitled. The Prime Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to sub-subcontractors in a similar manner.

**9.8.2 No Obligation of District for Subcontractor Payment.** The District shall have no obligation to pay, or to see to the payment of, money to a Subcontractor except as may otherwise be required by law.

**9.8.3 Payment Not Constituting Approval or Acceptance.** An approved Application for Payment, a progress payment, or partial or entire use or occupancy of the Project by the District shall not constitute acceptance of Work not in accordance with the Contract Documents.

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

## Section 9.9 CLOSE-OUT REQUIREMENTS

**9.9.1 Punch-List Procedures.** When the Prime Contractor considers the Work substantially complete, the Prime Contractor shall prepare and submit to the District a comprehensive list of minor or other items to be completed or corrected (hereinafter "Punch-List"). The Prime Contractor and its Subcontractors shall proceed promptly to complete and correct items on the list. Failure to include an item on such list does not alter the responsibility of the Prime Contractor to complete all Work in accordance with the Contract Documents.

Upon receipt of the Prime Contractor's punch-list, and not before, the Construction Manager, the Architect and the Project Inspector will inspect the Work to determine whether it or any designated portion of it is complete. If the inspection discloses any item, whether or not included on the Prime Contractor's punch-list, is not completed in accordance with the requirements of the Contract Documents, the Prime Contractor shall, before District's issuance of the Notice of Completion, complete or correct such item. The Prime Contractor shall then submit a request for an additional inspection by the District to determine Completion. When the Work or designated portion thereof is complete, the District will file a Notice of Completion.

Warranties required by the Contract Documents shall commence on the date of Completion of the Work, or designated portion thereof, unless otherwise provided in the Notice of Completion.

**9.9.2 Utility Connection Requirements.** Buildings shall be connected to water, gas, sewer, and electric services, complete, tested and ready for use. Service connections shall be made and existing services reconnected.

**9.9.3 Record Drawings.**

**9.9.3.1** The intent of this procedure is to obtain an exact “as-built” record of the Work upon completion of the Project. The following information shall be carefully and correctly drawn on the prints and all items shall be accurately located and dimensioned from finished surfaces of building walls on all record Drawings:

- (i) any Work not installed as originally indicated on Drawings; and
- (ii) the exact location and elevations of all covered utilities, including valves, cleanouts, *et cetera*.

**9.9.3.2** Prime Contractor is liable and responsible for inaccuracies in as-built Drawings, even though those may become evident at some future date.

**9.9.3.3** Upon completion of the Work and as a condition precedent to approval of final payment, Contractor shall obtain the Project Inspector’s acceptance of the corrected plans and specifications and provide the certification required by General Conditions section 3.10.3.4.

- (i) Corrections shall be made in black, blue or red ink on a set of approved plans and specifications. Answers to RFI’s that affect the approved plans or specifications shall be posted on the affected sheet. Plans and sketches that have been approved by field directive, Construction Change Directive, Change Order, Deferred Submittal or outside agency permit (public utilities, street improvements) shall be posted on the affected sheet or, where entire sheets have been replaced, the new sheet shall be collated into the set. Approved shop drawings shall be added to the record set and shall be appropriately added to the table of contents. Where it is impractical to post the change on the affected sheet, the change documents may be added to the record set by reference both on the affected sheet and by adding the change documents to the table of contents for the set. When referencing a sheet or document that has been added to the approved set, the area affected by the change shall be clouded on the original approved document. Any change documents with sheets that are smaller than the standard sheet size of the approved plans shall be copied onto a standard size sheet prior to scanning.

- (ii) Once the record set of approved plans and specifications is complete and accepted by the Project Inspector and the Architect, the Contractor shall have the

entire set of approved, corrected plans electronically scanned in color, each sheet its own .pdf file and named in accordance with the sheet name and number and filed in the order of the Table of Contents on a compact DVD. Provide a Table of Contents .pdf file with active links to each file on the disk. Disks and jackets must be clearly labeled with the project name and general contents. Upon completion of this task, deliver the DVD to the Architect for review and approval of the accurate compilation of the approved plans. The Contractor shall use the approved DVD to then reproduce three black and white bond copies of the entire set, (one for the school site, one for M&O and one for the Bond Program record). These three sets shall be bound with screw post fasteners using a strip of chip board both front and back as a binding and clear plastic protector sheets at the front and back of each set.

(iii) The approved corrected specifications shall be electronically scanned, each section its own .pdf file and named in accordance with the section name and number and filed in the order of the Table of Contents on a compact DVD. Provide a Table of Contents .pdf file with active links to each file on the disk. Upon completion of this task, deliver the DVD to the Architect for review and approval of the accurate compilation of the approved specifications. The Contractor shall use the approved DVD to then reproduce three black and white bond copies of the entire specification book (one for the school site, one for M&O and one for the Bond Program record). These three sets shall be bound with heavy duty three ring binders labeled with the project name on the spine.

(iv) The Contractor shall provide five copies of the two approved DVDs, (one for the school site (to be delivered to the Manager of School Facilities), one for M&O (to be delivered to the M&O front office), one for the Bond office Record (to be delivered to the Project Manager), one for the Architect and one for the Construction Manager. Contractor is to obtain hand receipts from each party and submit them to the CM.

(v) Each Operations & Maintenance Manual binder shall include plastic sleeves to receive the DVDs of the plans and specifications.

(vi) All Prime Contractors shall provide the following closeout documentation in addition to other required documents referenced in the General Conditions and Project Specifications:

1. (3) Complete sets of all applicable warranties; to be originals with wet signatures. Warranties shall be bound in a three-ring Warranty binder appropriately labeled on the spine and the face and including a table of contents.
2. (3) CD's containing all approved submittals; to be scanned in color.
3. (3) Complete sets of operation and maintenance manuals; to be properly bound, itemized/divided. Operation and maintenance manuals



shall be bound in a three-ring O&M binder appropriately labeled on the spine and the face and including a table of contents.

**9.9.4 Maintenance Manuals.** At least thirty (30) days prior to final inspection, three (3) copies of complete operations and maintenance manuals, repair parts lists, service instructions for all electrical and mechanical equipment, and equipment warranties shall be submitted. All installation, operating, and maintenance information and drawings shall be bound in 8-1/2" X 11" white binders, indexed with tabs and preceded by a table of contents. Each manual shall contain a list of Subcontractors, with their addresses and the names of persons to contact in case of emergency. Identifying labels shall provide names of manufacturers, their addresses, ratings, and capacities of equipment and machinery.

#### **9.9.5 Inspection Requirements.**

**9.9.5.1** Before calling for final inspection, Prime Contractor shall determine that the following Work has been performed:

- (i) The Work has been completed. Prime Contractor shall have performed its own punch-list and completed said rework.
- (ii) All life safety items are completed and in working order.
- (iii) Mechanical and electrical Work complete, fixtures in place, connected and ready for tryout and test. All commissioning and test and balance has been completed and reports submitted.
- (iv) Electrical circuits scheduled in panels and disconnect switches labeled.
- (v) Painting and special finishes completed.
- (vi) Doors complete with hardware, cleaned of protective film, relieved of sticking or binding, and in working order.
- (vii) Tops and bottoms of doors sealed.
- (viii) Floors waxed and polished as specified.
- (ix) Broken glass replaced and glass cleaned.
- (x) Grounds cleared of Prime Contractor's equipment, raked clean of debris, and trash removed from Project Site.
- (xi) Work cleaned, free of stains, scratches, and other foreign matter, replacement of damaged and broken material.

(xii) Finished and decorative Work shall have marks, dirt and superfluous labels removed.

(xiii) Final cleanup, as in Section 3.12.

**9.9.5.2** Furnish a letter to District stating that a responsible representative of District (specify name and position of such person) has been instructed in working characteristics of mechanical and electrical equipment.

**9.9.6 Costs of Multiple Inspections.** More than two (2) requests of the District to make inspections required under Section 13.5 shall be considered an additional service of the Construction Manager and the Architect, and all subsequent costs will be invoiced to Prime Contractor and if funds are available, withheld from remaining payments.

#### Section 9.10 PARTIAL OCCUPANCY OR USE

**9.10.1 District's Rights.** The District may occupy or use any completed or partially completed portion of the Work at any stage. The District and the Prime Contractor shall agree in writing to the responsibilities assigned to each of them for payments, security, maintenance, heat, utilities, damage to the Work, insurance, the period for correction of the Work, and the commencement of warranties required by the Contract Documents. If District and Prime Contractor cannot agree as to responsibilities such disagreement shall be resolved pursuant to Subsection 4.5.1. When the Prime Contractor considers a portion complete, the Prime Contractor shall prepare and submit a punch-list to the District as provided under Subsection 9.9.1.

**9.10.2 Inspection Prior to Occupancy or Use.** Immediately prior to such partial occupancy or use, the District, the Prime Contractor, the Construction Manager and the Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

**9.10.3 No Waiver.** Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of the Work not complying with the requirements of the Contract Documents.

#### Section 9.11 COMPLETION AND FINAL PAYMENT

**9.11.1 Final Inspection.** Prime Contractor shall comply with punch-list procedures under Subsection 9.9.1, and maintain the presence of Project superintendent and Project manager until the punch-list is complete to ensure proper and timely completion of the punch-list. Under no circumstances shall Prime Contractor demobilize its forces prior to completion of the punch-list. Upon receipt of Prime Contractor's written notice that all of the punch-list items have been fully completed and the Work is ready for final inspection and acceptance, Construction Manager and Architect shall inspect the Work and shall submit to Prime Contractor and District a final inspection report noting the Work, if any, required in order to complete in

accordance with the Contract Documents. Absent unusual circumstances, this report shall consist of the punch-list items not yet satisfactorily completed.

Upon completion of the Work contained in the final inspection report, the Prime Contractor shall notify the District, Construction Manager and Architect, who shall again inspect such Work. If the Construction Manager, the Architect and the District finds the Work contained in such final inspection report acceptable under the Contract Documents and, therefore, the Work fully completed, and if the Architect and the Construction Manager deem the requirements of Subsection 4.2.7 to be complete, it shall notify Prime Contractor, who shall then submit to the Architect its final Application for Payment.

Upon receipt and approval of such final Application for Payment, the Architect shall issue a final Certificate of Payment stating that to the best of its knowledge, information, and belief, and on the basis of its observations, inspections, and all other data accumulated or received by the Architect in connection with the Work, such Work has been completed in accordance with the Contract Documents. The District shall thereupon inspect such Work and either accept the Work as complete or notify the Architect and the Prime Contractor in writing of reasons why the Work is not complete. Upon acceptance of the Work of the Prime Contractor as fully complete (which, absent unusual circumstances, will occur when the punch-list items have been satisfactorily completed), the District shall record a Notice of Completion with the County Recorder, and the Prime Contractor shall, upon receipt of payment from the District, pay the amounts due Subcontractors.

**9.11.2 Retainage.** The retainage, less any amounts disputed by the District or which the District has the right to withhold Pursuant to Section 9.6, shall be paid after approval of the District by the Architect's Certificate of Payment, after the satisfaction of the conditions set forth in Part 9, or up to sixty (60) days after the acceptance of the Work, occupancy of the facility or recording of the Notice of Completion by District. No interest shall be paid on any retainage, or on any amounts withheld due to a failure of the Prime Contractor to perform, in accordance with the terms and conditions of the Contract Documents, except as provided to the contrary in any Escrow Agreement between the District and the Prime Contractor pursuant to Public Contract Code Section 22300.

#### **9.11.3 Procedures for Application for Final Payment.**

**9.11.3.1** *Prerequisites for Final Payment.* The following conditions must be fulfilled prior to Final Payment:

- (i) The Prime Contractor shall have made all corrections to the Work which are required to remedy any defects therein, to obtain compliance with the Contract Documents or any requirements of applicable codes and ordinances, or to fulfill any of the orders or directions of District required under the Contract Documents.

- (ii) Each Prime Contractor shall have delivered to the District all written guarantees, warranties, applications, and bonds required by the Contract Documents for its portion of the Work.
- (iii) Prime Contractor must have completed all requirements set forth in Section 9.9.
- (iv) Architect shall have issued a Final Certificate of Payment.
- (v) The Prime Contractor shall have provided all waivers and releases as required pursuant to Article 9.4.2.3.
- (vi) The Prime Contractor shall have delivered to the District all manuals and materials required by the Contract Documents.

#### Section 9.12 SUBSTITUTION OF SECURITIES

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

### **PART 10 PROTECTION OF PERSONS AND PROPERTY**

#### Section 10.1 SAFETY PRECAUTIONS AND PROGRAMS

**10.1.1 Prime Contractor Responsibility.** The Prime Contractor shall be responsible for all damages to persons or property that occur as a result of its fault or negligence in connection with the prosecution of the Contract and shall take all necessary measures and be responsible for the proper care and protection of all materials delivered and Work performed until completion and final acceptance by the District. All Work shall be solely at the Prime Contractor's risk, with the exception of damage to the Work caused by "acts of God" as defined in Public Contract Code Section 7105(b)(2).

Prime Contractor shall take, and require Subcontractors to take, all necessary precautions for safety of workers on the Work and shall comply with all applicable federal, State of California, local and other safety laws, standards, orders, rules, regulations, and building codes to prevent accidents or injury to persons on, about, or adjacent to premises where Work is being performed and to provide a safe and healthful place of employment. In addition to meeting all requirements of OSHA, Cal-OSHA, State of California, and local codes, Prime Contractor shall furnish, erect and properly maintain at all times, as directed by District or required by conditions and progress of Work, all necessary safety devices, safeguards, construction canopies, signs, audible devices for protection of the blind, safety rails, belts and nets, barriers, lights, and watchmen for protection of workers and the public, and shall post danger signs warning against hazards created by such features in the course of construction. Prime Contractor shall designate a responsible member of its organization on the Work, whose duty shall be to post information regarding protection and obligations of workers and other notices required under

OSHA and Cal-OSHA regulations, to comply with reporting and other occupational safety regulations and requirements, and to protect the life, safety and health of workers. The name and position of the person so designated shall be reported to District by Prime Contractor. Prime Contractor shall correct any violations of safety laws, rules, orders, standards, or regulations. Upon the issuance of a citation or notice of violation by the OSHA or Cal-OSHA, such violation shall be corrected promptly.

**10.1.2 Subcontractor Responsibility.** Prime Contractor shall require that Subcontractors participate in, and enforce, the safety and loss prevention programs established by the Prime Contractor for the Project, which will cover all Work performed by the Prime Contractor and its Subcontractors. Each Subcontractor shall designate a responsible member of its organization whose duties shall include loss and accident prevention, and who shall have the responsibility and full authority to enforce the program. This person shall attend meetings with the representatives of the various Subcontractors employed to ensure that all employees understand and comply with the programs.

**10.1.3 Cooperation.** All Subcontractors and material or equipment suppliers shall cooperate fully with Prime Contractor, the District, and all insurance carriers and loss prevention engineers.

**10.1.4 Accident Reports.** The Prime Contractor shall require that its Subcontractors report in writing to the Prime Contractor all accidents whatsoever arising out of, or in connection with, the performance of the Work, whether on or off the Project Site, resulting in any death, personal injury, or property damage. In addition, the Prime Contractor shall require that, if the accident results in death, serious injuries, or substantial damages, the Subcontractor shall report the accident to the Prime Contractor immediately after the accident by telephone, and the Prime Contractor shall then report the accident to the Construction Manager by telephone immediately after being informed of the accident. The Prime Contractor shall report all accidents, including any for which telephonic notice has been given, in writing to the Construction Manager within two (2) days of the accident. Each written accident report shall provide all relevant facts related to the occurrence, weather information, lists of witnesses, witness statements, *et cetera*.

**10.1.5 First-Aid Supplies at Project Site.** The Prime Contractor will provide and maintain at the Project Site first-aid supplies which comply with the current OSHA and Cal-OSHA regulations.

**10.1.6 Material Safety Data Sheets and Compliance with Proposition 65.** Prime Contractor is required to have material safety data sheets available in a readily accessible place at the Project Site for any material requiring a material safety data sheet per the Federal "hazard communication" standard, or employees' "right-to-know" law. The Prime Contractor is also required to properly label any substance brought onto the Project Site, and require that any person working with the material, or within the general area of the material, is informed of the hazards of the substance and follows proper handling and protection procedures.

Prime Contractor is required to comply with the provisions of California Health and Safety Code Section 25249.5 *et seq.*, which requires the posting and giving of notice to persons who may be exposed to any chemical known to the State of California to cause cancer. The Prime Contractor shall familiarize itself with the provisions of this Section and shall comply fully with its requirements.

**10.1.7 Non-Utilization of Asbestos Material.** NO ASBESTOS OR ASBESTOS-CONTAINING PRODUCTS SHALL BE USED IN THIS CONSTRUCTION OR IN ANY TOOLS, DEVICES, CLOTHING, OR EQUIPMENT USED TO EFFECT THIS CONSTRUCTION.

Asbestos and/or asbestos-containing products shall be defined as all items containing, but not limited to, chrysotile, amosite, anthophyllite, tremolite, and actinolite.

Any or all material containing greater than one-tenth of one percent (.1%) asbestos shall be defined as asbestos-containing material.

All Work or materials found to contain asbestos or Work or material installed with asbestos-containing equipment will be immediately rejected and such Work must be removed at no additional cost to the District.

Decontamination and removal of Work found to contain asbestos or Work installed with asbestos-containing equipment shall be done only under supervision of a qualified consultant knowledgeable in the field of asbestos abatement and accredited by the Environmental Protection Agency (EPA).

The asbestos removal Prime Contractor shall be an EPA-accredited contractor qualified in the removal of asbestos and shall be chosen and approved by the asbestos consultant, which shall have sole discretion and final determination in this matter.

The asbestos consultant shall be chosen and approved by the District, which shall have sole discretion and final determination in this matter.

The Work will not be accepted until asbestos contamination is reduced to levels deemed acceptable by the asbestos consultant.

Interface of Work under the Contract Documents with work containing asbestos shall be executed by the Prime Contractor at its risk and at its discretion, with full knowledge of the currently accepted standards, hazards, risks, and liabilities associated with asbestos work and asbestos-containing products. By execution of the Agreement, the Prime Contractor acknowledges the above and shall hold harmless District and its assigns for all asbestos liability that may be associated with the Work and shall instruct its employees with respect to the above-mentioned standards, hazards, risks, and liabilities.

## Section 10.2 SAFETY OF PERSONS AND PROPERTY

**10.2.1 The Prime Contractor.** The Prime Contractor shall take reasonable precautions for the safety of, and shall provide reasonable protection to prevent damage, injury, or loss to:

- (i) Employees on the Work and other persons who may be affected thereby;
- (ii) The Work, material, and equipment to be incorporated therein, whether in storage on or off the Project Site, under the care, custody, or control of the Prime Contractor, its Subcontractors or they're sub-subcontractors; and
- (iii) Other property at the Project Site or adjacent thereto such as trees, shrubs, lawns, walks, pavement, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

**10.2.2 Prime Contractor Notices.** The Prime Contractor shall give notices and comply with applicable laws, ordinances, rules, regulations, and lawful orders of public authorities bearing on the safety of persons or property or their protection from damage, injury, or loss.

**10.2.3 Safety Barriers and Safeguards.** The Prime Contractor shall erect and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations, and notifying owners and users of adjacent sites and utilities. The Prime Contractor shall also as necessary relocate such safety barriers to maintain a safe path of travel for staff and students. Prime Contractor shall also provide maps showing such relocations and timing of them. Upon Written notice of deficiencies in safety barriers, Prime Contractor shall immediately remedy such a hazard. The District shall have the right to remedy such a hazard within forty-eight (48) hours of written notice to the Prime Contractor and forward a deductive change order for the cost of the remedy.

**10.2.4 Use or Storage of Hazardous Material.** When use or storage of explosives, other hazardous materials or equipment, or unusual methods are necessary for execution of the Work, the Prime Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel. The Prime Contractor shall notify the District any time that explosives or hazardous materials are expected to be stored or used on the Project Site. Location of storage shall be coordinated with the District and local fire authorities.

**10.2.5 Protection of Work.** The Prime Contractor and Subcontractors shall continuously protect the Work, the District's property, and the property of others, from damage, injury, or loss arising in connection with operations under the Contract Documents. The Prime Contractor and Subcontractors, at their own expense, shall make good any such damage, injury, or loss, except such as may be solely due to or caused by agents or employees of the District.

The Prime Contractor, at its expense, will remove all mud, water, or other elements as may be required for the proper protection and prosecution of its Work.

Prime Contractor shall take adequate precautions to protect existing roads, sidewalks, curbs, pavements, utilities, adjoining property and structures (including, without limitation, protection from settlement or loss of lateral support), and to avoid damage thereto, and repair any damage thereto caused by construction operations. All permits, licenses, or inspection fees required for such repair Work shall be obtained and paid for by Prime Contractor.

**10.2.6 Requirements for Existing Sites.** Prime Contractor shall (unless waived by the District in writing):

- (i) When performing construction on existing sites, become informed and take into specific account the maturity of the students on the Project Site; and perform Work which may interfere with school routine before or after school hours, enclose working area with a substantial barricade, and arrange Work to cause a minimum amount of inconvenience and danger to students and faculty in their regular school activities. The Prime Contractor shall comply with Specifications and directives of the District regarding the timing of certain construction activities in order to avoid unnecessary interference with District and school functions. The Prime Contractor shall be responsible for all directional and safety signage.
- (ii) Provide substantial barricades around any shrubs or trees indicated to be preserved.
- (iii) Deliver materials to building area over the route designated by Construction Manager.
- (iv) Take preventive measures to eliminate objectionable dust, noise, or other disturbances.
- (v) Confine apparatus, the storage of materials, and the operations of workers to limits indicated by law, ordinances, permits or directions of Construction Manager; and not interfere with the Work or unreasonably encumber premises or overload any structure with materials; and enforce all instructions of District and Construction Manager regarding signs, advertising, fires, and smoking and require that all workers comply with all regulations while on the Project Site.
- (vi) Take care to prevent disturbing or covering any survey markers, monuments, or other devices marking property boundaries or corners. If such markers are disturbed by accident, they shall be replaced by an approved land surveyor or civil engineer and all maps and records required therefrom shall be filed with county and local authorities, at no cost to the District. All filing and plan check fees shall be paid by Prime Contractor.
- (vii) Provide District with Prime Contractor's written safety program and safety plan for each Project Site.



**10.2.7 Shoring and Structural Loading.** The Prime Contractor shall not impose structural loading upon any part of the Work under construction or upon existing construction on or adjacent to the Project Site in excess of safe limits, or loading such as to result in damage to the structural, architectural, mechanical, electrical, or other components of the Work. The design of all temporary construction equipment and appliances used in construction of the Work and not a permanent part thereof, including, without limitation, hoisting equipment, cribbing, shoring, and temporary bracing of structural Steele, is the sole responsibility of the Prime Contractor. All such items shall conform with the requirements of governing codes and all laws, ordinances, rules, regulations, and orders of all authorities having jurisdiction. The Prime Contractor shall take special precautions, such as shoring of masonry walls and temporary tie bracing of structural Steele work, to prevent possible wind damage during construction of the Work. The installation of such bracing or shoring shall not damage the Work in place or the Work installed by others. Any damage which does occur shall be promptly repaired by the Prime Contractor at no cost to the District.

**10.2.8 Conformance Within Established Limits.** The Prime Contractor and Subcontractors shall confine their construction equipment, the storage of materials, and the operations of workers to the limits indicated by laws, ordinances, permits, and the limits established by the District or the Prime Contractor, and shall not unreasonably encumber the premises with construction equipment or materials.

**10.2.9 Subcontractor Enforcement of Rules.** Subcontractors shall enforce the District's and the Prime Contractor's instructions, laws, and regulations regarding signs, advertisements, fires, smoking, the presence of liquor, and the presence of firearms by any person at the Project Site.

**10.2.10 Project Site Access.** The Prime Contractor and the Subcontractors shall use only those ingress and egress routes designated by the District, observe the boundaries of the Project Site designated by the District, park only in those areas designated by the District, which areas may be on or off the Project Site, and comply with any parking control program established by the District, such as furnishing license plate information and placing identifying stickers on vehicles.

### Section 10.3 EMERGENCIES

**10.3.1 Emergency Action.** In an emergency affecting the safety of persons or property, the Prime Contractor shall take any action necessary, at the Prime Contractor's discretion, to prevent threatened damage, injury, or loss. Additional compensation or extension of time claimed by the Prime Contractor on account of an emergency shall be determined as provided in Part 8.

**10.3.2 Accident Reports.** The Prime Contractor shall promptly report in writing to the District all accidents arising out of or in connection with the Work, which caused death, personal injury, or property damage, giving full details and statements of any witnesses in conformance with Subsection 10.1.4. In addition, if death, serious personal injuries, or serious property

damages are caused, the accident shall be reported in accordance with Subsection 10.1.4, immediately by telephone or messenger to the District.

#### Section 10.4 HAZARDOUS MATERIALS

**10.4.1 Discovery of Hazardous Materials.** In the event the Prime Contractor encounters or suspects the presence on the Project Site of material reasonably believed to be asbestos, polychlorinated biphenyl (PCB), or any other material defined as being hazardous by Section 25249.5 of the California Health and Safety Code, which has not been rendered harmless, the Prime Contractor shall immediately stop Work in the area affected and report the condition to the District, the Construction Manager and the Architect in writing, whether or not such material was generated by the Prime Contractor or the District. The Work in the affected area shall not thereafter be resumed, except by written agreement of the District and the Prime Contractor, if in fact the material is asbestos, PCB, or other hazardous material, and has not been rendered harmless. The Work in the affected area shall be resumed only in the absence of asbestos, PCB, or other hazardous material, or when it has been rendered harmless by written agreement of the District and the Prime Contractor.

**10.4.2 Hazardous Material Work Limitations.** In the event that the presence of hazardous materials is suspected or discovered on the Project Site, the District shall retain an independent testing laboratory to determine the nature of the material encountered and whether corrective measures or remedial action is required. The Prime Contractor shall not be required perform any Work in the affected area of the Project Site relating to asbestos, PCB, or other hazardous material, until any known or suspected hazardous material has been removed, or rendered harmless, or determined to be harmless by District, as certified by an independent testing laboratory and approved by the appropriate government agency.

**10.4.3 Indemnification for Hazardous Material Caused by Prime Contractor.** In the event hazardous materials on the Project Site are caused by the Prime Contractor, the Prime Contractor shall pay for all costs of testing and remediation, if any, and shall compensate the District for any additional costs incurred as a result of Prime Contractor's generation of hazardous material on the Project Site. In addition, the Prime Contractor shall defend, indemnify and hold harmless District and its agents, officers, and employees from and against any and all claims, damages, losses, costs and expenses incurred in connection with, arising out of, or relating to, the presence of hazardous material on the Project Site.

**10.4.4 Terms of Hazardous Material Provision.** The terms of this Hazardous Material provision shall survive the completion of the Work and/or any termination of the Contract.

### **PART 11 INSURANCE AND BONDS**

#### Section 11.1 PRIME CONTRACTOR'S LIABILITY INSURANCE

**11.1.1 Insurance Requirements.** Before the commencement of the Work, the Prime Contractor shall purchase from and maintain in a company or companies lawfully authorized to

do business in California as admitted carriers or approved surplus lines with a financial rating of at least A- status as rated in the most recent edition of Best's Insurance Reports or as otherwise set forth in the Special Conditions, such insurance as will protect the District from claims set forth below, which may arise out of or result from the Prime Contractor's operations under the Contract and for which the Prime Contractor may be legally liable, whether such operations are by the Prime Contractor, by a Subcontractor, by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

- (i) Claims for damages arising from bodily injury, sickness, disease, or death of any person requiring, as an employee claim, indemnification and coverage of the District;
- (ii) Claims for damages insured by usual personal injury liability coverage, which are sustained by a person as a result of an offense directly or indirectly related to employment of such person by the Prime Contractor or by another person;
- (iii) Claims for damages because of injury or destruction of tangible property, including loss of use resulting therefrom, arising from operations under the Contract Documents;
- (iv) Claims for damages because of bodily injury, death of a person, or property damage arising out of the ownership, maintenance, or use of a motor vehicle, all mobile equipment, and vehicles moving under their own power and engaged in the Work;
- (v) Claims involving contractual liability applicable to the Prime Contractor's obligations under the Contract Documents, including liability assumed by and the indemnity and defense obligations of the Prime Contractor and the Subcontractors;
- (vi) Claims involving completed operations, independent contractors' coverage, and broad-form property damage, without any exclusions for collapse, explosion, demolition and abatement, underground coverage, and excavating (XCU); and
- (vii) Claims involving sudden or accidental discharge of contaminants or pollutants.

**11.1.2 Subcontractor Insurance Requirements.** The Prime Contractor shall require its Subcontractors to take out and maintain similar public liability insurance and property damage insurance required under Subsection 11.1.1 in like amounts. A "claims made" or modified "occurrence" policy shall not satisfy the requirements of Subsection 11.1.1 without prior written approval of the District.

**11.1.3 Additional Insured Endorsement Requirements.** The Prime Contractor shall name, on any policy of insurance required under Section 11.1, the District, Construction Manager, Architect, Project Inspector, the State of California, their officers, employees, agents and independent contractors as additional insureds. Subcontractors shall name the Prime Contractor, the District, Construction Manager, Architect, Project Inspector, and the State of California, their officers, employees, agents and independent contractors as additional insureds. The Additional Insured Endorsement included on all such insurance policies shall be a CG 2010 1185 form and state that coverage is afforded the additional insured with respect to claims arising out of operations performed by or on behalf of the insured. If the additional insureds have other insurance that is applicable to the loss, such other insurance shall be on an excess or contingent basis. The insurance provided by the Prime Contractor pursuant to Subsection 11.1.1 must be designated in the policy as primary to any insurance obtained by the District. The amount of the insurer's liability shall not be reduced by the existence of such other insurance. Contractor shall also provide contractual liability coverage equivalent to ISO Form CG 00 01.

#### Section 11.2 WORKERS' COMPENSATION INSURANCE

During the term of the Contract, the Prime Contractor shall provide workers' compensation insurance for all of the Prime Contractor's employees engaged in Work under the Contract on or at the Project Site and, in case any of the Prime Contractor's Work is subcontracted, the Prime Contractor shall require the Subcontractor to provide Workers' Compensation insurance for all the Subcontractor's employees engaged in Work under the subcontract. Any class of employee or employees not covered by a Subcontractor's insurance shall be covered by the Prime Contractor's insurance. In case any class of employees engaged in Work under the Contract on or at the Project Site is not protected under the Workers' Compensation laws, the Prime Contractor shall provide or cause a Subcontractor to provide adequate insurance coverage for the protection of those employees not otherwise protected. The Prime Contractor shall file with the District certificates of insurance as required under Section 11.6 and in compliance with Labor Code Section 3700.

#### Section 11.3 BUILDER'S RISK - "ALL RISK" INSURANCE

The Prime Contractor will procure and maintain Builder's Risk, Course of Construction or similar property coverage for the Project. Such insurance will have a \$5,000 deductible.

#### Section 11.4 FIRE INSURANCE

The Prime Contractor will procure and maintain fire insurance for the Project. The Prime Contractor also shall be responsible for providing its own insurance for tools, equipment and other materials not intended to become a permanent component of the Project.

#### Section 11.5 OTHER INSURANCE

The Prime Contractor shall provide all other insurance required to be maintained under applicable laws, ordinances, rules, and regulations.

#### Section 11.6 PROOF OF INSURANCE

The Prime Contractor shall not commence Work nor shall it allow any Subcontractor to commence Work under the Contract until all required insurance and certificates have been obtained and delivered in duplicate to the District for approval subject to the following requirements:

- (i) Certificates and insurance policies shall include the following clause:

“This policy shall not be non-renewed, canceled, or reduced in required limits of liability or amounts of insurance until notice has been mailed to the District. Date of cancellation or reduction may not be less than thirty (30) days after the date of mailing notice.”

- (ii) Certificates of insurance shall state in particular those insured, the extent of insurance, location and operation to which the insurance applies, the expiration date, and cancellation and reduction notices.

- (iii) Certificates of insurance shall clearly state that the District, Construction Manager and the Architect are named as additional insureds under the policy described and that such insurance policy shall be primary to any insurance or self-insurance maintained by District.

- (iv) The Prime Contractor and its Subcontractors shall produce a certified copy of any insurance policy required under this Section upon written request of the District.

#### Section 11.7 COMPLIANCE

In the event of the failure of any Prime Contractor to furnish and maintain any insurance required by this Part 11, the Prime Contractor shall be in default under the Contract. Compliance by Prime Contractor with the requirement to carry insurance and furnish certificates or policies evidencing the same shall not relieve the Prime Contractor from liability assumed under any provision of the Contract Documents, including, without limitation, the obligation to defend and indemnify the District, Construction Manager and the Architect.

#### Section 11.8 WAIVER OF SUBROGATION

Prime Contractor waives (to the extent permitted by law) any right to recover against the District, Construction Manager and the Architect for damages to the Work, any part thereof, or any and all claims arising by reason of any of the foregoing, but only to the extent that such damages and/or claims are covered by property insurance and only to the extent of such coverage (which shall exclude deductible amounts) by insurance actually carried by the District.

The provisions of this Section are intended to restrict each party to recovery against insurance carriers only to the extent of such coverage and waive fully and for the benefit of each, any rights and/or claims which might give rise to a right of subrogation in any insurance carrier. The District and the Prime Contractor shall each obtain in all policies of insurance carried by either of them, a waiver by the insurance companies thereunder of all rights of recovery by way of subrogation for any damages or claims covered by the insurance.

## Section 11.9 PERFORMANCE AND PAYMENT BONDS

**11.9.1 Bond Requirements.** Prior to commencing any portion of the Work, the Prime Contractor shall furnish separate payment and performance bonds for its portion of the Work which shall cover 100% faithful performance of and payment of all obligations arising under the Contract Documents and/or guaranteeing the payment in full of all claims for labor performed and materials supplied for the Work. All bonds shall be provided by a corporate surety authorized and admitted to transact business in California as sureties.

To the extent, if any, that the Contract Price is increased in accordance with the Contract Documents, the Prime Contractor shall, upon request of the District, cause the amount of the bonds to be increased accordingly and shall promptly deliver satisfactory evidence of such increase to the District. To the extent available, the bonds shall further provide that no change or alteration of the Contract Documents (including, without limitation, an increase in the Contract Price, as referred to above), extensions of time, or modifications of the time, terms, or conditions of payment to the Prime Contractor will release the Surety. If the Prime Contractor fails to furnish the required bonds, the District may terminate the Contract for cause.

**11.9.2 Surety Qualification.** Only bonds executed by admitted Surety insurers as defined in Code of Civil Procedure Section 995.120 shall be accepted. Surety must be a California-admitted Surety and listed by the U.S. Treasury with a bonding capacity in excess of the Project cost.

**11.9.3 Alternate Surety Qualifications.** If a California-admitted surety insurer issuing bonds does not meet these requirements, the insurer will be considered qualified if it is in conformance with Section 995.660 of the California Code of Civil Procedure and proof of such is provided to the District.

## **PART 12**

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

## Section 12.1 UNCOVERING OF WORK

**12.1.1 Uncovering Work for Required Inspections.** If a portion of the Work is covered without Construction Manager, Project Inspector or Architect approval or not in compliance with the Contract Documents, it must, if required in writing by the Construction Manager, the Project Inspector or the Architect, be uncovered for the Project Inspector's or the Architect's observation and be replaced at the Prime Contractor's expense without change in the Contract Price or Contract Time.

**12.1.2 Costs for Inspections not Required.** If a portion of the Work has been covered which the Construction Manager, the Project Inspector or the Architect has not specifically requested to observe prior to its being covered, the Construction Manager, the Project Inspector or the Architect may request to see such Work, and it shall be uncovered by the Prime Contractor. If such Work is in accordance with the Contract Documents, costs to uncover and replace shall, by appropriate Change Order, be charged to the District. If such Work is not in accordance with Contract Documents, the Prime Contractor shall pay such costs unless the condition was caused by the District or a separate Prime Contractor, in which event the District shall be responsible for payment of such costs to the Prime Contractor.

## Section 12.2 CORRECTION OF WORK

**12.2.1 Correction of Rejected Work.** The Prime Contractor shall promptly correct the Work rejected by the Project Inspector or the District upon recommendation of the Construction Manager or the Architect as failing to conform to the requirements of the Contract Documents, whether observed before or after Completion and whether or not fabricated, installed, or completed. The Prime Contractor shall bear costs of correcting the rejected Work, including additional testing, inspections, and compensation for the Project Inspector's or the Architect's services and expenses made necessary thereby.

**12.2.2 Two-Year Warranty Corrections.** If, within two (2) years after the date of Completion of the Work or a designated portion thereof, or after the date for commencement of warranties established under Section 9.11.1, or by the terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Prime Contractor shall correct it promptly after receipt of written notice from the District to do so unless the District has previously given the Prime Contractor a written acceptance of such condition. This two (2) year period shall be extended with respect to portions of the Work first performed after Completion by the period of time between Completion and the actual performance of the Work. This obligation under this Subsection 12.2.2 shall survive acceptance of the Work under the Contract and termination of the Contract. The District shall give such notice promptly after discovery of the condition. This Subsection shall not limit or reduce the length of any warranties or guaranties required by the Contract Documents to have a duration of more than one (2) years.

**12.2.3 District's Rights if Prime Contractor Fails to Correct.** If the Prime Contractor fails to correct nonconforming Work within a reasonable time, the District may correct it in accordance with Section 9.7.

## **PART 13 MISCELLANEOUS PROVISIONS**

### Section 13.1 GOVERNING LAW

The Contract shall be governed by the law of the place where the Project is located.

## Section 13.2 SUCCESSORS AND ASSIGNS

The District and the Prime Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to the other party hereto and to partners, successors, assigns, and legal representatives of such other party in respect to covenants, agreements, and obligations contained in the Contract Documents. Neither party to the Contract shall assign the Contract as a whole without prior written consent of the other. If either party attempts to make such an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

## Section 13.3 WRITTEN NOTICE

In the absence of specific notice requirements in the Contract Documents, written notice shall be deemed to have been duly served if delivered in person to the individual, member of the firm or entity, or to an officer of the corporation for which it was intended, or if delivered at or sent by registered or certified mail to the last business address known to the party giving notice.

## Section 13.4 RIGHTS AND REMEDIES

**13.4.1 Duties and Obligations Cumulative.** Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law.

**13.4.2 No Waiver.** No action or failure to act by the Project Inspector, the District, the Construction Manager or the Architect shall constitute a waiver of a right or duty afforded them under the Contract Documents, nor shall such action or failure to act constitute approval or acquiescence in a breach thereunder, except as may be specifically agreed in writing.

## Section 13.5 TESTS AND INSPECTIONS

**13.5.1 Compliance.** Tests, inspections, and approvals of portions of the Work required by the Contract Documents will comply with Title 24, and with all other applicable laws, ordinances, rules, regulations, or orders of public authorities having jurisdiction.

**13.5.2 Independent Testing Laboratory.** The District will select and pay an independent testing laboratory to conduct all tests and inspections. Selection of the materials required to be tested shall be made by the laboratory or the District's representative and not by the Prime Contractor. Any costs or expenses of inspection or testing incurred outside of a fifty (50) mile radius from the Project Site or not located in a contiguous county to the Project Site, whichever distance is greater, shall be paid for by the District, invoiced by the District to the Prime Contractor, and deducted from the next Progress Payment.

**13.5.3 Advance Notice to Project Inspector.** The Prime Contractor shall notify the Project Inspector a sufficient time in advance of its readiness for required observation or inspection so that the Project Inspector may arrange for same. The Prime Contractor shall



notify the Project Inspector a sufficient time in advance of the manufacture of material to be supplied under the Contract Documents which must, by terms of the Contract Documents, be tested in order that the Project Inspector may arrange for the testing of the material at the source of supply.

**13.5.4 Testing Off-Site.** Any material shipped by the Prime Contractor from the source of supply, prior to having satisfactorily passed such testing and inspection or prior to the receipt of notice from said Project Inspector that such testing and inspection will not be required, shall not be incorporated in the Work.

**13.5.5 Additional Testing or Inspection.** If the Construction Manager, the Project Inspector, the Architect, the District, or public authority having jurisdiction determines that portions of the Work require additional testing, inspection, or approval not included under Section 13.5.1, the Project Inspector will, upon written authorization from the District, make arrangements for such additional testing, inspection, or approval. The District shall bear such costs except as provided in Section 13.5.7.

**13.5.6 Costs for Retesting.** If such procedures for testing, inspection, or approval under Sections 13.5.1 and 13.5.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, the Prime Contractor shall bear all costs arising from such failure, including those of re-testing, re-inspection, or re-approval, including, but not limited to, compensation for the Architect's and Construction Manager's services and expenses. Any such costs shall be paid by the District, invoiced to the Prime Contractor, and deducted from the next Progress Payment.

**13.5.7 Costs for Premature Test.** In the event the Prime Contractor requests any test or inspection for the Project and is not completely ready for the inspection, the Prime Contractor shall be invoiced by the District for all costs and expenses resulting from that testing or inspection, including, but not limited to, the Construction Manager's, the Project Inspector's and Architect's fees and expenses, and the amount of the invoice of shall be deducted from the next Progress Payment.

## Section 13.6 TRENCHES AND OTHER EXCAVATIONS

### **13.6.1 Trenches or Excavations Deeper Than Four Feet.**

**13.6.1.1** The provisions of this Subsection 13.6.1 shall be effective only if the Project involves digging trenches or other excavations that extend deeper than four (4) feet below the surface of the Project Site.

**13.6.1.2** The Prime Contractor shall promptly, and before the following conditions are disturbed, notify the District, in writing, of any: (i) material that the Prime Contractor believes may be hazardous waste, as defined in Section 25117 of the Health and Safety Code, that is required to be removed to a Class I, Class II, or Class III disposal site in accordance with provisions of existing law; (ii) subsurface or latent physical conditions at the Project Site differing from those indicated, including geological, soils, and or water table issues

that impede construction or increase the construction cost; and/or (iii) unknown physical conditions at the Project Site of any unusual nature, different materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents.

**13.6.1.3** The District shall promptly investigate the conditions identified by the Prime Contractor pursuant to Article 13.6.1.2 of this Section. If the District determines that such conditions exist and cause a decrease or increase in the Prime Contractor's cost of, or the time required for, performance of the Contract, the District shall issue a Change Order in accordance with the procedures set forth in these General Conditions. If asbestos-related work or hazardous substance removal is required that is not disclosed in the Contract Documents, such work shall be performed pursuant to a contract separate from any other Work to be performed as required by Section 25914.2 of the Health and Safety Code, as may from time to time be amended.

**13.6.1.4** In the event a dispute arises between the District and the Prime Contractor in regard to whether any condition identified by the Prime Contractor pursuant to Article 13.6.1.2 of this Section actually exists, or causes a decrease or increase in the Prime Contractor's cost of, or time required for, performance of the Contract, the Prime Contractor shall not be excused from completing the Project in accordance with the Project schedule, but shall proceed with all Work to be performed pursuant to the Contract Documents. However, the Prime Contractor may file a Claim as provided in these General Conditions.

#### **13.6.2 Trenches Deeper Than Five Feet.**

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

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

**13.6.2.3** *No Tort Liability of District.* Nothing in Labor Code Section 6705 or this Subsection 13.6.2 shall be construed to impose tort liability upon the District or any of its employees.

**13.6.3 No Excavation Without Permits.** The Prime Contractor shall not commence any excavation Work until it has secured all necessary permits including the required OSHA and

Cal-OSHA excavation/shoring permits. Any permits shall be prominently displayed on the Project Site prior to the commencement of any excavation.

#### Section 13.7 WAGE RATES, TRAVEL, AND SUBSISTENCE

**13.7.1 Wage Rates.** This Project is a public work and is subject to the payment of prevailing wages. Pursuant to the provisions of Article 2 (commencing at Section 1720), Chapter 1, Part 7, Division 2, of the Labor Code, the Governing Board has obtained the general prevailing rate of per diem wages and the general prevailing rate for holiday and overtime work in the locality in which this public Work is to be performed for each craft, classification, or type of worker needed for this Project from the Director of the Department of Industrial Relations ("Director"). These rates are on file with the Clerk of the Governing Board, and copies will be made available to any interested party on request. The Prime Contractor shall post a copy of such wage rates at the Project Site.

**13.7.2 Holiday and Overtime Pay.** Holiday and overtime work, when permitted by law, shall be paid for at a rate of at least one and one-half (1-1/2) times the above specified rate of per diem wages, unless otherwise specified.

**13.7.3 Wage Rates Not Affected by Subcontracts.** The Prime Contractor shall pay and shall cause to be paid each worker engaged in the execution of the Work on the Project not less than the general prevailing rate of per diem wages determined by the Director, regardless of any contractual relationship which may be alleged to exist between the Prime Contractor or any Subcontractor and such workers.

**13.7.4 Travel and Subsistence.** The Prime Contractor shall pay and shall cause to be paid to each worker needed to execute the Work on the Project travel and subsistence payments, as such travel and subsistence payments are defined by the Department of Industrial Relations in accordance with Labor Code Section 1773.1.

**13.7.5 Forfeiture and Payments.** Pursuant to Labor Code Section 1775, the Prime Contractor shall pay a penalty to the District for each calendar day, or portion thereof, for each worker paid less than the prevailing rate of per diem wages, determined by the Director, for such craft or classification in which such worker is employed for any Work done under the Agreement by the Prime Contractor or by any Subcontractor under it. The amount of the penalty shall be determined by the Labor Commissioner and shall be based on consideration of the Prime Contractor's mistake, inadvertence, or neglect in failing to pay the correct prevailing rate of per diem wage, the previous record of the Prime Contractor in meeting its prevailing rate of per diem wage obligations, or the Prime Contractor's willful failure to pay the correct prevailing rate of per diem wages. A mistake, inadvertence, or neglect in failing to pay the correct prevailing rate of per diem wage is not excusable if the Prime Contractor had knowledge of it or the obligations under this part. The difference between such prevailing rate of per diem wage and the amount paid to each worker for each calendar day or portion thereof for which each worker was paid less than the prevailing rate of per diem wage shall be paid to each worker by the Prime Contractor.

## Section 13.8 RECORD OF WAGES PAID: INSPECTION

### **13.8.1 Application of Labor Code.** Pursuant to Section 1776 of the Labor Code:

- (i) The Prime Contractor and each Subcontractor shall keep an accurate payroll record, showing the name, address, social security number, work classification, and straight time and overtime hours worked each day and week, and the actual per diem wages paid to each journeyman, apprentice, worker, or other employee employed by him or her in connection with the Work.
- (ii) The payroll records enumerated under subdivision (i) shall be certified and shall be available for inspection at all reasonable hours at the principal office of the Prime Contractor on the following basis:
  - (a) A certified copy of an employee's payroll record shall be made available for inspection or furnished to such employee or his or her authorized representative on request.
  - (b) A certified copy of all payroll records enumerated in subdivision (i) shall be made available for inspection or furnished upon request to a representative of the body awarding the contract, the Division of Labor Standards Enforcement, and the Division of Apprenticeship Standards of the Department of Industrial Relations.
  - (c) A certified copy of all payroll records enumerated in subdivision (i) shall be made available upon request by the public for inspection or for copies thereof. However, a request by the public shall be made through either the body awarding the contract, the Division of Apprenticeship Standards, or the Division of Labor Standards Enforcement. If the requested payroll records have not been provided pursuant to subparagraph (ii), the requesting party shall, prior to being provided the records, reimburse the costs of the preparation by the Prime Contractor, Subcontractors, and the entity through which the request was made. The public shall not be given access to such records at the principal office of the Prime Contractor.
  - (iii) The certified payroll records shall be on forms provided by the Division of Labor Standards Enforcement or shall contain the same information as the forms provided by the division.
  - (iv) The Prime Contractor shall file a certified copy of the records enumerated in subdivision (i) with the entity that requested such records within ten (10) days after receipt of a written request.
  - (v) Any copy of records made available for inspection as copies and furnished upon request to the public or any public agency by the awarding body or the Division of Labor Standards Enforcement shall be marked or obliterated in

such a manner as to prevent disclosure of an individual's name, address and social security number. The name and address of the contractor awarded or performing the contract shall not be marked or obliterated.

(vi) The Prime Contractor shall inform the body awarding the contract of the location of the records enumerated under subdivision (i), including the street address, city and county, and shall, within five (5) working days, provide a notice of a change of location and address.

(vii) The Prime Contractor shall have ten (10) days in which to comply, subsequent to receipt of written notice requesting the records enumerated in subdivision (i). In the event that the Prime Contractor fails to comply within the ten (10) day period, the Prime Contractor shall, as a penalty to the District, forfeit One Hundred Dollars (\$100.00) for each calendar day, or portion thereof, for each worker, until strict compliance is effectuated. Upon the request of the Labor Standards Enforcement, such penalties shall be withheld from the progress payments then due.

THE PRIME CONTRACTOR IS FULLY RESPONSIBLE FOR COMPLIANCE WITH THE REQUIREMENTS OF THIS SECTION 13.8 AND SECTIONS 13.7 AND 13.9.

#### Section 13.9 APPRENTICES

**13.9.1 Apprentice Wages and Definitions.** All apprentices employed by the Prime Contractor to perform services under the Contract shall be paid the standard wage paid to apprentices under the regulations of the craft or trade to which he or she is registered, and as determined by the Director, and shall be employed only at the Work of the craft or trade to which he or she is registered. Only apprentices, as defined in Section 3077 of the Labor Code, who are in training under apprenticeship standards and written apprenticeship agreements under Chapter 4 (commencing with Section 3070) of Division 3, are eligible to be employed under the Contract. The employment and training of each apprentice shall be in accordance with the apprenticeship standards and apprentice agreements under which he or she is training.

**13.9.2 Employment of Apprentices.** Prime Contractor shall comply with the requirements of Labor Code Section 1777.5. When the Prime Contractor to whom the Contract is awarded by the District, or any Subcontractor, in performing any of the Work under the Contract or subcontract, employs workers in any apprenticeable craft or trade, the Prime Contractor and Subcontractor shall apply to the appropriate and approved joint apprenticeship committee administering the apprenticeship standards of the craft or trade in the area of the Project Site, for a certificate approving the Prime Contractor or Subcontractor under the apprenticeship standards for the employment and training of apprentices in the area or industry affected. The joint apprenticeship committee or committees, subsequent to approving the subject Prime Contractor or Subcontractor, shall arrange for the dispatch of apprentices to the Prime Contractor or Subcontractor in order to comply with this Section. The Prime Contractor and each Subcontractor shall submit the Contract award information to the applicable joint apprenticeship committee which shall include an estimate of journeyman hours to be performed

under the Contract, the number of apprentices to be employed, and the approximate dates the apprentices will be employed. There shall be an affirmative duty upon the joint apprenticeship committee or committees administering the apprenticeship standards of the crafts or trade in the area of the Project Site to ensure equal employment and affirmative action and apprenticeship for women and minorities. The Prime Contractor and Subcontractors shall not be required to submit individual applications for approval to local joint apprenticeship committees provided they are already covered by the local apprenticeship standards. The ratio of work performed by apprentices to journeymen shall be in accordance with Labor Code Section 1777.5.

**13.9.2.1** *Apprenticeable Craft or Trade.* “Apprenticeable craft or trade” as used in this Part means a craft or trade determined as an apprenticeable occupation in accordance with the rules and regulations prescribed by the California Apprenticeship Council.

**13.9.3 Apprentice Fund.** The Prime Contractor or any Subcontractor that, in performing any of the Work under the Contract, employs journeymen or apprentices in any apprenticeable craft or trade, shall contribute to the California Apprenticeship Council the same amount that the Director determines is the prevailing amount of apprenticeship training contributions in the area of the Project Site. The Prime Contractor or Subcontractor may take as a credit for payments to the Council any amounts paid by the Prime Contractor or Subcontractor to an approved apprenticeship program that can supply apprentices to the Project Site. The Prime Contractor or Subcontractor may add the amount of the contributions in computing its bid for the Contract.

**13.9.4 Prime Contractor Compliance.** The Prime Contractor is responsible for compliance with this Section 13.9 and Section 1777.5 of the Labor Code for all apprenticeable occupations.

## Section 13.10 ASSIGNMENT OF ANTI-TRUST CLAIMS

**13.10.1 Application.** Pursuant to Public Contract Code Section 7103.5, in entering into a public works contract or a subcontract to supply goods, services, or materials pursuant to a public works contract, the Prime Contractor or Subcontractor offers and agrees to assign to the District all rights, title, and interest in and to all causes of action it may have under Section 4 of the Clayton Act, (15 U.S.C. §15) or under the Cartwright Act (Chapter 2 [commencing with §16700] of Part 2 of Division 7 of the Business and Professions Code), arising from the purchase of goods, services, or materials pursuant to the public works contract or the subcontract. This assignment shall be made and become effective at the time the awarding body tenders final payment to the Prime Contractor, without further acknowledgment by the parties. If the District receives, either through judgment or settlement, a monetary recovery for a cause of action assigned under Chapter 11 (commencing with § 4550) of Division 5 of Title 1 of the Government Code, the assignor shall be entitled to receive reimbursement for actual legal costs incurred and may, upon demand, recover from the District any portion of the recovery, including treble damages, attributable to overcharges that were paid by the assignor but were not paid by the District as part of the bid price, less the expenses incurred in obtaining that portion of the recovery.

**13.10.2 Assignment of Claim.** Upon demand in writing by the assignor, the District shall, within one (1) year from such demand, reassign the cause of action assigned pursuant to this Part if the assignor has been or may have been injured by the violation of law for which the cause of action arose and the District has not been injured thereby or the District declines to file a court action for the cause of action.

#### Section 13.11 STATE AUDIT

Pursuant to and in accordance with the provisions of Government Code § 8546.7, if the Contract involves an expenditure of public funds in excess of \$10,000, the District and the Prime Contractor are subject to examination and audit by the State of California for a period of three (3) years after final payment is made under the Contract. The Prime Contractor shall preserve all records related to the Project (financial and otherwise) for such three (3) year period or, if an audit is commenced within such period, until the audit is complete. The Prime Contractor shall require that each of its Subcontractors preserve all records related to the Project for such three (3) year period or, if an audit is commenced within such period, until the audit is complete.

#### Section 13.12 STORM WATER RUN-OFF

**13.12.1 Local Agency Requirements.** The Prime Contractor shall, as necessary in connection with the Work, comply with the applicable requirements of the County, any drainage or storm water district, or other local agency with jurisdiction in regard to discharges of storm water to storm-drain systems or watercourses, including, without limitation, requirements of applicable municipal storm water management programs. It is the Prime Contractor's obligation to ascertain the National Pollutant Discharge Elimination System ("NPDES") and Water Pollution Prevention Plan ("SWPPP") requirements, but the Construction Manager may provide assistance.

**13.12.2 NPDES Permit Requirements.** The Prime Contractor shall, as necessary in connection with the Work, comply with all requirements of any applicable NPDES permit and Storm SWPPP. It is the Prime Contractor's obligation to ascertain the NPDES and SWPPP requirements, but the Construction Manager may provide assistance. The Prime Contractor shall not disturb any on-site or off-site run-off control measures in place for the Project, and shall replace and/or restore any such control measures damaged in connection with the Work being performed on behalf of the Prime Contractor, as required by the Construction Manager. Failure to comply with the NPDES permit or the SWPPP is a violation of federal and/or State law. The Prime Contractor shall indemnify, defend and hold-harmless each District Indemnitee, in accordance with the Contract Documents, with respect to any noncompliance with the NPDES permit or the SWPPP.

**13.12.3 Responsibility for NPDES Permit and SWPPP.** If this Subsection 13.12.3 is made applicable as set forth in the Special Conditions, the Prime Contractor shall be responsible for filing a "Notice of Intent" and obtaining coverage under the applicable NPDES permit for the Project, and for preparing, obtaining approvals of, implementing and monitoring a SWPPP for the Project. The Prime Contractor shall provide a draft of the SWPPP to the District

as soon as practicable after execution of the Contract, which shall be subject to review by the Construction Manager.

(i) The Prime Contractor shall be required to comply with all conditions of the State Water Resources Control Board National Pollutant Discharge Elimination System General Permit for Waste Discharge Requirements for Discharges of Storm Water Runoff Associated with Construction Activity ("Permit") for all construction activity which results in the disturbance of in excess of one acre of total land area or which is part of a larger common area of development or sale. Prime Contractor shall be responsible for filing the Notice of Intent and for obtaining the Permit. The Prime Contractor shall be solely responsible for preparing and implementing a SWPPP prior to initiating Work. In bidding on this Contract, it shall be the Prime Contractor's responsibility to evaluate the cost of procuring the Permit and preparing the SWPPP as well as complying with the SWPPP and any necessary revision to the SWPPP. The Prime Contractor shall comply with all requirements of the State Water Resources Control Board. The Prime Contractor shall include all costs of compliance with specified requirements in the Contract amount.

(ii) The Prime Contractor shall be responsible for procuring, implementing and complying with the provisions of the Permit and the SWPPP, including the standard provisions, monitoring and reporting requirements as required by the Permit and the SWPPP. Prime Contractor shall provide copies of all reports and monitoring information to the District Representative, Architect, and Construction Manager. The Prime Contractor shall provide to the District a copy of the NPDES permit (and all supporting rules and orders) and, after final approval, a copy of the SWPPP. The Prime Contractor shall implement and comply with all provisions of the NPDES permit, the SWPPP and other requirements of the State Water Resources Control Board in connection with the Work, including, without limitation, the standard provisions, monitoring and reporting requirements as required by the NPDES permit.

(iii) The Prime Contractor shall comply with the lawful requirements of any applicable municipality, the District, drainage district, and other local agencies regarding discharges of storm water to separate storm drain system or other watercourses under their jurisdiction, including applicable requirements in municipal storm water management programs.

(iv) Storm, surface, nuisance, or other waters may be encountered at various times during construction of the work. Therefore, the Prime Contractor, by submitting a Bid, hereby acknowledges that it has investigated the risk arising from such waters, has prepared its Bid accordingly, and assumes any and all risks and liabilities arising therefrom.

(v) Failure to comply with the Permit is in violation of federal and state law. The Prime Contractor hereby agrees to indemnify and hold harmless District, its



officials, officers, agents, employees and authorized volunteers from and against any and all claims, demands, losses or liabilities of any kind or nature which District, its officials, officers, agents, employees and authorized volunteers may sustain or incur for noncompliance with the Permit arising out of or in connection with the Project, except for liability resulting from the sole established negligence, willful misconduct or active negligence of the District, its officials, officers, agents, employees or authorized volunteers. District may seek damages from the Prime Contractor for delay in completing the Contract in accordance with the Contract Documents, caused by the Prime Contractor's failure to comply with the Permit.

(vi) The Prime Contractor shall be responsible for removal and clean-up of all run-off and other control measures upon completion of the Work.

## **PART 14**

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

#### **Section 14.1 TERMINATION BY THE PRIME CONTRACTOR FOR CAUSE**

**14.1.1 Grounds for Termination.** The Prime Contractor may terminate the Contract if the Work is stopped for a period of one-hundred and twenty (120) consecutive days through no act or fault of the Prime Contractor, a Subcontractor, a sub-subcontractor, their agents or employees, or any other persons performing portions of the Work for whom the Prime Contractor is contractually responsible, and the Work is stopped as a result of:

- (i) Issuance of an order of a court or other public authority having jurisdiction; or
- (ii) An act of government, such as a declaration of national emergency.

**14.1.2 Notice of Termination.** If one of the above reasons exists and more than one hundred twenty (120) days has elapsed without any Work being performed, the Prime Contractor may, upon written notice of seven (7) additional days to the District, terminate the Contract and recover from the District payment for Work executed and for reasonable costs verified by the Construction Manager or the Architect with respect to materials, equipment, tools, construction equipment, and machinery, including reasonable overhead, profit, and damages.

#### **Section 14.2 TERMINATION BY THE DISTRICT FOR CAUSE**

**14.2.1 Grounds for Termination.** The District may terminate the Contract and/or the Prime Contractor's right to proceed with the Work under the Contract if the Prime Contractor:

- (i) Persistently or repeatedly refuses or fails to supply enough properly skilled workers or proper materials;

- (ii) Persistently or repeatedly is absent, without excuse, from the Project Site;
- (iii) Fails to make payment to Subcontractors;
- (iv) Unreasonably or persistently disregards laws, ordinances, rules, regulations, or orders of a public authority having jurisdiction; or
- (v) Otherwise is in substantial breach of a provision of the Contract Documents.

**14.2.2 Notification of Termination.** When any of the above reasons exist, the District may, without prejudice to any other rights or remedies of the District and after giving the Prime Contractor and the Prime Contractor's Surety, if any, written notice of seven (7) days, terminate the Contract and/or the Prime Contractor's right to proceed with the Work under the Contract and may, subject to any prior rights of the Surety:

- (i) Take possession of the Project and of all material, equipment, tools, and construction equipment and machinery thereon owned by the Prime Contractor;
- (ii) Accept assignment of subcontracts; and
- (iii) Complete the Work by any reasonable method the District may deem expedient.

**14.2.3 Payments Withheld.** If the District terminates the Contract for one of the reasons stated in Subsection 14.2.1, the Prime Contractor shall not be entitled to receive further payment until the Work is complete.

**14.2.4 Payments Upon Completion.** If the unpaid balance of the Contract Price exceeds costs of completing the Work, including compensation for professional services and expenses made necessary thereby, such excess shall be paid to the Prime Contractor. If such costs exceed the unpaid balance, the Prime Contractor shall pay the difference to the District. The amount to be paid to the Prime Contractor, or District, as the case may be, shall be certified by the Construction Manager or the Architect upon application. This payment obligation shall survive completion of the Contract.

### Section 14.3 TERMINATION FOR CONVENIENCE OF DISTRICT

District, without need for cause, may terminate the Contract upon fifteen (15) calendar days of written notice to the Prime Contractor. In such a case, the Prime Contractor shall have no claims against the District except: (1) the actual cost for labor, materials, and services performed which may be documented through timesheets, invoices, receipts, or otherwise, and (2) ten percent (10%) profit and overhead, and (3) five percent (5%) termination cost of the total of items (1) and (2). The Prime Contractor shall remain liable in accordance with the Contract Documents for all Work performed prior to termination.

#### Section 14.4 REMEDIES OTHER THAN TERMINATION

If a default occurs, the District may, without prejudice to any other right or remedy, including, without limitation, its right to terminate the Contract pursuant to Section 14.2, do any of the following:

- (i) Permit the Prime Contractor to continue under the Contract, but make good such deficiencies or complete the Contract by whatever method the District may deem expedient, and the cost and expense thereof shall be deducted from the Contract Price or paid by the Prime Contractor to the District on demand;
- (ii) If the workmanship performed by the Prime Contractor is faulty or defective materials are provided, erected or installed, then the District may order the Prime Contractor to remove the faulty workmanship or defective materials and to replace the same with Work or materials that conform to the Contract Documents, in which event the Prime Contractor, at its sole costs and expense, shall proceed in accordance with the District's order and complete the same within the time period given by the District in its notice to the Prime Contractor; or
- (iii) Initiate procedures to declare the Prime Contractor a non-responsible bidder for a period of two (2) to five (5) years thereafter.

All amounts expended by the District in connection with the exercise of its rights hereunder shall accrue interest from the date expended until paid to the District at the maximum legal rate. The District may retain or withhold any such amounts from the Contract Price. If the Prime Contractor is ordered to replace any faulty workmanship or defective materials pursuant to subdivision (ii) above, the Prime Contractor shall replace the same with new Work or materials approved by the Construction Manager, the Architect and the District, and, at its own cost, shall repair or replace, in a manner and to the extent the Construction Manager, the Architect and the District shall direct, all Work or material that is damaged, injured or destroyed by the removal of said faulty workmanship or defective material, or by the replacement of the same with acceptable Work or materials. In no event shall anything in this Section be deemed to constitute a waiver by the District of any other rights or remedies that it may have at law or in equity, it being acknowledged and agreed by the Prime Contractor that the remedies set forth in this Section are in addition to, and not in lieu of, any other rights or remedies that the District may have at law or in equity.

## Project Closeout (For Reference)

Item	GC Paragraph	
1	9.9.4	Contractor delivers O&M manuals to District at least 30 day prior to final inspection
2	9.9.1	prime contractor considers work substantially complete
3	9.9.1	prime contractor prepares and submits comprehensive list of items to be completed/corrected (Punch list)
4	9.9.1	prime contractor and sub-contractors complete items on punch list
5	9.9.1	CM inspect the Work
6	9.9.1	Arch inspect the Work
7	9.9.1	IOR inspect the Work
8	9.9.1	Contractor completes work identified by CM, AOR and IOR
9	9.9.5.1	Contractor performs punch list and completes work.
	iii	All commissioning & T&B is completed and reports submitted
	iv	All electrical circuits are scheduled and disconnects are labeled
	v	Complete painting
	vi	Doors complete with hardware and relieved of sticking and binding
	viii	Tops and bottoms of doors sealed
	viii	Floors completed as specified
	ix	Broken glass replaced and glass cleaned.
	x	Grounds cleared of equipment, raked clean of debris and trash removed
	xiii	Work cleaned
	xiii	Remove marks, dirt and labels from Finish work
	xiii	Final clean
10	9.9.1	Contractor submits request for additional inspection
11	9.9.1	IOR determines whether complete or not - repeat process until complete
12	9.11.1	Contractor provides written notice that all punch items are complete
13	9.11.1	CM and AOR perform final inspection
14	9.11.1	CM & AOR provide final inspection report to District and Contractor
15	9.11.1	Contractor completes work identified by CM and AOR if any and notifies the District, CM and Architect
16	9.11.1	District, CM and AOR inspect the work
	4.2.7 &	
17	9.11.1	CM and AOR determine date of completion and notify the District and Contractor
18	9.9.1	CM prepares and District files Notice of Completion
19	9.9.3.3	Contractor obtains Inspector's acceptance of corrected plans & specs
20	9.9.3.3	Contractor obtains Architect's acceptance of corrected plans & specs
21	9.9.3.3	Contractor scans plans and specifications to create .pdf's
22	n/a	Contractor obtains approval of scanned documents for accuracy of the compilation from Architect
23	n/a	Contractor produces three sets of black and white bond copies from the compiled pdf's
24	n/a	Contractor produces and delivers five sets of DVDs
	9.10.3.4	Contractor provides Record Drawing certification
25	9.9.6	Contractor provides letter to District identifying District personnel trained in the various systems.
26	9.11.1	Contractor submits final application for payment
	i	corrections completed

		iii	delivered guarantees, warranties, applications, and bonds
		iii	completed all items above
		iv	AOR issues final Certificate for Payment
		v	provide all unconditional and conditional releases per 9.4.2.3
			Deliver to District all manuals and materials required by the contract including
		vi	Certification per section 3.10.3.5
27	n/a		Contractor files DSA form 6
28	n/a		Contractor requests Owner to file NOT with SWRCB
29	4.2.7		Architect and CM issue final certificate for payment
30	n/a		Contractor submits application for release of retention

# **GROSSMONT UNION HIGH SCHOOL DISTRICT**

## **VALHALLA BATTERY INVERTER REPLACEMENT CN-2559**

**SECTION 00720  
SPECIAL CONDITIONS**

**(00720)**  
**SPECIAL CONDITIONS**

- A. **TIME OF PERFORMANCE:** The work shall be commenced on the date stated in the District's Notice to Proceed (which date will be not less than **five (5)** consecutive calendar days from and after the date of the (Preliminary) Notice of Award) and shall be completed within **59 working** days from and after the date stated in such notice to proceed, **and in accordance with the scheduled dates as specified below.** Construction period includes **five (5) rain** days and **five (5)** quiet/testing days. The District will have ownership of these rain and quiet days. District and Contractor each hereby stipulate that the stated performance period is accepted as reasonable and that no other performance period shall be acceptable unless accepted in writing (See Article 2 of Agreement and **Sections 8.3 and 8.4** of General Conditions.)

Work under this contract shall be scheduled and coordinated in compliance with the following:

1. See Bid Schedule for all required dates.
2. The contractor acknowledges that it fully understands the Project work to be performed has been scheduled by the District for a specific time period. In addition, the Contractor acknowledges that it fully understands that scheduling has been established for this Project in order to promote the best usage of school facilities and to timely provide an appropriate learning environment for students to the fullest extent possible. With these understandings in mind, pursuant to **Sections 14.2 and 14.3** of the General Conditions regarding the District's Right to Terminate Contract, it is acknowledged and understood by the Contractor that it is a substantial violation of the Contract for the Contractor to fail to provide all submittals in the time specified and identified. Furthermore, it is acknowledged and understood by the Contractor that it is a substantial violation of the Contract for the Contractor to fail to provide a full work crew or properly skilled workers with proper and sufficient materials and equipment from the first day of Project work scheduled as specified in the District's Notice to Proceed.

If the site will not be available after the Notice to Proceed date, Contractor shall utilize this time period for administrative tasks and initial mobilization and shall coordinate such activities with District.

B. **LIQUIDATED DAMAGES**

**Liquidated Damages – Submittals:** If technical submittals, contract, bonds, and certificates of insurance are not received by the District within the scheduled time period, the agreed liquidated damages established in **Section 8.4** of the General Conditions is Fifty Dollars (\$50.00) per day for each calendar day the start date is delayed.

**Liquidated Damages – Time of Completion:** If work under this contract is not complete within the specified time period, the agreed liquidated damages established in **Section 8.4** of the General Conditions is One-Thousand Dollars (\$1,000.00) per day for each calendar day the completion date is delayed.

- C. **DOCUMENTS FURNISHED:** The number of copies of drawings and specifications to be furnished to Contractor free of charge, per **Section 3.10** of the General Conditions, is two (2). Additional copies of the drawings are the responsibility of the contractor.
- D. **BONDS:** Contractor shall provide (i) a bid bond in the amount of ten (10%) of the contract price; (ii) a payment bond in the total amount of bid or as specified in the Information to Bidders; and (iii) a performance bond in the amount of one hundred percent (100%) of the contract price or as specified in the Information for Bidders.
- E. **INSURANCE:** Comply with insurance requirements as provided in **Section 11.1 PRIME CONTRACTOR'S LIABILITY INSURANCE** of the General Conditions. Before the commencement of the Work, the Prime Contractor shall purchase from and maintain, in a company or companies lawfully authorized to do business in California with a financial rating of at least **A-** status as rated in the most recent edition of Best's Insurance Reports, such insurance as will protect the District from claims set forth below, which may arise out of or result from the Prime Contractor's operations under the Contract and for which the Prime Contractor may be legally liable, whether such operations are by the Prime Contractor, by a Subcontractor, by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

For Contracts up to \$500,000 the following limits apply:		Contractor	Subcontractor
Comprehensive General Liability Insurance with a combined single limit per occurrence of not less than:	\$ 1,000,000.00	\$ 1,000,000.00	
Project Specific Aggregate (for this project only)	\$ 2,000,000.00	\$ 2,000,000.00	
OR			
Commercial General Liability and Property Damage Insurance (including automobile insurance) which provides limits of not less than:			
(a) Per occurrence (combined single limit)	\$ 1,000,000.00	\$ 1,000,000.00	
(b) Project Specific Aggregate (for this project only)	\$ 2,000,000.00	\$ 2,000,000.00	
(c) Products/Completed Operations	\$ 1,000,000.00	\$ 1,000,000.00	
(d) Personal & Advertising Injury limit	\$ 1,000,000.00	\$ 1,000,000.00	
For Contracts from \$500,000 - \$1 Million the following limits apply:		Contractor	Subcontractor

<b>Comprehensive General Liability Insurance</b> with a combined single limit per occurrence of not less than:	\$ 2,000,000.00	\$ 2,000,000.00
Project Specific Aggregate (for this project only)	\$ 3,000,000.00	\$ 3,000,000.00
<b>OR</b>		
<b>Commercial General Liability and Property Damage</b>		



<b>Insurance</b> (including automobile insurance) which provides limits of not less than:		
(a) Per occurrence (combined single limit)	\$ 2,000,000.00	\$ 2,000,000.00
(b) Project Specific Aggregate (for this project only)	\$ 3,000,000.00	\$ 3,000,000.00
(c) Products/Completed Operations	\$ 2,000,000.00	\$ 2,000,000.00
(d) Personal & Advertising Injury limit	\$ 2,000,000.00	\$ 2,000,000.00
<b>For Contracts greater than \$1 Million the following limits apply:</b>		
	<b>Contractor</b>	<b>Subcontractor</b>
<b>Comprehensive General Liability Insurance</b> with a combined single limit per occurrence of not less than:		
	\$ 3,000,000.00	\$ 3,000,000.00
Project Specific Aggregate (for this project only)	\$ 5,000,000.00	\$ 5,000,000.00
<b>OR</b>		
<b>Commercial General Liability and Property Damage Insurance</b> (including automobile insurance) which provides limits of not less than:		
(a) Per occurrence (combined single limit)	\$ 3,000,000.00	\$ 3,000,000.00
(b) Project Specific Aggregate (for this project only)	\$ 5,000,000.00	\$ 5,000,000.00
(c) Products/Completed Operations	\$ 3,000,000.00	\$ 3,000,000.00
(d) Personal & Advertising Injury limit	\$ 3,000,000.00	\$ 3,000,000.00

**Certificate Holder:** Certificate Holder shall be Grossmont Union High School District.

**Insurance Covering Special Hazards:** The following special hazards shall be covered by riders or riders to above-mentioned commercial liability insurance or property damage insurance policy or policies of insurance, or by special policies of insurance, in amounts as follows:

- a. Automotive and truck, where operated, in automobile amounts above;
- b. Material hoist, where used, in automobile amounts above.

F. **EXECUTED COPIES:** The number of executed copies of the Agreement, the Performance Bond, and the Payment Bond for Public Works required is **two (2)**.

G. **LICENSE CLASSIFICATION:** Each bidder shall be a licensed Contractor pursuant to the Business and Professions Code and shall be licensed in the following classification:

**B**

- H. **FINGERPRINTING:** Pursuant to the provisions of **Section 3.3** of the General Conditions, District Determination of Fingerprinting Requirement Application is as follows:

The District has considered the totality of the circumstances concerning the Project and has determined that the Contractor, Sub-Contractors, and their respective employees:

Fingerprinting and background checks ARE required of all Contractors' jobsite supervisors. This information shall be readily available to view by the District at any time.

Contractor must provide certification of Department of Justice Clearance for job site supervisor's employed by the Contractor and all its Subcontractors obtained through LiveScan. Clearance must be obtained using the Contractor's ORI (Origination Number). Local agency clearances including but not limited to DMV, Police Department, and San Diego Sheriff are not acceptable.

When necessary, the District may call for fingerprinting of all employees if there will be more than limited contact with school students.

- I. **TEMPORARY FACILITIES/UTILITY USAGE:** Contractor shall provide temporary power/utilities from other sources to all trailers and work spaces as required to complete the work listed in these documents. This includes but is not limited to water, electrical, gas, sewer, phones/data systems. Contractor shall not use District utilities.
- J. **LABOR COMPLIANCE:** Contractor is to submit certified payroll records (CPRs) to the Department of Industrial Relations ("DIR") Labor Commissioner and awarding body. Visit the DIR website for additional information at:  
<http://www.dir.ca.gov/Public-Works/SB854.html>

Contractor is to retain all certified payrolls for a period of no less than (5) five years from date of completion as noted in the General Conditions.

- K. **STORM WATER POLLUTION PREVENTION PLAN:** Contractor shall upon receipt of the Notice to Proceed, contact the District to coordinate the filing of the Notice of Intent for the Storm Water Permit with the Legally Responsible Party ("LRP") in accordance with General Conditions Section 13.12.3 and shall make payment of the application fee and any annual renewal fees directly to the State Water Resources Control Board ("SWRCB"). Responsibility for obtaining the required storm water permit remains with the Contractor and as such, the Contractor shall facilitate and coordinate any actions required of the District in obtaining the permit. Similarly, the Contractor shall, as part of their closeout requirements, coordinate the filing of the Notice of Termination with the District. District shall reimburse Contractor for any fees paid to SWRCB.
- L. **SAFETY/SECURITY:** Site safety and security is the responsibility of the Contractor per Section 10, Protection of Persons and Property until achievement of Substantial Completion. The Contractor is to conduct safety meetings once per week with the Contractor's employees, subcontractors and any tiers thereof. **Minutes of the safety meetings are to be submitted to the Construction Manager ("CM") on that date's Daily Report, prior to approval of monthly pay requests.** In addition, the General

Contractor must provide the CM and Inspector of Record with a copy of its safety plan, SWPPP Plan, MSDS sheets/binder, and copies of safety plans from each of the General Contractor's subcontractors at the start of the Project. The General Contractor is required to keep the school site and the construction zone in a clean, safe and secure condition.

- M. **DISTRICT STANDARDS:** The District has made a finding that certain brands or trade names are necessary in order to maintain conformity among its campuses, to maintain compatibility with existing systems, and to streamline maintenance and parts storage, so substitutions will only be permitted as described in the General Conditions and the Resolutions are included at the end of the Special Conditions. Executed copies of the resolutions are available at the District's Purchasing Department.

N. **AS-BUILT DRAWINGS**

General Contractor shall maintain a clean, undamaged set of contract drawings and shop drawings, in addition to maintaining one complete set of record drawings in the Construction Manager's/Inspector of Record's office. Prior to approval of monthly pay requests, CM Project Superintendent, the Inspector of Record, and the Architect will verify the as-built drawings and updating of project record drawings in the CM trailer.

The General Contractor shall be monetarily responsible for reproduction of the final record set of drawings (as-builts) for all category scopes of work at the conclusion of the project.

O. **WARRANTY**

In addition to all applicable manufacturers' warranties required per the Technical Specifications, the Prime Contractor as well as all subcontractors shall utilize the attached workmanship/installation warranty form and deliver a completed warranty form for their portion of the work to the CM prior to final payment.

P. **DEFINITIONS General Conditions section 1.2 Definitions is hereby supplemented as follows:**

1. Substantial Completion: The date upon which all items of work have been provided and are considered complete by the Contractor. The Inspector of Record and the Construction Manager shall also concur that all items of work have been provided. Or, if mutually agreed between the District and the Contractor, the date upon which the District takes occupancy of the facility. Partial occupancy, per Section 9.10, shall not be considered Occupancy for the purpose of establishing the date of Substantial Completion. The District shall not be obligated to Occupy the facility if all items of work have not been completed. Alternatively, the date upon which the District accepts the work shall be considered the date of substantial completion.
2. Final Completion: The date when all punch list items have been cleared by the Inspector of Record and all other contractual requirements, including but not limited to, all testing, inspections, reports, record documents, sitework, software, programming, and any incomplete Change Order documents have been completed to the satisfaction of the Construction Manager, District and Architect in accordance with Section 9.11.

3. Construction Period: Beginning on and including the Notice to Proceed date and ending on and including the Final Completion Date as indicated in the original Contract Schedule as amended from time to time by appropriate Change Order.

#### **Q. INSPECTIONS**

General Conditions section 13.5.2 is hereby supplemented as follows: All shop fabricated steel requires continuous inspection by a DSA certified inspector provided by the Owner. One inspector is capable of observing as many as ten welders simultaneously depending on the shop and project conditions. Consequently, the Contractor is expected to provide sufficient manpower during shop fabrication to keep the Inspector fully engaged. For this purpose, the Contractor shall provide an average of six welders per inspector per day. Should the average number of welders be less than six per day, the Contractor shall be back charged through the change order process on a prorated basis. For example, if the Contractor only provides 5 welders per day on average, one sixth of the cost of inspection shall be back charged to the Contractor. Similarly, field welding operations that require continuous inspection shall be staffed in the same way as shop welding. The Contractor shall be back charged for providing fewer than an average of six welders per day, per location. All load bearing masonry work requires continuous inspection by a DSA certified inspector provided by the Owner. Multiple crews can be observed by one inspector. Consequently, the Contractor shall provide as many crews as possible that can safely work on the project. The Contractor shall be similarly back charged for providing fewer crews than possible on the job. The Construction Manager shall determine the maximum number of crews that can safely work on the job for the purposes of determining whether any back charges would be due. The Contractor is obligated to plan any work that requires continuous inspection in such a way that the total duration of that activity is reduced to the minimum in an effort to restrain the cost of continuous inspection to the Owner.

#### **R. UTILITY CONNECTION REQUIREMENTS**

General Conditions section 9.9.2 is hereby supplemented as follows: In addition to any punchlists and inspections performed by the Owner, Architect or Construction Manager, the Contractor shall obtain and complete a punch list for any Work within the public right of way or work performed on public utilities from each jurisdiction's inspector. Corrective work shall be completed according to the instructions of each jurisdiction's inspector whether or not those instructions are consistent with the original approved contract documents. The Contractor shall cause all corrective work to be completed, to the satisfaction of each inspector, at no additional charge to the Owner.

#### **S. ABATEMENT SPECIFICATIONS N/A**

General Conditions section 3.8 is hereby supplemented as follows: Hazardous Materials Abatement specifications dated ( ) prepared by ( ) are hereby incorporated into this contract for construction.

#### **T. MISCELLANEOUS PROVISIONS**

1. All trades excavating in or traversing existing landscaped areas shall be responsible for repairing any damage to irrigation and plants. Plants shall be avoided and protected.

2. No material storage or parking in fire lane. Vehicles/machinery parked in fire lane must have spotters assigned to watch and secure the vehicle. Failure to follow this requirement will force the towing of the vehicle, at Contractor's expense.
3. No personal vehicles onsite; all personal vehicles (including prime contractor and tiered subcontractor vehicles) must park offsite or in designated parking areas. Failure to follow this requirement will force the towing of the vehicle.
4. All areas of work may not be available at the same time and may require more than one move-on by the Prime Contractor and tiered subcontractors to complete an item of work. Contractor shall not be entitled to additional compensation for additional mobilization.
5. For multi-prime contracts, the CM has the authority to reasonably update, modify, revise and otherwise change the project schedule to accommodate the best interests of the District at any time during course of construction, with express District consent. Although the CM will make every effort to accommodate all Prime and Subcontractors in a fair and productive manner, no construction schedule is without challenges. Prime and Subcontractors shall conform to these schedule revisions immediately, cooperatively and without any additional cost to the District or CM. Likewise all Prime and Subcontractors shall provide regular and timely schedule input and provide adequate resources required to meet schedule requirements in a cooperative and proactive manner. In as much as possible, CM shall accommodate this Prime and Subcontractor input in so far as it works for the District and all other Prime and Subcontractors so that the CM schedule will ultimately prevail.

#### **U. ADMINISTRATION OF THE CONTRACT**

For multi-prime contracts, the Construction Manager has the authority to coordinate the Work under this Contract with work being performed by separate contractors on the Site. The Construction Manager will assist the District in coordinating the Contractor's Construction Schedule with construction schedules of separate contractors performing work on the Site.

**PROJECT WARRANTY  
FOR THE FOLLOWING SPECIFICATION(S) & SCOPE OF WORK**

Description of the Work warranted by this contractor: \_\_\_\_\_

Drawing sheets describing the Work warranted by this contractor: \_\_\_\_\_

Specification sections describing the Work warranted by this contractor: \_\_\_\_\_

We, the undersigned, do hereby warrant and guarantee that the portion of the Work described above which we have provided for

**VALHALLA BATTERY INVERTER REPLACEMENT  
CN-2559**

is in accordance with the Contract Documents and that all such Work as installed will fulfill or exceed all minimum warranty requirements. We agree to repair or replace Work installed by us, together with any adjacent Work which is displaced or damaged by so doing, that proves to be defective in workmanship, material, or function within a period of **TWO (2) YEARS** from date of recording of the Notice of Completion by the District, **GROSSMONT UNION HIGH SCHOOL DISTRICT**, without any expense whatsoever to the said District, ordinary wear and tear and unusual abuse or neglect excepted.

In the event of our failure to comply with the above-mentioned conditions within **TEN (10) business days**, after notification in writing, we, the undersigned, all collectively and separately, hereby authorize the District to have said defective Work repaired or replaced to be made good, and agree to pay to the District upon demand all moneys that the District may expend in making good said defective Work, including all collection costs and reasonable attorney fees.

Date: \_\_\_\_\_ Signed: \_\_\_\_\_  
(Subcontractor – As Applicable)

Date: \_\_\_\_\_ Signed: \_\_\_\_\_  
(General Contractor)

Local Representative to be contacted for services:

Name: \_\_\_\_\_ Phone No. \_\_\_\_\_

Address: \_\_\_\_\_

State License No: \_\_\_\_\_

## GROSSMONT UNION HIGH SCHOOL DISTRICT

### RESOLUTION AUTHORIZING STANDARDIZING ) OF PROPRIETARY SPECIFICATIONS )

**WHEREAS**, the Governing Board of the Grossmont Union High School District finds that it is in its best interest to utilize standardized products in order to maintain conformity, where possible, among its campuses, compatibility with existing systems, and to streamline maintenance; and

**WHEREAS**, the Governing Board of the Grossmont Union High School District finds that the following manufacturers provide products that match other products in use:

Uninterruptible power supplies:	American Power Conversion (APC)
Software for APC units:	PowerChute Plus
Intercom/Clock/Speaker assemblies, enclosures, etc:	Atlas Sound
CATV distribution amplifiers and accessories:	Blonder -Tongue Laboratories, Inc
Data network switches and routers:	Cisco Systems
Servers, laptop/notebook and desktop computers:	Dell or Lenovo
Wall mount cabinets for IT equipment	Southwest Data Products
Camera mounts and mounting adapters:	Videolarm
Surveillance cameras (Steele Canyon HS):	Mobotix
Surveillance software systems (Steele Canyon HS):	On-Net Surveillance Systems, Inc.
; and	

**NOW, THEREFORE, BE IT RESOLVED** by the Governing Board of the Grossmont Union High School District as follows:

1. All of the recitals set forth above are true.
2. The Governing Board determines that aforementioned brands shall be the Districtwide standards.

**PASSED AND ADOPTED** by the Governing Board of the Grossmont Union High School District at El Cajon, California, on this 15th day of \_\_\_\_\_, 2020, by the following vote:

AYES:  
NOES:  
ABSENT:  
ABSTAIN:

STATE OF CALIFORNIA     )  
  )  
COUNTY OF SAN DIEGO    )

I, Elva Salinas, Clerk of the Governing Board of the Grossmont Union High School District of El Cajon, California, do hereby certify that the foregoing is a full, true and correct copy of a resolution adopted by said Board at the regular meeting thereof at the time and place of vote stated, which resolution is on file and of record in the office of said Board.

## GROSSMONT UNION HIGH SCHOOL DISTRICT

### RESOLUTION AUTHORIZING STANDARDIZING ) OF PROPRIETARY SPECIFICATIONS )

**WHEREAS**, the Governing Board of the Grossmont Union High School District finds that it is in its best interest to utilize standardized products in order to maintain conformity, where possible, among its campuses, compatibility with existing systems, and to streamline maintenance; and

**WHEREAS**, the Governing Board of the Grossmont Union High School District finds that Otis Elevator Company elevators match the system currently in use; and

**NOW, THEREFORE, BE IT RESOLVED** by the Governing Board of the Grossmont Union High School District as follows:

1. All of the recitals set forth above are true.
2. The Governing Board determines that aforementioned brands shall be the Districtwide standards.

**PASSED AND ADOPTED** by the Governing Board of the Grossmont Union High School District at El Cajon, California, on this 15th day of \_\_\_\_\_, 2020, by the following vote:

AYES:

NOES:

ABSENT:

ABSTAIN:

STATE OF CALIFORNIA )

)  
COUNTY OF SAN DIEGO )

I, Elva Salinas, Clerk of the Governing Board of the Grossmont Union High School District of El Cajon, California, do hereby certify that the foregoing is a full, true and correct copy of a resolution adopted by said Board at the regular meeting thereof at the time and place of vote stated, which resolution is on file and of record in the office of said Board.

00124-00005/725777.2



## **SUPPLEMENTAL CONDITIONS**

### **GUHSD: VHS Battery Inverter Replacement Project**

The following are supplemental conditions for the project. These supplemental conditions are part of the project's requirements to stipulate and clarify inclusions, exclusions, and other information. These requirements are in addition to the requirements found elsewhere in the project documents. Any scope included within the supplemental conditions is a requirement of the contract. Scope inclusions that are not utilized during the course of construction will be credited back to the district upon completion of the project.

**I. GENERAL REQUIREMENTS:** The following general requirements apply to all work included in this contract:

1. Prime Contractor has reviewed the Project site and is aware of existing conditions.
2. The project is located on the existing operating Valhalla High School (VHS) Campus. Prime Contractor is responsible to ensure construction activities do not affect Campus operations. Prime Contractor to sequence and schedule work to permit uninterrupted and safe use of the campus by staff and students.
3. Comply with all City, County and State requirements, prepare haul route and obtain permits, as required. Include preparation of all paperwork; haul route maps, applications, etc., as required by the local municipality. If required, include erosion control measures.
4. Maintain fire department access requirements, emergency access for District personnel and construction personnel.
5. Continuously clean all on and off-site roadways during earthwork, demolition and hauling operations that result in dirt and debris collecting on roadways and access paths. The only acceptable street cleaning equipment is equipment that will not create dust.
6. Obtain and comply with all AQMD and/or APCD permits (if required) and CAL/OSHA safety requirements.
7. All import soil must be sourced from a DTSC certified site and be DTSC compliant. Provide documentation of the DTSC certified source site to C.W. Driver three (3) days after notice of award.
8. Provide dust control for earthwork operations. Site is to be sufficiently wetted at end of shift to prevent the need for off-hours dust control. Protect existing structures and surrounding areas from water damage due to dust control. Prime Contractor includes wet-cutting concrete and asphalt surfaces in an effort to control dust migration.
9. Include all necessary precautions (including retaining a utility locator service, potholing and/or exposing of each utility in the excavation zone) to prevent disturbing of known or unknown existing underground utilities and/or structures, which are not to be removed in this scope of work. Prime Contractor includes calling Dig-alert 48-hours prior to digging. Prime Contractor includes mapping of underground utilities in the vicinity (20' minimum radius) of new work and shall submit the PDF/CAD file of said

mapping to the Construction Manager prior to starting Prime Contractor's digging/trenching/grading activities. Prime Contractor shall pothole all

10. Provide all necessary railings, barricades, fall protection, and safety devices related to all work including excavation, earthwork, and demolition in compliance with all Local, State and Federal agencies including temporary shoring and structural bracing. Remove all temporary items when no longer required.
11. Provide protection of existing finishes to remain including installation and maintenance of dust and weather barriers for existing buildings. Special attention to protect existing hydrants, backflow preventers, meters, etc. shall be made.
12. Provide flagmen as required. It is understood that the work will take place within an operating campus and that the Prime Contractor is solely responsible to protect the public and maintain un-interrupted access to the campus by the general public. Provide all barricades, etc. as required to achieve this. Perform work during off- hours as required to avoid disruption of campus operations.
13. Prime Contractor will be responsible for collateral damage to areas or finishes not scheduled for demolition as a result of his operations.
14. Prime Contractor must provide a Master Construction Schedule within Ten (10) calendar days of notice to proceed for District (GUSHD) and Construction Manager (CM) review. The Prime Contractor shall not proceed with critical path activities until the Master Construction Schedule has been approved by the District or Construction Manager. If the Prime Contractor fails to provide an approved Master Construction Schedule within the timeframe listed above before starting the project, the Prime Contractor shall forfeit any claim to delays to the activities that started prior to receiving an approved Master Construction Schedule. Prime Contractor includes all expediting and additional costs associated with ensuring the battery inverter equipment arrives two (2) weeks prior to the project completion date. The approved Master Construction Schedule must include but is not limited to the following activities:
  - a) Critical Path submittals
  - b) Critical Path procurement items
  - c) Utility locating, mapping & mark-out
  - d) Demo hardscape & haul-off
  - e) FRP (Frame-Reinforce-Pour) Concrete Pad
  - f) Fan coil & condensing unit rough-in
  - g) Low-voltage rough-in
  - h) Electrical rough-in
  - i) Order battery inverter
  - j) Install battery inverter
  - k) Power shutdown
  - l) Testing

- m) Punchlist
  - n) Five (5) GUHSD Awarded Rain days
  - o) Five (5) GUHSD Awarded Test Days
15. The Prime Contractor has included the costs for off-site storage of project materials should insufficient area be available at the job site.
  16. It is understood that the supplemental conditions contained in the Contract Documents are a material element of this Contract and scope of work. It is specifically noted that the Prime Contractor shall be responsible for all requirements and clauses contained in the Supplemental Conditions.
  17. Prime Contractor shall protect, maintain and adjust SWPPP/WPCP measures as required by all applicable laws and regulations.
  18. Prime Contractor may use the domestic or irrigation water service on site. If this is insufficient then this Prime Contractor shall arrange and pay for all other necessary water services. Obtain permits and meters from governing Water District if use of fire water is required. Prime Contractor shall pay for any use of fire water.
  19. Prime Contractor may use the electrical services on site. Prime Contractors shall provide temporary power systems to support construction activities, as required.
  20. Protect all existing hardscape, barricades, trees, etc. that may be damaged during work operations.
  21. Protect all existing structures/utilities/benchmarks/miscellaneous items as required.
  22. Prime Contractor shall walk the site and provide the Construction Manager a video of existing conditions (i.e. damaged curbs, raveling, etc.) prior to commencing work. Prime Contractor shall remedy any damage resulting from Prime Contractor's work.
  23. Provide continuous handling and removal of spoils from work areas.
  24. Clean-out of concrete trucks and grouting equipment shall be into concrete wash out containers provided and maintained by the Prime Contractor.
  25. Testing and inspections are included in this contract when inspections are caused by Prime Contractor's failure to meet testing and inspection criteria.
  26. It is the Prime Contractor's responsibility to protect all existing utilities from damage caused by their operation.
  27. All surplus spoils shall not be stockpiled onsite unless authorized by the Construction Manager. Haul-off is the responsibility of the Prime Contractor. Stockpiles, if allowed, shall not block access to any other work.
  28. At the conclusion of all work power wash all paving surfaces and clean all buildings and other surfaces that exhibit dirt, dust or debris from work in this Contract.
  29. Any landscape or hardscape damaged during the course of construction must be repaired to its original, before construction condition, at no additional cost to the District.

30. Give proper written notice to the Inspector of Record and Testing Laboratory prior to initial start of fabrication and fieldwork.
31. Include cost of preparation and printing of all shop drawings for all contract work items including all revisions to shop drawings during the approval process and up until payment of retention.
32. Prime Contractor shall notify the Construction Manager and Architect, in writing, of all inconsistencies in the project drawings/specifications and subsequent shop drawings prior to fabrication.
33. Prime Contractor shall utilize the District's e-Builder contract management software program for project communication/documentation. Prime Contractor shall direct all communication to the Construction Manager, per the general conditions. All payment applications shall be submitted and processed through the e-Builder system.
  - a) RFI's will be processed through e-Builder. The Prime contractor is responsible for generating the RFI and providing all applicable attachments in E-Builder.
  - b) The submittal register will be submitted to CM in an excel sheet for review and acceptance by the Architect. Once accepted, the Prime Contractor will upload the register into E-Builder for the submittal tracking process. The register items in E-Builder should be structured to reflect each complete PDF package that will be submitted (not each submittal item in the specifications).
  - c) The project SOV and subsequent payment applications will be processed through E-Builder
  - d) All Potential Change Orders will be uploaded by the Prime Contractor for processing
34. Coordinate all shop fabrication / field inspection (for costs relating to inspection see Project Specific Provisions.) Become completely familiar with testing requirements and coordination of mill certificates, labeling, tagging, and stamping of steel during the fabrication process, shipment to jobsite and erection. No unidentified steel shall be used. All steel will have mill certifications and be properly identified (source, heat or melt number, etc.). If required, the Inspection Firm will take steel samples and will perform destructive tests. Accordingly, purchase steel in such quantity, length, size, etc. to allow steel samples to be taken from the actual elements to be used in construction. Coordinate this and provide the samples required by the Testing Laboratory. Provide adequate access for Inspectors to all elements of work. Means of access include ladders, lifts, scaffolds, etc. Costs for re-inspection of any work as a result of previous failed inspection will be the responsibility of this Prime Contractor.
35. A safety Job Hazard Analysis (JHA), task-specific Activity Hazard Analysis (AHA) and a complete fall protection plan shall be submitted to the Construction Manager for review prior to the start of work activities. Prime Contractor must submit their Injury and Illness Prevention Program (IIPP) prior to mobilizing to the project site. Prime Contractor must review Appendix A – Pre-Plan Trench/Excavation Checklist, fill-out

and submit the associated paperwork prior to commencing any digging activities. Prime Contractor shall include trench plates at all exposed trenches created in or adjacent to hardscape or paths of travel if not specifically noted in Prime Contractor's IIPP. Prime Contractor shall cover trenches outside of hardscape or path of travel zones with 1" plywood if Prime Contractor's own IIPP does not specifically address said condition.

36. Prime Contractor shall provide sufficient on-site bathrooms/restrooms/hand-wash stations, as required to meet CalOSHA regulations. No on-site bathrooms/restrooms or facilities shall be used by the Prime Contractor or their tiered sub-Prime Contractors.
37. The District may remove all materials they wish to salvage prior to the start of work. All items/materials left within the project site at the start of work that are not specifically noted to be demolished are to be protected by this Prime Contractor.
38. Prime Contractor is required to attend weekly Prime Contractor meetings as required by the Construction Manager.
39. Upon return receipt of approved shop drawings, Prime Contractor is responsible to notify the Construction Manager, in writing, of any questions that are unresolved on reviewed shop drawings that will delay delivery. Unless the Construction Manager receives notice, all claims for delays shall be invalid.
40. In the event of discrepancies or if an item/system is not clearly defined prior to the bidding deadline, Prime Contractor shall assume the most stringent, higher quality and greater quantity of work for bidding purposes. If Prime Contractor still requires clarification after awarded the project, Prime Contractor shall generate an RFI. If appropriate, a deductive change order shall be issued if the clarification results in reduced scope. Example: If the plans show a receptacle for a device/equipment but does not designate a panel/circuit for power, Prime Contractor shall assume the power will be fed from a spare circuit from the furthest panel within the building or the closest panel from the closest building.
41. All mechanical, electrical and structural plans are schematic in nature only and actual routing of ductwork, piping, raceways, etc. will vary due to actual job conditions. Include all necessary relocations and re-routing as required for a complete and functional system. System components (ductwork, piping, raceways, etc.) should be expected to be relocated up to 10' in order to avoid obstructions. Prime Contractor shall bear all costs to relocate Mech/Elec components to alleviate conflicts and clashes between systems. Prime Contractor includes provisions to move ALL conduit and associated wiring/cabling that will obstruct the installation of the new 50kw battery inverter. Prime Contractor has reviewed the existing conditions during the mandatory pre-bid job-walk. Reference Exhibit B for further clarification of the new battery inverter. Prime Contractor shall conduct weekly coordination meetings to ensure that conflicts and clashes are detected and rectified prior to actual installation.
42. All required utility shutdowns shall be closely coordinated with the Construction Manager and the District. Provide a minimum of 72-hours notice prior to each shutdown. It is understood that the operations of a functioning campus shall not be interrupted. Therefore, shutdowns may need to occur after hours and on weekends. Prime Contractor shall include the costs for this off-hour work.

43. Perform shutdowns or tie-ins during off-hours (3pm – 6am). The contract amount shall include any overtime work and temporary facilities necessary for such work. All off-hour work shall be coordinated with the VHS Campus and GUHSD Facilities Departments via the Construction Manager.
44. Include all provisions to maintain utilities, mechanical, electrical, plumbing and fire protection services to occupied buildings, site equipment/services/components and any other buildings on campus that are outside the limits of work. These services are to remain fully functional throughout the entire course of the project. This specifically includes but is not limited to performing work out of sequence, installing temporary piping/systems, temporarily cutting/capping piping to assist in other demo operations, etc. The maintenance of said utilities may not be specifically detailed or noted on the plans.
45. Prime Contractor has reviewed the available As-builts and information available via site visits and has included all work needed to work over, around and under existing below grade utilities including all “wet” and “dry” systems and above-head utilities/services.
46. All surfaces of existing building and site components shall be inspected and accepted by the Prime Contractor prior to start of any work. Application of Prime Contractor's work shall constitute acceptance of these components.
47. Construction parking: All construction parking shall be confined within the limits of work or street. Prime Contractors cannot use student, Staff or public parking spaces on campus unless specifically allowed in the Contract Documents or agreed upon by the District. Costs associated with parking are the responsibility of the Prime Contractor.
48. Project Signage is to be determined by the District and Construction Manager. No company signs shall be placed on the project without expressed written consent from the District. Prime Contractor will provide all project signage.
49. Any fire hydrants located on site shall remain active and accessible. Any existing hydrants scheduled for removal shall remain active until new hydrants are installed
50. Verify all existing grades/elevations and report any discrepancies prior to starting work.
51. Prime Contractor shall comply with all District labor requirements including the use of LCP Tracker.
52. Prime Contractor to remove, protect and reinstall all existing items as required to install new work. This work may not be specifically noted on the contract documents. It is the Prime Contractor's option whether to protect items in place or remove and reinstall them.
53. Prime Contractor is solely responsible for means and methods of demolition, including any temporary shoring, if needed.
54. Prime Contractor includes verification that existing storm drain catch basins and pipe are free of debris. Prime Contractor shall provide BMPs to prevent debris or

construction material from entering the storm drain during the duration of the project. Prime Contractor includes flushing, cleaning and providing video evidence the storm drains are clear from any obstructions upon completion of the project.

55. Prime Contractor shall include forty (40) additional labor hours for miscellaneous work used at the discretion of the Construction Manager.
56. Prime Contractor to include twenty (20) additional labor hours for miscellaneous demolition activates used at the discretion of the Construction Manager.
57. Prime Contractor includes twenty (20) square feet of drywall patching and painting used at the discretion of the Construction Manager.
58. Prime Contractor includes one additional 24" square wall access door.
59. Prime Contractor shall provide a Procurement Log of all long-lead items five (5) days after the approved Master Construction Schedule has been established. The Procurement Log shall include, but is not limited to showing the following information:
  - a) Long-lead item descriptions
  - b) Responsible subcontractor
  - c) Date submittal is due to Architect
  - d) Actual date submitted to architect
  - e) Estimated lead time
  - f) Date of submittal approval
  - g) Date lead item must be on site
  - h) Date lead item installation must start
  - i) Linked activity ID #/description from the approved Master Construction Schedule.
60. Prime Contractor shall carry their own surveying and layout.
61. If the Prime Contractor pursues product substitution, it is the Prime Contractor's responsibility to guarantee the substituted product will not contribute to preventing project completion within the contract timeframe. Note: This project contains basis of design products/systems. Prime Contractor must request substitutions through GUHSD's substitution procedures during the bid phase in order to deviate from the basis of design products/systems. Product substitution is not permitted post-bid, regardless of any specification sections showing post-bid substitution procedures. Products and equipment specifically included in the contract documents must be used unless Prime Contractor is able to prove that the proposed product provides a monetary benefit to the District.
62. Prime Contractor shall include testing of new battery inverter system and shall verify that Valhalla High School Emergency Systems (emergency lighting, smoke-evac, etc.) are operational on the new battery inverter system. GUHSD, VHS, CWD, Architect and IOR shall all be invited to the final testing. Final battery inverter system testing shall

include a visit and report from battery inverter manufacturer technician stating that the battery inverter system is operating per the manufacturer's specifications.

63. Prime Contractor shall include a minimum of four (4) hours of training for battery inverter system. Training shall include operation and maintenance of all newly installed components associated with the new battery inverter system.
64. Prime Contractor shall submit ALL submittals for new work fifteen (15) calendar days after the Notice to Proceed date.
65. Prime Contractor includes provisions for closeout submittals, per specifications #01 – General Requirements and any other closeout requirements found within the Contract Documents. Closeout submittals shall include but are not limited to:
  - a) As-built Drawings (Full-sized hard copy and digital copy)
  - b) Manufacturer warranties
  - c) Workmanship warranties
  - d) Operation and Maintenance Manuals
  - e) Training
  - f) Attic stock
  - g) Test Reports
  - h) Completed punchlists
66. Sheet E1.0 & E1.1 references an existing conduit pathway and adding a new Cat-6 cable in the existing conduit pathway. Prime Contractor includes provisions for reviewing the existing conduit, pulling new Cat-6 cable and terminating said Cat-6 cable at the new battery inverter system and at the head-end IDF cabinet. Prime Contractor has the option to specifically walk this condition during the mandatory pre-bid job-walk, but for bidding purposes, Prime Contractor shall assume the above-mentioned distance spans four hundred (400) lineal feet. Reference Exhibit A for further clarification of the existing pathway and the location of the existing IDF cabinet that Prime Contractor must terminate to. Prime Contractor includes provisions to coordinate with GUHSD IT (ETS) department for activating the port of the existing IDF cabinet that will supply low-voltage to the new battery inverter system.
67. Prime Contractor includes provisions to locate any utilities via Ground-Penetrating Radar (GPR) that are within the vicinity of the new equipment pad. Reference I/A1-1.1, 3/M5.01 and 3/S0.1. This activity must take place within ten (10) days of contract award. Prime Contractor's utility locating shall include depth of utilities in order to identify whether or not utilities will obstruct the new equipment pad work. If utilities are located within the footprint of the equipment pad.
68. Prime Contract has reviewed Exhibit B and understands that the equipment/material cutsheets are for the specific equipment/material to be used on the project. Substitutions for these products is not acceptable. Reference the corresponding specification for this equipment/material for additional information.



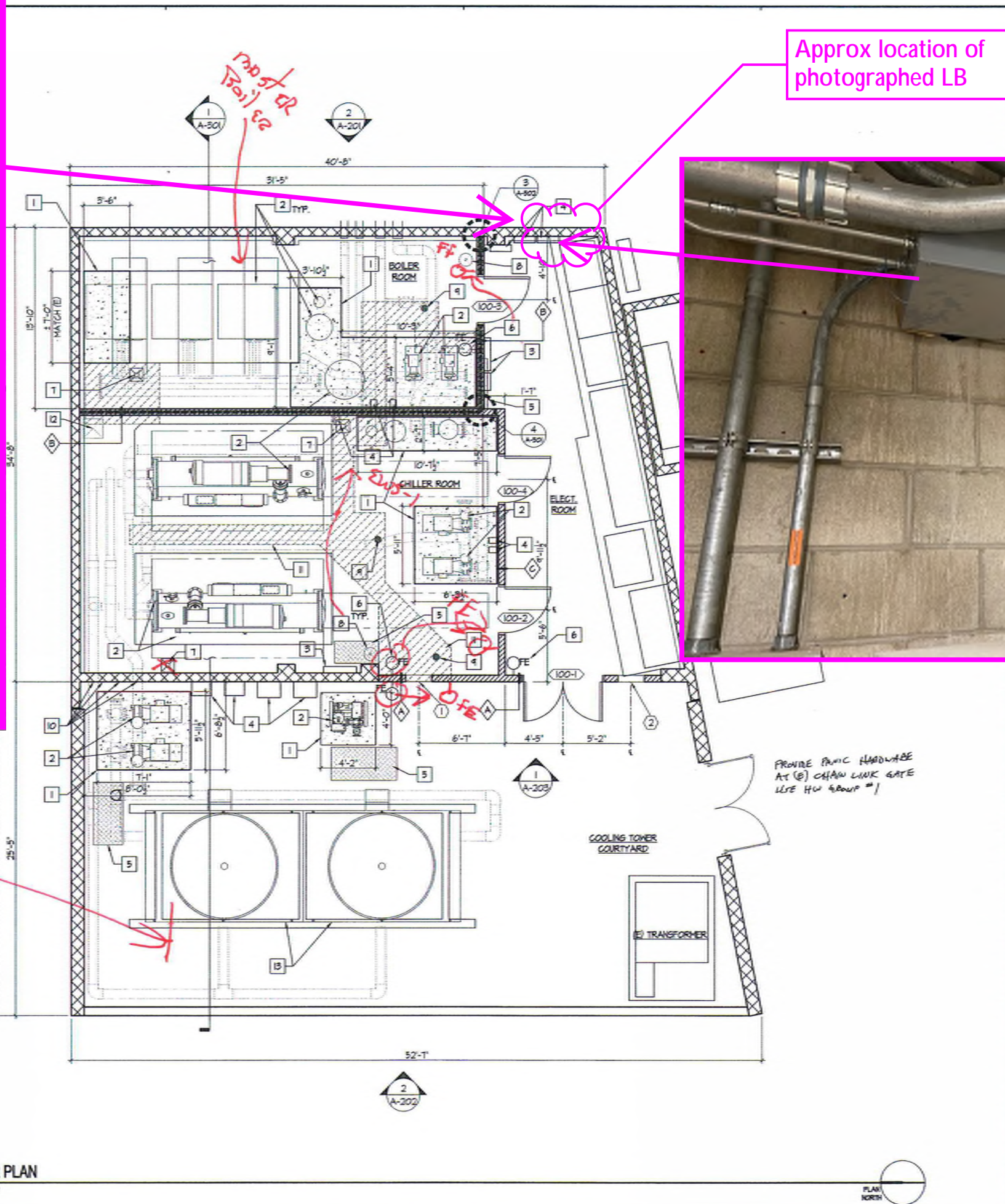
- 69. Prime Contractor includes all work associated with detail 4/M5.01 and said detail shall be applied KN #1 & #2 on M2.01.
- 70. Prime Contractor includes sealant, caulking and grout at all penetrations, per the specifications. If the type of sealant, caulking or grout is not specified in the plans/specifications, Prime Contractor includes fire caulking at all interior wall penetrations, includes grout at all CMU penetrations and non-sag sealant at plaster penetrations. Prime Contractor to provide submittals for said sealant, caulking and grout.
- 71. Prime Contractor includes all necessary backing for fan coil FC-1 & FC-2.
- 72. Prime Contractor includes all necessary wall demo and wall patching (framing, drywall & painting) as needed to complete installation of new wall devices, equipment, systems, etc.
- 73. Prime Contractor shall paint to match existing wall surfaces if a specific paint is not specified.

# EXHIBIT A









**KEYNOTES**

- 1 6" HIGH CONCRETE PAD - MATCH HEIGHT OF (E) WHERE ADJOINING TO (E) - COORDINATE SIZE AND LOCATION OF PADS W/ EQUIPMENT REQUIREMENTS
- 2 MECHANICAL EQUIPMENT PER M-201 ON CONCRETE PAD
- 3 MECHANICAL CONTROLS EQUIPMENT PER M-201 - PROVIDE BACKING AT STUD WALLS PER 4/52.0
- 4 ELECTRICAL EQUIPMENT PER M-201

**GENERAL NOTES**

- 1. SEE A-201 FOR WALL TYPES
- 2. SEE A-201 FOR SCHEDULES

**LEGEND**

- (E) CMU WALL
- (E) STUD WALL W/ CEMENT PLASTER BOTH SIDES
- STUD WALL - SEE PLAN FOR WALL TYPES
- CONCRETE PAD - MATCH HEIGHT OF (E) WHERE ADJOINING
- AREA OF CONCRETE PATCH W/ 5/8" DONELS @ 12" O.C. @ PERIMETER
- 1-HR RATED CONSTRUCTION (PER UL #441)
- WALL TYPE
- DOOR TYPE
- LOUVER TYPE
- PATCH WHERE (E) CONCRETE PAD REMOVED

**FLOOR PLAN**

CENTRAL PLANT EQUIPMENT UPGRADE

VALHALLA HIGH SCHOOL  
1725 HILLSDALE ROAD  
EL CAJON, CA 92019

PROJECT NO. FWA 1026110  
FILE NAME: A-102 FLOOR PLAN.DWG  
DATE: 4/14/2017  
DRAWN: [blank]  
CHECKED: [blank]

**A-102**

SHEET NO. 1 OF 1 SHEETS

SCALE: 1/4" = 1'-0"

0 2' 4' 8'

J:\00110 Valhalla Central Plant\02-Drawings\Central Plant\valhalla\A-102 Floor Plan.dwg 04/19/2017 07:53



0      4'      8'      16'      20'

1/8" = 1'-0"

TREI # 09219.07

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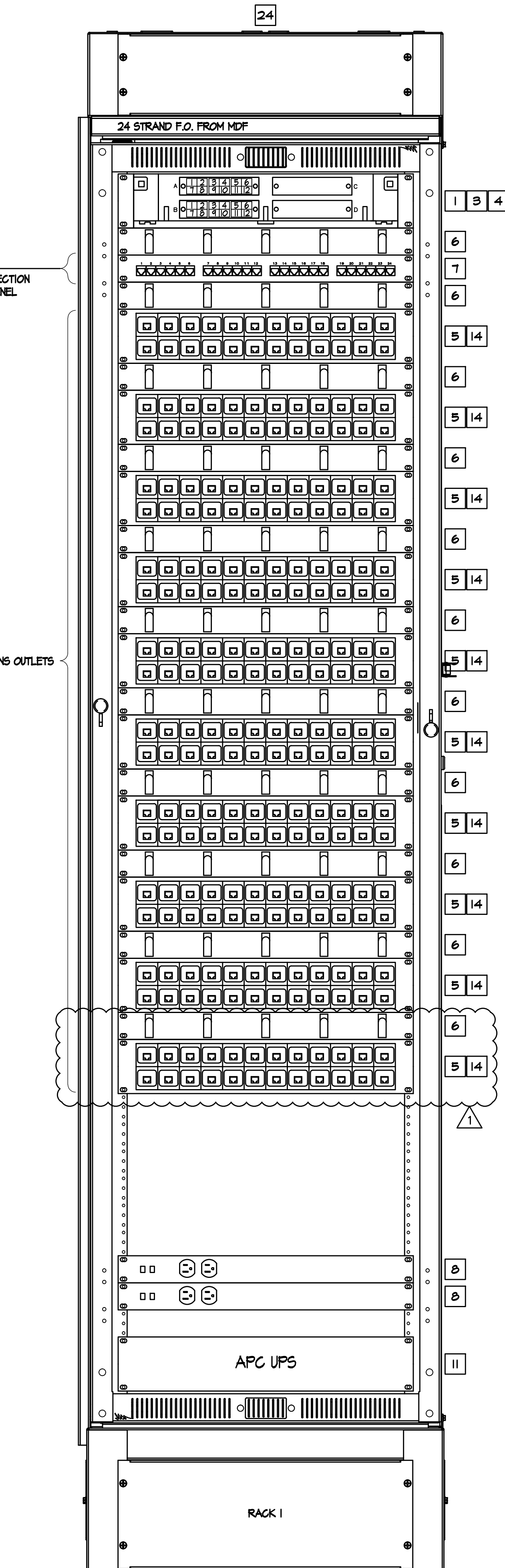


25 PAIR MULTI PAIR  
FROM MDF

25

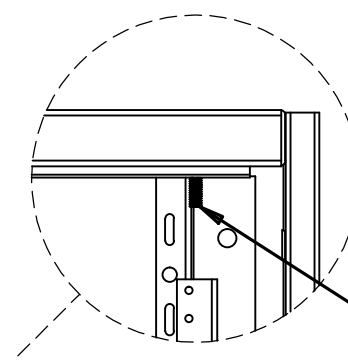
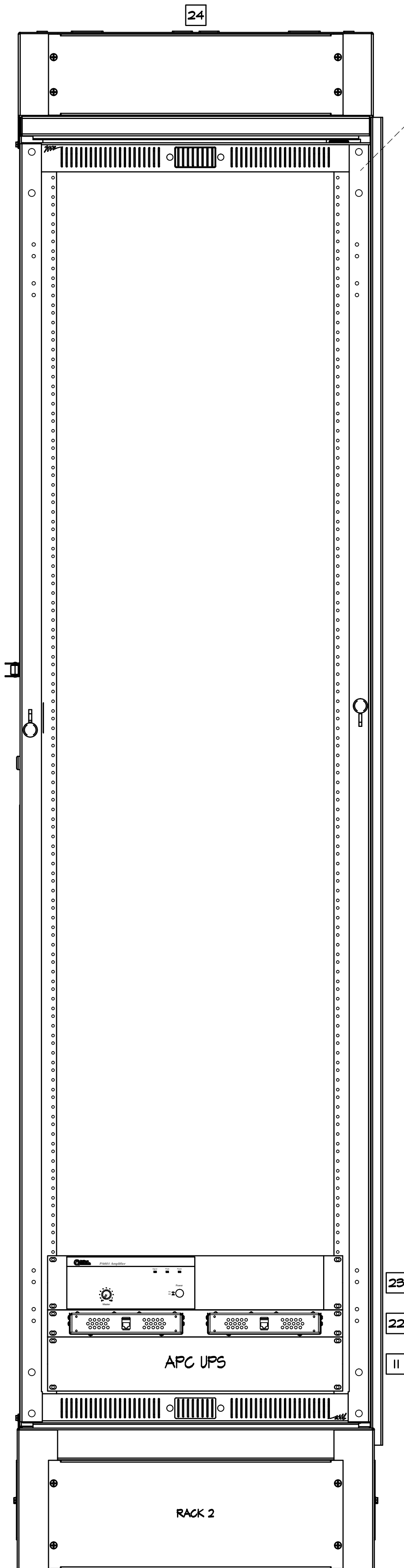
RJ-21X CONNECTION  
TO PATCH PANEL

TELECOMMUNICATIONS OUTLETS

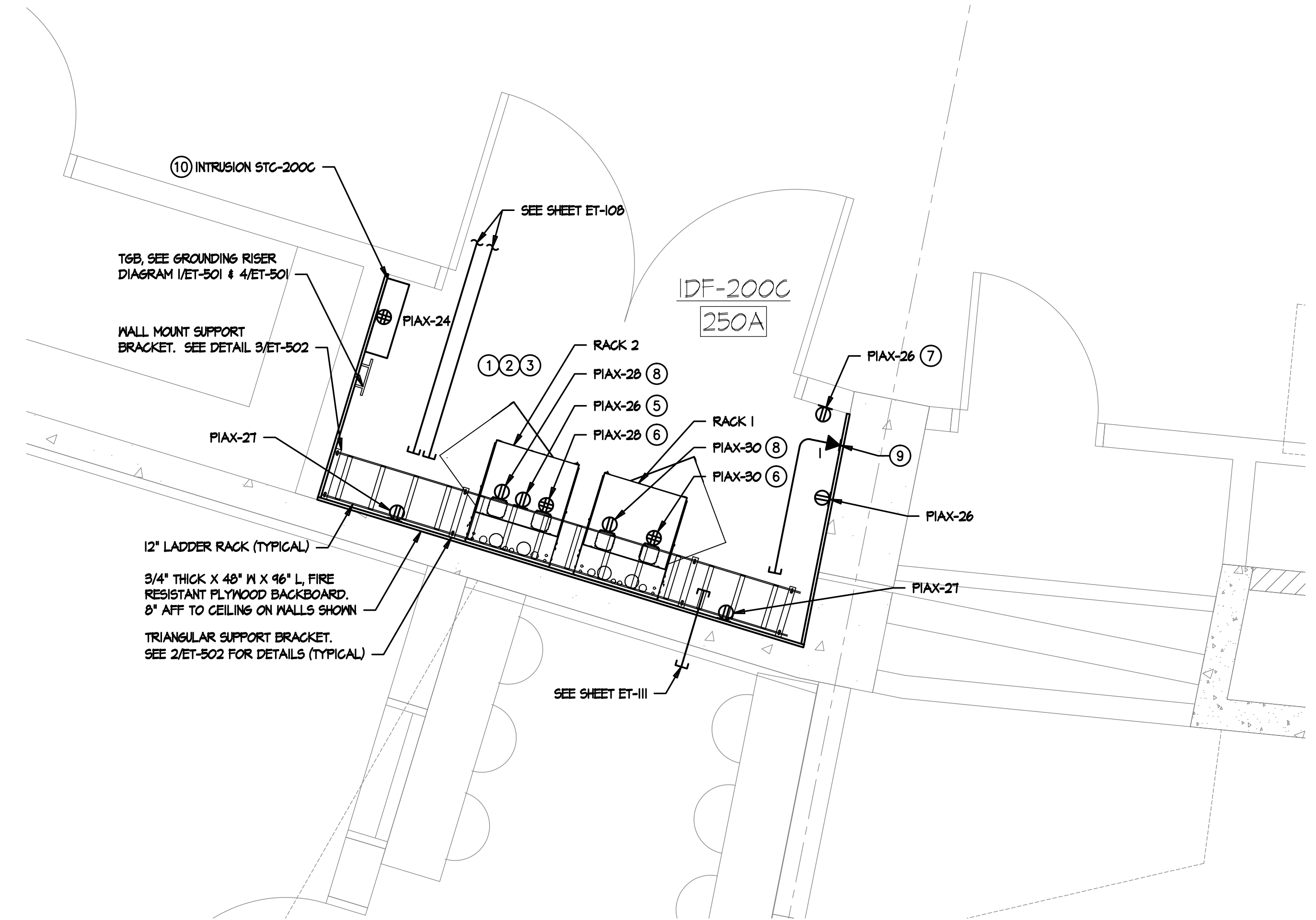


IDF-200C ELEVATION DETAIL

NO SCALE

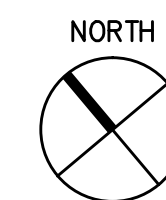
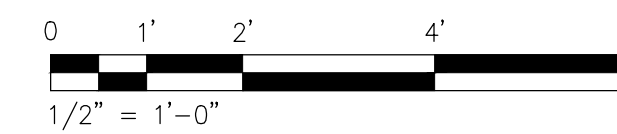


GROUNDING TERMINAL (TYPICAL)  
SEE GROUNDING RISER DIAGRAM I/ET-501



IDF-200C PLAN DETAIL

SCALE: 1/2" = 1'-0"



KEYNOTES

- 1 PROVIDE 30" CLEARANCE IN FRONT AND (I) SIDE OF IDF ENCLOSURE.
- 2 SEE ARCHITECTURAL PLANS FOR ARCHITECTURAL WORK IN THIS AREA.
- 3 CONTRACTOR TO PROVIDE ALL NECESSARY LADDER RACK COMPONENTS TO ENSURE MANUFACTURER'S SUGGESTED PRACTICES ARE MET. COMPONENTS INCLUDE CHANNEL RACK-TO-RUNWAY PLATES, J-BOLTS, BUTT-SPLICE KITS, RUBBER END CAPS, ETC.
- 4 66 BLOCK MOUNTED ON IDF-200C BACKBOARD. PROVIDE BINDER CLIPS TO EXTEND CONNECTIVITY TO PATCH PANEL.
- 5 MOUNT OUTLET FOR CCTV WEB CONTROLLER TO IDF RACK. COORDINATE LOCATION WITH INTRUSION CONTRACTOR.
- 6 MOUNT OUTLET AT TOP OF RACK.
- 7 OUTLET FOR CCTV CONTROLLER, VERIFY EXACT LOCATION WITH CAMERA INSTALLER.
- 8 MOUNT OUTLET AT +18" FOR APC UPS.
- 9 WALL MOUNTED VOICE OUTLET. PROVIDE STAINLESS STEEL WALL PLATE (17), DATA JACK (12) AND 3/4" CONDUIT TO LADDER RACK.
- 10 PROVIDE 3/4" CONDUIT FROM INTRUSION SIGNAL TERMINAL CABINET INTO ACCESSIBLE CEILING SPACE FOR INTRUSION DEVICE WIRING.

2

ET-404

**TURPIN & RATTAN**  
Engineering, Inc.

Consulting Engineers  
4719 PALM AVENUE  
LA MESA, CA 91941-5221  
619 / 466 / 6224 Fax 466 / 6233  
E-MAIL: engineer@treisd.com

TREI # 09219.07

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DATE: JAN 15, 2015 DRAWN: PS/HL  
CHECKED: MR

ET-404

SHEET NO. 1 OF 2 SHEETS

# EXHIBIT B

## Illuminator CIII

Emergency Lighting Inverter System

3 Phase Systems 4.8KVA/KW to 50KVA/KW

Electronics Cabinet  
Models 4.8KVA to 16.7KVA\*



Electronics Cabinet  
Models 24KVA to 50KVA\*



\*Electronics cabinet dimensions. Please refer to chart on next page for battery cabinet dimensions.

### STANDARD FEATURES

- 97% Efficient
- UL 924 Listed
- PWM/IGBT Technology
- Micro-Processor Control
- User Programmable with Password Protection
- Automatic Event & Alarm Log
- RS232 Communications Port
- Input Circuit Breaker
- Low Audible Noise
- Internal Battery Circuit Breaker/Fuse

### OPTIONAL FEATURES

- Auto Dialer
- External Maintenance Bypass
- Summary Form C Contacts
- Modem
- Remote Meter Panel
- Output Circuit Breakers
- Remote Meter Panel
- Extended Factory Warranty
- Factory Startup & Training

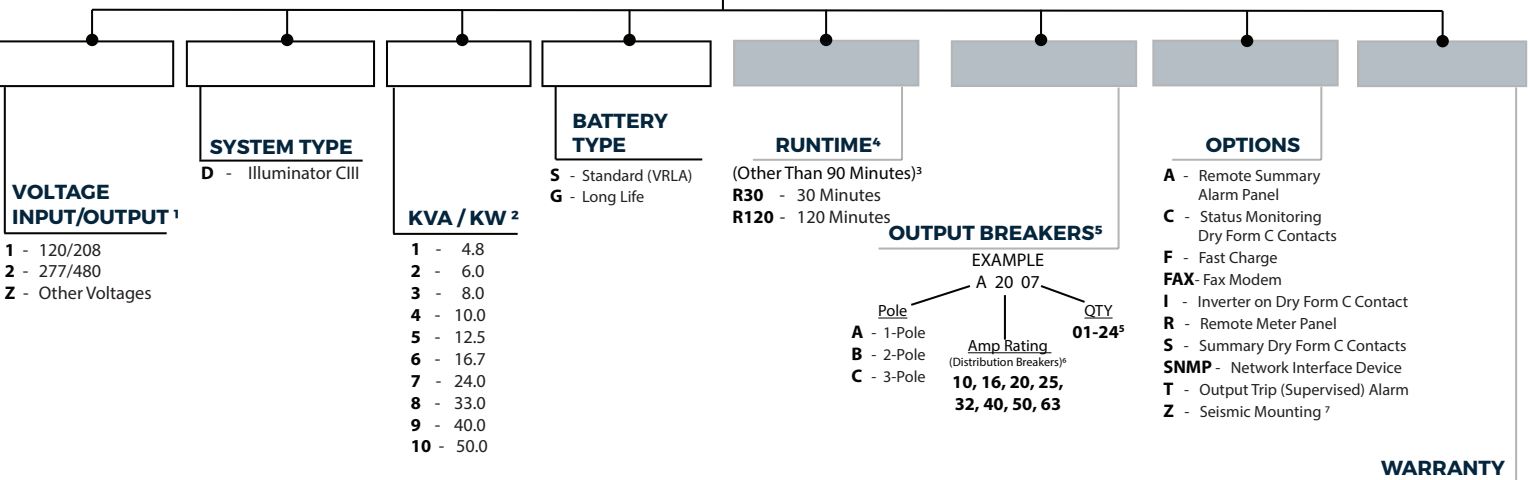
### SPECIFICATIONS

- Input 120/208 Or 277/480 VAC 3 Phase 4 Wire Wye Configuration
- Output 120/208 or 277/480 VAC 3 Phase Wye Or Delta Configuration
- Output Load Power Factor .5 Lag to .5 Lead
- Electronic & Magnetic Ballast Compatible
- Output Distortion Less Than 3% THD For Linear Loads
- Forced Air Cooling Only During Emergency Operation, No Filters Required
- Generator Compatibility
- 90 Minute Runtime Standard; Additional Runtimes Available Upon Request



# ORDERING GUIDE

Example Model Number:  
1-D-4-S-A2007-F-T-S-2YW



- Standard input voltage is 4-Wire Wye. 3-Wire Delta Input requires external isolation transformer.
- KVA= KW
- Non-standard cabinets.
- Standard battery run time is 90 minutes. Additional runtimes available. Contact factory.
- Maximum output breakers available: 4.8k up to 16.7k systems -12 unsupervised (1-pole), 9 supervised (1-pole), 24k up to 50k systems -24 unsupervised (1-pole), 24 supervised (1-pole). Combinations of 1, 2 and 3 pole breakers available (consult factory).
- Higher Amp ratings available - contact factory.
- Anchorage based on calculations, for systems requiring shaker table testing please contact factory.

☐ = Required feature for part number.  
☐ = Optional feature. Not required for part number. Contact factory.

## DIMENSIONS

UPS Electronics Module										Batteries		Battery Module										Tot. Sys. Wt.						
Model Number	Power Rating (kVA)		Power Rating (KW)		Efficiency (@ full load)		Audible Noise (dBA @ 1m)		Heat Loss (BTU)		Cabinet Dimensions		Voltage (VDC)	Current (Amperes)		Run Time (mins)		Number of Battery Cabinets		Width	Height		Depth	Weight				
	in/cm	in/cm	in/cm	in/cm	in/cm	in/cm	in/cm	in/cm	in/cm	in/cm	in/cm	in/cm		in/cm	in/cm	in/cm	in/cm	in/cm	in/cm					in/cm	in/cm	in/cm	in/cm	in/cm

# Outdoor Unit Single Zone Heat Pump Ductless System

Outdoor Model: 38MAQB36R--3

## Submittal Data

Job Data:

Location:

Buyer:  Buyer P.O. #:

Carrier #:

Unit Number:

Model Number:

Performance Data Certified By:

Date:



### STANDARD FEATURES

- Variable Speed (Inverter)
- Factory installed Base Pan Heater
- Factory installed Crankcase Heater
- Low Voltage Controls
- Auto-Restart function
- Condenser High Temp Protection
- Refrigerant Leakage Detection
- Modes: Cool, Heat, Dry, Fan, Auto
- Quiet operation
- Aluminum Golden Hydrophilic pre-coated fins

### LIMITED WARRANTY\*

- 10 year limited to original purchaser on compressor and parts upon timely registration, otherwise 5 years
- \*For residential applications.  
See warranty for full details.

NOTE: Images for illustration purposes only. Actual models may be slightly different.

System	Size		36
	Outdoor Model		38MAQB36R--3
Electrical	Voltage, Phase, Cycle	V/Ph/Hz	208/230-1-60
	MCA	A.	25
	MOCP - Fuse Rating	A.	35
Operating Range	Cooling Outdoor DB Min - Max	°F(°C)	-13~122 (-25~50)
	Heating Outdoor DB Min - Max	°F(°C)	-13~86 (-25~30)
Piping	Total Piping Length	ft (m)	164 (50)
	Piping Lift <sup>†</sup>	ft (m)	82 (25)
	Pipe Connection Size - Liquid	in (mm)	3/8 (9.52)
	Pipe Connection Size - Suction	in (mm)	5/8 (16)
Refrigerant	Refrigerant Type		R410A
	Metering Device		EEV
	Charge	lbs (kg)	7.50 (3.40)

\* Condensing unit above or below indoor unit  
For Compatibility See Product Data

Outdoor Coil	Face Area	Sq. Ft.	8.0
	No. Rows		3
	Fins per inch		18
	Circuits		6
Compressor	Type		Rotary Inverter
	Model		ATF250D22UMT
	Oil Type		VG74
	Oil Charge	Fl. Oz.	23.6
	Rated Current	RLA	17.0
Outdoor	Unit Width	in (mm)	37.24 (946)
	Unit Height	in (mm)	31.89 (810)
	Unit Depth	in (mm)	16.14 (410)
	Net Weight	lbs (kg)	147.3 (66.8)
	Airflow	CFM	2,130
	Sound Pressure	dB(A)	60.5

## Accessories

RCD# 331831-701	Piping Adaptor Kit, to facilitate piping installation when matched with FMA/FMC/FMU or FV4
-----------------	--

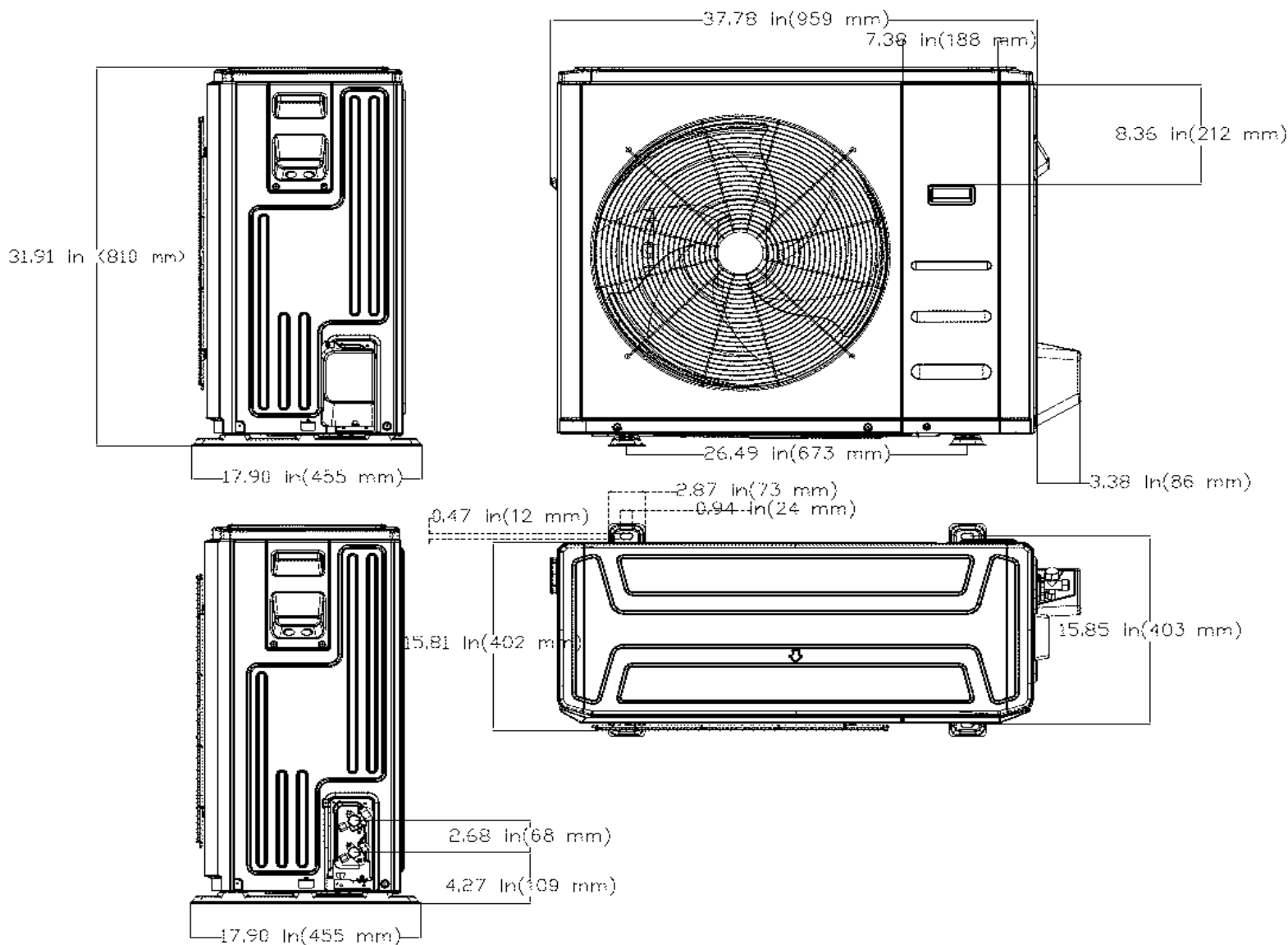
# Performance

High Wall	Indoor Model		40MAQB36B--3
	Indoor Model		619PEQ036BBMA
	Indoor Model		DHMSHAQ36XA3
	Energy Star		NO
	Cooling Rated Capacity	Btu/h	36,000
	Cooling Cap. Range Min - Max	Btu/h	8,000~36,200
	SEER		16.0
	EER		8.6
	Heating Rated Capacity (47°F)	Btu/h	36,000
	Heating Rated Capacity (17°F)	Btu/h	21,000
	Heating Maximum Capacity (17°F)	Btu/h	21,000
	Heating Maximum Capacity (5°F)	Btu/h	16,380
	Heating Cap. Range Min - Max	Btu/h	9,000~37,000
	HSPF		8.5
	COP (47°F)	W/W	2.56
	COP (17°F)	W/W	2.12
	COP (5°F)	W/W	1.50
FMA Fan Coil	Indoor Model		FMA4X3600AL
	Energy Star		NO
	Cooling Rated Capacity	Btu/h	34,000
	Cooling Cap. Range Min - Max	Btu/h	10,500~43,500
	SEER		14.5
	EER		9
	Heating Rated Capacity (47°F)	Btu/h	37,000
	Heating Rated Capacity (17°F)	Btu/h	22,200
	Heating Maximum Capacity (17°F)	Btu/h	20,700
	Heating Maximum Capacity (5°F)	Btu/h	19,900
	Heating Cap. Range Min - Max	Btu/h	10,900~36,500
	HSPF		8.7
	COP (47°F)	W/W	3.30
	COP (17°F)	W/W	1.75
	COP (5°F)	W/W	1.98
FMC - FMU Fan Coil	Indoor Model		FMC4Z3600AL
	Indoor Model		FMU4Z3600AL
	Energy Star		NO
	Cooling Rated Capacity	Btu/h	35,000
	Cooling Cap. Range Min - Max	Btu/h	8,700~46,000
	SEER		16.0
	EER		9
	Heating Rated Capacity (47°F)	Btu/h	36,000
	Heating Rated Capacity (17°F)	Btu/h	19,000
	Heating Maximum Capacity (17°F)	Btu/h	26,500
	Heating Maximum Capacity (5°F)	Btu/h	19,000
	Heating Cap. Range Min - Max	Btu/h	10,800~36,500
	HSPF		9.0
	COP (47°F)	W/W	3.30
	COP (17°F)	W/W	2.35
	COP (5°F)	W/W	2.00
FV4 Fan Coil	Indoor Model		FV4CNF003L00
	Energy Star		NO
	Cooling Rated Capacity	Btu/h	34,600
	Cooling Cap. Range Min - Max	Btu/h	11,600~40,610
	SEER		15.5
	EER		8.8
	Heating Rated Capacity (47°F)	Btu/h	37,800
	Heating Rated Capacity (17°F)	Btu/h	21,200
	Heating Maximum Capacity (17°F)	Btu/h	25,710
	Heating Maximum Capacity (5°F)	Btu/h	19,900
	Heating Cap. Range Min - Max	Btu/h	12,200~36,500
	HSPF		8.7
	COP (47°F)	W/W	3.05
	COP (17°F)	W/W	2.15
	COP (5°F)	W/W	1.98

Applications with the FMA4, FMC, FMU and FV4 fan coils require the 24V interface 2nd Generation KSAIC0301230 and a Piping Adaptor Kit to facilitate piping installation when removing the TXV kit from the indoor unit

# Construction View

Outdoor Model: 38MAQB36R--3



# High Wall Heat Pump Ductless System

Indoor Model: 40MAQB36B--3



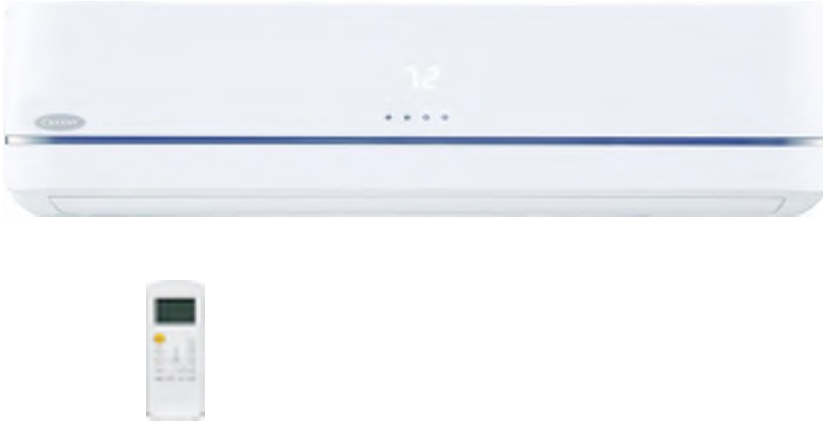
## Submittal Data

Job Data:  Location:

Buyer:  Buyer P.O. #:  Carrier #:

Unit Number:  Model Number:

Performance Data Certified By:  Date:



Performance  
SERIES

### STANDARD FEATURES

- Modes: Cool, Heat, Dry, Fan, Auto
- Turbo Mode
- Four fan speeds
- Sleep Mode
- Up-Down Louver control (fixed or swing)
- Follow Me (senses temperature at handheld remote)
- Heating Setback (46° F Heating Mode)
- Quiet indoor operation
- Aluminum Golden Hydrophilic pre-coated fins

### CONTROLS:

- Wireless Remote Controller included with indoor unit
- Wired Remote Controller KSACN0401AAA (7 Day programmable) (Optional)

### LIMITED WARRANTY\*

- 10 year limited to original purchaser on compressor and parts upon timely registration, otherwise 5 years

\*For residential applications. See warranty for full details.

System	Size	36	
	Indoor Model	40MAQB36B--3	
Electrical	Voltage, Phase, Cycle	V/Ph/Hz	208/230-1-60
	Power Supply	Indoor unit powered by outdoor unit	
	MCA	A.	0.4
Controls	Wireless Remote Controller (°F/°C Convertible)	Standard	
	Wired Remote Controller (°F/°C Convertible)	Optional	
Operating Range	Cooling Indoor DB Min -Max	°F(°C)	63~86 (17~30)
	Heating Indoor DB Min -Max	°F(°C)	32~86 (0~30)
Piping	Pipe Connection Size - Liquid	in (mm)	3/8 (9.52)
	Pipe Connection Size - Suction	in (mm)	5/8 (16)

Indoor Coil	Face Area	Sq. Ft.	3.68
	No. Rows		3
	Fins per inch		18
	Circuits		7
Indoor	Unit Width	in (mm)	46.69 (1186)
	Unit Height	in (mm)	13.39 (343)
	Unit Depth	in (mm)	10.16 (258)
	Net Weight	lbs (kg)	40.12 (18.2)
	Number of Fan Speeds		4
	Airflow (lowest to highest)	CFM	520/620/780/870
	Sound Pressure (lowest to highest)	dB(A)	39/45/50
	Air throw Data	ft (m)	36 (11)
	Moisture removal	Pint/h (L/h)	11.7 (5.6)
	Field Drain Pipe Size O.D.	in (mm)	0.625 (16)

Performance may vary based on the outdoor unit matched to. See compatible outdoor units pages for Performance Data.

For Compatibility See Product Data

Accessories

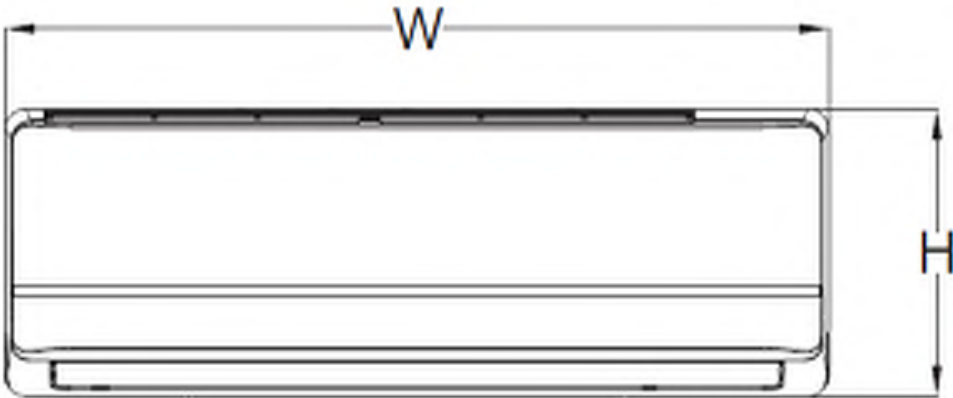
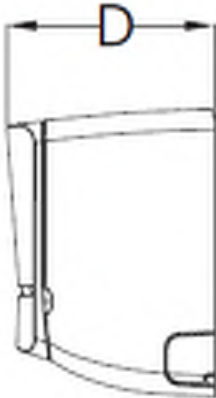
53DS-900---118	Condensate Pump (208/230V)
KSACN0101AAA	Wired Remote Control with Timer Function
KSACN0401AAA	Wired Remote Control 7 day Programmable*
KSAIF0301AAA	Wi-Fi™ Kit High Wall Mid-Tier
KSAIC0101230	24V Interface Kit 230V
53DS-900---090	Wireless Remote Control Locking Mount Kit

**Note:** \*KSACN0401AAA Wired Remote Control 7 Day programmable compatible with High Walls Units starting with Serial Number 0216V10001.

\*\*24V Interface compatible with High Walls Units starting with Serial Number 4316V10001.

Construction View

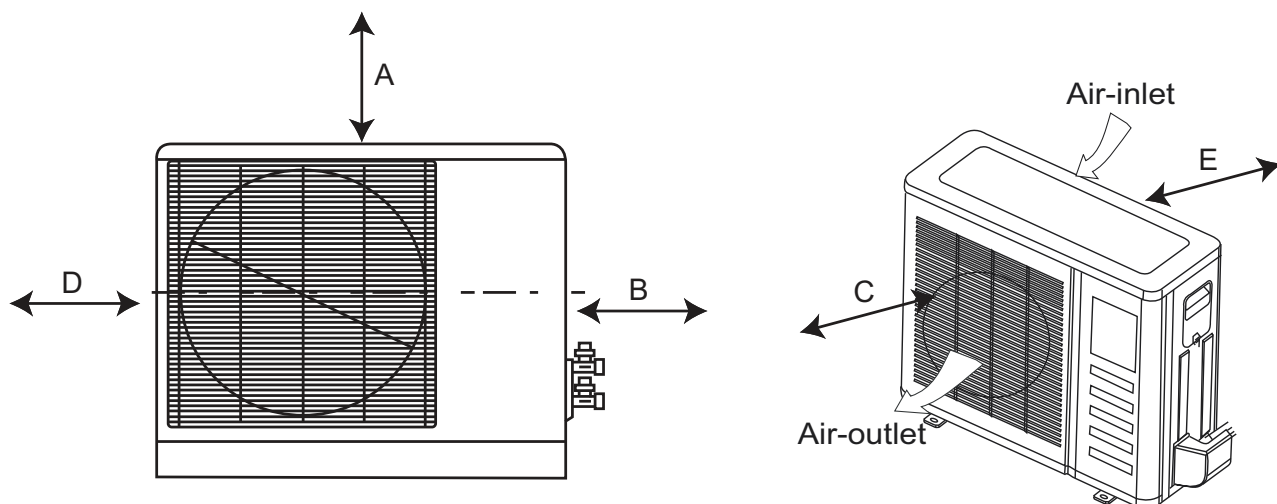
Indoor Model: 40MAQB36B--3



Unit Width	in (mm)	46.69 (1186)
Unit Height	in (mm)	13.39 (343)
Unit Depth	in (mm)	10.16 (258)
Net Weight	lbs (kg)	40.12 (18.2)



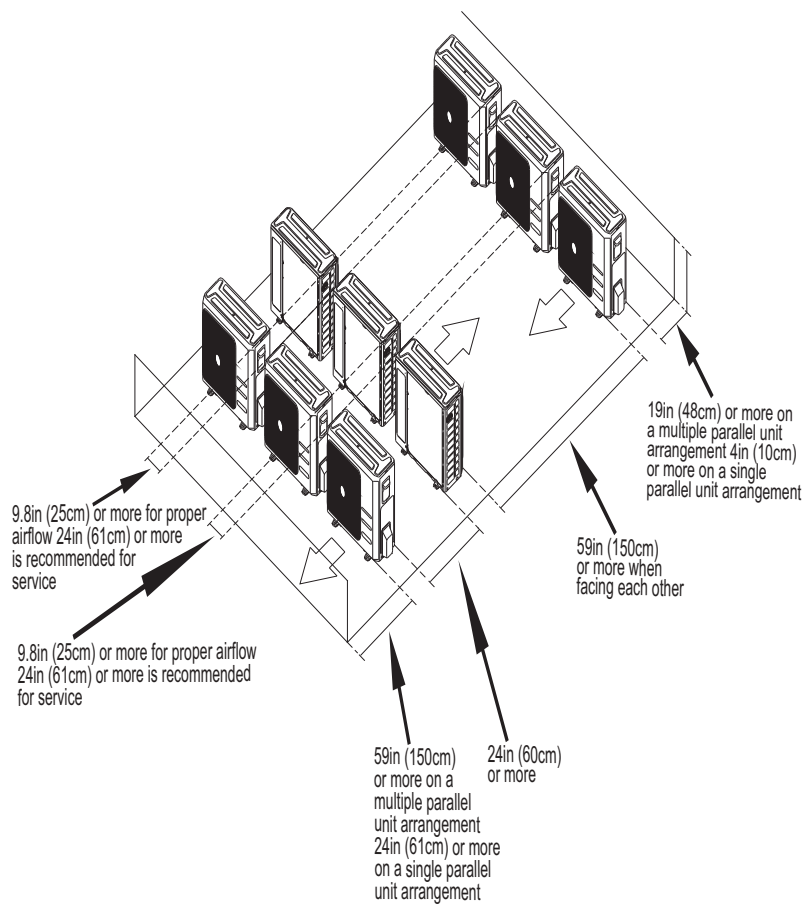
## CLEARANCES



**Fig. 6 — Clearances**

UNIT	MINIMUM VALUE in. (mm)
A	24 (609)
B	24 (609)
C	24 (609)
D	4 (101)
E	4 (101)

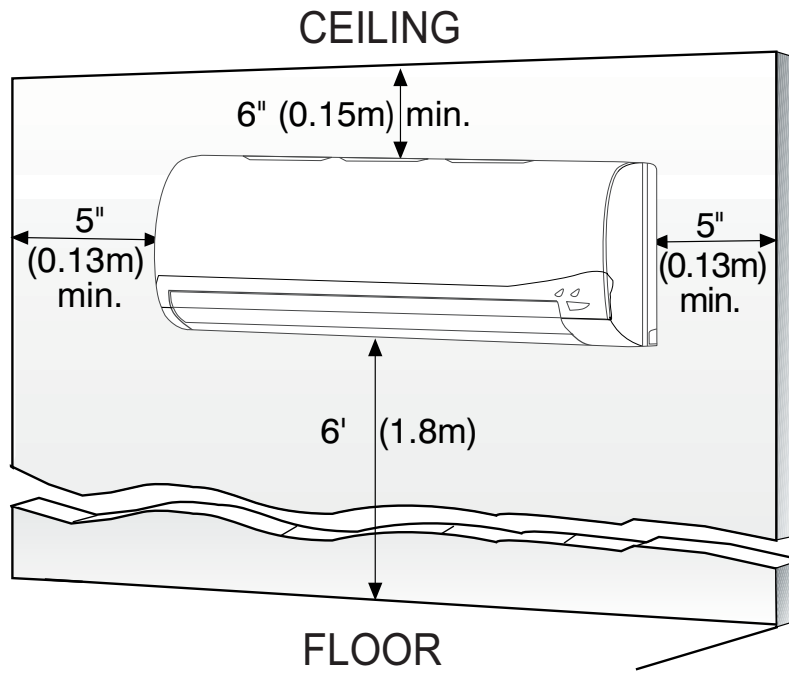
**NOTE:** The outdoor unit must be mounted at least 2in (50mm) above the maximum anticipated snow depth.



**Fig. 7 — Clearances for multiple units**



## CLEARANCES – INDOOR



**Fig. 6 – Indoor Unit Clearance**

**NOTE:** The top clearance recommended for proper return airflow is 5.9in (15cm). Reduction of this clearance may decrease unit performance. This may be reduced to 3.2in (80mm) as long as the right and left clearances are achieved.



# **GROSSMONT UNION HIGH SCHOOL DISTRICT**

## **VALHALLA BATTERY INVERTER REPLACEMENT CN-2559**

**SECTION 00740  
ESCROW AGREEMENT**

## ESCROW ACCOUNT INSTRUCTIONS

Establishment of an escrow account is optional. When using the option of having retentions deposited into an escrow account, please execute three (3) copies of the Escrow Account Forms. Once the Contractor and the Bank have signed the agreements, forward all three copies to:

Rian Pinson  
Director of Purchasing  
Grossmont Union High School District  
PO Box 1043  
La Mesa, CA 91944-1043

The Deputy Superintendent, Business Services will sign the three originals and will forward the Bank's and Contractor's copy to the Bank and Contractor and retain one for the District's records.

Contractor shall submit a **separate payment request** for retention. Payments will be forwarded directly to the bank for deposit to the escrow account.

**ESCROW RELEASE:** Upon completion of a project, please forward a letter requesting release of the Escrow Account funds to the above address or via email to [rpinson@guhsd.net](mailto:rpinson@guhsd.net). Include the following information in the letter:

1. Bank representative's name
2. Bank name
3. Address
4. Fax or email
5. Escrow Account Number

The District will send a request for release to the Bank following receipt of the Request to Release Escrow Funds letter and filing of the Notice of Completion.

(00740)  
**ESCROW AGREEMENT FOR SECURITY DEPOSITS IN LIEU OF RETENTION**  
**VALHALLA BATTERY INVERTER REPLACEMENT**  
**CN-2559**

This Escrow Agreement is made and entered into by and between the **GROSSMONT UNION HIGH SCHOOL DISTRICT** whose address is **1100 Murray Drive, El Cajon, CA 92020** (hereinafter \_\_\_\_\_ called "Owner") and

whose address is \_\_\_\_\_ (hereinafter called "Contractor")  
and \_\_\_\_\_ whose address is  
\_\_\_\_\_ (hereinafter called "Escrow Agent").

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

(1) Pursuant to Section 22300 of the Public Contract Code of the State of California, Contractor has the option to deposit securities with Escrow Agent as a substitute for retention earnings required to be withheld by Owner pursuant to the Construction Contract entered into between the Owner and Contractor for the \_\_\_\_\_ in the amount of \_\_\_\_\_ dated \_\_\_\_\_ (hereinafter referred to as the "Contract"). Alternatively, on written request of the Contractor, the Owner shall make payments of the retention earnings directly to the Escrow Agent. When Contractor deposits the securities as a substitute for Contract earnings, the Escrow Agent shall notify the Owner within 10 days of the deposit. The market value of the securities at the time of the substitution shall be at least equal to the cash amount then required to be withheld as retention under the terms of the Contract between the Owner and Contractor. Securities shall be held in the name of \_\_\_\_\_, and shall designate the Contractor as the beneficial Owner.

(2) The Owner shall make progress payments to the Contractor for those funds which otherwise would be withheld from progress payments pursuant to the Contract provisions, provided that the Escrow Agent holds securities in the form and amount specified above.

(3) When the Owner makes payment of retention earned directly to the Escrow Agent, the Escrow Agent shall hold them for the benefit of the Contractor until the time that the escrow created under this Escrow Agreement is terminated. The Contractor may direct the investment of the payments into securities. All terms and conditions of this Escrow Agreement and the rights and responsibilities of the parties shall be equally applicable and binding when the Owner pays the Escrow Agent directly.

(4) Contractor shall be responsible for paying all fees for the expenses incurred by Escrow Agent in administering the Escrow Account and all expenses of the Owner. These expenses and payment terms shall be determined by the Owner, Contractor and Escrow Agent.

(5) The interest earned on the securities or the money market accounts held in escrow and all interest earned on that interest shall be for the sole account of Contractor and shall be subject to withdrawal by Contractor at any time and from time to time without notice to the Owner.

(6) Contractor shall have the right to withdraw all or any part of the principal in the Escrow Account only by written notice to Escrow Agent accompanied by written authorization from the Owner to the Escrow Agent that Owner consents to the withdrawal of the amount sought to be withdrawn by Contractor.

(7) The Owner shall have a right to draw upon the securities in the event of default by the Contractor. Upon seven days written notice to the Escrow Agent from the Owner of the default, the Escrow Agent shall immediately convert the securities to cash and shall distribute the cash as instructed by the Owner.

(8) Upon receipt of written notification from the Owner certifying that the Contract is final and complete, and that the Contractor has complied with all requirements and procedures applicable to the Contract, Escrow Agent shall release to Contractor all securities and interest on deposit less escrow fees and charges of the Escrow Account. The escrow shall be closed immediately upon disbursement of all moneys and securities on deposit and payments of fees and charges.

(9) Escrow Agent shall rely on the written notifications from the Owner and the Contractor pursuant to Sections (5) to (8), inclusive, of this Escrow Agreement and the Owner and Contractor shall hold Escrow Agent harmless from Escrow Agent's release and disbursement of the securities and interest as set forth above.

(10) The names of the persons who are authorized to give written notice or to receive written notice on behalf of the Owner and on behalf of Contractor in connection with the foregoing, and exemplars of their respective signatures are as follows:

On behalf of Owner:

Deputy Superintendent, Bus. Svcs.  
Title

Scott Patterson  
Name

\_\_\_\_\_  
Signature

1100 Murray Drive, El Cajon, CA 92020  
Address

On behalf of Escrow Agent:

\_\_\_\_\_  
Title

\_\_\_\_\_  
Name

\_\_\_\_\_  
Signature

On behalf of Contractor:

\_\_\_\_\_  
Title

\_\_\_\_\_  
Name

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Address

\_\_\_\_\_  
Address

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

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

**OWNER:**

**CONTRACTOR:**

**GROSSMONT UNION HIGH SCHOOL DIST.**

\_\_\_\_\_  
Deputy Superintendent, Bus. Svcs.  
Title

\_\_\_\_\_  
Title

\_\_\_\_\_  
Scott Patterson  
Name

\_\_\_\_\_  
Name

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Signature

# **GROSSMONT UNION HIGH SCHOOL DISTRICT**

## **VALHALLA BATTERY INVERTER REPLACEMENT CN-2559**

**SECTION 00750  
CERTIFICATIONS TO BE  
SUBMITTED WITH BID**

(00751)  
CERTIFICATION OF COMPLIANCE WITH DVBE POLICY

**VALHALLA BATTERY INVERTER REPLACEMENT  
CN-2559**

When completing Attachment B on the DVBE forms, please attach proof of the DVBE Certification for your firm, the subcontractor, or the supplier to your DVBE Documentation.

Project agreements for the construction and/or modernization of school facilities, which are approved for funding by the State Allocation Board, shall include the following language:

1. As required by the Education Code Section 17076.11, this Board has a participation goal for Disabled Veteran Business Enterprises of three percent, per year, of the overall dollar amount of funds allocated to the District by the State Allocation Board pursuant to the Leroy F. Greene School Facilities Act of 1998 for construction or modernization and expended each year by the District.
2. At the time of execution of a contract, the contractor will provide a statement to the District of anticipated participation of Disabled Veteran Business Enterprises in the contract. Prior to, and as a condition for final payment under any contract for such project, the contractor shall provide appropriate documentation to the District identifying the amount paid to Disabled Veteran Business Enterprises in conjunction with the contract, so that the District can assess its success at meeting this goal.
3. The Superintendent or designee shall devise a process for the implementation of this policy as defined in the Education Code and shall make any necessary revision to keep the policy current with State legislation.

The bidder/contractor agrees to comply with the above District DVBE policy:

Bidder/Contractor: \_\_\_\_\_

Signature: \_\_\_\_\_

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

(00752)  
**BIDDER'S ACKNOWLEDGEMENT  
OF PROJECT SCHEDULE AND PHASING**

**VALHALLA BATTERY INVERTER REPLACEMENT  
CN-2559**

The undersigned acknowledges that he/she has carefully and thoroughly reviewed the Project Schedule and Phasing Plan, attached herein, and made a part of the Contract Documents.

The undersigned fully understands the manpower requirements necessary to complete the project in accordance with the Project Schedule and Phasing Plan, and agrees to furnish all labor, materials and equipment necessary, upon District acceptance of bidder's proposal, to fully comply with this schedule. The undersigned agrees to comply with any and all adjustments to schedule and phasing plan, as may be directed by the Construction Manager, and which may be required to ensure project completion as stipulated in the Contract Documents.

The undersigned acknowledges that failure to comply with the above could result in delays to other contractors, whose bona fide and substantiated cost impacts, due to said delays, may be borne by the undersigned.

ACKNOWLEDGED AND AGREED:

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

\_\_\_\_\_  
CONTRACTOR

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



(00753)  
SITE VISIT CERTIFICATION

**VALHALLA BATTERY INVERTER REPLACEMENT  
CN-2559**

I certify that I have visited the site of the proposed work and have fully acquainted myself 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 under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

I fully indemnify the Grossmont Union High School District, the Architect, the 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 to the site.

\_\_\_\_\_  
(Signature of Bidder)

\_\_\_\_\_  
(Typed name of Bidder)

SUBSCRIBED BEFORE ME on this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_

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

My commission expires: \_\_\_\_\_

**(00754)**  
**ACKNOWLEDGEMENT OF BIDDING PRACTICES**  
**REGARDING INDEMNITY**

TO: Grossmont Union High School District  
1100 Murray Drive  
El Cajon, California 92020

RE: VALHALLA BATTERY INVERTER REPLACEMENT CN-2559

Please be advised that with respect to the above-referenced PROJECT the undersigned CONTRACTOR on behalf of itself and all subcontractors hereby waives the benefits and protection of Labor Code section 3864, which provides:

“If an action as provided in this chapter is prosecuted by the employee, the employer, or both jointly against the third person results in judgment against such third person, the employer shall have no liability to reimburse or hold such third person harmless on such judgment or settlement in the absence of a written agreement to do so executed prior to the injury.”

This Agreement has been signed by an authorized representative of the contracting party and shall be binding upon its successors and assignees. The undersigned further agrees to promptly notify the DISTRICT of any changes of ownership of the contracting party or any subcontractor while this Agreement is in force.

\_\_\_\_ ACKNOWLEDGED AND AGREED:

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

\_\_\_\_\_  
CONTRACTOR

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

# **GROSSMONT UNION HIGH SCHOOL DISTRICT**

## **VALHALLA BATTERY INVERTER REPLACEMENT CN-2559**

**SECTION 00755  
CERTIFICATIONS TO BE  
SUBMITTED WITH  
AGREEMENT**

**CONTRACTOR'S CERTIFICATE  
REGARDING DRUG-FREE WORKPLACE**

**VALHALLA BATTERY INVERTER REPLACEMENT  
CN-2559**

This Drug-Free Workplace Certification form is required from all successful bidders pursuant to the requirements mandated by Government Code sections 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 performing 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.

Pursuant to Government Code section 8355, every person or organization awarded a contract or grant from a State agency shall certify that it will provide a drug-free workplace by doing all of the following:

- a) 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;
- b) 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 employee-assistance programs; and
  - 4) The penalties that may be imposed upon employees for drug abuse violations;
- c) Requiring that each employee engaged in the performance of the contract or grant be given a copy of the statement required by subdivision (a) 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 (a) publish a statement notifying employees concerning the prohibition of controlled substance at the workplace, (b) establish a drug-free awareness program, and (c) require each employee engaged in the performance of the contract be given a copy of the statement required by section 8355(a) and require such 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 sections 8350 et. seq.

I acknowledge that I am aware of the provisions of Government Code sections 8350 et. seq. and hereby certify that I will adhere to the requirements of the Drug-Free Workplace Act of 1990.

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

\_\_\_\_\_  
CONTRACTOR

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

**CONTRACTOR'S CERTIFICATE REGARDING  
ALCOHOLIC BEVERAGE AND TOBACCO-FREE CAMPUS POLICY**

**VALHALLA BATTERY INVERTER REPLACEMENT  
CN-2559**

The CONTRACTOR agrees that it will abide by and implement the DISTRICT's Alcoholic Beverage and Tobacco-Free Campus Policy, which prohibits the use of alcoholic beverages and tobacco products, at any time, on DISTRICT-owned or leased buildings, on DISTRICT property and in DISTRICT vehicles. The CONTRACTOR shall procure signs stating "ALCOHOLIC BEVERAGE AND TOBACCO USE IS PROHIBITED" and shall ensure that these signs are prominently displayed in all entrances to school property at all times.

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

\_\_\_\_\_  
CONTRACTOR

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

## ASBESTOS-FREE MATERIALS CERTIFICATION

The undersigned declares that he or she is the person who executed the bid for [VALHALLA BATTERY INVERTER REPLACEMENT CN-2559](#) (Hereinafter referred to as the "Project", and submitted it to the GROSSMONT UNION HIGH SCHOOL DISTRICT (hereinafter referred to as the "Owner" on behalf of \_\_\_\_\_ (hereinafter referred to as the "Contractor").

To the best of my knowledge, information and belief, in completing the Contractor's Work for the Project, no material furnished, installed or incorporated into the Project will contain, or in itself be composed of, any materials listed by the federal or state EPA or federal or state health agencies as a hazardous material.

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

Executed on this \_\_\_\_\_ day of \_\_\_\_\_,  
20\_\_\_\_ at \_\_\_\_\_.

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

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

*JURAT*

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Title

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

Subscribed and sworn to (or affirmed) before me on this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_,  
by \_\_\_\_\_, proved to me on the basis of satisfactory evidence to be the  
person(s) who appeared before me.

\_\_\_\_\_  
Notary Public in and for  
the State of California

Seal

My Commission Expires: \_\_\_\_\_



**CONTRACTOR'S CERTIFICATE REGARDING BACKGROUND CHECKS**

**VALHALLA BATTERY INVERTER REPLACEMENT  
CN-2559**

\_\_\_\_\_ certifies that it has performed one of the following:  
*[Name of contractor/consultant]*

- ☐ Pursuant to Education Code section 45125.1, Contractor has conducted criminal background checks, through the California Department of Justice, of all employees providing services to the Grossmont Union High School District, pursuant to the contract/purchase order dated \_\_\_\_\_, and that none have been convicted of serious or violent felonies, as specified in Penal Code sections 1192.7(c) and 667.5(c), respectively.
- ☐ As further required by Education Code section 45125.1, attached hereto as Attachment "A" is a list of the names of the employees of the undersigned who may come in contact with pupils.

AND

- ☐ Pursuant to Education Code section 45125.2, Contractor will ensure the safety of pupils by one or more of the following methods:
  - ☐ (1) The installation of a physical barrier at the work site to limit contact with pupils.
  - ☐ (2) Continual supervision and monitoring of all employees of the entity by an employee of the entity whom the Department of Justice has ascertained has not been convicted of a violent or serious felony.

I declare under penalty of perjury under the laws of the United States that the foregoing is true and correct.

Date \_\_\_\_\_, 2021

\_\_\_\_\_  
[Name of Contractor/Consultant]

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

## CONTRACTOR FINGERPRINTING REQUIREMENTS

### CONTRACTOR CERTIFICATION

# VALHALLA BATTERY INVERTER REPLACEMENT CN-2559

With respect to the Contract dated \_\_\_\_\_ 20\_\_\_\_, by and between the Grossmont Union High School District ("Owner") and \_\_\_\_\_ ("Contractor"), Contractor hereby certifies to the Owner's governing board that it has completed the criminal background check requirements of Education Code Section 45125.1 and that none of its employees that may come in contact with Owner's pupils have been convicted of a violent felony listed in Penal Code section 667.5(c) or a serious felony listed in Penal Code section 1192.7(c).

\_\_\_\_\_  
Signature of Contractor's Representative

\_\_\_\_\_  
Date

- OR -

### CONTRACTOR EXEMPTION

Pursuant to Education Code sections 45125.1 and 45125.2, the Grossmont Union High School District ("Owner") has determined that \_\_\_\_\_ ("Contractor") is exempt from the criminal background check certification requirements for the contract dated \_\_\_\_\_, 20\_\_\_\_ by and between the Owner and Contractor ("Contract") because:

- ☐ The Contractor's employees will have limited contact with Owner students during the course of the Contract;
- ☐ Emergency or exceptional circumstances exist; or
- ☒ With respect to contractors constructing, reconstructing, rehabilitating or repairing a school facility, as provided in Section 45125.2, the Contractor has agreed to ensure the safety of pupils at the school facility by the following method(s) specified in Section 45125.2:

\_\_\_\_\_ Installation of physical barrier at the work site to limit contact with pupils.  
\_\_\_\_\_ Surveillance of employees of the Contractor by school personnel.  
  X   Continual supervision and monitoring of all employees of the Contractor by an employee of the Contractor whom the DOJ has ascertained has not been convicted of a violent or serious felony.

Supervisor's Name: \_\_\_\_\_

Soc.Sec. No. (last 4 digits) or CDL \_\_\_\_\_

### SUBCONTRACTOR'S CERTIFICATION

## VALHALLA BATTERY INVERTER REPLACEMENT CN-2559

The Grossmont Union High School District ("Owner") entered into a contract for services with \_\_\_\_\_ ("Contractor") on or about \_\_\_\_\_, 20\_\_\_\_ ("Contract"). This certification is submitted by \_\_\_\_\_, a subcontractor to the Contractor for purposes of that Contract ("Subcontractor"). Subcontractor hereby certifies to the Owner's governing board that it has completed the criminal background check requirements of Education Code section 45125.1 and that none of its employees that may come in contact with Owner pupils have been convicted of a violent felony listed in Penal Code section 667.5(c) or a serious felony listed in Penal Code section 1192.7(c).

\_\_\_\_\_  
Signature of Contractor's Representative

\_\_\_\_\_  
Date

- OR -

### SUBCONTRACTOR'S EXEMPTION

The Grossmont Union High School District ("Owner") entered into a contract for services with \_\_\_\_\_ ("Contractor") on or about \_\_\_\_\_, 20\_\_\_\_. ("Contract"). Pursuant to Education Code sections 45125.1 and 45125.2, the Owner has determined that \_\_\_\_\_, a subcontractor to the Contractor for purposes of that Contract ("Subcontractor"), is exempt from the criminal background check certification requirements for the Contract because:

- ☐ The Subcontractor's employees will have limited contact with Owner students during the course of the Contract;
- ☐ Emergency or exceptional circumstances exist; or
- ☒ With respect to contractors constructing, reconstructing, rehabilitating or repairing a school facility, as provided in Section 45125.2, the Contractor and/or Subcontractor have agreed to ensure the safety of pupils at the school facility by the following method(s) specified in Section 45125.2:

\_\_\_\_\_ Installation of physical barrier at the work site to limit contact with pupils.  
\_\_\_\_\_ Surveillance of employees of the Contractor by school personnel.  
  X   Continual supervision and monitoring of all employees of the Contractor by an employee of the Contractor whom the DOJ has ascertained has not been convicted of a violent or serious felony.

Supervisor's Name: \_\_\_\_\_

Soc.Sec. No. (last 4 digits) or CDL \_\_\_\_\_



---

## FINGERPRINTING & BADGING PROCEDURES

### Attachment "A"

All Contractors/Consultants shall be badged for all work and projects on our school sites. See Ed Code 45125 for any details. The District does not provide fingerprinting services, only badging.

#### **Fingerprinting**

All LiveScan offices require an ORI number to obtain FBI Background Checks and DOJ clearances. Any person who is to be fingerprinted must be able to provide the Request for LiveScan Form, ORI number, their name, valid California identification such as a driver's license (out-of-state ID requires a Social Security Card). Contractors may use any LiveScan office to process their employees' fingerprints.

Contracting companies may obtain an ORI number by completing the process to become an applicant agency. Information is available at the Department of Justice website: <https://oag.ca.gov/fingerprints/agencies>. Note this process may take from 4 – 6 weeks or longer.

#### **Construction Contractor Badge Procedures**

Badges shall be obtained from the Facilities Department - Bond Office, Monday through Friday from 8:00 – 3:00.

- **Unrestricted Badges:** Upon obtaining DOJ and FBI clearance, the Contractor shall provide the District and the Construction Manager (for CM projects) a written, employer-certified list of DOJ/ FBI CLEARED employees on company letterhead. A GREEN badge with picture will be issued showing UNRESTRICTED status.
- **Restricted Badges:** Contractor shall also provide a list of employees on company letterhead that have NOT been fingerprinted. A RED badge with picture will be issued showing RESTRICTED status. These employees must be overseen at all times by a GREEN badge employee.
- **Contractor Employees:** Contractor employee on site less than 7 days per project will be issued local badge by CM or general contractor and will be under supervision of a GREEN badge employee at all times.

The lists shall include:

- Employee first and last name
- California Identification Card or Driver's License number OR the last four digits of the employee's Social Security Number.

Badges should be obtained at least five (5) working days prior to start of work.

Contractor **SHALL NOT** permit any employee who does not have a badge to enter school premises or be on any Grossmont Union High School District jobsite. Submission of a list of DOJ cleared employees shall constitute acknowledgment by the Contractor that the employees listed are eligible to provide supervision services for non-cleared employees on a school site campus.

Sample certification and badge request letters can be requested.

Fingerprinting and Department of Justice clearance is the responsibility of the awarded contractor as noted in the Fingerprinting Certifications submitted with your bid documents. Questions regarding the application for an ORI number can be referred to the Dept. of Justice, [AuthorizationQuestions@doj.ca.gov](mailto:AuthorizationQuestions@doj.ca.gov).

Call Dani Murphy at (619) 644-8159 if you need assistance in badging.



# **DISABLED VETERANS BUSINESS ENTERPRISE FORMS**

**Attachment "B"**

Forms are required to be submitted with bid. Failure to submit DVBE documents with the bid MAY result in the bid being determined non-responsive. Documentation of Good Faith Effort (GFE) must be completed if bidder does not secure 3% DVBE participation.

**Purchasing Department  
Grossmont Union High School District  
1100 Murray Drive, El Cajon, CA 92020  
January 2019**

## DVBE INSTRUCTIONS

### IMPORTANT – READ ALL INSTRUCTIONS CAREFULLY

#### Steps / Instructions

**Document GFE efforts on the forms in this package entitled "Good Faith Effort".**

***Do not delay until the final days before your bid is due to start this process!***

As you begin your search for DVBEs, please note that there are five steps of the "Good Faith Effort" outlined in the state's Public Contract Code, and each step must be documented:

- 1) Contact was made with the awarding department to identify DVBEs
  - 2) Contact was made with other state and federal agencies, and with local DVBE organizations to identify DVBEs
  - 3) Advertising was published in trade papers and publications focusing on DVBEs
  - 4) Invitations to bid were submitted to potential DVBE contractors
  - 5) Available DVBEs were considered
1. Contact the District's Purchasing Department online at <https://www.guhds.net/Departments/Business-Services/Purchasing/Solicitations/Construction-Bids/index.html>
    - a. Information regarding how to obtain a DVBE and resources is located at this website.
    - b. If you have any questions, submit an RFI during the RFI period of your specific project for assistance.
  2. Contact state and federal agencies, along with local DVBE organizations for assistance in identifying potential DVBE service providers or suppliers.
    - a. The California Department of General Services Procurement Division (DGS-PD) Office of Small Business and DVBE Services (OSDS) is the state certifying agency that administers California's DVBE and SBE certification program. It has a DVBE/SBE firm search tool available online at <https://caleprocure.ca.gov/pages/PublicSearch/supplier-search.aspx>. To begin your search for a certified DVBE firm, check only the box for DVBE firms, select a Service Area from the dropdown menu, and hit the Search tab. San Diego County is Service Area 037. Once the results display, you will have the option to download them. To create a list of your search results, click on the download tab to generate an Excel file that you can sort. Please note that the list will return all firms who have identified San Diego as a service territory; not all of these are from San Diego County or even California. OSDS adds DVBE firms to the directory throughout the year so check the list periodically.

To verify an *individual* firm's certification, enter the Business Name OR Certification ID – not both. If the firm has a DVBE or SBE certification, a Supplier Profile will return. Check the Profile to see what active certification(s) the firm may have and their expiration date. You can also use the search tool to identify specific trades or licenses; it is recommended you use a key word search in addition to a license search as some vendors may not have complete information on file.
    - b. The federal Small Business Administration's (SBA) System for Award Management (SAM) serves as the official website of the U.S. Government. To search for firms who have registered as DVBEs, use their online database at <https://www.sam.gov/SAM/pages/public/searchRecords/search.jsf>. Begin your search by using the Advanced Search – Entity tool in the lower right. To narrow down the search area, click on Location and enter California in the State/Province column and/or the applicable Congressional District(s). (San Diego's congressional districts are the 49<sup>th</sup>, 50<sup>th</sup>, 51<sup>st</sup>, 52<sup>nd</sup>, and 53<sup>rd</sup>. Next, check the Socio-Economic Status box which will reveal other options. Check the Service Disabled Veteran Owned Business box at the lower left, and then click Search. The available results may be exported but you will have to do a manual save-as to save the document as an Excel file.

Before claiming the use of a firm from SAM, verify the named DVBE is registered with the DGS. The SBA is not a certifying agency for DVBEs; firms

self-identify this status on the SAM registry and are not required to submit corroborating documentation.

- c. Local veteran-owned business organizations in San Diego County you can contact to identify DVBE firms include:

The Elite SDVOB Network, San Diego Chapter

(619) 284-9922

<https://www.elitesdvob.org/contact-us>

<https://www.elitesdvob.org/members-directory/california/san-diego>

Disabled Veteran Business Alliance (DVBA), San Diego Chapter

Chapter President: Amy Aledo

[amy@dynamikinc.com](mailto:amy@dynamikinc.com)

(866) 820-3110

- d. Enter the DVBE firms you intend to use on the form entitled "Good Faith Effort" and include the date and time of your contact with the firm, the name of organization contacted, contact method, and telephone number, email, or Internet address. Print out and attach a copy of each Internet website page visited (e.g. DGS' and federal SAM search to prove contacts made via the Internet.)

3. Unless GFE advertising is placed by the Construction Manager, advertisements for DVBE service providers, subcontractors or suppliers must be placed in at least:

- a. One "trade" publication related to a trade or industry, and
- b. One "focus" publication whose ads are specifically distributed and focused to reach DVBE firms, or
- c. A single publication that qualifies as both a "trade" and "focus" publication. *Publications such as the San Diego Union-Tribune, San Diego Reader, and localized community newspapers are considered "general circulation" newspapers; ads placed in these newspapers are not acceptable.*

- 1) Ad placement may be specifically directed to publications that distribute their ads to businesses in the geographical areas where the work will be performed.
- 2) *Ads should appear in publications 10-14 calendar days* prior to the date the bid or proposal response is due to be submitted.
- 3) Give potential subcontractors/suppliers ample time (approximately 3-5 working days) to respond to the ad(s), while allowing sufficient time to seriously consider each firm that submits a response.
- 4) Ads should contain information similar to the following:

[Enter name of bidding firm]

Is seeking qualified DVBE vendors to provide

(Enter description/list of services/supplies that qualify.)

in [Enter geographical service areas/locations, if applicable]

for Project Name and Bid Number Contact: [Enter a contact name, address, telephone and fax number, and/or email address]

Submit qualifications/bids by: [date/time]

- 5) Document the GFE efforts on the forms in this package entitled "Good Faith Effort". Indicate, in Step 3 on the Good Faith Effort form, the publication date, whether the publication is a trade publication, a focus publication or both and whether ad copy or written ad content is attached.

If an ad was placed by Construction Manager, a copy of that ad is required with your GFE. But you are not required to place your own ad.

4. Transmit direct solicitations or invitations to bid to potential DVBEs, identified in Steps 2 and/or 3, by way of mail, telephone, email, fax, or other method.

- a. Submit *one or more examples of direct solicitation*. Solicitations should contain: company name; contact name, address, telephone and fax number (if applicable), District's bid name and number; a description of commercially useful goods and/or services for which subcontractors are sought; location of service area; and response date.
- b. If contact with DVBE firms is verbal or by telephone, document in writing the date of contact, person contacted, and business/subcontract opportunities discussed.
- c. Submit a list of DVBE firms to whom direct solicitations were transmitted (i.e., DVBE bidders list). Include each DVBE firm's name, mailing address,

contact name/title (if applicable), telephone/fax number, and email address (if applicable).

5. Show that DVBE firms that responded to the ad(s) and/or direct solicitations were considered. Bidding firms are encouraged to achieve full or partial DVBE participation. Review the Program Preference section of the bid document for information about the DVBE Incentive that is available to eligible bidders/proposers that achieve participation.
    - a. List each DVBE firm that responded with interest to the bidding firm's ad(s), telephone/fax/email contacts, or direct solicitations. If no responses were received, indicate "none", as instructed in Step 5 on page 3.
    - b. For each DVBE listed in Step 5 on page 3, indicate if the bidding firm:
      - 1) **WILL USE** the DVBE to perform a commercially useful function. For each DVBE that will be used, do the following: Enter the name of the DVBE on the form entitled "Actual DVBE Participation". Indicate whom the DVBE will contract with, the commercially useful function the DVBE will provide or perform. Attach a copy of the DVBE's current DGS certification.
      - 2) **WILL NOT USE** the DVBE after giving consideration to such things as the DVBE's qualifications, availability when needed, capacity to perform/deliver the full range of services/supplies, location or proximity to the service area, results of reference checks, and/or the nature of the services offered by the DVBE or the nature of the goods that can be supplied by the DVBE, etc.
- For each DVBE firm that will not be used, indicate, in Step 5 on page 3, the business reason(s) for choosing not to use the DVBE.

If awarded the contract, the Contractor must faithfully use each DVBE identified for use and listed on the form entitled "Actual DVBE Participation" and provide a statement as called for in the Certification of Compliance with DVBE Policy contained in the Bid Documents.



### Actual DVBE Participation

<b>NAME OF DVBE FIRM IDENTIFIED FOR USE</b> <small>(Prime is to enter its own name if the Prime is a certified DVBE)</small>	<b>FIRM THAT DVBE WILL CONTRACT WITH</b> <small>(Prime is to enter "self" if the Prime is a certified DVBE)</small>	<b>COMMERCIALLY USEFUL FUNCTION TO BE PERFORMED OR PROVIDED BY THE IDENTIFIED DVBE</b>	<b>DVBE % Claimed</b>	<b>Tier</b> <small>(See legend below)</small>

**DVBE % Claimed:**  
Enter the percentage level of actual DVBE participation achieved, even if the amount or participation achieved is less than a full three percent (3%) of the total bid amount Participation may be expressed as a partial/fractional decimal percentage. Do not enter dollar figures in the "**DVBE % Claimed**" column.

TIER =   0 = Prime Contractor                                      1 = Subcontractor/Supplier to the Prime Contractor  
           2 = Subcontractor/Supplier to a Level 1 Subcontractor/Supplier     3 = Subcontractor/Supplier to a Level 2 Subcontractor/Supplier, etc.

Attach to this form, a copy of the current DVBE certification issued by DGS for each DVBE listed in the first column. H a new or renewed certification request was recently approved by DGS, but confirmation of DVBE certification has not yet been received, place a footnote next to the DVBE's name and indicate on this form "DVBE Cert Pending" or "DVBE Cert to Follow".

Bidding/Proposing Firm’s Name	Signature
Printed Name & Title of Person Signing Above	Date Signed

**GOOD FAITH EFFORT**  
(mandatory to be completed before time of bid if no DVBE is listed)

**Steps 1 and 2**

Show the date and form of contact with GUHSD **and** show the contacts made with one or more other California state agencies **and** the Federal SBA **and** one or more California local DVBE organizations (see DGS' Resource Packet).

DATE OF CONTACT	TIME OF CONTACT	NAME OF AGENCY OR ORGANIZATION CONTACTED	CONTACT METHOD (Enter voice mail, internet access, or name of person contacted)	PHONE NUMBER, EMAIL OR WEB ADDRESS
		Awarding Agency - GUHSD	Internet*	<a href="https://www.guhsd.net/Departments/Business-Services/Purchasing/Solicitations/Construction-Bids/index.html">https://www.guhsd.net/Departments/Business-Services/Purchasing/Solicitations/Construction-Bids/index.html</a>
		Dept. of General Services' Small Business and		(916) 375-4940 or (800) 559-5529
		Dept. of General Services' Small Business and	Internet*	<a href="https://www.caleprocure.ca.gov/pages/PublicSearch/supplier-search.aspx">https://www.caleprocure.ca.gov/pages/PublicSearch/supplier-search.aspx</a>
		U.S. SBA Central Contractor Registration	Internet*	<a href="https://www.sam.gov/SAM/pages/public/searchRecords/search.jsf">https://www.sam.gov/SAM/pages/public/searchRecords/search.jsf</a>
			<ul style="list-style-type: none"> <li>• Attach one copy of each Internet website page that is visited as proof of this portion of the good faith effort.</li> </ul>	

**Step 3**

Show proof of advertising in one trade and one DVBE focus publication, **OR** one publication qualifying as both a trade and a DVBE focus publication. Or attach the CM's advertisement if advertisement was made by Construction Manager.

NAME OF PUBLICATION SOURCE	PUBLICATION DATE(S)	TYPE OF PUBLICATION Check the one that applies.			COPY OF AD ATTACHED	AD CONTENT ATTACHED
		Trade	Focus	Both		

**Step 4**

Show proof that direct invitations to bid were transmitted to potential DVBEs by way of mail, email/fax, telephone, or other method.

A. At a minimum attach, to this form, one or more examples of invitations to bid or solicitations that were transmitted directly to potential DVBEs. Bidding firm's may attach:

- One or more examples of the direct solicitations used to solicit bids from potential DVBE subcontractors/suppliers, **and/or**
- One or more copies of the narrative content of an emailed invitation to bid that was transmitted to potential DVBE subcontractors/suppliers **or** one or more copies of a faxed invitation to bid that was transmitted to potential DVBE Subcontractors/suppliers, **and/or**

- A description of the verbal dialog held with a potential DVBE subcontractor/supplier via telephone or personal meeting, including date of contact, person spoken to, and potential business opportunities discussed.

B. Attach to this form a copy of the DVBE bidder list. This is the list of certified DVBE firms to whom direct solicitations or invitations to bid were transmitted and may include the DVBE firms that responded to the bidding firm's published ad(s).

- Include each certified DVBE firm's name, mailing address, email address (if applicable), telephone and fax number.

Step 5			
Show that the bidding firm has considered the interested DVBE firms that responded to the bidding firm's ad(s), direct solicitations, and/or personal contacts. If no responses were received from DVBEs, indicate "None" on the first line of Column 1.			
NAME OF DVBE(S) THAT RESPONDED (This column is self-explanatory)	INDICATE YOUR PROPOSED USE OF EACH DVBE (Complete the appropriate column below and show percentage use, if applicable)		REASON(S) FOR NOT CHOOSING TO USE THIS DVBE (Enter a business reason for not selecting each firm identified in Column 2B)
	COLUMN 2A Will Use ___ Percent	COLUMN 2B X = Will Not Use	
COLUMN 1			COLUMN 3
	%		
	%		
	%		
	%		
	%		
	%		

**Completion Instructions**

For each entry in Column 2A, transfer the firm's name and claimed percentage value of use to the form entitled "**Actual DVBE Participation**". Complete Column 2A, only for those DVBEs that the bidding firm intends to subcontract with. An entry in Column 2A will impose an obligation on the bidding firm to use the DVBE firm identified for the percentage value claimed. DVBE participation may be expressed as a partial/fractional decimal percentage.

Place an "X" in Column 2B for each interested DVBE that the bidding firm does not intend to use.

Complete Column 3 for each "X" placed in Column 2B. In Column 3, indicate the business reason(s) for electing not to use the DVBE firm.

Sole authority rests with GUHSD to determine whether or not a bidder/proposer has successfully documented actual DVBE participation and/or whether a bidder/proposer has made an adequate GFE to achieve participation. Bidders/proposers may, at their sole option, choose to submit both forms in this package (documenting both full participation and a GFE) as insurance against a finding that the actual participation claimed is unacceptable.

Forms are to be submitted with your bid documents.

Bidding/Proposing Firm's Name	Signature
Printed Name & Title of Person Signing Above	Date Signed



# **GROSSMONT UNION HIGH SCHOOL DISTRICT**

## **VALHALLA BATTERY INVERTER REPLACEMENT CN-2559**

**ATTACHMENT C  
TECHNICAL  
SPECIFICATIONS**

## TECHNICAL SPECIFICATIONS

**Location:** [Valhalla](#)

**Project Manual:** Project manual published separately.

**Scope of Work:** As per the following trade categories.

## GROSSMONT UNION HIGH SCHOOL DISTRICT

This substitution request form may be used for Pre-Bid Substitution Requests or Post-Bid Substitution Requests.

TO: \_\_\_\_\_

PROJECT: \_\_\_\_\_

### SPECIFICATION ITEM:

Section	Page	Paragraph	Description
---------	------	-----------	-------------

Substitution approval is an acceptance of only the manufacturer and product for general conformance with the design concept reflected in the Contract Documents. The A/E has made no attempt to verify specific performance data, or to check the details of the proposed substitution as to special features, capacities, physical dimensions or code and/or regulatory compliance, all of which remain the responsibility of the person/entity submitting the proposed substitution.

### The undersigned requests consideration of the following:

#### PROPOSED SUBSTITUTION:

Attached data includes product description, specifications, drawings, photographs, performance and test data, adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents that the 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 the Drawings.
2. The undersigned will pay for changes to the building design, including engineering design, detailing, and construction
3. costs caused by the requested substitution.
4. The proposed substitution will have no adverse effect on other trades, the construction schedule, or specified warranty
5. requirements.
6. Maintenance and service parts will be locally available for the proposed substitution.

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

The undersigned agrees that, if this page is reproduced, the terms and conditions for substitutions found in the Bidding Documents apply to this request.

SUBMITTED ON \_\_\_\_\_, \_\_\_\_\_ BY:

\_\_\_\_\_  
Name

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Company Name

\_\_\_\_\_  
Address

\_\_\_\_\_  
City State Zip Code

#### For Use by Design Consultant:

- ☐ Accepted
- ☐ Accepted as Noted
- ☐ Not Accepted
- ☐ Submitted Late

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

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



PROJECT MANUAL

BATTERY REPLACEMENT  
AT VALHALLA HIGH SCHOOL

GROSSMONT UNION HIGH SCHOOL DISTRICT

El Cajon, CA

CONSTRUCTION DOCUMENTS

VOLUME 1 OF 1      Divisions 00 - 27

DSA Application #04-120235      File #37-H4

1.30.43

June 2021





**SECTION 00 01 01**  
**PROJECT TITLE PAGE**

**FOR**

**BATTERY REPLACEMENT**

**PROJECT NUMBER: 1-30-56**

**GROSSMONT UNION HIGH SCHOOL DISTRICT**

**1100 MURRAY DRIVE, EL CAJON, CA 92020**

**WWW.GUHSD.NET**

**PROJECT LOCATION**

**VALHALLA HIGH SCHOOL**

**1725 HILLSDALE ROAD**

**EL CAJON , CALIFORNIA 92019**

**PREPARED BY:**

**ARCHITECT**

**RUHNAU CLARKE ARCHITECTS**

5751 Palmer Way, Suite C, Carlsbad CA 92010

760.438.5899

[www.ruhnaucclarke.com](http://www.ruhnaucclarke.com)

Grossmont Union High School District Valhalla High School <b>Battery Replacement</b> RCA Project No. 1-30-56		Project Title Page 00 01 01 - 1
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NOTICE: This Project Manual, is an unpublished instrument of service of the authors. It is prepared for use only on this Project and in conjunction with the authors' interpretations, observations, decisions and administration, as described in the Conditions of the Contract. Desired results without these services cannot be assured. Use in whole or in part, without the authors' services and expressed written consent may violate Act 17 U.S.C. par. 301 (1991).

Grossmont Union High School District Valhalla High School <b>Battery Replacement</b> RCA Project No. 1-30-56		Project Title Page 00 01 01 - 2
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**SECTION 00 01 02  
PROJECT INFORMATION**

**PART 1 GENERAL**

**1.01 PROJECT IDENTIFICATION**

- A. Project Name: Battery Replacement, located at:  
Project Number: 1-30-56.  
Valhalla High School.  
1725 Hillsdale Road.  
El Cajon, California 92019.
- B. The Owner, hereinafter referred to as District: Grossmont Union High School District  
**Grossmont Union High School District**  
1100 Murray Drive, El Cajon, CA 92020  
www.guhsd.net  
619.644.8000

**1.02 NOTICE TO PROSPECTIVE BIDDERS**

- A. These documents constitute an Invitation to Bid to and request for qualifications from General Contractors for the construction of the project described below.

**1.03 PROJECT DESCRIPTION**

- A. Summary Project Description: Battery replacement and related equipment.
- B. Contract Scope: renovation.
- C. Contract Terms: Lump sum (fixed price, stipulated sum).

**1.04 PROJECT CONSULTANTS**

- A. The Architect, hereinafter referred to as Architect: **Ruhnau Clarke Architects**  
5751 Palmer Way, Suite C, Carlsbad CA 92010  
www.ruhnauclarke.com  
760.438.5899

**1.05 PROCUREMENT DOCUMENTS**

- A. Availability of Documents: Complete sets of procurement documents may be obtained:
1. From District at the Project Manager's address listed above.

Grossmont Union High School District Valhalla High School <b>Battery Replacement</b> RCA Project No. 1-30-56		Project Information 00 01 02 - 1
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**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION (NOT USED)**

**END OF SECTION**

Grossmont Union High School District Valhalla High School <b>Battery Replacement</b> RCA Project No. 1-30-56		Project Information 00 01 02 - 2
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**SECTION 00 01 07  
SEALS PAGE**

**ARCHITECT OF RECORD (AOR)**

**RUHNAU CLARKE ARCHITECTS**

5751 Palmer Way, Suite C, Carlsbad CA 92010  
David Ruhnau, Architect of Record C-20662



**STRUCTURAL ENGINEER OF RECORD (SEOR)**

**KNA CONSULTING ENGINEERS, INC.**

9931 Muirlands Blvd., Irvine, CA 92618  
Larry Kaprielian S-2795



**MECHANICAL ENGINEER OF RECORD (MEOR)**

**MA ENGINEERS**

5160 Carroll Canyon Road, Suite 200, San Diego CA 92121  
Roy C. Campbell M-025911



**ELECTRICAL ENGINEER OF RECORD (EEOR)**

**JOHNSON CONSULTING ENGINEERS, INC.**

12875 Brookprinter Place, #300, Poway CA 92064  
Monica Goese-Hansen E-14781



END OF SEALS PAGE

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**SECTION 00 40 25  
REQUEST FOR INFORMATION**

**RFI NUMBER:** \_\_\_\_\_

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

**PROJECT NAME: BATTERY REPLACEMENT**

**PROJECT NO.: 1-30-56**

**TO: RUHNAU CLARKE ARCHITECTS**

. Construction Manager

Attention: \_\_\_\_\_

Contractor: \_\_\_\_\_

Address: \_\_\_\_\_

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

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

**BRIEF SUMMARY OF RFI:** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Drawing No. \_\_\_\_\_ Detail No. \_\_\_\_\_

Specification Section \_\_\_\_\_ Title \_\_\_\_\_

\_\_\_\_\_

. Page \_\_\_\_\_ Paragraph \_\_\_\_\_

**DETAILS OF THIS RFI:** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Attachments: \_\_\_\_\_

\_\_\_\_\_

**RESPONSE WILL BE INCLUDED IN AN ADDENDUM**

Grossmont Union High School District Valhalla High School <b>Battery Replacement</b> RCA Project No. 1-30-56		Request for Information 00 40 25 - 1
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**END OF RFI**

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**SECTION 00 43 25**  
**SUBSTITUTION REQUEST FORM - DURING PROCUREMENT**

**SUBSTITUTION REQUEST NO.** \_\_\_\_\_

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

**PROJECT NAME: BATTERY REPLACEMENT**

**PROJECT NUMBER: 1-30-56**

**TO: RUHNAU CLARKE ARCHITECTS**  
Construction Manager

From: \_\_\_\_\_

We hereby submit for your consideration the following product comparisons of the specified product and the proposed substitution. The undersigned fully understands that failure to answer any item below may be cause for rejection of request for substitution.

Request for substitution shall only be made during bidding (not later than 7 days prior to bid opening for inclusion by Addendum) except under conditions beyond control of Contractor.

**SPECIFIED PRODUCT:** \_\_\_\_\_

Project Manual Section Title \_\_\_\_\_ Number \_\_\_\_ Page \_\_\_\_ Paragraph \_\_\_\_.

Drawing No. \_\_\_\_\_ Detail No. \_\_\_\_\_

Proposed Substitution: \_\_\_\_\_

Manufacturer: \_\_\_\_\_ Tel: \_\_\_\_\_

A. Is the point-by-point comparative data attached? — REQUIRED BY A/E

B. Reason request for substitution is being submitted: \_\_\_\_\_

**DIFFERENCES BETWEEN PROPOSED SUBSTITUTION AND SPECIFIED PRODUCT**

C. Does proposed substitution affect in any way the Structural Safety, Access Compliance, or Fire & Life Safety portions of the project? No\_\_ Yes\_\_

Explain \_\_\_\_\_

D. Does proposed substitution affect dimensions, gages, weights, etc. on Drawing? No\_\_ Yes\_\_

Explain \_\_\_\_\_

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- E. Does proposed substitution require changes in Drawings or design and installation changes?  
 No\_\_\_ Yes\_\_\_ \_\_\_\_\_  
 (If yes, cost of these changes is the responsibility of the Contractor.)
- F. Does proposed substitution affect product cost, delivery time, or construction schedule?  
 No\_\_\_ Yes\_\_\_ Explain \_\_\_\_\_
- G. Does proposed substitution comply with specified ICC Number, UL Rating, ASTM Numbers?  
 No\_\_\_ Yes\_\_\_ Explain \_\_\_\_\_
- H. Does proposed substitution affect other trades and systems such as wiring, piping, ductwork, structure, etc.? No \_\_\_ Yes \_\_\_ (Explain which and how) \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
- I. Does proposed substitution product guarantee differ from that of the specified product?  
 No\_\_\_ Yes\_\_\_ Explain \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Attach a listing of 3 similar projects (one in service for at least 3 years) using the proposed substitution.

Substantiating Data: Attach product data/brochures and Vendor qualifications for both specified and substitute product. Provide samples for both specified and substitute products, if applicable.

Certification: Undersigned has examined Construction Documents, is familiar with specified product, understands indicated application of product, and understands design intent of the Architect caused by the requested substitution.

Submitted by: \_\_\_\_\_

\_\_\_\_\_. (Type Name)      Signature      Date

Signature must be made by person having legal authority to bind his firm to the above terms.

**END OF SECTION**

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**SECTION 00 63 25**  
**SUBSTITUTION REQUEST FORM - DURING CONSTRUCTION**

**SUBSTITUTION REQUEST NO.** \_\_\_\_\_

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

**PROJECT NAME: BATTERY REPLACEMENT**

**PROJECT NUMBER: 1-30-56**

**TO: RUHNAU CLARKE ARCHITECTS**  
Construction Manager

From: \_\_\_\_\_

We hereby submit for your consideration the following product comparisons of the specified product and the proposed substitution. The undersigned fully understands that failure to answer any item below may be cause for rejection of request for substitution.

This request for substitution form shall only be used after the end of the bidding period except under conditions beyond control of Contractor.

Specified Product: \_\_\_\_\_

Project Manual Section Title \_\_\_\_\_ Number \_\_\_\_ Page \_\_\_\_ Paragraph \_\_\_\_.

Drawing No. \_\_\_\_\_ Detail No. \_\_\_\_\_

Proposed Substitution: \_\_\_\_\_

Manufacturer: \_\_\_\_\_ Tel: \_\_\_\_\_

A. Reason request for substitution is being submitted: \_\_\_\_\_

\_\_\_\_\_

B. Does proposed substitution affect in any way the Structural Safety, Access Compliance, or Fire & Life Safety portions of the project? No\_\_ Yes\_\_

Explain \_\_\_\_\_

\_\_\_\_\_

C. Does proposed substitution affect dimensions, gages, weights, etc. on Drawing? No\_\_ Yes\_\_

Explain \_\_\_\_\_

\_\_\_\_\_

D. Does proposed substitution require changes in Drawings or design and installation changes?

No\_\_ Yes\_\_ \_\_\_\_\_

(If yes, cost of Architect and Engineer document changes are the responsibility of the Contractor.)

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- E. Does proposed substitution affect product cost, delivery time, or construction schedule?  
No\_\_\_ Yes\_\_\_ Explain \_\_\_\_\_
- F. Does proposed substitution comply with specified ICC Number, UL Rating, ASTM Numbers?  
No\_\_\_ Yes\_\_\_ Explain \_\_\_\_\_
- G. Does proposed substitution affect other trades and systems such as wiring, piping, ductwork, structure, etc.? No \_\_\_ Yes \_\_\_ (Explain which and how) \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

If yes, has impact on their work been included in price of proposed substitution? No\_\_ Yes\_\_.

- H. Does proposed substitution product guarantee differ from that of the specified product?  
No\_\_\_ Yes\_\_\_ Explain \_\_\_\_\_

\_\_\_\_\_

If the substitution request is accepted, it will result in:

No cost impact \_\_\_\_\_ Improve Schedule \_\_\_\_\_ Credit of \$ \_\_\_\_\_

Attach a listing of 3 projects (one in service for at least 3 years) using the proposed substitution.

Substantiating Data: Attach product data/brochures and Vendor qualifications for both specified and substitute product. Provide samples for both specified and substitute products, if applicable.

Certification: Undersigned has examined Construction Documents, is familiar with specified product, understands indicated application of product, and understands design intent of the Architect caused by the requested substitution.

Submitted by: \_\_\_\_\_

\_\_\_\_\_. (Type Name)      Signature      Date

Signature must be made by person having legal authority to bind his firm to the above terms.

Architect's Comments:

\_\_\_\_\_ Accepted, \_\_\_\_\_ accepted as noted, \_\_\_\_\_ not accepted, \_\_\_\_\_ received too late.

Reviewed by:

\_\_\_\_\_  
Architect      Date

\_\_\_\_\_  
DSA      Date

\_\_\_\_\_  
District      Date

**END OF SECTION**

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## SECTION 01 10 00 SUMMARY

### PART 1 GENERAL

#### 1.01 PROJECT

- A. Project Name: Battery Replacement
- B. District's Name: Grossmont Union High School District.
- C. Architect's Name: Ruhnau Clarke Architects.
- D. The Project consists of the canopy panels outside of the existing kitchen located at Valhalla High School.

#### 1.02 CONTRACT DESCRIPTION

- A. Contract Type: A single prime contract based on a Stipulated Price as described in Owner-Contractor Agreement.

#### 1.03 CONTRACT DOCUMENTS

- A. Contract Requirements:
  - 1. Conditions of the Contract and other Contract documents have been included in the Project Manual, as indicated in the Table of Contents.
    - a. Such documents are not Specifications.
- B. Contract Drawings: The Drawings provided with and identified in the Project Manual are the Drawings referenced in the Agreement.
  - 1. The location, extent and configuration of the required construction and improvements are shown and noted on Drawings.
    - a. The Drawings are referenced in the Agreement.
    - b. An index of Drawings is included in the set of Drawings.
  - 2. Drawings are arranged into series according to design discipline. Such organization and all references to trades, subcontractor, specialty contractor or supplier shall not control the Contractor in dividing the Work among subcontractors or in establishing the extent of the Work to be performed by any trade.
  - 3. Where the terms "as shown", "as indicated", "as noted", "as detailed", "as scheduled", or terms of like meaning, are used in the Drawings or Specifications, it shall be understood that reference is being made to the Drawings referenced in the Agreement.
  - 4. Where reference to the word "plans" is made anywhere in Drawings, Specifications and related Contract Documents, it shall be understood to mean the Drawings referenced in the Agreement.
- C. Contract Specifications: The Specifications provided in the Project Manual are the Specifications referenced in the Agreement.
  - 1. Specifications are organized by Divisions and Sections in accordance with the recommended practices of the Construction Specifications Institute.

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- a. Such organization shall not control the Contractor in dividing the Work among subcontractors or in establishing the extent of Work to be performed by any trade.
- 2. Specifications are included in the Project Manual, which may also include other Bidding and Contract Documents.
  - a. Contents of the Project Manual are listed in Document 00 01 10 - Table of Contents, in the Project Manual.

#### 1.04 DESCRIPTION OF ALTERATIONS WORK

- A. Scope of demolition and removal work is indicated on drawings and specified in Section 02 41 00.
  - 1. The intent of these drawings and specifications are the work of the alteration, rehabilitation, or reconstruction of this facility shall be submitted and approved by DSA before proceeding with the repair work. CAC Section 4-317.
- B. Scope of alterations work is indicated on drawings.

#### 1.05 WORK BY OWNER

- A. Concurrent Work Under Separate Contracts:
  - 1. Work Under Separate Contracts: District will award separate contracts for products and installation for interior improvements and other work as may be indicated on Drawings as NIC (Not in Contract).
  - 2. Relationship to Work Under the Contract:
    - a. Work under the Contract shall include all provisions necessary to make such concurrent work under separate contracts complete in every respect and fully functional, including field finishing.
    - b. Provide necessary backing, supports, piping, conduit, conductors and other such provisions from point of service to point of connection, as shown on Drawings and specified herein.
  - 3. Related Contract Documents:
    - a. District will make available, in a timely manner, drawings and specifications of work under separate contracts for coordination and further description of that work.
    - b. Such drawings and other data required for the coordination of the work of separate contracts with the Work of this Contract may be included with the Contract Documents.
    - c. If so, they are provided for convenience only and are not to be considered Contract Documents produced by Architect or Architect's consultants.
  - 4. Permits, Notices and Fees:
    - a. Permits, Notices and Fees: Notices required by and approvals required of authorities having jurisdiction for work under separate contracts and related fees will be solely the responsibility of District.

#### 1.06 OWNER OCCUPANCY

- A. District intends to continue to occupy adjacent portions of the existing building during the entire construction period.

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- B. District intends to occupy the Project upon Substantial Completion.
- C. Cooperate with District to minimize conflict and to facilitate District's operations.
- D. Schedule the Work to accommodate District occupancy.

#### **1.07 CONTRACTOR USE OF SITE AND PREMISES**

- A. Arrange use of site and premises to allow:
  - 1. District occupancy.
  - 2. Work by Others.
  - 3. Work by District.
  - 4. Use of site and premises by the public.
- B. Provide access to and from site as required by law and by District:
  - 1. Emergency Building Exits During Construction: Keep all exits required by code open during construction period; provide temporary exit signs if exit routes are temporarily altered.
  - 2. Do not obstruct roadways, sidewalks, or other public ways without permit.
  - 3. Construction Limit:
    - a. Limit construction activities to areas indicated on Drawings as Project Area or, if not indicated, to areas within the parcel as described in the legal description on the Drawings.
    - b. Refer also to Section 01 50 00 - Temporary Construction Facilities and Controls for additional requirements.
- C. Existing building spaces may not be used for storage.
- D. Time Restrictions:
  - 1. Limit conduct of especially noisy malodorous and dusty exterior work to the hours of 8 AM to 6 PM.
- E. Utility Outages and Shutdown:
  - 1. Limit disruption of utility services to hours the site is unoccupied.
  - 2. Do not disrupt or shut down life safety systems, including but not limited to fire sprinklers and fire alarm system, without 7 days notice to District and authorities having jurisdiction.
  - 3. Prevent accidental disruption of utility services to other facilities.

#### **1.08 CONSTRUCTION WASTE MANAGEMENT**

- A. Construction and waste management, complying with Section 01 74 19 - Construction Waste Management and Disposal, is a requirement for this project.
- B. The Contractor, Prime Contractors, and subcontractors all have obligations in meeting the requirements of this specification.

**END OF SECTION**

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**SECTION 01 20 00  
PRICE AND PAYMENT PROCEDURES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Procedures for preparation and submittal of applications for progress payments.
- B. Documentation of changes in Contract Sum and Contract Time.
- C. Change procedures.
- D. Correlation of Contractor submittals based on changes.
- E. Procedures for preparation and submittal of application for final payment.

**1.02 RELATED REQUIREMENTS**

- A. Section 01 78 00 - Closeout Submittals: Project record documents.

**1.03 SCHEDULE OF VALUES**

- A. Use Schedule of Values Form:
  - 1. Form provided by District.
- B. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit draft to Architect for approval.
- C. Forms filled out by hand will not be accepted.
- D. Submit Schedule of Values in duplicate within 15 days after date established in Notice to Proceed.
- E. Format: Utilize the Table of Contents of this Project Manual. Identify each line item with number and title of the specification section. Identify site mobilization.
- F. Include in each line item, the amount of Allowances specified in this section. For unit cost Allowances, identify quantities taken from Contract Documents multiplied by the unit cost to achieve the total for the item.
- G. Include separately from each line item, a direct proportional amount of Contractor's overhead and profit.
- H. Revise schedule to list approved Change Orders, with each Application For Payment.
  - 1. List each authorized Change Order as an extension on the continuation sheet, listing the Change Order number and dollar value as for an original portion of Work.

**1.04 APPLICATIONS FOR PROGRESS PAYMENTS**

- A. Payment Period: Submit at intervals stipulated in the Agreement.
  - 1. Substantiating information will normally be required only for those portions of Work whose completion state cannot be readily determined by observation of the completed Work.
- B. Use Form AIA G702 and Form AIA G703, edition stipulated in the Agreement.

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- C. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit sample to Architect for approval.
- D. Forms filled out by hand will not be accepted.
- E. For each item, provide a column for listing each of the following:
  - 1. Item Number.
  - 2. Description of work.
  - 3. Scheduled Values.
  - 4. Previous Applications.
  - 5. Work in Place and Stored Materials under this Application.
  - 6. Authorized Change Orders.
  - 7. Total Completed and Stored to Date of Application.
  - 8. Balance to Finish.
  - 9. Retainage.
- F. Execute certification by signature of authorized officer.
- G. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored products.
- H. List each authorized Change Order as a separate line item, listing Change Order number and dollar amount as for an original item of work.
  - 1. No Change Orders shall be included with Application for Payment until approved in writing by District and Architect. Also approved by DSA when appropriate.
- I. Submit one electronic and three hard-copies of each Application for Payment.
- J. Include the following with the application:
  - 1. Transmittal letter as specified for submittals in Section 01 30 00.
  - 2. Construction progress schedule, revised and current as specified in Section 01 30 00.
  - 3. Current construction photographs specified in Section 01 30 00.
  - 4. Partial release of liens from major subcontractors and vendors.
    - a. Provide with each Application for Payment lien releases from all subcontractors, workers and materials suppliers employed for the Project covering their portion of Work to date for which payment application is made. Lien release forms will be provided by District and shall be completed in accordance with directions provided.
  - 5. Project record documents as specified in Section 01 78 00, for review by District which will be returned to the Contractor.
  - 6. Affidavits attesting to off-site stored products.
- K. When Architect requires substantiating information, submit data justifying dollar amounts in question. Provide one copy of data with cover letter for each copy of submittal. Show application number and date, and line item by number and description.

#### 1.05 ADDENDA

- A. Addenda are changes issued prior to the signing of the Contract for Construction. These Addenda shall be signed by the Architect and approved by the (Project City).

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- B. These documents may or may not have approved by the (Project City) prior to the close of Bid.
  - 1. If not approved by DSA prior to close of the bidding period, the contract price shall include the Addenda.
  - 2. No work shall proceed regarding any Addendum until approved by DSA.
  - 3. Revisions to Addenda, when approved by DSA, shall be incorporated by an additional addendum or Change Order as indicated below and as provided for in the Contract for Construction and General Conditions.

#### 1.06 MODIFICATION PROCEDURES

- A. Construction Changes, General:
  - 1. The following describe administrative procedures to be followed in compliance with provisions of the Conditions of the Contract for Architect's Supplemental Instructions, Construction Change Directives, Construction Change Documents, and Contract Change Orders.
  - 2. The Architect will prepare and issue: Architect's Supplemental Instructions, a Construction Change Directive or a Request for Proposal to be presented to the Contractor for action.
- B. Submit name of the individual authorized to receive change documents and who will be responsible for informing others in Contractor's employ or subcontractors of changes to Contract Documents.
- C. Contract Change Order Forms: Form as directed by District.
- D. For minor changes not involving an adjustment to the Contract Sum or Contract Time, Architect will issue instructions directly to Contractor.
  - 1. Architect's Supplemental Instructions:
    - a. Minor changes in the Work, not involving an adjustment in either the Contract Sum or Contract Time, as authorized by the Conditions of the Contract, will be presented by the Architect using the Architect's Bulletin form.
    - b. Should the Architect's Supplemental Instructions result in disputed costs and time adjustments, such dispute shall be resolved in accordance with the provisions of the Conditions of the Contract.
- E. DSA Construction Change Document approval for substitutions and changes to structural, accessibility, or fire-life-safety portions of approved Drawings and Specifications is required from DSA prior to fabrication and installation. DSA IR A-6; CAC Section 4-215, & 4-233(c).
  - 1. The approved Construction Change Document shall be signed by:
    - a. Architect of Record.
    - b. When applicable:
      - 1) Structural Engineer of Record.
      - 2) Delegated Professional Engineer.
    - c. Division of the State Architect for final approval.
- F. For other required changes, not involving structural, accessibility, or fire-life-safety portions of approved Drawings and Specifications, Architect will issue a document signed by District

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instructing Contractor to proceed with the change, for subsequent inclusion in a Change Order.

1. The document will describe the required changes and will designate method of determining any change in Contract Sum or Contract Time.
  2. Promptly execute the change.
  3. Construction Change Directives: In accordance with provisions of the Conditions of the Contract, the District may direct the Contractor to proceed with a change in the Work prior to formal preparation, review and agreement of a Contract Change Order, in order to not delay construction.
    - a. The Architect will prepare and issue a change document containing a Construction Change Directive which, when signed by the District and the Architect, shall instruct the Contractor to proceed with a change in the Work, for subsequent inclusion in a Contract Change Order.
    - b. Should the Construction Change Directive result in disputed costs and time adjustments, such dispute shall be resolved in accordance with the provisions of the Conditions of the Contract.
    - c. Construction Change Directives shall follow procedures specified below for Contract Change Orders except that Contractor shall immediately proceed with the change upon receipt of the signed Change Directive.
- G. For changes for which advance pricing is desired, Architect will issue a document that includes a detailed description of a proposed change with supplementary or revised drawings and specifications, a change in Contract Time for executing the change with a stipulation of any overtime work required and the period of time during which the requested price will be considered valid. Contractor shall prepare and submit a fixed price quotation within 14 days.
1. Such Request for Proposal may include an estimate of additions or deductions in Contract Time and Contract Sum for executing the change and may include stipulations regarding overtime work and the period of time the requested response from the Contractor shall be considered valid.
- H. Contractor may propose a change by submitting a request for change to Architect, describing the proposed change and its full effect on the work, with a statement describing the reason for the change, and the effect on the Contract Sum and Contract Time with full documentation and a statement describing the effect on work by separate or other contractors. Document any requested substitutions in accordance with Section 01 6000.
1. After review of the request and with the District's approval, the Architect will prepare a change document containing a Request for Proposal, as described above.
  2. Issuance of such a request by the Architect shall not indicate authorization of the Contractor to proceed with the proposed change.
  3. Changes will be approved only by an approved Construction Change Directive and Contract Change Order.
- I. Computation of Change in Contract Amount: As specified in the Agreement and Conditions of the Contract.
1. For change requested by Architect for work falling under a fixed price contract, the amount will be based on Contractor's price quotation.

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2. For change requested by Contractor, the amount will be based on the Contractor's request for a Change Order as approved by Architect.
  3. For pre-determined unit prices and quantities, the amount will be based on the fixed unit prices.
  4. For change ordered by Architect without a quotation from Contractor, the amount will be determined by Architect based on the Contractor's substantiation of costs as specified for Time and Material work.
- J. Substantiation of Costs: Provide full information required for evaluation.
1. On request, provide the following data:
    - a. Quantities of products, labor, and equipment.
    - b. Taxes, insurance, and bonds.
    - c. Overhead and profit.
    - d. Justification for any change in Contract Time.
    - e. Credit for deletions from Contract, similarly documented.
  2. Support each claim for additional costs with additional information:
    - a. Origin and date of claim.
    - b. Dates and times work was performed, and by whom.
    - c. Time records and wage rates paid.
    - d. Invoices and receipts for products, equipment, and subcontracts, similarly documented.
  3. For Time and Material work, submit itemized account and supporting data after completion of change, within time limits indicated in the Conditions of the Contract.
    - a. Cost and Time Resolution: If amounts for changes in Contract Sum and Contract Time cannot be agreed upon by District and Contractor, amounts shall be resolved in accordance with provisions of the Conditions of the Contract for resolution of disputes and the following:
      - 1) Contractor shall keep accurate records of time, both labor and calendar days, and cost of materials and equipment.
      - 2) Contractor shall prepare and submit an itemized account and supporting data after completion of changed Work, within the time limits indicated in the Conditions of the Contract.
      - 3) Contractor shall provide full information as required and requested, for District and Architect to evaluate and substantiate proposed costs and time for the change in the Work.
      - 4) When District and Contractor determine mutually acceptable amounts for changes in Contract Sum and Contract Time, a Contract Change Order shall be executed for these amounts.
      - 5) District shall have the right to audit Contractor's invoices and bid quotations to substantiate costs for Contract Change Orders.

- K. Construction Changes Based on Stipulated Sum or Time: Based on the Contractor's response to a Request for Proposal or Construction Change Directive, the District and Architect will

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review the response.

1. The District and Contractor shall negotiate a mutually acceptable adjustment in Contract Sum and Contract Time, as appropriate, prior to performance of the changed Work.
  2. A Contract Change Order for the stipulated amounts shall be prepared based on the stipulated sum and change in time.
- L. Execution of Change Orders: Architect will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.
1. When agreement is reached on changes, if any, in the Contract Time and the Contract Sum, the Contractor shall prepare a Contract Change Order using a form as directed by the District, with supplementary documents as necessary to describe the change and the associated costs and schedule impacts.
  2. Construction Change Document approval is required from DSA prior to fabrication and installation.
  3. Submit Contract Change Orders to District through the Architect.
  4. Contractor shall prepare and submit five original sets of documents for each Change Order. District, Architect and DSA shall sign the Change Order indicating acceptance and approval of the change.
    - a. Structural Engineer shall also sign the Change Order, when applicable.
  5. All Change Orders must be approved by DSA prior to fabrication and installation.
  6. Upon approval of the Change Order, Contractor shall promptly execute the change in the Work.
- M. After execution of Change Order, promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Sum.
- N. Promptly revise progress schedules to reflect any change in Contract Time, revise sub-schedules to adjust times for other items of work affected by the change, and resubmit.
1. Contractor shall submit revised schedules at the next Application for Payment following approval and acceptance of the Contract Change Order.
- O. Promptly enter changes in Project Record Documents.

#### **1.07 APPLICATION FOR FINAL PAYMENT**

- A. Prepare Application for Final Payment as specified for progress payments, identifying total adjusted Contract Sum, previous payments, and sum remaining due.
- B. Application for Final Payment will not be considered until the following have been accomplished:
  1. All closeout procedures specified in Section 01 70 00.

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**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION - NOT USED**

**END OF SECTION**

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**SECTION 01 25 00  
SUBSTITUTION PROCEDURES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Procedural requirements for proposed substitutions.

**1.02 RELATED REQUIREMENTS**

- A. Division 00 - Procurement and Contracting Requirements: Restrictions on timing of substitution requests.
- B. Section 00 43 25 - Substitution Request Form - During Procurement: Required form for substitution requests made prior to award of contract (During procurement).
- C. Section 00 63 25 - Substitution Request Form - During Construction: Required form for substitution requests made after award of contract (During construction).
- D. Section 01 30 00 - Administrative Requirements: Submittal procedures, coordination.
- E. Section 01 60 00 - Product Requirements: Fundamental product requirements, product options, delivery, storage, and handling.
- F. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions: Restrictions on emissions of indoor substitute products.

**1.03 DEFINITIONS**

- A. Substitutions: Changes from Contract Documents requirements proposed by Contractor to materials, products, assemblies, and equipment.
  - 1. Substitutions for Cause: Proposed due to changed Project circumstances beyond Contractor's control.
    - a. Unavailability.
    - b. Regulatory changes.
  - 2. Substitutions for Convenience: Proposed due to possibility of offering substantial advantage to the Project.
    - a. Substitution requests offering advantages solely to the Contractor will not be considered.

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION**

**3.01 GENERAL REQUIREMENTS**

- A. Requests by Contractor to deviate from specified requirements for products, materials, equipment, and methods, or to provide products other than those specified, shall be considered requests for substitutions except under the following conditions:

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1. Substitutions are requested during the bidding period, and accepted prior to execution of the Contract. Acceptance shall be in the form of written Addendum to the Bidding documents or revision to the Drawings or Specifications for use as Construction Contract Documents.
  2. Changes in products, materials, equipment, and methods of construction are directed by the District or Architect.
  3. Contractor options for provision of products and construction methods are specifically stated in the Contract Documents.
  4. Change in products, materials, equipment, and methods of construction is required for compliance with Codes, ordinances, regulations, orders and standards of authorities having jurisdiction.
- B. Substitution Provisions: Refer to substitution provisions of the Conditions of the Contract, in addition to the requirements specified herein. Provisions for consideration and acceptance of substitutions shall be as follows:
1. Documentation:
    - a. Substitutions will not be considered if they are indicated or implied on shop drawing, product data or sample submittals.
    - b. All requests for substitution shall be made by separate written request from Contractor.
  2. Cost and Time Considerations: Substitutions will not be considered unless a net reduction in Contract Sum or Contract Time results to the District's benefit, including redesign costs, life cycle costs, changes in related Work and overall performance of building systems.
  3. Design Revision:
    - a. Substitutions will not be considered if acceptance will require substantial revision of the Contract Documents or will substantially change the intent of the design, in the opinion of the Architect.
    - b. The intent of the design shall include functional performance and aesthetic qualities.
  4. Data: It shall be the responsibility of the Contractor to provide adequate data demonstrating the merits of the proposed substitution, including cost data and information regarding changes in related Work.
  5. Determination by Architect:
    - a. Architect will determine the acceptability of proposed substitutions and will notify Contractor, in writing within a reasonable time, of acceptance or rejection.
    - b. The determination by the Architect regarding functional performance and aesthetic quality shall be final.
  6. Non-Acceptance: If a proposed substitution is not accepted, provide the specified product.
    - a. If, in the opinion of the Architect, the substitution request is incomplete or has insufficient data to enable a full and thorough review of the intended substitution, the substitution may be summarily refused and determined to be unacceptable.

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7. Substitution Limitation: Only one request for substitution will be considered for each product.
- C. A Substitution Request for products, assemblies, materials, and equipment constitutes a representation that the submitter:
  1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product, equipment, assembly, or system.
    - a. Include a signed certification that the Contractor has:
      - 1) Reviewed the proposed substitution and has determined that the substitution is equivalent or superior in every respect to product requirements indicated or product specified in the Contract Documents.
      - 2) Certify the proposed substitution is suited for and can perform the purpose or application of the specified product indicated or specified in the Contract Documents.
  2. Agrees to provide the same warranty for the substitution as for the specified product.
  3. Agrees to provide same or equivalent maintenance service and source of replacement parts, as applicable.
  4. Agrees to coordinate installation and make changes to other work that may be required for the work to be complete, with no additional cost to District.
  5. Waives claims for additional costs or time extension that may subsequently become apparent.
    - a. Include a signed waiver by the Contractor for changes in the Contract Time or Contract Sum because of the following:
      - 1) Substitution failed to perform adequately.
      - 2) Substitution required changes in on other elements of the Work.
      - 3) Substitution caused problems in interfacing with other elements of the Work.
      - 4) Substitution was determined to be unacceptable by authorities having jurisdiction.
  6. Agrees to reimburse District and Architect for review or redesign services associated with re-approval by authorities.
- D. A Substitution Request for specified installer constitutes a representation that the submitter:
  1. Has acted in good faith to obtain services of specified installer, but was unable to come to commercial, or other terms.
- E. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents. Burden of proof is on proposer.
  1. Note explicitly any non-compliant characteristics.
- F. Content: Include information necessary for tracking the status of each Substitution Request, and information necessary to provide an actionable response.
  1. Forms indicated and included in the Project Manual are adequate for this purpose, and must be used.
  2. No specific form is required. Contractor's Substitution Request documentation must include the following:

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- a. Project Information:
  - 1) Official project name and number, and any additional required identifiers established in Contract Documents.
  - 2) District's, Architect's, and Contractor's names.
- b. Substitution Request Information:
  - 1) Discrete and consecutive Substitution Request number, and descriptive subject/title.
  - 2) Indication of whether the substitution is for cause or convenience.
  - 3) Issue date.
  - 4) Reference to particular Contract Document(s) specification section number, title, and article/paragraph(s).
  - 5) Description of Substitution.
  - 6) Reason why the specified item cannot be provided.
  - 7) Differences between proposed substitution and specified item.
  - 8) Description of how proposed substitution affects other parts of work.
- c. Attached Comparative Data: Provide point-by-point, side-by-side comparison addressing essential attributes specified, as appropriate and relevant for the item:
  - 1) Physical characteristics.
  - 2) In-service performance.
  - 3) Expected durability.
  - 4) Visual effect.
  - 5) Sustainable design features.
  - 6) Warranties.
  - 7) Other salient features and requirements.
  - 8) Include, as appropriate or requested, the following types of documentation:
    - (a) Product Data:
    - (b) Samples.
    - (c) Certificates, test, reports or similar qualification data.
    - (d) Drawings, when required to show impact on adjacent construction elements.
  - 9) Include a detailed description, in written or graphic form as appropriate, indicating all changes or modifications needed to other elements of the Work and to construction to be performed by the District and by others under separate Contract with District, that will be necessary if the proposed substitution is accepted.
- d. Impact of Substitution:
  - 1) Savings to District for accepting substitution.
    - (a) Include detailed cost data, including a proposal for the net change, if any, in the Contract Sum.

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- 2) Change to Contract Time due to accepting substitution.
  - (a) Indicate the substitution's effect on the Construction Schedule. Indicate the effect of the proposed substitution on overall Contract Time and, as applicable, on completion of portions of the Work for use by District or for work under separate contract by District.
- G. Limit each request to a single proposed substitution item.
  1. Submit an electronic document, combining the request form with supporting data into single document.

### 3.02 SUBSTITUTION PROCEDURES DURING PROCUREMENT

- A. Submittal Time Restrictions:
- B. Instructions to Bidders specifies time restrictions for submitting requests for substitutions during the bidding period, and the documents required.
- C. Pursuant to Section 3400 of the Public Contract Code, requests for substitution will be considered only if received up to 7 days prior to the bid date. Subsequent requests will be considered only in the case of product unavailability, through no fault of the Contractor , or for reasons of cost reducing value analysis requested by the District .
- D. Submittal Form (before award of contract):
  1. Submit substitution requests by completing the form in Section 00 43 25; see this section for additional information and instructions. Use only this form; other forms of submission are unacceptable.

### 3.03 SUBSTITUTION PROCEDURES DURING CONSTRUCTION

- A. Submittal Form (after award of contract):
  1. Submit substitution requests by completing the form in Section 00 63 25; see this section for additional information and instructions. Use only this form; other forms of submission are unacceptable.
- B. After Contract award, requests will be considered for cause only; in the case of product unavailability, through no fault of the Contractor , or for reasons of cost reducing value analysis requested by the District.
  1. Substitutions will be considered when a product, through no fault of the Contractor, becomes unavailable or unsuitable due to regulatory change.
  2. Product Availability Waiver:
    - a. Substitutions will be considered after 35 day time limit only when a product becomes unavailable due to no fault of Contractor.
    - b. Failure to place orders for specified products sufficiently in advance of required date for incorporation into the Work will not be considered as a valid reason for which Contractor may request a substitution or deviation from requirements of the Drawings and Specifications.
  3. Waiver: At the discretion of the District, limitations on substitutions may be waived.
- C. Submit request for Substitution for Cause within 14 days of discovery of need for substitution, but not later than 14 days prior to time required for review and approval by Architect, in order to stay on approved project schedule.

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- D. Submit request for Substitution for Convenience immediately upon discovery of its potential advantage to the project, but not later than 14 days prior to time required for review and approval by Architect, in order to stay on approved project schedule.
  - 1. In addition to meeting general documentation requirements, document how the requested substitution benefits the District through cost savings, time savings, greater energy conservation, or in other specific ways.
  - 2. Document means of coordinating of substitution item with other portions of the work, including work by affected subcontractors.
  - 3. Bear the costs engendered by proposed substitution of:
    - a. District's compensation to the Architect for any required redesign, time spent processing and evaluating the request.
    - b. Other construction by District.
    - c. Other unanticipated project considerations.
- E. Substitutions will not be considered under one or more of the following circumstances:
  - 1. When they are indicated or implied on shop drawing or product data submittals, without having received prior approval.
  - 2. Without a separate written request.
  - 3. When acceptance will require revisions to Contract Documents.

#### **3.04 CONTRACT DOCUMENT REVISIONS:**

- A. Should a Contractor-proposed substitution or alternative sequence or method of construction require revision of the Contract Drawings or Specifications;
  - 1. Including revisions for the purposes of determining feasibility, scope or cost, or revisions for the purpose of obtaining review and approval by authorities having jurisdiction.
  - 2. Revisions will be made by Architect or other consultant of District who is the responsible design professional, as approved in advance by District.
- B. Services of Architect or other consultant of the District, including time spent in researching and reporting on proposed substitutions or alternative sequence and method of construction, shall be paid by Contractor when such activities are considered additional services to the design services contracts of the Architect or other responsible design professional with the District.
- C. Costs of services by Architect or other responsible design professional of the District shall be paid on a time and materials basis, based on current hourly fee schedules, with reproduction, long distance telephone and shipping costs reimbursable at cost plus usual and customary mark-up for handling and billing.
- D. Such fees shall be paid whether or not the proposed substitution or alternative sequence or method of construction is ultimately accepted by District and a Change Order is executed.
- E. Such fees shall be paid from Contractor's portion of savings, if a net reduction in Contract Sum results. If fees exceed Contractor's portion of net reduction, Contractor shall pay all remaining fees unless otherwise agreed in advance by the District.
- F. Such fees owed shall be deducted from the amount owed Contractor on the Application for Payment next made following completion of revised Contract Drawings and Specifications or completion of research and other services. District will then pay Architect or other consultant of the

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District.

- G. Certain substitutions require approval from DSA.

### **3.05 RESOLUTION**

- A. Architect may request additional information and documentation prior to rendering a decision. Provide this data in an expeditious manner.
- B. Architect will notify Contractor in writing of decision to accept or reject request.
  - 1. Architect's decision following review of proposed substitution will be noted on the submitted form.

### **3.06 ACCEPTANCE**

- A. Accepted substitutions change the work of the Project. They will be documented and incorporated into work of the project by Change Order, Construction Change Directive, Architectural Supplementary Instructions, or similar instruments provided for in the Conditions of the Contract.

### **3.07 CLOSEOUT ACTIVITIES**

- A. See Section 01 78 00 - Closeout Submittals, for closeout submittals.
- B. Include completed Substitution Request Forms as part of the Project record. Include both approved and rejected Requests.

### **3.08 ATTACHMENTS**

- A. A facsimile of the Substitution Request Form (During Construction) required to be used on the Project is included after this section.

**END OF SECTION**

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**SECTION 01 30 00**  
**ADMINISTRATIVE REQUIREMENTS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. General administrative requirements.
- B. Electronic document submittal service.
- C. Preconstruction meeting.
- D. Site mobilization meeting.
- E. Progress meetings.
- F. Construction progress schedule.
- G. Contractor's daily reports.
- H. Progress photographs.
- I. Submittals for review, information, and project closeout.
- J. Number of copies of submittals.
- K. Requests for Interpretation or Information (RFI) procedures.
- L. Submittal procedures.

**1.02 RELATED REQUIREMENTS**

- A. Section 01 60 00 - Product Requirements: General product requirements.
- B. Section 01 78 00 - Closeout Submittals: Project record documents; operation and maintenance data; warranties and bonds.
- C. Technical Product Sections: Procedures for specific submittals specified in those Sections to be made at Contract closeout.

**1.03 DEFINITIONS**

- A. Action Submittals: Written and graphic information that requires responsive action by Construction Manager and Architect or other responsible design professional.
- B. Informational Submittals: Written information that does not require responsive action by Construction Manager and Architect or other responsible design professional.
- C. Unsolicited Submittals: Action or informational submittals not required by the Contract Documents or not requested by the reviewer. Unsolicited submittals may be returned with notation "not reviewed."
- D. Product Data: Standard published information ("catalog cuts") and specially prepared data for the Work of the Contract, including standard illustrations, schedules, brochures, diagrams, performance charts, instructions and other information to illustrate a portion of the Work.
- E. Request for Interpretation or Information (RFI): A document submitted by the Contractor requesting clarification of a portion of the Contract Documents, hereinafter referred to as an RFI.

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- F. Samples: Physical examples that demonstrate the materials, finishes, features, workmanship and other characteristics of a portion of the Work. Accepted samples shall serve as quality basis for evaluating the Work.
- G. Shop Drawings, Product Data and Samples: Instruments prepared and submitted by Contractor, for Contractor's benefit, to communicate to Architect the Contractor's understanding of the design intent, for review and comment by Architect on the conformance of the submitted information to the general intent of the design. Shop drawings, product data and samples are not Contract Documents.
- H. Shop Drawings: Drawings, diagrams, schedules and illustrations, with related notes, specially prepared for the Work of the Contract, to illustrate a portion of the Work.
- I. Other Submittals: Technical data, test reports, calculations, surveys, certifications, special warranties and guarantees, operation and maintenance data, extra stock and other submitted information and products shall not be considered as Contract Documents but shall be information from Contractor to Architect to illustrate a portion of the Work for confirmation of understanding of design intent.

#### 1.04 PROJECT COORDINATOR

- A. Project Coordinator: Construction Manager.
- B. Cooperate with the Project Coordinator in allocation of mobilization areas of site; for field offices and sheds, for material delivery access, traffic, and parking facilities.
  - 1. Comply with requirements of Section 01 70 00 - Execution and Closeout Requirements for coordination of execution of administrative tasks with timing of construction activities.
- C. During construction, coordinate use of site and facilities through the Project Coordinator.
- D. Comply with Project Coordinator's procedures for intra-project communications; submittals, reports and records, schedules, coordination drawings, and recommendations; and resolution of ambiguities and conflicts.
- E. Comply with instructions of the Project Coordinator for use of temporary utilities and construction facilities. Responsibility for providing temporary utilities and construction facilities is identified in Section 01 10 00 - Summary.
- F. Coordinate field engineering and layout work under instructions of the Project Coordinator.
- G. Make the following types of submittals to Architect through the Project Coordinator:
  - 1. Requests for Interpretation or Information.
  - 2. Requests for substitution.
  - 3. Shop drawings, product data, and samples.
  - 4. Test and inspection reports.
  - 5. Design data.
  - 6. Manufacturer's instructions and field reports.
  - 7. Applications for payment and change order requests.
  - 8. Progress schedules.
  - 9. Coordination drawings.

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10. Correction Punch List and Final Correction Punch List for Substantial Completion.
11. Closeout submittals.

## **PART 2 PRODUCTS - NOT USED**

## **PART 3 EXECUTION**

### **3.01 ELECTRONIC DOCUMENT SUBMITTAL SERVICE**

- A. All documents transmitted for purposes of administration of the contract are to be in electronic (PDF, MS Word, or MS Excel) format, as appropriate to the document, and transmitted via an Internet-based submittal service that receives, logs and stores documents, provides electronic stamping and signatures, and notifies addressees via email.
  1. Besides submittals for review, information, and closeout, this procedure applies to Requests for Interpretation or Information (RFIs), progress documentation, contract modification documents (e.g. supplementary instructions, change proposals, change orders), applications for payment, field reports and meeting minutes, Contractor's correction punchlist, and any other document any participant wishes to make part of the project record.
  2. Contractor and Architect are required to use this service.
  3. It is Contractor's responsibility to submit documents in allowable format.
  4. Subcontractors, suppliers, and Architect's consultants are to be permitted to use the service at no extra charge.
  5. Users of the service need an email address, internet access, and PDF review software that includes ability to mark up and apply electronic stamps (such as Adobe Acrobat, [www.adobe.com](http://www.adobe.com), or Bluebeam PDF Revu, [www.bluebeam.com](http://www.bluebeam.com)), unless such software capability is provided by the service provider.
  6. Unless specifically requested, paper document transmittals will not be reviewed; emailed electronic documents will not be reviewed.
  7. All other specified submittal and document transmission procedures apply, except that electronic document requirements do not apply to samples or color selection charts.
- B. Cost: The cost of the service is to be paid by Contractor; include the cost of the service in the Contract Sum.
- C. Submittal Service: The selected service is:
  1. Bluebeam Software Inc.; Bluebeam Revu Studio: [www.bluebeam.com](http://www.bluebeam.com).
  2. Other Service acceptable to both District and Architect.
    - a. Direct email with PDF copies.
- D. Project Closeout: Architect will determine when to terminate the service for the project and is responsible for obtaining archive copies of files for District.

### **3.02 PRECONSTRUCTION MEETING**

- A. District will schedule a meeting after Notice of Award.
- B. Attendance Required:

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1. District.
  2. Architect.
  3. Contractor.
- C. Agenda:
1. Execution of District-Contractor Agreement.
  2. Submission of executed bonds and insurance certificates.
  3. Distribution of Contract Documents.
  4. Submission of list of subcontractors, list of products, schedule of values, and progress schedule.
  5. Submission of initial Submittal schedule.
  6. Designation of personnel representing the parties to Contract and <1|A/E|>.
  7. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
  8. Scheduling.
  9. Scheduling activities of a Geotechnical Engineer.
- D. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, District, participants, and those affected by decisions made.

### 3.03 SITE MOBILIZATION MEETING

- A. Schedule meeting at the Project site prior to Contractor occupancy.
- B. Attendance Required:
1. Contractor.
  2. District.
  3. Architect.
  4. Contractor's superintendent.
  5. Major subcontractors.
  6. Inspector of Record.
- C. Agenda:
1. Distribute and discuss list of subcontractors and suppliers.
  2. Project Communication Procedures: Review requirements and administrative requirements for written and oral communications.
    - a. Review requirements and administrative procedures Contractor may wish to institute for identification and reporting purposes.
  3. Change Procedures: Review requirements and administrative procedures for Change Orders, Construction Change Directives, Architect's supplemental instructions and Contractor's Requests for Interpretation or Information.
  4. Use of premises by District and Contractor.
    - a. Site access restrictions, if any, and requirements to avoid disruption of operations at adjoining facilities or operations.

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- b. Construction Facilities and Temporary Utilities: Designate storage and staging areas, construction office areas; review temporary utility provisions; present District's requirements for use of premises.
- 5. District's requirements.
- 6. Construction facilities and controls provided by District.
- 7. Temporary utilities provided by District.
- 8. Survey and building layout.
- 9. Security and housekeeping procedures.
- 10. Schedules.
  - a. Distribute and discuss initial construction schedule and critical work sequencing of major elements of Work;
  - b. Include coordination of District Furnished / Contractor Installed (OFCl) products;
- 11. Application for payment procedures.
- 12. Procedures for testing.
- 13. Procedures for maintaining record documents.
- 14. Requirements for start-up of equipment.
- 15. Inspection and acceptance of equipment put into service during construction period.
- D. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, District, participants, and those affected by decisions made.

### 3.04 PROGRESS MEETINGS

- A. Schedule and administer meetings throughout progress of the work at maximum bi-weekly intervals.
- B. Meeting Time and Location: As mutually agreed by District, Architect, and Contractor, at on-site location.
- C. Special Meetings: As necessary, Construction Manager may convene special meetings to discuss specific construction issues in detail and to plan specific activities.
  - 1. See Section 01 70 00 - Execution and Closeout Requirements.
- D. Attendance Required:
  - 1. Contractor.
  - 2. District.
  - 3. Architect.
  - 4. Contractor's superintendent.
  - 5. Major subcontractors.
- E. Agenda:
  - 1. Review minutes of previous meetings.
  - 2. Review of work progress.
  - 3. Field observations, problems, and decisions.
  - 4. Identification of problems that impede, or will impede, planned progress.

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5. Review of submittals schedule and status of submittals.
  6. Review of RFIs log and status of responses.
  7. Review of off-site fabrication and delivery schedules.
  8. Maintenance of progress schedule.
  9. Corrective measures to regain projected schedules.
    - a. Develop corrective measures and procedures, including but not necessarily limited to additional personnel loading to regain planned schedule.
  10. Planned progress during succeeding work period.
  11. Coordination of projected progress.
  12. Maintenance of quality and work standards.
  13. Effect of proposed changes on progress schedule and coordination.
  14. Other business relating to work.
- F. Record minutes and distribute copies within two days after meeting to participants, with copies to Architect, District, participants, and those affected by decisions made.

### **3.05 CONSTRUCTION PROGRESS SCHEDULE**

- A. Within 10 days after date of the Agreement, submit preliminary schedule defining planned operations for the first 60 days of work, with a general outline for remainder of work.
- B. Contractor's Review: All schedules shall be reviewed and approved by Contractor prior to submission for Architect's and DSA's review.
- C. Reviews by Architect and DSA will be to ascertain the general status of construction and shall not be interpreted to establish or approve the means, methods, techniques and sequences of construction.
- D. If preliminary schedule requires revision after review, submit revised schedule within 10 days.
- E. Within 20 days after review of preliminary schedule, submit draft of proposed complete schedule for review.
  1. Include written certification that major contractors have reviewed and accepted proposed schedule.
- F. Within 10 days after joint review, submit complete schedule.
- G. Submit updated schedule with each Application for Payment.

### **3.06 DAILY CONSTRUCTION REPORTS**

- A. Include only factual information. Do not include personal remarks or opinions regarding operations and/or personnel.
- B. In addition to transmitting electronically a copy to District and Architect, submit two printed copies at weekly intervals.
  1. Submit in format acceptable to District.
  2. Submit using required form, a sample of which is appended to this section.
- C. Prepare a daily construction report recording the following information concerning events at Project site and project progress:

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1. Date.
2. High and low temperatures, and general weather conditions.
3. List of subcontractors at Project site.
4. List of separate contractors at Project site.
5. Approximate count of personnel at Project site.
  - a. Include a breakdown for supervisors, laborers, journeymen, equipment operators, and helpers.
6. Major equipment at Project site.
7. Material deliveries.
8. Safety, environmental, or industrial relations incidents.
9. Meetings and significant decisions.
10. Unusual events (submit a separate special report).
11. Stoppages, delays, shortages, and losses. Include comparison between scheduled work activities (in Contractor's most recently updated and published schedule) and actual activities. Explain differences, if any. Note days or periods when no work was in progress and explain the reasons why.
12. Meter readings and similar recordings.
13. Emergency procedures.
14. Directives and requests of Authority(s) Having Jurisdiction (AHJ).
15. Change Orders received and implemented.
16. Testing and/or inspections performed.
17. List of verbal instruction given by District and/or Architect.
18. Signature of Contractor's authorized representative.

### 3.07 PROGRESS PHOTOGRAPHS

- A. Submit photographs with each application for payment, taken not more than 3 days prior to submission of application for payment.
- B. Maintain one set of all photographs at project site for reference; same copies as submitted, identified as such.
- C. Photography Type: Digital; electronic files.
- D. Provide photographs of construction throughout progress of work produced by an experienced photographer, acceptable to Architect.
- E. Take photographs as evidence of existing project conditions as follows:
  1. Interior views: each elevation, floor and ceilings prior to demolition.
- F. Digital Photographs: 24 bit color, minimum resolution of 1024 by 768, in JPG format; provide files unaltered by photo editing software.
  1. Delivery Medium: Via email.
  2. File Naming: Include project identification, date and time of view, and view identification.

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3. PDF File: Assemble all photos into printable pages in PDF format, with 2 to 3 photos per page, each photo labeled with file name; one PDF file per submittal.
4. Hard Copy: Printed hardcopy (grayscale) of PDF file and point of view sketch.

### 3.08 REQUESTS FOR INTERPRETATION OR INFORMATION (RFI)

- A. Definition: A request seeking one of the following:
  1. An interpretation, amplification, or clarification of some requirement of Contract Documents arising from inability to determine from them the exact material, process, or system to be installed; or when the elements of construction are required to occupy the same space (interference); or when an item of work is described differently at more than one place in the Contract Documents.
  2. A resolution to an issue which has arisen due to field conditions and affects design intent.
- B. Whenever possible, request clarifications at the next appropriate project progress meeting, with response entered into meeting minutes, rendering unnecessary the issuance of a formal RFI.
- C. Preparation: Prepare an RFI immediately upon discovery of a need for interpretation of Contract Documents. Failure to submit a RFI in a timely manner is not a legitimate cause for claiming additional costs or delays in execution of the work.
  1. Prepare a separate RFI for each specific item.
    - a. Review, coordinate, and comment on requests originating with subcontractors and/or materials suppliers.
    - b. Do not forward requests which solely require internal coordination between subcontractors.
  2. Prepare in a format and with content acceptable to District.
  3. Combine RFI and its attachments into a single electronic file. PDF format is preferred.
- D. Reason for the RFI: Prior to initiation of an RFI, carefully study all Contract Documents to confirm that information sufficient for their interpretation is definitely not included.
  1. Include in each request Contractor's signature attesting to good faith effort to determine from Contract Documents information requiring interpretation.
    - a. Submit RFIs from subcontractors and material suppliers through, be reviewed by and be attached to an RFI prepared, signed and submitted by Contractor.
      - 1) RFIs from subcontractors and material suppliers are to be:
        - (a) Reviewed by Contractor.
        - (b) Corrected and rewritten to clarify as required by Contractor.
        - (c) Placed on the proper form, then signed, and submitted by Contractor.
        - (d) RFIs submitted directly by subcontractors or material suppliers will be returned unanswered to the Contractor.
      - 2) RFIs submitted directly by subcontractors or material suppliers will be returned unanswered to the Contractor.
    - b. Review all subcontractor- and supplier-initiated RFIs and take actions to resolve issues of coordination, sequencing and layout of the Work.

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- 1) RFIs submitted to request clarification of issues related to means, methods, techniques and sequences of construction or for establishing trade jurisdictions and scopes of subcontracts will be returned without response.
    - (a) Such issues are solely the Contractor's responsibility.
  - 2) Contractor is responsible for delays resulting from the necessity to resubmit an RFI due to insufficient or incorrect information presented in the RFI.
2. Unacceptable Uses for RFIs: Do not use RFIs to request the following::
- a. Approval of submittals (use procedures specified elsewhere in this section).
  - b. Approval of substitutions (see Section - 01 60 00 - Product Requirements)
  - c. Changes that entail change in Contract Time and Contract Sum (comply with provisions of the Conditions of the Contract).
  - d. Different methods of performing work than those indicated in the Contract Drawings and Specifications (comply with provisions of the Conditions of the Contract).
3. Improper RFIs: Requests not prepared in compliance with requirements of this section, and/or missing key information required to render an actionable response. They will be returned without a response, with an explanatory notation.
4. Frivolous RFIs: Requests regarding information that is clearly indicated on, or reasonably inferable from, Contract Documents, with no additional input required to clarify the question. They will be returned without a response, with an explanatory notation.
- a. The District reserves the right to assess the Contractor for the costs (on time-and-materials basis) incurred by the Architect, and any of its consultants, due to processing of such RFIs.
- E. Content: Include identifiers necessary for tracking the status of each RFI, and information necessary to provide an actionable response.
1. Official Project name and number, and any additional required identifiers established in Contract Documents.
  2. District's, Architect's, and Contractor's names.
  3. Discrete and consecutive RFI number, and descriptive subject/title.
  4. Issue date, and requested reply date.
  5. Reference to particular Contract Document(s) requiring additional information/interpretation. Identify pertinent drawing and detail number and/or specification section number, title, and paragraph(s).
  6. Annotations: Field dimensions and/or description of conditions which have engendered the request.
    - a. Inability to determine from the Contract Documents the exact material, process, or system to be installed;
    - b. Or when the elements of construction are required to occupy the same space (interference);
    - c. Or when an item of Work is described differently at more than one place in the Contract Documents.

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7. Contractor's suggested resolution: A written and/or a graphic solution, to scale, is required in cases where clarification of coordination issues is involved, for example; routing, clearances, and/or specific locations of work shown diagrammatically in Contract Documents. If applicable, state the likely impact of the suggested resolution on Contract Time or the Contract Sum.
  - a. In all cases, furnish all information required for the Architect to analyze and/or understand the circumstances causing the RFI and prepare a clarification or direction as to proceed for RFIs issued to request clarification of issues related to:
    - 1) Means, methods, techniques and sequences of construction, for example
    - 2) Pipe and duct routing, clearances;
    - 3) Specific locations of Work shown diagrammatically;
    - 4) Apparent interferences and similar items.
    - 5) If information included with this type RFI by the Contractor is insufficient, the RFI will be returned unanswered.
- F. Attachments: Include sketches, coordination drawings, descriptions, photos, submittals, and other information necessary to substantiate the reason for the request.
- G. RFI Log: Prepare and maintain a tabular log of RFIs for the duration of the project.
  1. Indicate current status of every RFI. Update log promptly and on a regular basis.
  2. Note dates of when each request is made, and when a response is received.
  3. Highlight items requiring priority or expedited response.
  4. Highlight items for which a timely response has not been received to date.
  5. Identify and include improper or frivolous RFIs.
- H. Review Time: Architect will respond and return RFIs to Contractor within seven calendar days of receipt. For the purpose of establishing the start of the mandated response period, RFIs received after 12:00 noon will be considered as having been received on the following regular working day.
  1. Response period may be shortened or lengthened for specific items, subject to mutual agreement, and recorded in a timely manner in progress meeting minutes.
- I. Responses: Content of answered RFIs will not constitute in any manner a directive or authorization to perform extra work or delay the project. If in Contractor's belief it is likely to lead to a change to Contract Sum or Contract Time, promptly issue a notice to this effect, and follow up with an appropriate Change Order request to District.
  1. Response may include a request for additional information, in which case the original RFI will be deemed as having been answered, and an amended one is to be issued forthwith. Identify the amended RFI with an R suffix to the original number.
  2. Do not extend applicability of a response to specific item to encompass other similar conditions, unless specifically so noted in the response.
  3. Upon receipt of a response, promptly review and distribute it to all affected parties, and update the RFI Log.
  4. Notify Architect within seven calendar days if an additional or corrected response is required by submitting an amended version of the original RFI, identified as specified

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above.

### 3.09 SUBMITTAL SCHEDULE

- A. Submit to Architect for review a schedule for submittals in tabular format.
  - 1. Submit at the same time as the preliminary schedule.
    - a. Submit initial Submittals Schedule within 14 days of date of Notice of Award of construction.
    - b. After review and return by Architect, resubmit Submittals Schedule within 10 days and thereafter submit updated Submittals Schedules at each Construction Progress Meeting.
    - c. Submit one copy each to Owner and Architect.
  - 2. Coordinate with Contractor's construction schedule and schedule of values.
  - 3. Format schedule to allow tracking of status of submittals throughout duration of construction.
    - a. Prepare schedules in Gantt format using software at Contractor's option, providing clear indication of sequencing and scheduling of Work, for determination of "critical path" of construction progress.
      - 1) Submittals shall be connected to the related construction element by a graphically indicated critical path on the same page.
      - 2) Present schedules using opaque reproductions on substantial paper, with sheet size a multiple of 8-1/2 by 11 inches and large enough to clearly read characters.
  - 4. Arrange information to include scheduled date for initial submittal, specification number and title, submittal category (for review or for information), description of item of work covered, and role and name of subcontractor.
  - 5. Account for time required for preparation, review, manufacturing, fabrication and delivery when establishing submittal delivery and review deadline dates.

### 3.10 SUBMITTALS FOR REVIEW

- A. When the following are specified in individual sections, submit them for review:
  - 1. Product data.
  - 2. Shop drawings.
  - 3. Samples for selection.
  - 4. Samples for verification.
- B. Submit to Architect for review for the limited purpose of checking for compliance with information given and the design concept expressed in Contract Documents.
- C. Samples will be reviewed for aesthetic, color, or finish selection.
- D. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below and for record documents purposes described in Section 01 78 00 - Closeout Submittals.

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### 3.11 SUBMITTALS FOR INFORMATION

- A. When the following are specified in individual sections, submit them for information:
  - 1. Design data.
  - 2. Certificates.
  - 3. Test reports.
  - 4. Inspection reports.
  - 5. Manufacturer's instructions.
  - 6. Manufacturer's field reports.
  - 7. Other types indicated.
- B. Submit for Architect's knowledge as contract administrator or for District.

### 3.12 SUBMITTALS FOR PROJECT CLOSEOUT

- A. Submit Correction Punch List for Substantial Completion.
- B. Submit Final Correction Punch List for Substantial Completion.
- C. When the following are specified in individual sections, submit them at project closeout in compliance with requirements of Section 01 78 00 - Closeout Submittals:
  - 1. Project record documents.
  - 2. Operation and maintenance data.
    - a. Include operation and maintenance data submittals in Submittals Schedule specified above.
    - b. Provide space for review action stamps and, if required by governing authorities having jurisdiction, license seal of design Professional, if applicable.
  - 3. Warranties.
  - 4. Bonds.
  - 5. Other types as indicated.
- D. Submit for District's benefit during and after project completion.

### 3.13 NUMBER OF COPIES OF SUBMITTALS

- A. Electronic Documents: Submit one electronic copy in PDF format with renderable text; an electronically-marked up file will be returned. Create PDFs at native size and right-side up; illegible files will be rejected.
- B. Small Size Sheets, Not Larger Than 11 by 17 inch: Submit one copy; the Contractor shall make his own copies from original returned by the Architect after making his own file copy.
- C. Extra Copies at Project Closeout: See Section 01 78 00.
- D. Samples: Submit the number specified in individual specification sections; one of which will be retained by Architect.
  - 1. After review, produce duplicates.
  - 2. Retained samples will not be returned to Contractor unless specifically so stated.
  - 3. Quantity:

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- a. Submit minimum of four (4) samples of each of color, texture and pattern.
- b. Submit one item only of actual assembly or product.
- c. Unless otherwise noted, full-size and complete samples will be returned and may be incorporated into field mock-ups and the Work.

### 3.14 SUBMITTAL PROCEDURES

#### A. General Requirements:

- 1. Use a separate transmittal for each item.
- 2. Submit separate packages of submittals for review and submittals for information, when included in the same specification section.
- 3. Transmit using approved form.
- 4. Sequentially identify each item. For revised submittals use original number and a sequential numerical suffix.
- 5. Identify: Project; Contractor; subcontractor or supplier; pertinent drawing and detail number; and specification section number and article/paragraph, as appropriate on each copy.
  - a. For example:
    - 1) 09 21 16-1 - First submittal for Section 09 21 16 - Gypsum Board Assemblies.
    - 2) 09 21 16-2 - Second submittal for Section 09 21 16 - Gypsum Board Assemblies.
  - b. Use same number for resubmittals as original submittal, followed by a letter indicating sequential resubmittal. For example:
    - 1) 09 21 16-2A - Resubmission of second submittal for Section 09 21 16 - Gypsum Board Assemblies.
    - 2) 09 21 16-2B - Second resubmission of second submittal for Section 09 21 16 - Gypsum Board Assemblies.
- 6. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of products required, field dimensions, adjacent construction work, and coordination of information is in accordance with the requirements of the work and Contract Documents.
  - a. Submittals from sources other than the Contractor, or without Contractor's stamp will not be acknowledged, reviewed, or returned.
  - b. Field measurements have been determined and verified.
  - c. Conformance with requirements of Contract Drawings and Specifications is confirmed.
  - d. Catalog numbers and similar data are correct.
  - e. Work being performed by various subcontractors and trades is coordinated.
  - f. Field construction criteria have been verified, including confirmation that information submitted has been coordinated with the work being performed by others for District and actual site conditions.
  - g. All deviations from requirements of Drawings and Specifications have been identified and noted.

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7. Deliver each submittal on date noted in submittal schedule, unless an earlier date has been agreed to by all affected parties, and is of the benefit to the project.
    - a. Send submittals in electronic format via email to Architect.
    - b. Upload submittals in electronic form to Electronic Document Submittal Service website.
  8. Schedule submittals to expedite the Project, and coordinate submission of related items.
    - a. For each submittal for review, allow 15 days excluding delivery time to and from the Contractor.
    - b. For sequential reviews involving Architect's consultants, District, or another affected party, allow an additional 7 days.
  9. Identify variations from Contract Documents and product or system limitations that may be detrimental to successful performance of the completed work.
    - a. Changes in the Work shall not be authorized by submittals review actions.
    - b. No review action, implicit or explicit, shall be interpreted to authorized changes in the Work.
    - c. Changes shall only be authorized by separate written Contract Change Order or Construction Change Directive, in accordance with the Conditions of the Contract and Section 01 20 00 - Price and Payment Procedures.
  10. Provide space for Contractor and Architect review stamps.
  11. When revised for resubmission, identify all changes made since previous submission.
  12. Distribute reviewed submittals. Instruct parties to promptly report inability to comply with requirements.
  13. Incomplete submittals will not be reviewed, unless they are partial submittals for distinct portion(s) of the work, and have received prior approval for their use.
  14. Submittals not requested will be recognized, but will be returned without comment,
- B. Product Data Procedures:
1. Submit only information required by individual specification sections.
  2. Collect required information into a single submittal.
  3. Submit concurrently with related shop drawing submittal.
  4. Do not submit (Material) Safety Data Sheets for materials or products.
- C. Shop Drawing Procedures:
1. Prepare accurate, drawn-to-scale, original shop drawing documentation by interpreting Contract Documents and coordinating related work.
  2. Use of reproductions of Contract Documents in digital data form to create shop drawings is only permitted as defined in Division 01 and individual product sections.
  3. Coordination: Show all field dimensions and relationships to adjacent or critical features of Work.
  4. Generic, non-project-specific information submitted as shop drawings do not meet the requirements for shop drawings.
- D. Samples Procedures:

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1. Transmit related items together as single package.
2. Samples will be reviewed for aesthetic, color, or finish selection.
3. Identify each item to allow review for applicability in relation to shop drawings showing installation locations.
4. Color Selection Samples: Architect will review and select colors for Project only after all colors are received, so that colors may be properly coordinated.
5. Copies: Submit actual samples. Photographic or printed reproductions will not be accepted.
6. Review of Field Samples: Review by Architect of field samples will be made for the following example products, as applicable, if not otherwise required and if requested by Contractor.
  - a. Concrete wall finishes and detailing (edges, corners and reveals).
  - b. Concrete paving colors and textures.
  - c. Gypsum board textures and finishes.
  - d. Field-applied paint colors and finishes.

### 3.15 SUBMITTAL REVIEW

- A. Submittals for Review: Architect will review each submittal, and approve, or take other appropriate action.
- B. Submittals for Information: Architect will acknowledge receipt and review. See below for actions to be taken.
- C. Architect's actions will be reflected by marking each returned submittal using virtual stamp on electronic submittals.
  1. Notations may be made directly on submitted items and/or listed on appended Submittal Review cover sheet.
- D. Architect's and consultants' actions on items submitted for review:
  1. Authorizing purchasing, fabrication, delivery, and installation:
    - a. "Approved", or language with same legal meaning.
    - b. "Approved as Noted, Resubmission not required", or language with same legal meaning.
      - 1) At Contractor's option, submit corrected item, with review notations acknowledged and incorporated.
    - c. "Approved as Noted, Resubmit for Record", or language with same legal meaning.
      - 1) Resubmit corrected item, with review notations acknowledged and incorporated. Resubmit separately, or as part of project record documents.
      - 2) Non-responsive resubmittals may be rejected.
  2. Not Authorizing fabrication, delivery, and installation:
    - a. "Revise and Resubmit".
      - 1) Resubmit revised item, with review notations acknowledged and incorporated.
      - 2) Non-responsive resubmittals may be rejected.

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- b. "Rejected".
    - 1) Submit item complying with requirements of Contract Documents.
- E. Architect's and consultants' actions on items submitted for information:
  - 1. Items for which no action was taken:
    - a. "Received" - to notify the Contractor that the submittal has been received for record only.
  - 2. Items for which action was taken:
    - a. "Reviewed" - no further action is required from Contractor.

**END OF SECTION**

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**SECTION 01 30 00.01  
REQUEST FOR INTERPRETATION**

**RFI NUMBER:** \_\_\_\_\_ **DATE:** \_\_\_\_\_

**PROJECT NAME: BATTERY REPLACEMENT PROJECT NO.: 1-30-56**

**TO: RUHNAU CLARKE ARCHITECTS**

. Construction Manager

Attention: \_\_\_\_\_

Contractor: \_\_\_\_\_

Address: \_\_\_\_\_

**BRIEF SUMMARY OF RFI:** \_\_\_\_\_

Drawing No. \_\_\_\_\_ Detail No. \_\_\_\_\_

Specification Section \_\_\_\_\_ Title \_\_\_\_\_

. Page \_\_\_\_\_ Paragraph \_\_\_\_\_

**DETAILS OF THIS RFI:** \_\_\_\_\_

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

**SUGGESTED SOLUTION:** \_\_\_\_\_

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

Response required by: \_\_\_\_\_ (min. 3 full days) Submitted By: \_\_\_\_\_

\_\_\_\_\_

. Organization: \_\_\_\_\_

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

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

Attachments: \_\_\_\_\_

Response By: \_\_\_\_\_ Date: \_\_\_\_\_

\_\_\_\_\_

Organization: \_\_\_\_\_

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Copies: ☐ File ☐ District ☐ Structural ☐ Mechanical ☐ Plumbing ☐ Electrical  
☐ Civil ☐ Landscape ☐ other consultants

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**END OF RFI**

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## SUBMITTAL / SHOP DRAWING TRANSMITTAL

To:	Ruhnau Clarke Architects	Contractor's Submittal No.	
Attn:	<b>Construction Dept.</b>		
Contractor:		Project Name:	Battery Replacement at Valhalla High School
Street:		RCA's Project No.	1-30-56
City, State:		Subcontractor:	

CONTRACTOR TO FILL OUT THE FOLLOWING COVERING ONE COMPLETE SECTION OF THE SPECIFICATIONS ONLY:

Specification Section #:	Section Title:
--------------------------	----------------

<input type="checkbox"/>	Initial Submittal	Scheduled Date of Submittal	
<input type="checkbox"/>	1st Resubmittal	Scheduled Date of Submittal Return	
<input type="checkbox"/>	___ Resubmittal	Date Sent	
<input type="checkbox"/>	Submittal was a previously approved substitution.	Number of Copies	
	Approved Substitution Request Transmittal Form is enclosed.	Number of Samples	

CONTRACTOR COMPLETE EITHER (A) OR (B) FOLLOWING, <u>CHECK ONE</u> :		CONSTRUCTION MANAGERS CERTIFICATION	
(A)	WE HAVE VERIFIED THAT THE MATERIAL OR EQUIPMENT CONTAINED IN THIS SUBMITTAL MEETS ALL THE REQUIREMENTS SPECIFIED OR SHOWN (NO EXCEPTIONS).	THIS IS TO CERTIFY THAT THE CONSTRUCTION MANAGER IS REASONABLY CERTAIN THAT THE MATERIAL SPECIFIED IN THIS SUBMITTAL MEETS THE REQUIREMENTS OF THE CONTRACT DOCUMENTS, AND THE SUBMITTAL IS COMPLETE PER THE CONTRACT DOCUMENTS.	
	<input type="checkbox"/>	SIGNATURE: _____	
(B)	WE HAVE VERIFIED THAT THE MATERIAL OR EQUIPMENT CONTAINED IN THIS SUBMITTAL MEETS ALL THE REQUIREMENTS SPECIFIED OR SHOWN, EXCEPT FOR THE FOLLOWING DEVIATIONS (LIST DEVIATIONS ON AN ATTACHED SHEET OR INDICATE DEVIATIONS CLEARLY ON SHOP DRAWINGS OR SUBMITTALS).	CONTRACTORS CERTIFICATION	
	<input type="checkbox"/>	THIS IS TO CERTIFY THAT THE CONTRACTOR IS REASONABLY CERTAIN THAT THE MATERIAL SPECIFIED IN THIS SUBMITTAL MEETS THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.	
		SIGNATURE: _____	

ARCHITECT'S USE ONLY BELOW THIS LINE.

Action:

☐ No Exception Taken      ☐ Make Corrections Noted      ☐ Rejected/Resubmit      ☐ Revise and Resubmit

Comments:

Date Received By RRC:

Date Sent to Consultant:

Structural \_\_\_\_\_

Mechanical \_\_\_\_\_

Electrical \_\_\_\_\_

Other \_\_\_\_\_

Date Received From:

Consultant \_\_\_\_\_

No. of Copies Received \_\_\_\_\_

Final Distribution: Contractor \_\_\_\_\_ Inspector \_\_\_\_\_ District/P.M. \_\_\_\_\_ Architect \_\_\_\_\_

Final Distribution Date: \_\_\_\_\_

**SECTION 01 35 53  
SECURITY PROCEDURES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Security measures including formal security program, entry control, personnel identification, and miscellaneous restrictions.

**1.02 RELATED REQUIREMENTS**

- A. Section 01 10 00 - Summary: use of premises and occupancy.
- B. Section 01 50 00 - Temporary Facilities and Controls: Temporary lighting.

**1.03 SECURITY PROGRAM**

- A. Protect Work , existing premises and District's operations from theft, vandalism, and unauthorized entry.
- B. Initiate program in coordination with District's existing security system at project mobilization.
- C. Maintain program throughout construction period until District acceptance precludes the need for Contractor security.

**1.04 ENTRY CONTROL**

- A. Restrict entrance of persons and vehicles into Project site and existing facilities.
- B. Allow entrance only to authorized persons with proper identification.
- C. Maintain log of workers and visitors, make available to District on request.
- D. District will control entrance of persons and vehicles related to District's operations.
- E. Contractor shall control entrance of persons and vehicles related to District's operations.
- F. Coordinate access of District's personnel to site in coordination with District's security forces.

**1.05 PERSONNEL IDENTIFICATION**

- A. Shall be worn by Contractor's superintendent and all sub contractors
- B. Provide identification badge to each person authorized to enter premises.
- C. Badge To Include: Personal photograph, name, assigned number , expiration date and employer.
- D. Maintain a list of accredited persons, submit copy to District on request.
- E. Require return of badges at expiration of their employment on the Work.

**1.06 RESTRICTIONS**

- A. Do not allow cameras on site or photographs taken except by written approval of District.

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**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION - NOT USED**

**END OF SECTION**

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**SECTION 01 40 00**  
**QUALITY REQUIREMENTS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Contractor Quality assurance submittals.
- B. Quality assurance.
- C. Testing and inspection agencies and services.
- D. Control of installation.
- E. Tolerances.
- F. Manufacturers' field services.
- G. Defect Assessment.

**1.02 RELATED REQUIREMENTS**

- A. Section 01 30 00 - Administrative Requirements: Submittal procedures.
- B. Section 01 41 00 - Regulatory Requirements: Compliance with applicable codes, ordinances and standards.
- C. Section 01 60 00 - Product Requirements: Requirements for material and product quality.
  - 1. Product options, substitutions, transportation and handling requirements, storage and protection requirements, and system completeness requirements.

**1.03 REFERENCE STANDARDS**

- A. IAS AC89 - Accreditation Criteria for Testing Laboratories.

**1.04 DEFINITIONS**

- A. Contractor's Quality Control Plan: Contractor's management plan for executing the Contract for Construction.

**1.05 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Test Reports: After each test/inspection, promptly submit two copies of report to Architect and to Contractor.
  - 1. Include:
    - a. Date issued.
    - b. Project title and number.
    - c. Name of inspector.
    - d. Date and time of sampling or inspection.
    - e. Identification of product and specifications section.
    - f. Location in the Project.

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- g. Type of test/inspection.
  - h. Date of test/inspection.
  - i. Results of test/inspection.
  - j. Compliance with Contract Documents.
  - k. When requested by Architect, provide interpretation of results.
2. Test report submittals are for Architect's knowledge as contract administrator for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents, or for District's information.
- C. Certificates: When specified in individual specification sections, submit certification by the manufacturer and Contractor or installation/application subcontractor to Architect, in quantities specified for Product Data.
- 1. Indicate material or product complies with or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
  - 2. Certificates may be recent or previous test results on material or product, but must be acceptable to Architect.
- D. Manufacturer's Instructions: When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, for the District's information. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.
- E. Manufacturer's Field Reports: Submit reports for Architect's benefit as contract administrator or for District.
- 1. Submit report in duplicate within 30 days of observation to Architect for information.
  - 2. Submit for information for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents.
- F. Erection Drawings: Submit drawings for Architect's benefit as contract administrator or for District.
- 1. Submit for information for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents.
  - 2. Data indicating inappropriate or unacceptable Work may be subject to action by Architect or District.

#### 1.06 QUALITY ASSURANCE

- A. Testing Agency Qualifications:
- 1. Prior to start of work, submit agency name, address, and telephone number, and names of full time registered Engineer and responsible officer.
  - 2. Submit copy of report of laboratory facilities inspection made by NIST Construction Materials Reference Laboratory during most recent inspection, with memorandum of remedies of any deficiencies reported by the inspection.
  - 3. Qualification Statement: Provide documentation showing testing laboratory is approved by Division of the State Architect.

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4. Qualification Statement: Provide documentation showing testing laboratory is accredited under IAS AC89.
- B. Designer Qualifications: Where professional engineering design services and design data submittals are specifically required of Contractor by Contract Documents, provide services of a Professional Engineer experienced in design of this type of work and licensed in California.
- C. Contractor's Quality Control (CQC) Plan:
  1. Prior to start of work, submit a comprehensive plan describing how contract deliverables will be produced. Tailor CQC plan to specific requirements of the project. Include the following information:
    - a. Management Structure: Identify personnel responsible for quality. Include a chart showing lines of authority.
      - 1) Include qualifications (in resume form), duties, responsibilities of each person assigned to CQC function.
    - b. Management Approach: Define, describe, and include in the plan specific methodologies used in executing the work.
      - 1) Management and control of documents and records relating to quality.
      - 2) Communications.
      - 3) Coordination procedures.
      - 4) Resource management.
      - 5) Process control.
      - 6) Inspection and testing procedures and scheduling.
      - 7) Control of noncomplying work.
      - 8) Tracking deficiencies from identification, through acceptable corrective action, and verification.
      - 9) Control of testing and measuring equipment.
      - 10) Project materials certification.
      - 11) Managerial continuity and flexibility.
    - c. District will not make a separate payment for providing and maintaining a Quality Control Plan. Include associated costs in Bid price.
    - d. Acceptance of the plan is required prior to start of construction activities not including mobilization work. District's acceptance of the plan will be conditional and predicated on continuing satisfactory adherence to the plan. District reserves the right to require Contractor to make changes to the plan and operations, including removal of personnel, as necessary, to obtain specified quality of work results.
- D. Quality-Control Personnel Qualifications. Engage a person with requisite training and experience to implement and manage quality assurance (QA) and quality control (QC) for the project.

#### 1.07 REGULATORY REQUIREMENTS FOR TESTING AND INSPECTION

- A. Inspections, testing and approvals as required by authorities having jurisdiction. Refer to Section 01 41 00 - Regulatory Requirements.

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- B. Standards and Code Compliance and Manufacturer's Instructions and Recommendations: Unless more stringent requirements are indicated or specified, comply with manufacturer's instructions and recommendations, reference standards and building code research report requirements in preparing, fabricating, erecting, installing, applying, connecting and finishing Work.
- C. Deviations from Standards and Code Compliance and Manufacturer's Instructions and Recommendations: Document and explain all deviations from reference standards and building code research report requirements and manufacturer's product installation instructions and recommendations, including acknowledgement by the manufacturer that such deviations are acceptable and appropriate for the Project.

#### **1.08 TESTING AND INSPECTION AGENCIES AND SERVICES**

- A. District will employ and pay for services of an independent testing agency approved by DSA to perform other specified testing.
- B. As indicated in individual specification sections, District or Contractor shall employ and pay for services of an independent testing agency to perform other specified testing.
- C. Employment of agency in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.

### **PART 2 PRODUCTS - NOT USED**

### **PART 3 EXECUTION**

#### **3.01 CONTRACTOR'S QUALITY ASSURANCE**

- A. Quality Requirements: Work shall be accomplished in accordance with quality requirements of the Drawings and Specifications, including, by reference, all Codes, laws, rules, regulations and standards. When no quality basis is prescribed, the quality shall be in accordance with the best accepted practices of the construction industry for the locale of the Project, for projects of this type.
- B. Quality Control Personnel: Contractor shall employ and assign knowledgeable and skilled personnel as necessary to perform quality control functions to ensure that the Work is provided as required.

#### **3.02 CONTROL OF INSTALLATION**

- A. Quality of Products: Unless otherwise indicated or specified, all products shall be new, free of defects and fit for the intended use.
- B. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.
- C. Comply with manufacturers' instructions, including each step in sequence.
- D. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.
- E. 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.

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- F. Have work performed by persons qualified to produce required and specified quality.
- G. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.
- H. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.
- I. Quality of Installation: All Work shall be produced plumb, level, square and true, or true to indicated angle, and with proper alignment and relationship between the various elements.
- J. Protection of Existing and Completed Work: Take all measures necessary to preserve and protect existing and completed Work free from damage, deterioration, soiling and staining, until Acceptance by the District.
- K. Verification of Quality: Work shall be subject to verification of quality by District, or Architect in accordance with provisions of the General Conditions of the Contract.
  - 1. Contractor shall cooperate by making Work available for inspection by District, Architect or their designated representatives.
  - 2. Such verification may include mill, plant, shop, or field inspection as required.
  - 3. Provide access to all parts of the Work, including plants where materials or equipment are manufactured or fabricated.
  - 4. Provide all information and assistance as required, including that by and from subcontractors, installers, fabricators, materials suppliers and manufacturers, for verification of quality by District, or Architect.
  - 5. Contract modifications, if any, resulting from such verification activities shall be governed by applicable provisions in the General Conditions.

### 3.03 TOLERANCES

- A. Monitor fabrication and installation tolerance control of products 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.

### 3.04 TESTING AND INSPECTION

- A. See individual specification sections for testing required.
- B. Testing Agency Duties:
  - 1. Test samples of mixes submitted by Contractor.
  - 2. Provide qualified personnel at site. Cooperate with Architect and Contractor in performance of services.
  - 3. Perform specified sampling and testing of products in accordance with specified standards.
  - 4. Ascertain compliance of materials and mixes with requirements of Contract Documents.
  - 5. Promptly notify Architect and Contractor of observed irregularities or non-compliance of Work or products.

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6. Perform additional tests and inspections required by Architect.
  7. Submit reports of all tests/inspections specified.
- C. Limits on Testing/Inspection Agency Authority:
1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
  2. Agency may not approve or accept any portion of the Work.
  3. Agency may not assume any duties of Contractor.
  4. Agency has no authority to stop the Work.
- D. Contractor Responsibilities:
1. Deliver to agency at designated location, adequate samples of materials proposed to be used that require testing, along with proposed mix designs.
  2. Cooperate with laboratory personnel, and provide access to the Work and to manufacturers' facilities.
  3. Provide incidental labor and facilities:
    - a. To provide access to Work to be tested/inspected.
    - b. To obtain and handle samples at the site or at source of Products to be tested/inspected.
    - c. To facilitate tests/inspections.
    - d. To provide storage and curing of test samples.
  4. Notify Architect and laboratory 24 hours prior to expected time for operations requiring testing/inspection services.
  5. Employ services of an independent qualified testing laboratory and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
  6. Arrange with District's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
- E. Re-testing required because of non-compliance with specified requirements shall be performed by the same agency on instructions by Architect.
- F. Re-testing required because of non-compliance with specified requirements shall be paid for by Contractor.

### 3.05 MANUFACTURERS' FIELD SERVICES

- A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust, and balance equipment as applicable, and to initiate instructions when necessary.
- B. Submit qualifications of observer to Architect 30 days in advance of required observations.
  1. Observer subject to approval of Architect.
  2. Observer subject to approval of District.
- C. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

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### 3.06 FIELD QUALITY CONTROL SUBMITTALS

- A. Administration: Make all submittals to the Architect, unless otherwise directed.
- B. Submittal Identification: Identify each submittal by Specification Section number followed by a number indicating sequential submittal for that Section. Coordinate submittal numbers with submittals specified in Section 01 30 00 - Administrative Requirements.
  - 1. Resubmittals shall use same number as original submittal, followed by a letter indicating sequential resubmittal.

03 30 00 - 1	First submittal for Section 03 30 00 - Cast in Place Concrete.
03 30 00 - 2	Second submittal for Section 03 30 00 - Cast in Place Concrete.
03 30 00 - 2A	Resubmittal of second submittal for Section 03 30 00 - Cast in Place Concrete.
03 30 00 - 2B	Second resubmittal of second submittal for Section 03 30 00 - Cast in Place Concrete.

- C. Project Identification: Title each submittal with Project name, submittal date and Architect's Project number.
- D. Copies: Provide PDF copies electronically transmitted or submit 6 copies, minimum, of reports of quality control reports on dry-process xerographic copies only.
- E. Contractor's Review:
  - 1. Submittals shall be made in accordance with requirements specified herein and in individual Sections.
  - 2. Indicate clearly on each submittal the specified or referenced values for each quality control activity and the values obtained.
  - 3. Note clearly and sign each submittal certifying that reported quality control activity "Conforms" or "Does Not Conform".
- F. Changes and Deviations:
  - 1. Identify all deviations from requirements of Drawings and Specifications.
  - 2. Changes in the Work shall not be authorized by submittals review actions.
  - 3. No review action, implicit or explicit, shall be interpreted to authorized changes in the Work.
  - 4. Changes shall only be authorized by separate written Change Order or Construction Change Directive, in accordance with the General Conditions and 01 20 00 - Price and Payment Procedures.
- G. Record Submittals: When record submittals are specified, submit three copies or sets only. Record submittals will not be reviewed but will be retained for historical and maintenance purposes.
- H. Unsolicited Submittals: Unsolicited submittals will be returned unreviewed.

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### 3.07 ARCHITECT'S REVIEW

- A. General:
  - 1. Submitted Report review by Architect and Architect's consultants shall be only for general conformance with the design concept and requirements based on the information presented.
  - 2. Neither Architect nor Architect's consultants shall verify submitted quality control data.
- B. Contract Requirements:
  - 1. Review by Architect and Architect's consultants shall not relieve the Contractor from compliance with requirements of the Drawings and Specifications.
  - 2. Changes shall only be authorized by separate written Change Order or Construction Change Directive, in accordance with the General Conditions and 01 20 00 - Price and Payment Procedures.
- C. Observations by Architect and Architect's Consultants: Periodic and occasional observations of Work in progress will be made by Architect and Architect's consultants as deemed necessary to review progress of Work and general conformance with design intent.

### 3.08 DEFECT ASSESSMENT

- A. Replace Work or portions of the Work not conforming to specified requirements, at no change in Contract Sum or Contract Time.
- B. If, in the opinion of Architect, it is not practical to remove and replace the work, Architect will direct an appropriate remedy or adjust payment.
- C. Architect's Acceptance and Rejection of Work: Architect reserves the right to reject all Work not in conformance to the requirements of the Drawings and Specifications.
- D. Acceptance of Non-Conforming Work: Acceptance of non-conforming Work, without specific written acknowledgement and approval of the District, shall not relieve the Contractor of the obligation to correct such Work.
  - 1. Acceptance of structurally related non-conforming work shall be submitted to DSA for review and approval.
- E. Contract Adjustment for Non-conforming Work:
  - 1. Should Architect or District determine that it is not feasible or in District's interest to require non-conforming Work to be repaired or replaced, an equitable reduction in Contract Sum shall be made by agreement between District and Contractor.
  - 2. If equitable amount cannot be agreed upon, a Construction Change Directive will be issued and the amount in dispute resolved in accordance with applicable provisions of the General Conditions.
- F. Non-Responsibility for Non-Conforming Work: Architect and Architect's consultants disclaim any and all responsibility for Work produced not in conformance with the Drawings and Specifications.

### END OF SECTION

Grossmont Union High School District Valhalla High School <b>Battery Replacement</b> RCA Project No. 1-30-56		Quality Requirements 01 40 00 - 8
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**SECTION 01 41 00  
REGULATORY REQUIREMENTS**

**PART 1 GENERAL**

**1.01 AUTHORITY AND PRECEDENCE OF CODES, ORDINANCES AND STANDARDS**

- A. Authority: All codes, ordinances and standards referenced in the Drawings and Specifications shall have the full force and effect as though printed in their entirety in the Specifications.
- B. Precedence:
  - 1. Where specified requirements differ from the requirements of applicable codes, ordinances and standards, the more stringent requirements take precedence.
  - 2. Where the Drawings or Specifications require or describe products or execution of better quality, higher standard or greater size than required by applicable codes, ordinances and standards, the Drawings and Specifications take precedence so long as such increase is legal.
  - 3. Where no requirements are identified in the Drawings or Specifications, comply with all requirements of applicable codes, ordinances and standards of authorities having jurisdiction.
- C. Applicable Codes, Laws and Ordinances: Refer also to Section 01 10 00 - Summary, regarding permits and licenses.
  - 1. Performance of the Work is to be governed by all applicable laws, ordinances, rules and regulations of Federal, State and local governmental agencies and jurisdictions having authority over the Project, including accessibility requirements.
  - 2. Performance of the Work shall be accomplished in conformance with all rules and regulations of public utilities, utility districts and other agencies serving the development.
  - 3. Where such laws, ordinances, rules and regulations require more care or greater time to accomplish Work, or require better quality, higher standards or greater size of products, Work shall be accomplished in conformance to such requirements with no change to the Contract Time and Contract Sum, except where changes in laws, ordinances, rules and regulations occur subsequent to the execution date of the Agreement.
- D. Applicable Building Codes: References on the Drawings or in the Specifications to "code" or "building code" not otherwise identified shall mean the codes specified below, together with all additions, amendments, changes, and interpretations adopted by code authorities of the jurisdiction having authority over the Project.
- E. Performance of the Work shall meet or exceed the minimum regulatory requirements applicable to this project as summarized in this section, as adopted by Division of the State Architect:
  - 1. Part 1, Title 24 CCR - 2019 California Building Standards Administrative Code.
  - 2. Part 2, Title 24 CCR - 2019 California Building Code (CBC); Volumes 1 and 2.
    - a. Based on ICC (IBC) - ICC International Building Code, 2018.

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3. Part 3, Title 24 CCR - 2019 California Electrical Code (CEC, NFPA 70-NEC 2017).
4. Part 4, Title 24 CCR - 2019 California Mechanical Code (CMC).
  - a. Based on IAPMO (UMC) - Uniform Mechanical Code, 2018.
5. Part 5, Title 24 CCR - 2019 California Plumbing Code (CPC).
  - a. Based on IAPMO (UPC) - Uniform Plumbing Code, 2018.
6. Part 6, Title 24 CCR - 2019 California Energy Code.
7. Part 9, Title 24 CCR - 2019 California Fire Code (CFC).
  - a. Based on ICC (IFC) - International Fire Code; 2018.
8. Part 11, Title 24 CCR - 2019 California Green Building Standards Code (CALGreen).
9. Part 12, Title 24 CCR - 2019 California Referenced Standards Code.

## **1.02 SUMMARY OF REFERENCE STANDARDS**

- A. Regulatory requirements applicable to this project are the following:
- B. California Referenced Standards Code, 2016: Chapter 12-7-4 Fire Resistive Standards, for fire rated doors.
- C. 28 CFR 35 - Nondiscrimination on the Basis of Disability in State and Local Government Services; Final Rule; Department of Justice.
- D. 28 CFR 36 - Nondiscrimination by Public Accommodations and in Commercial Facilities; Final Rule; Department of Justice.
- E. 36 CFR 1191 - Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines.
- F. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design.
- G. 29 CFR 1910 - Occupational Safety and Health Standards.

## **1.03 RELATED REQUIREMENTS**

- A. Section 01 40 00 - Quality Requirements.

## **PART 2 PRODUCTS - NOT USED**

## **PART 3 EXECUTION - NOT USED**

**END OF SECTION**

Grossmont Union High School District Valhalla High School <b>Battery Replacement</b> RCA Project No. 1-30-56		Regulatory Requirements 01 41 00 - 2
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**SECTION 01 45 33**  
**CODE-REQUIRED SPECIAL INSPECTIONS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Division of the State Architect (DSA) Procedures for construction oversight and inspections required during the course of construction.
- B. Code-required special inspections.
  - 1. Division of the State Architect (DSA) approved testing laboratory services and inspections required during the course of construction.
- C. Testing services incidental to special inspections.
- D. Submittals.
- E. Manufacturers' field services.
- F. Fabricators' field services.

**1.02 RELATED REQUIREMENTS**

- A. Section 01 30 00 - Administrative Requirements: Submittal procedures.
- B. Section 01 40 00 - Quality Requirements.
- C. Section 01 42 19 - Reference Standards.
- D. Section 01 60 00 - Product Requirements: Requirements for material and product quality.

**1.03 DEFINITIONS**

- A. Code or Building Code: California Building Code and, more specifically, Chapter 17A - Structural Tests and Special Inspections, of same.
- B. Authority Having Jurisdiction (AHJ): Agency or individual officially empowered to enforce the building, fire and life safety code requirements of the permitting jurisdiction in which the Project is located. AHJ for this Project is Division of the State Architect.
- C. Special Inspection:
  - 1. Special inspections are inspections and testing of materials, installation, fabrication, erection or placement of components and connections mandated by the CBC that also require special expertise to ensure compliance with the approved contract documents and the referenced standards.
  - 2. Special inspections are separate from and independent of tests and inspections conducted by District or Contractor for the purposes of quality assurance and contract administration.

**1.04 REFERENCE STANDARDS**

- A. ACI 318 - Building Code Requirements for Structural Concrete and Commentary.
- B. AISC 341 - Seismic Provisions for Structural Steel Buildings.
- C. AISC 360 - Specification for Structural Steel Buildings.

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- D. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures.
- E. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
- F. ASTM E329 - Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection.
- G. ASTM E543 - Standard Specification for Agencies Performing Nondestructive Testing.
- H. ASTM E2174 - Standard Practice for On-Site Inspection of Installed Firestop Systems.
- I. ASTM E2393 - Standard Practice for On-Site Inspection of Installed Fire Resistive Joint Systems and Perimeter Fire Barriers.
- J. AWS D1.1/D1.1M - Structural Welding Code - Steel.
- K. AWS D1.4/D1.4M - Structural Welding Code - Reinforcing Steel.
- L. SDI (QA/QC) - Standard for Quality Control and Quality Assurance for Installation of Steel Deck.

#### 1.05 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Special Inspection Agency Qualifications: Prior to the start of work, the Special Inspection Agency is required to:
  - 1. Submit agency name, address, and telephone number, names of full time registered Engineer and responsible officer.
  - 2. Submit copy of report of laboratory facilities inspection made by NIST Construction Materials Reference Laboratory during most recent inspection, with memorandum of remedies of any deficiencies reported by the inspection.
  - 3. Submit certification that Special Inspection Agency is acceptable to AHJ.
- C. Testing Agency Qualifications: Prior to the start of work, the Testing Agency is required to:
  - 1. Submit agency name, address, and telephone number, and names of full time registered Engineer and responsible officer.
  - 2. Testing and inspections will be performed by an independent testing laboratory selected and employed by the District and approved by the (Project City) (DSA).
    - a. Qualification of a testing agency or laboratory will be under the jurisdiction of the DSA Structural Safety Section (SSS). Procedural and acceptance criteria are set forth in the California Administrative Code (CBC) Chapter 4.
- D. Manufacturer's Qualification Statement: Manufacturer is required to submit documentation of manufacturing capability and quality control procedures. Include documentation of AHJ approval.
- E. Fabricator's Qualification Statement: Fabricator is required to submit documentation of fabrication facilities and methods as well as quality control procedures.
- F. Distribution List: The Testing Laboratory will make the following distribution of test and inspection reports:
  - 1 District
  - 2 Architect

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- 1 Structural Engineer
  - 1 Contractor
  - 1 District's Inspector
  - 1 DSA
- G. Each and every test or inspection report shall bear the File Number and Application Number assigned to this project by the DSA.
- H. DSA Form 291: From the engineering manager of the laboratory of record.
- I. Special Inspection Reports: After each special inspection, Special Inspector is required to promptly submit at least two copies of report; one to Architect and one each to the distribution list.
- 1. Include:
    - a. Date issued.
    - b. Project title and number.
    - c. Name of Special Inspector.
    - d. Date and time of special inspection.
    - e. Identification of product and specifications section.
    - f. Location in the Project.
    - g. Type of special inspection.
    - h. Date of special inspection.
    - i. Results of special inspection.
    - j. Compliance with Contract Documents.
  - 2. Final Special Inspection Report: Document special inspections and correction of discrepancies prior to the start of the work.
  - 3. Comply with DSA IR 17-12, revised 04/23/20.
- J. Fabricator Special Inspection Reports: After each special inspection of fabricated items at the Fabricator's facility, Special Inspector is required to promptly submit at least two copies of report; one to Architect and one each to the distribution list.
- 1. Include:
    - a. Date issued.
    - b. Project title and number.
    - c. Name of Special Inspector.
    - d. Date and time of special inspection.
    - e. Identification of fabricated item and specification section.
    - f. Location in the Project.
    - g. Results of special inspection.
    - h. Verification of fabrication and quality control procedures.
    - i. Compliance with Contract Documents.
    - j. Compliance with referenced standard(s).

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K. Test Reports: After each test or inspection, promptly submit at least two copies of report; one to Architect and one each to the distribution list.

1. Include:
  - a. Date issued.
  - b. Project title and number.
  - c. Name of inspector.
  - d. Date and time of sampling or inspection.
  - e. Identification of product and specifications section.
  - f. Location in the Project.
  - g. Type of test or inspection.
  - h. Date of test or inspection.
  - i. Results of test or inspection.
  - j. Compliance with Contract Documents.
  - k. Test reports shall be signed by a Civil Engineer licensed in the State of California.
2. Test reports shall include all tests made, regardless of whether such tests indicate that the material is satisfactory or unsatisfactory.
  - a. Samples taken but not tested shall also be reported.
  - b. Records of special sampling operations as required shall also be reported.
  - c. Reports shall show that the material or materials were sampled and tested in accordance with the requirements of the CBC, and with the approved specifications.
  - d. They shall also state definitely whether or not the material or materials tested comply with requirements.
  - e. Test reports shall be issued within 14 days of finding being known, to all parties listed above.
3. At the completion of the project, Testing Laboratory shall certify in writing and on all required DSA forms, that all work specified or required to be tested and inspected conforms to drawings, specifications and applicable building codes.
4. Verification of Test Reports:
  - a. The Testing Laboratory of record shall submit to the (Project City) (DSA) a verified report covering all tests which are required to be made by that agency during the progress of the project.
    - 1) Such report shall be furnished each time that work on the project is suspended, covering the tests up to that time, and at the completion of the project.
    - 2) Specific testing requirements as listed on the Structural Test and Inspections (T&I) Form DSA-103 for this project. These tests may include the following forms:
      - (a) DSA-201: Soils Compaction.
      - (b) DSA-202: Sieve Analysis.
      - (c) DSA-203: Tension/Bend.
      - (d) DSA-204: Compression.

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- (e) DSA-205: Concrete Masonry Unit.
  - (f) DSA-206: Anchor Load.
  - (g) DSA-207: Masonry Core Shear/Compression.
  - (h) DSA-210: Ultrasonic (NDT).
  - (i) DSA-250: Special Inspection(s).
  - (j) DSA-291: Laboratory Verified Report.
  - (k) DSA-292: Special Inspection(s) Verified Report(s).
  - (l) DSA-293: Geotechnical Verified Report.
- 3) Other Division of the State Architect (DSA) Certification Documents (Reports) as may be required.
- b. DSA Form 292 - Special Inspection Verified Report shall be from all special inspectors contracting directly and individually with the school board.
- L. Certificates: When specified in individual special inspection requirements, Special Inspector shall submit certification by the manufacturer, fabricator, and installation subcontractor to Architect and AHJ, in quantities specified for Product Data.
  - 1. Indicate material or product complies with or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
  - 2. Certificates may be recent or previous test results on material or product, but must be acceptable to Architect and AHJ.
- M. Manufacturer's Field Reports: Submit reports to Architect.
  - 1. Submit report in duplicate within 7 days of observation to Architect for information.
  - 2. Submit for information for the limited purpose of assessing compliance with information given and the design concept expressed in Contract Documents.
- N. Fabricator's Field Reports: Submit reports to Architect and AHJ.
  - 1. Submit report in duplicate within 30 days of observation to Architect for information.
  - 2. Submit for information for the limited purpose of assessing compliance with information given and the design concept expressed in Contract Documents.

#### 1.06 SPECIAL INSPECTION AGENCY

- A. District will employ services of a Special Inspection Agency to perform inspections and associated testing and sampling in accordance with ASTM E329 and required by the building code.
- B. The Special Inspection Agency may employ and pay for services of an independent testing agency to perform testing and sampling associated with special inspections and required by the building code.
- C. Employment of agency in no way relieves Contractor of obligation to perform work in accordance with requirements of Contract Documents.

#### 1.07 TESTING AND INSPECTION AGENCIES

- A. District is to employ services of an independent inspection and testing agency to perform observation, testing and sampling associated with special inspections including those not required by the building code. CAC

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1. Project Inspector and testing lab are employed by the District and approved by:
  - a. A/E of Record.
  - b. Structural Engineer (when applicable).
  - c. DSA.
- B. Employment of agency in no way relieves Contractor of obligation to perform work in accordance with requirements of Contract Documents.

#### 1.08 QUALITY ASSURANCE

- A. Special Inspection Agency Qualifications:
  1. Independent firm specializing in performing testing and inspections of the type specified in this section.
- B. Testing Agency Qualifications:
  1. Independent firm specializing in performing testing and inspections of the type specified in this section.
  2. Testing Agency must possess DSA LEA Program acceptance.
- C. Testing and inspection services which are performed shall be in accordance with requirements of the CBC, and as specified herein. Testing and inspection services shall verify that work meets the requirements of the Construction Documents.
- D. In general, tests and inspections for structural materials shall include all items enumerated on the Structural Tests and Inspections list for this project as prepared and distributed by the Architect.
- E. Copies of Documents at Project Site: Maintain at the project site a copy of each referenced document.

#### 1.09 INSPECTION BY THE DISTRICT

- A. The District shall have the right to reject materials and workmanship which are defective, or to require their correction.
  1. Rejected workmanship shall be satisfactorily corrected and rejected materials shall be removed from the premises without charge to the District.
  2. If the Contractor does not correct such rejected work within a reasonable time, the District may correct such rejected work and charge the expense to the Contractor.
- B. Should it be considered necessary or advisable by the District at any time before final acceptance of the entire work to make an examination of work already completed by removing or tearing out the completed work; the Contractor shall on request promptly furnish necessary facilities, labor and materials.
  1. If such work is found to be defective in any respect due to fault of the Contractor or his subcontractor, he shall defray all expenses of such examinations and of satisfactory reconstruction. .
  2. If, however, such work is found to meet the requirements of the Contract, the additional cost of labor and material necessarily involved in the examination and replacement shall be allowed the Contractor.

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### 1.10 DISTRICT'S INSPECTOR

- A. A Project Inspector (IOR) employed by the District and approved by Architect, Structural Engineer and DSA in accordance with the requirements of the California Building Code will be assigned to the work.
  - 1. Project Inspector duties are specifically defined in CCR Title 24 Part 1, Sec. 4-211(b), 4-219, 4-333(b), 4-336 and 4-342.
- B. The District's Inspector shall at all times have access for the purpose of inspection to all parts of the work and to the shops where the work is in preparation, and the Contractor shall at all times maintain proper facilities and provide safe access for such inspection.
- C. The work of construction in all stages of progress shall be subject to the personal continuous observation of the District's Inspector.
  - 1. The Contractor shall furnish the Inspector reasonable facilities for obtaining such information as may be necessary to keep him fully informed respecting the progress and manner of the work and the character of the materials.
  - 2. Inspection of the work shall not relieve the Contractor from any obligation to fulfill this Contract.
  - 3. Inspector of Record is required to work a normal 40 hour week on this project only. Any overtime required will be at the expense of the Contractor and sub-contractor requiring the inspection.

### 1.11 PAYMENTS

- A. Costs of initial testing and inspection, except as specifically modified herein, or specified otherwise in technical sections, will be paid for by the District, providing such testing and inspection indicates compliance with Contract Documents. Initial tests and inspections are defined as the first tests and inspections as herein specified.
- B. In the event a test or inspection indicates failure of a material or procedure to meet requirements of Contract Documents, costs for retesting and reinspection will be paid by the District and backcharged to the Contractor.
- C. Additional tests and inspections not herein specified but requested by District or Architect, will be paid for by District, unless results of such tests and inspections are found to be not in compliance with Contract Documents, in which case the District will pay all costs for initial testing as well as retesting and reinspection and backcharge the Contractor.
- D. Costs for additional tests or inspections required because of change in materials being provided or change of source or supply will be paid by District and backcharged to the Contractor.
- E. Costs for tests or inspections which are required to correct deficiencies will be paid by the District and backcharged to the Contractor.
- F. Cost of testing which is required solely for the convenience of Contractor in his scheduling and performance of work will be paid by the District and backcharged to the Contractor.
- G. Overtime costs for testing and inspections performed outside the regular work day hours, including weekends and holidays, will be paid for by the District and backcharged to the Contractor. Such costs include overtime costs for the District's Inspector.

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- H. Testing Laboratory shall separate and identify on the invoices, the costs covering all testing and inspections which are to be backcharged to the Contractor as specified above.
- I. Testing Laboratory shall furnish to District a cost estimate breakdown covering initial tests and inspections required by Contract Documents. Estimate shall include number of tests, man-hours required for tests, field and plant inspections, travel time, and costs.

## **PART 2 PRODUCTS - NOT USED**

## **PART 3 EXECUTION**

### **3.01 SCHEDULE OF SPECIAL INSPECTIONS, GENERAL**

- A. Frequency of Special Inspections: Special Inspections are indicated as continuous or periodic.
  - 1. Continuous Special Inspection: Special Inspection Agency is required to be present in the area where the work is being performed and observe the work at all times the work is in progress.
  - 2. Periodic Special Inspection: Special Inspection Agency is required to be present in the area where work is being performed and observe the work part-time or intermittently and at the completion of the work.
- B. Tests and inspections for the following will be required in accordance with the current CBC, unless otherwise specified.

### **3.02 SPECIAL INSPECTIONS FOR STEEL CONSTRUCTION (CHAPTER 17A AND 22A)**

- A. Structural Steel: Comply with quality assurance inspection requirements of CBC.
- B. Cold-Formed Steel Deck: Comply with quality assurance inspection requirements of SDI (QA/QC).
- C. Welding:
  - 1. Testing Laboratory will review welding procedure specifications as prepared by the fabricator.
  - 2. Structural Steel:
    - a. Inspect welding per CBC 1705A.2.5.
      - 1) Comply with DSA IR 17-3: Structural Welding Inspection: 2019 CBC; Revised 09/24/19.
    - b. Complete and Partial Joint Penetration Groove Welds: Verify compliance with AWS D1.1/D1.1M and AWS D1.8/D1.8M; continuous.
  - 3. Reinforcing Steel: Verify items listed below comply with AWS D1.4/D1.4M and ACI 318, Section 26.6.
    - a. Provide continuous inspection of welding of reinforcing steel per CBC 1705A.3.1; Table 1705A.3, Item 2; 1903A.8.
  - 4. Ultrasonic Testing: All full penetration multi-pass groove welds shall be subject to ultrasonic testing.
    - a. Defective welds shall be repaired and retested with ultrasonic equipment.

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- b. Initially, all multi-pass groove field welds shall be tested at the rate of 100 percent of each individual welder.
  - 1) If rejectable defects occur in less than 5 percent of the welds tested, the frequency of testing may be reduced to 25 percent.
  - 2) If the rate of rejectable defects increases to 5 percent or more, 100 percent testing shall be reestablished until the rate is reduced to less than 5 percent.
  - 3) The percentage of rejects shall be calculated for each welder independently.
- c. When ultrasonic indications arising from the weld root can be interpreted as either a weld defect or the backing strip itself, the backing strip shall be removed at the expense of the Contractor, and if no root defect is visible, the weld shall be retested.
  - 1) If no defect is indicated on this retest, and no significant amount of the base and weld metal have been removed, no further repair or welding is necessary.
  - 2) If a defect is indicated, it shall be repaired at the Contractor's expense.
- 5. Technician to calibrate ultrasonic instrumentation to evaluate the quality of the welds in accordance with AWS D1.1/D1.1M latest Edition.
- 6. Should defects appear in welds tested, repairs shall be similarly inspected at the Contractor's expense and at the direction of the Architect until satisfactory performance is assured.
- 7. Other methods of inspection, for example, X-ray, gamma ray, magnetic particle, or dye penetrant, may be used on welds if felt necessary by the Architect.
- D. Corrections:
  - 1. Correct deficiencies in structural steel work which inspections and test reports indicate to be not in compliance with the specified requirements.
  - 2. Perform additional tests required to reconfirm noncompliance of the original work and to show compliance of corrected work. Costs for all additional tests will be paid for by the District and backcharged to the Contractor.

### 3.03 SPECIAL INSPECTIONS FOR FIRE RESISTANT PENETRATIONS AND JOINTS

- A. Verify penetration firestops in accordance with ASTM E2174.
- B. Verify fire resistant joints in accordance with ASTM E2393.
- C. Inspection: Comply with CBC 1705A.17.

### 3.04 SPECIAL INSPECTIONS FOR SEISMIC RESISTANCE

- A. Inspection: Comply with CBC 1705A.12.
- B. Testing: Comply with CBC 1705A.13.
- C. Structural Steel: Comply with the quality assurance plan requirements of AISC 341.
- D. Storage Racks and Access Floors: Anchorage; periodic.
- E. Architectural Components: Erection and fastening of components below; periodic.
  - 1. Exterior cladding; per ICC ESR Report when applicable.
  - 2. Interior and exterior veneer.
  - 3. Interior and exterior non-loadbearing walls and partitions.

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- F. Mechanical and Electrical Components:
  - 1. Anchorage of electric equipment required for emergency or standby power systems; periodic.
  - 2. Installation and anchorage of other electrical equipment; periodic.
  - 3. Vibration isolation systems where the approved Contract Documents require a nominal clearance of 1/4 inch or less between support frame and seismic restraint; periodic.
  - 4. Installation of mechanical and electrical equipment, including duct work, piping systems and their structural supports, where automatic fire sprinkler systems are installed.
    - a. Verify clearances have been provide as required by Section 13.2.3 of ASCE 7.
    - b. Verify nominal clearance of 3 inches has been provided between fire protection sprinkler drops and sprigs and: structural members not used collectively or independently to support the sprinklers; equipment attached to the building structure; and other systems' piping.
- G. Designated Seismic System Verification: Verify label, anchorage or mounting complies with certificate of compliance provided by manufacturer or fabricator.
- H. Structural Testing for Seismic Resistance:
  - 1. Concrete reinforcement: Comply with ACI 318, Section 20.2.2.5 and 21.1.52.
    - a. Materials Obtain mill certificates demonstrating compliance with ASTM A615/A615M; periodic.
    - b. Welding: Perform chemical tests complying with ACI 318, Section 26.6.4 to determine weldability; periodic.
  - 2. Structural Steel: Comply with the quality assurance requirements of AISC 341.
  - 3. Non-Structural Components:
    - a. General Design Requirements: Obtain manufacturer certification of compliance with requirements of ASCE 7, Section 13.2.1; periodic.
    - b. Designated Seismic Force-Resisting Non-Structural System Components: Obtain manufacturer certification of compliance with ASCE 7, Section 13.2.2; periodic.
- I. Structural Observations for Seismic Resistance: Visually observe structural system for general compliance with the approved Contract Documents; periodic.

### 3.05 STRUCTURAL OBSERVATIONS FOR STRUCTURES

- A. Provide Observations: For structure where one or more of the following conditions exist:
  - 1. Such observation is required by the registered design professional responsible for the structural design.
  - 2. Such observation is specifically required by AHJ.

### 3.06 SPECIAL ARCHITECTURAL INSPECTIONS

- A. Signs and/or identification devices:
  - 1. Prior to issuance of a final Certificate of Occupancy, Enforcing Agency shall verify installation of signs for information content, appearance, location and Braille per CBC 11B-703.1.1.2.

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- a. Inspection shall include, but not limited to:
  - 1) Braille dots and cells are properly spaced and the size proportion and type raised characters are in compliance with these regulations.
  - 2) Tactile exit signage per CBC 1013.4 and 11B-216.4.1 Exit doors.
  - 3) Tactile floor designation signs in stairways per CBC 1023.9 Stairway identification signs.
  - 4) Tactile special egress control device signs per CBC 1010.1.9.7 Delayed Egress Locks, item 5.1.
  - 5) Elevator car control identification per CBC 11B-407.4.6-8 Elevator car controls.
  - 6) Sanitary facilities signage per CBC 11B-216.8 Toilet rooms and bathing rooms; and 11B-703.7.2.6 Toilet and bathing facilities geometric symbols.

B. Inspection by Health Department:

1. CONSTRUCTION INSPECTIONS: Contact the Health Department Plan Checker for a Preliminary Inspection when construction is approximately 80% complete, with plumbing, rough ventilation, and rough equipment installed. Request for inspection should be made at least five (5) working days in advance.
2. A FINAL INSPECTION MUST be made upon completion of ALL work including finished details. APPROVAL to operate shall not be granted, or remodeled areas approved to operate, until the facility has passed the FINAL INSPECTION, and "APPLICATION TO OPERATE" has been completed and PERMIT FEES have been paid.

### 3.07 SPECIAL INSPECTION AGENCY DUTIES AND RESPONSIBILITIES

A. Special Inspection Agency shall:

1. Verify samples submitted by Contractor comply with the referenced standards and the approved Contract Documents.
2. Provide qualified personnel at site. Cooperate with Architect and Contractor in performance of services.
3. Perform specified sampling and testing of products in accordance with specified reference standards.
4. Ascertain compliance of materials and products with requirements of Contract Documents.
5. Promptly notify Architect, SEOR, IOR, DSA, District and Contractor of observed irregularities or non-conformance of work or products.
6. Perform additional tests and inspections required by Architect.
7. Submit reports of all tests or inspections specified.

B. Limits on Special Inspection Agency Authority:

1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
2. Agency may not approve or accept any portion of the work.
3. Agency may not assume any duties of Contractor.
4. Agency has no authority to stop the work.

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- C. Re-testing required because of non-compliance with specified requirements shall be performed by the same agency on instructions by Architect.
- D. Re-testing required because of non-compliance with specified requirements shall be paid for by Contractor.

### 3.08 TESTING AGENCY DUTIES AND RESPONSIBILITIES

- A. Testing Agency Duties:
  - 1. Test samples submitted by Contractor.
  - 2. Provide qualified personnel at site. Cooperate with Architect and Contractor in performance of services.
  - 3. Perform specified sampling and testing of products in accordance with specified standards.
  - 4. Ascertain compliance of materials and mixes with requirements of Contract Documents.
  - 5. Promptly notify Architect and Contractor of observed irregularities or non-compliance of work or products.
  - 6. Perform additional tests and inspections required by Architect.
  - 7. Attend preconstruction meetings and progress meetings.
  - 8. Submit reports of all tests or inspections specified.
- B. Limits on Testing or Inspection Agency Authority:
  - 1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
  - 2. Agency may not approve or accept any portion of the work.
  - 3. Agency may not assume any duties of Contractor.
  - 4. Agency has no authority to stop the work.
- C. Immediately upon determination of a test failure, the Laboratory shall telephone the results to the Architect. On the same day, Laboratory shall send test results by email to the Architect and to all relevant responsible parties of the project team, and District's Inspector
- D. On instructions by Architect, perform re-testing required because of non-compliance with specified requirements, using the same agency.
- E. Contractor will pay for re-testing required because of non-compliance with specified requirements.
- F. At the completion of the project, Testing Laboratory shall certify in writing and on all required DSA forms, that all work specified or required to be tested and inspected conforms to drawings, specifications and applicable building codes.
  - 1. See DSA Procedure PR 13-01.
- G. Duties of the Laboratory of Record related to the use of form DSA 152 are as follows:
  - 1. Meet with the Project Inspector, design professionals, and contractor as needed to mutually communicate and understand the testing and inspection program and the methods of communication appropriate for the project.
  - 2. Obtain a copy of the DSA approved construction documents from the design professional in general responsible charge prior to the commencement of construction

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3. Obtain a copy of the DSA approved Statement of Structural Tests and Special Inspections (form DSA 103) from the design professional in general responsible charge prior to the commencement of construction.
4. Report all project related activities to the Project Inspector. The Project Inspector is responsible for monitoring the work of the Laboratory of Record and Special Inspectors to ensure the testing and special inspection program is satisfactorily completed
5. Provide material testing as identified in the DSA approved construction documents.
6. Submit test reports to the Project Inspector on the day the tests were performed for any tests performed on-site
7. Submit material test reports in a timely manner such that construction is not delayed and not to exceed 14 days from the date the material tests were performed. Test reports are to be submitted to DSA, the Architect, structural engineer, Project Inspector and school district.
  - a. As a convenience, and if agreed upon by involved parties, the test reports may be submitted electronically as identified in Section 4 of this procedure.
8. Immediately submit reports of material tests not conforming to the requirements of the DSA approved construction documents. These reports shall be submitted to the DSA, Architect, structural engineer, Project Inspector and school district.
9. The Engineering Manager shall submit an interim Laboratory of Record Verified Report (form DSA 291) and the Geotechnical Engineer shall submit an interim Geotechnical Verified Report (form DSA 293) to DSA, the project inspector, school district and the Design Professional in General Responsible Charge.
  - a. The reports are required to be submitted upon any of the following events occurring:
    - 1) Within 14 days of the completion of the material testing/special inspection program.
    - 2) Work on the project is suspended for a period of more than one month.
    - 3) The services of the laboratory of record are terminated for any reason prior to completion of the project.
    - 4) The DSA requests a Verified Report. (See interim verified reports below. This is a "DSA request.")
10. The Engineering Manager shall submit an interim verified report (form DSA 291) and the Geotechnical Engineer shall submit form DSA 293 to DSA and a copy to the project inspector for each of the applicable sections of the form DSA 152, prior to the project inspector signing off that section of the project inspection card, if that section required material testing. The sections are:
  - a. Initial Site Work
  - b. Foundation Prep
  - c. Vertical Framing
  - d. Horizontal Framing
  - e. Appurtenances

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- f. Finish Site Work
  - g. Other Work
  - h. Final
- H. Duties of Special Inspectors, employed by the Laboratory of Record, related to the use of form DSA 152 are as follows:
1. Meet with the Project Inspector, design professionals, and contractor as needed to mutually communicate and understand the testing and inspection program and the methods of communication appropriate for the project.
  2. Report all project related activities to the Project Inspector. The Project Inspector is responsible for monitoring the work of the Laboratory of Record and Special Inspectors to ensure the testing and special inspection program is satisfactorily completed.
  3. Perform work under the supervision of the Engineering Manager for the Laboratory of Record
  4. Perform inspections in conformance with the DSA approved construction documents, applicable codes and code reference standards
  5. Prepare detailed daily inspection reports outlining the work inspected and provide the Project Inspector a copy of the reports on the same day the inspections were performed.
  6. Prepare detailed daily inspection reports outlining the work inspected and provide the Project Inspector a copy of the reports on the same day the inspections were performed.
  7. Immediately submit reports of materials or work not conforming to the requirements of the DSA approved construction documents. These reports shall be submitted to the DSA, Architect, structural engineer, Project Inspector and school district.
  8. Submit daily special inspection reports in a timely manner such that construction is not delayed and not to exceed 14 days from the date the special inspections were performed. The reports are to be submitted to the Architect, structural engineer, Project Inspector and school district.
  9. Submit Verified Report forms DSA 292 to the DSA, Project Inspector, district and design professional in responsible charge.
  10. The reports are required to be submitted upon any of the following events occurring:
  11. Within 14 days of the completion of the special inspection work.
  12. Work on the project is suspended for a period of more than one month.
  13. The services of the special inspector are terminated for any reason prior to completion of the project.
  14. The DSA requests a Verified Report. (See interim verified reports below. This is a "DSA request")
  15. Submit an interim Verified Report (form DSA 292) to the DSA and a copy to the Project Inspector for each of the applicable sections of the form DSA 152, prior to the Project Inspector signing off that section of the project inspection card, if that section required special inspections. The sections are:
    - a. Initial Site Work
    - b. Foundation

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- c. Vertical Framing
  - d. Horizontal Framing
  - e. Appurtenances
  - f. Non-Building Site Structures
  - g. Finish Site Work
  - h. Other Work
  - i. Final
16. The Verified Reports shall be sent electronically to the DSA.
- I. Duties of Special Inspectors, not employed by the Laboratory of Record, related to the use of form DSA 152 are as follows:
- 1. Meet with the project inspector, Laboratory of Record, the design professionals, and the contractors as needed to mutually communicate and understand the testing and inspection program, and the methods of communication appropriate for the project.
  - 2. Report all project related activities to the project inspector. The project inspector is responsible for monitoring the work of the Laboratory of Record and special inspectors to ensure the testing and special inspection program is satisfactorily completed.
  - 3. Perform work under the direction of the design professional in general responsible charge, as defined in Section 4-335(f)1B of the California Administrative Code (Title 24, Part 1).
  - 4. Perform inspections in conformance with the DSA approved construction documents, applicable codes and code reference standards.
  - 5. Prepare detailed daily inspection reports outlining the work inspected and provide the project inspector a copy of the reports on the same day the inspections were performed.
  - 6. Immediately submit reports of materials or work not conforming to the requirements of the DSA approved construction documents. These reports shall be submitted to DSA, the Architect, structural engineer, project inspector and the school district.
  - 7. Submit daily special inspection reports in a timely manner such that construction is not delayed and not to exceed 14 days from the date the special inspections were performed. The reports are to be submitted to DSA, the Architect, structural engineer, project inspector and the school district.
  - 8. Submit Special Inspection Verified Report forms DSA 292 to DSA, the project inspector, the school district and the Design Professional in General Responsible Charge.
    - a. The reports are required to be submitted upon any of the following events occurring:
      - 1) Within 14 days of the completion of the special inspection work.
      - 2) Work on the project is suspended for a period of more than one month.
      - 3) The services of the special inspector are terminated for any reason prior to completion of the project.
      - 4) DSA requests a verified report. (See interim verified reports below. This is a "DSA request.")

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9. Submit an interim Special Inspection Verified Report (form DSA 292) to DSA and a copy to the project inspector for each of the applicable sections of the form DSA 152, prior to the project inspector signing off that section of the project inspection card, if that section required special inspections.
  - a. The sections are:
    - 1) Initial Site Work
    - 2) Foundation Prep
    - 3) Vertical Framing
    - 4) Horizontal Framing
    - 5) Appurtenances
    - 6) Finish Site Work
    - 7) Other Work
    - 8) Final

### 3.09 CONTRACTOR DUTIES AND RESPONSIBILITIES

#### A. DSA Requirements:

1. Each Multi-Prime Contractor or Subcontractor shall comply with DSA Construction Oversight Procedure PR 13-01. California Code of Regulations (CCR), Title 24, Part 1, CCR, Chapter 4, Article 1 (Sections 4-211 through 4-220) and Group1, Articles 5 and 6 (Sections 4-331 through 4-344) which provide regulations governing the construction process for projects under the jurisdiction of the Division of the State Architect (DSA).
  - a. Assist the Project Inspector (IOR) and complete and fill out the following forms during the course of construction.
    - 1) Form-102-IC: Construction Start Notice/ Inspection Card Request: Verify Project Inspector has an active form issued by DSA.
    - 2) Form-151: Project Inspector Notifications: Contractor to notify IOR and assist.
    - 3) Form-152: Project Inspection Card: See below.
    - 4) Form-154: Notice of Deviations/ Resolution of Deviations: Contractor to verify all deviations are reviewed, corrected, and accepted by the design professional, and filed with DSA through the Project Inspector (IOR).
      - (a) When the Project Inspector identifies deviations from the DSA approved construction documents the inspector must verbally notify the contractor. If the deviations are not corrected within a reasonable time frame, the inspector is required to promptly issue a written notice of deviation to the contractor, with a copy sent to the design professional in general responsible charge and the DSA.
      - (b) When the noticed deviations are corrected, the inspector is required to promptly issue a written notice of resolution to the contractor, with a copy sent to the design professional in general responsible charge and the DSA.
      - (c) Deviations include both construction deviations and material deficiencies.
      - (d) The written notice of deviations shall be made using form DSA 154.

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- (e) The notice of resolution of deviations shall be made using the original form DSA 154 that reported the deviations.
  - 5) Form-156: Commencement/Completion of Work Notification
  - 6) Form-6.C: Verified Report – Contractor: From each contractor having a contract with the school board.
2. Duties of Contractor related to the use of form DSA 152 are as follows:
- a. The Contractor shall carefully study the DSA approved documents and shall plan a schedule of operations well ahead of time.
  - b. If at any time it is discovered that work is being done which is not in accordance with the DSA approved construction documents, the Contractor shall correct the work immediately.
  - c. Verify that forms DSA 152 are issued for the project prior to the commencement of construction.
  - d. Meet with the design team, the Laboratory of Record and the Project Inspector to mutually communicate and understand the testing and inspection program and the methods of communication appropriate for the project.
  - e. Notify the Project Inspector, in writing, of the commencement of construction of each and every aspect of the work at least 48 hours in advance by submitting form DSA 156 (or other agreed upon written documents) to the Project Inspector.
  - f. Notify the Project Inspector of the completion of construction of each and every aspect of the work by submitting form DSA 156 (or other agreed upon written documents) to the Project Inspector.
  - g. Consider the relationship of the signed off blocks and sections of the form DSA 152 and the commencement of subsequent work. Until the Project Inspector has signed off applicable blocks and sections of the form DSA 152, the Contractor may be prohibited from proceeding with subsequent construction activities that cover up the unapproved work. Any subsequent construction activities, that cover up the unapproved work, will be subject to a “Stop Work Order” from the DSA or the district and are subject to removal and remediation if found to be in non-compliance with the DSA approved construction documents.
  - h. Submit the final verified report. All prime contractors are required to submit final Contractor Verified Reports (form DSA 6-C) to DSA and the project inspector.
    - 1) The reports are required to be submitted upon any of the following events occurring:
      - (a) The project is substantially complete. DSA considers the project to be complete when the construction is sufficiently complete in accordance with the DSA approved construction documents so that the owner can occupy or utilize the project.
      - (b) Work on the project is suspended for a period of more than one month.
      - (c) The services of the contractor are terminated for any reason prior to the completion of the project.
      - (d) DSA requests a verified report.

B. Contractor Responsibilities, General:

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1. Deliver to agency at designated location, adequate samples of materials for special inspections that require material verification.
2. Availability of Samples
  - a. Contractor shall make materials required for testing available to Laboratory and assist in acquiring these materials as directed by the District's Inspector. The samples shall be taken under the immediate direction and supervision of the Testing Laboratory or District's Inspector.
  - b. If work which is required to be tested or inspected is covered up without prior notice or approval, such work may be uncovered at the discretion of Architect at no additional cost to the District. Refer to paragraph "Payments" herein.
  - c. Unless otherwise specified, Contractor shall notify Testing Laboratory a minimum of 10 working days in advance of all required tests, and a minimum of 2 working days in advance of all required inspections. All extra expenses resulting from a failure to notify the Laboratory will be paid by the District and backcharged to the Contractor.
  - d. Contractor shall give sufficient advance notice to Testing Laboratory in the event of cancellation or time extension of a scheduled test or inspection. Charges due to insufficient advance, notice of cancellations, or time extension will be paid for by the District and backcharged to the Contractor.
3. Cooperate with agency and laboratory personnel; provide access to approved documents at project site, to the work, to manufacturers' facilities, and to fabricators' facilities.
4. Provide incidental labor and facilities:
  - a. To provide access to work to be tested or inspected.
  - b. To obtain and handle samples at the site or at source of Products to be tested or inspected.
  - c. To facilitate tests or inspections.
  - d. To provide storage and curing of test samples.
5. Notify Architect and laboratory 24 hours prior to expected time for operations requiring testing or inspection services.
6. Arrange with District's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
7. The Contractor shall notify the District's Inspector a minimum of 5 working days in advance of the manufacture of material to be supplied by him under the Contract Documents, which must be by terms of the Contract be tested, in order that the District may arrange for the testing of such material at the source of supply.
8. Material shipped by the Contractor from the source of supply before having satisfactorily passed such testing and inspection or before the receipt of notice from said Inspector that such testing and inspection will not be required, shall not be incorporated in the Project.
9. The District will select and pay testing laboratory costs for all tests and inspections, but may be reimbursed by the Contractor for such costs under the Contract conditions. Any direct payments by the Contractor to the testing laboratory on this project is prohibited.

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- C. Contractor shall submit a written statement of responsibility to comply with CBC section 1704A.4.
  - 1. Each contractor responsible for the construction of a main wind- or seismic-force-resisting system, designated seismic system or a wind- or seismic-resisting component listed in the statement of special inspections shall submit a written statement of responsibility to the building official and the owner prior to the commencement of work on the system or component. The contractor's statement of responsibility shall contain the following:
    - a. Acknowledgment of awareness of the special requirements contained in the statement of special inspections;
    - b. Acknowledgment that control will be exercised to obtain conformance with the construction documents approved by the building official;
    - c. Procedures for exercising control within the contractor's organization, the method and frequency of reporting and the distribution of the reports; and
    - d. Identification and qualifications of the person(s) exercising such control and their position(s) in the organization.
- D. Contractor Responsibilities, Seismic Force-Resisting System, Designated Seismic System, and Seismic Force-Resisting Component: Submit written statement of responsibility for each item listed in the Statement of Special Inspections to AHJ and District prior to starting work. Statement of responsibility shall acknowledge awareness of special construction requirements and other requirements listed.
- E. Contractor Responsibilities, Wind Force-Resisting System and Wind Force-Resisting Component: Submit written statement of responsibility for each item listed in the Statement of Special Inspections to AHJ and District prior to starting work. Statement of responsibility shall acknowledge awareness of special construction requirements and other requirements listed.
- F. Unless otherwise directed, materials not conforming to the requirements of Contract Documents shall be promptly removed from the Project site.

### 3.10 MANUFACTURERS' AND FABRICATORS' FIELD SERVICES

- A. When specified in individual specification sections, require material suppliers, assembly fabricators, or product manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, to test, adjust, and balance equipment as applicable, and to initiate instructions when necessary.
- B. Submit qualifications of observer to Architect 30 days in advance of required observations.
  - 1. Observer subject to approval of Architect.
  - 2. Observer subject to approval of District.
- C. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

### END OF SECTION

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**SECTION 01 50 00**  
**TEMPORARY FACILITIES AND CONTROLS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Temporary utilities.
- B. Temporary sanitary facilities.
- C. Security requirements.
- D. Vehicular access and parking.
- E. Waste removal facilities and services.

**1.02 RELATED REQUIREMENTS**

- A. Section 01 35 53 - Security Procedures

**1.03 TEMPORARY UTILITIES**

- A. District will provide the following:
  - 1. Electrical power and metering, consisting of connection to existing facilities.
  - 2. Water supply, consisting of connection to existing facilities.
- B. Existing facilities may be used.
- C. Use trigger-operated nozzles for water hoses, to avoid waste of water.

**1.04 TEMPORARY SANITARY FACILITIES**

- A. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.
  - 1. Provide temporary toilet facilities if maximum number of personnel on project is greater than 10.
  - 2. Submit proposed location of temporary toilet(s) to DSA for approval.
    - a. Place on-site portable toilets away from building air intakes and entryway.
- B. Maintain daily in clean and sanitary condition.

**1.05 SECURITY**

- A. Provide security and facilities to protect Work, existing facilities, and District's operations from unauthorized entry, vandalism, or theft.
- B. Coordinate with District's security program.

**1.06 CAFETERIA AND FOOD**

- A. Construction personnel shall police their own areas. All cups, cans, paper, wrappers, and discarded food must be placed in trash receptacles at end of each break.
- B. Contractor(s) shall submit to DSA proposed location of any break areas and eating areas for approval.

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### **1.07 SMOKING AND TOBACCO**

- A. Smoking and vaping is not permitted on property.
- B. No chewing tobacco or spitting of tobacco is permitted.

### **1.08 VEHICULAR ACCESS AND PARKING**

- A. Comply with regulations relating to use of streets and sidewalks, access to emergency facilities, and access for emergency vehicles.
- B. Coordinate access and haul routes with governing authorities and District.
- C. Provide and maintain access to fire hydrants, free of obstructions.
- D. Provide means of removing mud from vehicle wheels before entering streets.
- E. Provide temporary parking areas to accommodate construction personnel. When site space is not adequate, provide additional off-site parking.

### **1.09 WASTE REMOVAL**

- A. See Section 01 74 19 - Construction Waste Management and Disposal, for additional requirements.
- B. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.
- C. Provide containers with lids. Remove trash from site periodically.
- D. If materials to be recycled or re-used on the project must be stored on-site, provide suitable non-combustible containers; locate containers holding flammable material outside the structure unless otherwise approved by the authorities having jurisdiction.
- E. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

### **1.10 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS**

- A. Remove temporary utilities, equipment, facilities, materials, prior to Date of Substantial Completion inspection.
- B. Clean and repair damage caused by installation or use of temporary work.
- C. Restore existing facilities used during construction to original condition.

## **PART 2 PRODUCTS - NOT USED**

## **PART 3 EXECUTION - NOT USED**

**END OF SECTION**

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**SECTION 01 60 00  
PRODUCT REQUIREMENTS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. General product requirements.
  - 1. System Completeness.
  - 2. Installation of Products.
- B. Transportation, handling, storage and protection.
- C. Product option requirements.
- D. Substitution limitations.
- E. Maintenance materials, including extra materials, spare parts, tools, and software.

**1.02 RELATED REQUIREMENTS**

- A. Section 01 25 00 - Substitution Procedures: Substitutions made during procurement and/or construction phases.
- B. Section 01 40 00 - Quality Requirements: Product quality monitoring.
- C. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions: Requirements for VOC-restricted product categories.
- D. Section 01 74 19 - Construction Waste Management and Disposal: Waste disposal requirements potentially affecting product selection, packaging and substitutions.

**1.03 REFERENCE STANDARDS**

- A. CAL (CDPH SM) - Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions From Indoor Sources Using Environmental Chambers.
- B. NFPA 70 - National Electrical Code.
  - 1. Use California Electrical Code.

**1.04 SUBMITTALS**

- A. Proposed Products List: Submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
  - 1. Submit within 15 days after date of Agreement.
  - 2. For products specified only by reference standards, list applicable reference standards.
- B. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
- C. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

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- D. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
  - 1. For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.

#### 1.05 QUALITY ASSURANCE

- A. CAL (CDPH SM) v1.1: California Department of Public Health (CDPH) Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers, v. 1.1–2010, for the emissions testing and requirements of products and materials.

### PART 2 PRODUCTS

#### 2.01 GENERAL REQUIREMENTS

- A. Drawings and Specifications:
  - 1. If a conflict exists between the Drawings and the Specifications (Project Manual), then the Contractor shall submit a Request for Interpretation from the Architect.
    - a. As noted in the General Conditions, the more stringent requirements shall govern, including cost of materials and/or installation.
  - 2. If a specific product is indicated on the Drawings for use, then that product shall be used without exception in the location identified.
  - 3. If the Contractor proposes the use of another product other than the item indicated, whether or not listed in these specifications, the Contractor shall submit the product using the complete substitution process. See the the Article titled "SUBSTITUTIONS".
  - 4. DSA ((Project City)) approval is also required prior to the use or installation of any substitution, on any product or location of product (requiring a revision to the Drawings or Specifications), included in these construction documents.
    - a. Installation of a non-approved product may result in the Contractor removing and replacing the non-approved product at the Contractor's own expense.
- B. General: Items purchased for incorporation in the Work, whether purchased for the Project or taken from previously purchased stock, and include materials, equipment, assemblies, fabrications and systems.
  - 1. Named Products: Items identified by manufacturer's product name, including make or model designations indicated in the manufacturer's published product data.
  - 2. Materials: Products that are shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed or installed to form a part of the Work.
  - 3. Equipment: A product with operating parts, whether motorized or manually operated, that requires connections such as wiring or piping.
- C. Specific Product Requirements: Refer to requirements of Section 01 40 00 - Quality Requirements and individual product Specifications Sections in Divisions 2 through 33 for specific requirements for products.
- D. Minimum Requirements: Specified requirements for products are minimum requirements. Refer to general requirements for quality of the Work specified in Section 01 40 00 - Quality

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Requirements and elsewhere herein.

E. Standard Products:

1. Where specific products are not specified, provide standard products of types and kinds that are suitable for the intended purposes and that are usually and customarily used on similar projects under similar conditions.
2. Products shall be as selected by Contractor and subject to review and acceptance by the District and Architect.

F. Product Completeness:

1. Provide products complete with all accessories, trim, finish, safety guards and other devices and details needed for a complete installation and for the intended use and effect.
2. Comply with additional requirements specified herein in Article titled "SYSTEM COMPLETENESS".

G. Code Compliance:

1. All products, other than commodity products prescribed by Code, shall have a current ICC Evaluation Service Research Report (ICC ESR), CABO National Evaluation Report (NER), or other testing agencies as accepted by the Division of the State Architect.
2. Refer to additional requirements specified in Section 01 41 00 - Regulatory Requirements.

## 2.02 SYSTEM COMPLETENESS

- A. The Contract Drawings and Specifications are not intended to be comprehensive directions on how to produce the Work. Rather, the Drawings and Specifications are instruments of service prepared to describe the design intent for the completed Work.
- B. It is intended that all equipment, systems and assemblies be complete and fully functional even though not fully described. Provide all products and operations necessary to achieve the design intent described in the Contract Documents.
- C. Refer to related general requirements specified in Section 01 41 00 - Regulatory Requirements regarding compliance with minimum requirements of applicable codes, ordinances and standards.
- D. Omissions and Misdescriptions: Contractor shall report to Architect immediately when elements essential to proper execution of the Work are discovered to be missing or misdescribed in the Drawings and Specifications or if the design intent is unclear.
  1. Should an essential element be discovered as missing or misdescribed prior to receipt of Bids, an Addendum will be issued so that all costs may be accounted for in the Contract Sum.
  2. Should an obvious omission or misdescription of a necessary element be discovered and reported after execution of the Agreement, Contractor shall provide the element as though fully and correctly described, and a no-cost Change Order shall be executed.
  3. Refer to related General Conditions or general requirements specified in Section 01 30 00 - Administrative Requirements and 01 31 14 - Facility Services Coordination regarding construction interfacing and coordination.

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## 2.03 NEW PRODUCTS

- A. Provide new products unless specifically required or permitted by Contract Documents.
  - 1. Provide products that fully comply with the Contract Documents, are undamaged and unused at installation.
  - 2. Comply with additional requirements specified herein in Article titled "PRODUCT OPTIONS".
- B. See Section 01 40 00 - Quality Requirements, for additional source quality control requirements.
- C. Use of products having any of the following characteristics is not permitted:
  - 1. Made outside the United States, its territories, Canada, or Mexico.
  - 2. Containing lead, cadmium, or asbestos.
- D. Where other criteria are met, Contractor shall give preference to products that:
  - 1. If used on interior, have lower emissions, as defined in Section 01 61 16.
  - 2. If wet-applied, have lower VOC content, as defined in Section 01 61 16.
  - 3. Are extracted, harvested, and/or manufactured closer to the location of the project.
  - 4. Have longer documented life span under normal use.
  - 5. Result in less construction waste. See Section 01 74 19
- E. Provide interchangeable components of the same manufacture for components being replaced.
  - 1. To the fullest extent possible, provide products of the same kind from a single source. Products required to be supplied in quantity shall be the same product and interchangeable throughout the Work.
  - 2. When options are specified for the selection of any of two or more products, provide product selected to be compatible with products previously selected.
- F. Product Nameplates and Instructions:
  - 1. Except for required Code-compliance labels and operating and safety instructions, locate nameplates on inconspicuous, accessible surfaces. Do not attach manufacturer's identifying nameplates or trademarks on surfaces exposed to view in occupied spaces or to the exterior.
  - 2. Provide a permanent nameplate on each item of service-connected or power-operated equipment. Nameplates shall contain identifying information and essential operating data such as the following example:
    - a. Name of manufacturer
    - b. Name of product
    - c. Model and serial number
    - d. Capacity
    - e. Operating and Power Characteristics
    - f. Labels of Tested Compliance with Codes and Standards

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3. Refer to additional requirements which may be specified in various sections, as included in this Project Manual.
4. For each item of service-connected or power-operated equipment, provide operating and safety instructions, permanently affixed and of durable construction, with legible machine lettering. Comply with all applicable requirements of authorities having jurisdiction and listing agencies.
- G. Wiring Terminations: Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated. Size terminal lugs to CEC/NFPA 70, include lugs for terminal box.
- H. Cord and Plug: Provide minimum 6 foot cord and plug including grounding connector for connection to electric wiring system. Cord of longer length is specified in individual specification sections.

## 2.04 PRODUCT OPTIONS

- A. Unless the specifications state that no substitution is permitted, whenever the Contract Documents indicate any specific article, device, equipment, product, material, fixture, patented process, form, method, or type of construction or any specific name, make, trade name, or catalog number, with or without the words "or equal," such specification shall be deemed to be used for the purpose of facilitating description of the material, process, or article desired and shall be deemed to be followed by the words "or equal."
  1. See Section 01 25 00 - Substitution Procedures.
- B. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.
  1. Reference Standards:
    - a. Where Specifications require compliance with a standard, provided product shall fully comply with the standard specified.
    - b. Refer to general requirements specified in Section 01 42 19 - Reference Standards regarding compliance with referenced standards, standard specifications, codes, practices and requirements for products.
  2. Product Description:
    - a. Where Specifications describe a product, listing characteristics required, with or without use of a brand name, provide a product that has the specified attributes and otherwise complies with specified requirements.
  3. Performance Requirements:
    - a. Where Specifications require compliance with performance requirements, provide product(s) that comply and are recommended by the manufacturer for the intended application.
    - b. Verification of manufacturer's recommendations may be by product literature or by certification of performance from manufacturer.
- C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.
- D. Products Specified by Identification of Manufacturer and Product Name or Number:

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1. "Specified Manufacturer": Provide the specified product(s) of the specified manufacturer.
  - a. If only one manufacturer is specified, without "acceptable manufacturers" being identified, provide only the specified product(s) of the specified manufacturer.
  - b. If District standard is indicated make all efforts to provide that product.
  - c. If the phrase "or equal" or "approved equal" is stated or reference is made to the "or equal provision," products of other manufacturers may be provided if such products are equivalent to the specified product(s) of the specified manufacturer.
    - 1) Equivalence shall be demonstrated by submission of information in compliance with requirements of Section 01 25 00 - Substitution Procedures.
2. "Acceptable Manufacturers":
  - a. Product(s) of the named manufacturers, if equivalent to the specified product(s) of the specified manufacturer, will be acceptable in accordance with the requirements of Section 01 25 00 - Substitution Procedures.
    - 1) Exception: Considerations regarding changes in Contract Time and Contract Sum will be waived if no increase in Contract Time or Contract Sum results from use of such equivalent products.
3. Unnamed manufacturers: Product(s) of unnamed manufacturers will be acceptable when disclosed during the bidding period and only as follows:
  - a. Unless specifically stated that substitutions will not be accepted or considered, the phrase "or equal" shall be assumed to be included in the description of specified product(s).
  - b. Equivalent products of unnamed manufacturers will be accepted in accordance with the "or equal" provision specified herein, below.
  - c. If provided, products of unnamed manufacturers shall be subject to the requirements of Section 01 25 00 - Substitution Procedures.
4. Quality basis:
  - a. Specified product(s) of the specified manufacturer shall serve as the basis by which products by named acceptable manufacturers and products of unnamed manufacturers will be evaluated.
  - b. Where characteristics of the specified product are described, where performance characteristics are identified or where reference is made to industry standards, such characteristics are specified to identify the most significant attributes of the specified product(s) which will be used to evaluate products of other manufacturers.
- E. Products Specified by Combination of Methods: Where products are specified by a combination of attributes, including manufacturer's name, product brand name, product catalog or identification number, industry reference standard, or description of product characteristics, provide products conforming to all specified attributes.
- F. "Or Equal" Provision: Where the phrase "or equal" or the phrase "or approved equal" is included, equivalent product(s) of unnamed manufacturer(s) may be provided as specified above in subparagraph titled "Unnamed manufacturers" and Section 01 25 00 - Substitution Procedures with the following conditions:

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1. The requirements of Section 01 25 00 - Substitution Procedures applies to products provided under the "or equal" provision.
    - a. Exception: If the proposed product(s) are determined to be equivalent to the specified product(s) of the specified manufacturer, the requirement specified for substitutions to result in a net reduction in Contract Time or Contract Sum will be waived.
  2. Use of product(s) under the "or equal" provision shall not result in any delay in completion of the Work, including completion of portions of the Work for use by District or for work under separate contract by District.
  3. Use of product(s) under the "or equal" provision shall not result in any costs to the District, including design fees and permit and plan check fees.
  4. Use of product(s) under the "or equal" provision shall not require substantial change in the intent of the design, in the opinion of the Architect.
    - a. The intent of the design shall include functional performance and aesthetic qualities.
  5. The determination of equivalence will be made by the Architect and District, and such determination shall be final.
- G. Visual Matching:
1. Where Specifications require matching a sample, the decision by the Architect on whether a proposed product matches shall be final.
  2. Where no product visually matches but the product complies with other requirements, comply with provisions for substitutions for selection of a matching product in another category.
- H. Visual Selection of Products:
1. Where requirements include the phrase "as selected from manufacturer's standard colors, patterns and textures", or a similar phrase, selections of products will be made by indicated party or, if not indicated, by the Architect. The will select color, pattern and texture from the product line of submitted manufacturer, if all other specified provisions are met.
  2. The Architect will select color, pattern and texture from the product line of submitted manufacturer, if all other specified provisions are met.

## 2.05 MAINTENANCE MATERIALS

- A. Furnish extra materials, spare parts, tools, and software of types and in quantities specified in individual specification sections.
- B. Deliver to Project site; obtain receipt prior to final payment.

## PART 3 EXECUTION

### 3.01 SUBSTITUTION LIMITATIONS

- A. See Section 01 25 00 - Substitution Procedures.

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### 3.02 TRANSPORTATION AND HANDLING

- A. Package products for shipment in manner to prevent damage; for equipment, package to avoid loss of factory calibration.
- B. If special precautions are required, attach instructions prominently and legibly on outside of packaging.
- C. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.
  - 1. Schedule delivery to minimize long-term storage and prevent overcrowding construction spaces.
  - 2. Coordinate with installation to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft and other losses.
- D. Transport and handle products in accordance with manufacturer's instructions.
- E. Transport products by methods to avoid product damage.
- F. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.
- G. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
- H. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage, and to minimize handling.
- I. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

### 3.03 STORAGE AND PROTECTION

- A. Provide protection of stored materials and products against theft, casualty, or deterioration.
- B. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication. See Section 01 74 19.
  - 1. Structural Loading Limitations: Handle and store products and materials so as not to exceed static and dynamic load-bearing capacities of project floor and roof areas.
- C. Inspection Provisions: Arrange storage to provide access for inspection and measurement of quantity or counting of units.
- D. Structural Considerations: Store heavy materials away from the structure in a manner that will not endanger supporting construction.
- E. Store and protect products in accordance with manufacturers' instructions.
- F. Store with seals and labels intact and legible.
- G. Arrange storage of materials and products to allow for visual inspection for the purpose of determination of quantities, amounts, and unit counts.
- H. Store sensitive products in weathertight, climate-controlled enclosures in an environment favorable to product.
- I. For exterior storage of fabricated products, place on sloped supports above ground.

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1. Place products on raised blocks, pallets or other supports, above ground and in a manner to not create ponding or misdirection of runoff.
- J. Provide bonded off-site storage and protection when site does not permit on-site storage or protection.
- K. Protect products from damage or deterioration due to construction operations, weather, precipitation, humidity, temperature, sunlight and ultraviolet light, dirt, dust, and other contaminants.
  1. Periodically inspect to ensure products are undamaged, and are maintained under required conditions.
  2. Remove and replace products damaged by improper storage or protection with new products at no change in Contract Sum or Contract Time.
  3. Weather-Resistant Storage:
    - a. Store moisture-sensitive products above ground, under cover in a weathertight enclosure or covered with an impervious sheet covering. Provide adequate ventilation to avoid condensation.
    - b. Maintain storage within temperature and humidity ranges required by manufacturer's instructions.
    - c. Store loose granular materials on solid surfaces in a well-drained area. Prevent mixing with foreign matter.
- L. Comply with manufacturer's warranty conditions, if any.
- M. Do not store products directly on the ground.
- N. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- O. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- P. Prevent contact with material that may cause corrosion, discoloration, or staining.
- Q. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- R. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

### 3.04 INSTALLATION OF PRODUCTS

- A. Comply with manufacturer's instructions and recommendations for installation of products, except where more stringent requirements are specified, are necessary due to Project conditions or are required by authorities having jurisdiction.
- B. Anchor each product securely in place, accurately located and aligned with other Work.
- C. Clean exposed surfaces and provide protection to ensure freedom from damage and deterioration at time of Substantial Completion review. Refer to additional requirements specified in General Conditions, Section 01 50 00 - Temporary Construction Facilities and Controls and 01 70 00 - Execution and Closeout Requirements.

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### 3.05 PROTECTION OF COMPLETED WORK

- A. Provide barriers, substantial coverings and notices to protect installed Work from traffic and subsequent construction operations.
- B. Remove protective measures when no longer required and prior to Substantial Completion review of the Work.
- C. Comply with additional requirements specified in Section 01 50 00 - Temporary Construction Facilities and Controls.

**END OF SECTION**

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**SECTION 01 61 16**  
**VOLATILE ORGANIC COMPOUND (VOC) CONTENT RESTRICTIONS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Requirements for Indoor-Emissions-Restricted products.
- B. Requirements for VOC-Content-Restricted products.
- C. Requirement for installer certification that they did not use any non-compliant products.

**1.02 RELATED REQUIREMENTS**

- A. Section 01 30 00 - Administrative Requirements: Submittal procedures.
- B. Section 01 40 00 - Quality Requirements: Procedures for testing and certifications.
- C. Section 01 60 00 - Product Requirements: Fundamental product requirements, substitutions and product options, delivery, storage, and handling.

**1.03 DEFINITIONS**

- A. Indoor-Emissions-Restricted Products: All products in the following product categories, whether specified or not:
  - 1. Interior paints and coatings applied on site.
  - 2. Interior adhesives and sealants applied on site, including flooring adhesives.
  - 3. Products making up wall and ceiling assemblies.
  - 4. Thermal and acoustical insulation.
  - 5. Exterior applied products (for Healthcare and Schools projects only).
  - 6. Other products when specifically stated in the specifications.
- B. VOC-Content-Restricted Products: All products in the following product categories, whether specified or not:
  - 1. Interior paints and coatings.
  - 2. Interior adhesives and sealants, including flooring adhesives.
  - 3. Wet-applied roofing and waterproofing.
  - 4. Other products when specifically stated in the specifications.
- C. Interior of Building: Anywhere inside the exterior weather barrier.
- D. Adhesives: All gunnable, trowelable, liquid-applied, and aerosol adhesives, whether specified or not; including flooring adhesives, resilient base adhesives, and pipe jointing adhesives.
- E. Sealants: All gunnable, trowelable, and liquid-applied joint sealants and sealant primers, whether specified or not; including firestopping sealants and duct joint sealers.
- F. Inherently Non-Emitting Materials: Products composed wholly of minerals or metals, unless they include organic-based surface coatings, binders, or sealants; and specifically the following:

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1. Metals that are plated, anodized, or powder-coated.

#### 1.04 REFERENCE STANDARDS

- A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency.
- B. ASTM D3960 - Standard Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings.
- C. CARB (SCM) - Suggested Control Measure for Architectural Coatings; California Air Resources Board.
- D. GreenSeal GS-36 - Adhesives for Commercial Use.
- E. SCAQMD 1113 - Architectural Coatings.
- F. SCAQMD 1168 - Adhesive and Sealant Applications.

#### 1.05 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: For each VOC-restricted product used in the project, submit evidence of compliance.
- C. Installer Certifications Regarding Prohibited Content: Require each installer of any type of product (not just the products for which VOC restrictions are specified) to certify that either 1) no adhesives, joint sealants, paints, coatings, or composite wood or agrifiber products have been used in the installation of installer's products, or 2) that such products used comply with these requirements.
  1. Use the form following this section for installer certifications.
- D. Verification of compliance with VOC limits as specified in the CalGreen Code Section 5.504 shall be provided at the request of the Building Inspector.
  1. Product certification and specifications.
  2. Chain of custody certifications.
  3. Product, labeled and invoiced as meeting the Composite Wood Products regulation.
  4. Exterior grade products marked as meeting the PS-1 or PS-2 standards of the Engineered Wood Association, the Australian AS/NZS 2269 or European 636 3S standards
  5. Other methods approved by the building official.

#### 1.06 QUALITY ASSURANCE

- A. VOC Content Test Method: 40 CFR 59, Subpart D (EPA Method 24), or ASTM D3960, unless otherwise indicated.
  1. Evidence of Compliance: Acceptable types of evidence are:
    - a. Report of laboratory testing performed in accordance with requirements.
    - b. Published product data showing compliance with requirements.
    - c. Certification by manufacturer that product complies with requirements.
- B. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.

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## **PART 2 PRODUCTS**

### **2.01 REGULATORY REQUIREMENTS**

- A. All VOC restricted products shall be compliant with local jurisdiction, South Coast Air Quality Management District, Air Pollution Control District, County of San Diego, and California Green Standards Code, Rules and Regulations in effect at the time of installation. Products specified in this project shall be used as a basis of design. Updated products that are compliant with the rules in force at the time of installation shall be submitted as substitutions when they become available.
  - 1. If a product is found to be non-compliant with the VOC rules at the scheduled time of installation, notify the Architect a minimum of 90 days prior to installation. Contractor shall submit a suggested compliant product that is equal to the performance and cost of the specified product using the substitution procedure.

### **2.02 MATERIALS**

- A. All Products: Comply with the most stringent of federal, State, and local requirements, or these specifications.
- B. VOC-Content-Restricted Products: VOC content not greater than required by the following:
  - 1. Adhesives, Including Flooring Adhesives: SCAQMD 1168 Rule.
  - 2. Aerosol Adhesives: GreenSeal GS-36.
  - 3. Joint Sealants: SCAQMD 1168 Rule.
  - 4. Paints and Coatings: Each color; most stringent of the following:
    - a. 40 CFR 59, Subpart D.
    - b. SCAQMD 1113 Rule.
    - c. CARB (SCM).
    - d. CalGreen Building Standards Section 5.504, Table 504.4.3 "VOC Content Limits for Architectural Coatings".
    - e. Clear Wood Finishes, Floor Coatings, Stains, Primers and Shellacs: Do not exceed the VOC content limits established in SCAQMD 1113 rule.
- C. Other Product Categories: Comply with limitations specified elsewhere.

## **PART 3 EXECUTION**

### **3.01 FIELD QUALITY CONTROL**

- A. District reserves the right to reject non-compliant products, whether installed or not, and require their removal and replacement with compliant products at no extra cost to District.
- B. Additional costs to restore indoor air quality due to installation of non-compliant products will be borne by Contractor.

### **END OF SECTION**

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**SECTION 01 61 16.01**  
**ACCESSORY MATERIAL VOC CONTENT CERTIFICATION FORM**

**1.01 FORM**

A. Identification:

1. Project Name: Battery Replacement
2. Project No.: 1-30-56
3. Architect: Ruhnau Clarke Architects

B. Use of This Form:

1. Because installers are allowed and directed to choose accessory materials suitable for the applicable installation, there is a possibility that such accessory materials might contain VOC content in excess of that permitted, especially where such materials have not been explicitly specified.
  - a. Each installer of work on this project is required to certify that his/their use of these particular materials complies with the contract documents and to provide documentation showing that the products used do not contain the prohibited content.
2. Contractor is required to obtain and submit this form from each installer of work on this project.
3. For each product category listed, check the correct paragraph.
4. If any of these accessory materials has been used, attach to this form product data and MSDS sheet for each such product.

C. VOC content restrictions are specified in Section 01 61 16.

1. Volatile organic compounds (VOCs) are defined by the U.S. EPA, California Air Resources Board (CARB), South Coast Air Quality Management District (SCAQMD), along with other state and local regulations applicable to this project.

**2.01 PRODUCT CERTIFICATION**

A. I certify that the installation work of my firm on this project:

1. [HAS] [HAS NOT] required the use of any ADHESIVES.
2. [HAS] [HAS NOT] required the use of any JOINT SEALANTS.
3. [HAS] [HAS NOT] required the use of any PAINTS OR COATINGS.
4. [HAS] [HAS NOT] required the use of any COMPOSITE WOOD or AGRIFIBER PRODUCTS.

B. Product data and MSDS sheets are attached.

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**3.01 CERTIFIED BY: (INSTALLER/MANUFACTURER/SUPPLIER FIRM)**

- A. Firm Name: \_\_\_\_\_
- B. Print Name: \_\_\_\_\_
- C. Signature: \_\_\_\_\_
- D. Title: \_\_\_\_\_ (officer of company)
- E. Date: \_\_\_\_\_

**END OF SECTION**

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**SECTION 01 70 00**  
**EXECUTION AND CLOSEOUT REQUIREMENTS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Examination, preparation, and general installation procedures.
- B. Requirements for alterations work, including selective demolition.
- C. Pre-installation meetings.
- D. Cutting and patching.
- E. Cleaning and protection.
- F. Closeout procedures, including Contractor's Correction Punch List, except payment procedures.
- G. General requirements for maintenance service.

**1.02 RELATED REQUIREMENTS**

- A. Section 01 10 00 - Summary: Limitations on working in existing building; continued occupancy; work sequence; identification of salvaged and relocated materials.
- B. Section 01 30 00 - Administrative Requirements: Submittals procedures.
- C. Section 01 40 00 - Quality Requirements: Testing and inspection procedures.
- D. Section 01 50 00 - Temporary Facilities and Controls: Temporary exterior enclosures.
- E. Section 01 50 00 - Temporary Facilities and Controls: Temporary interior partitions.
- F. Section 01 74 19 - Construction Waste Management and Disposal: Additional procedures for trash/waste removal, recycling, salvage, and reuse.
- G. Section 01 78 00 - Closeout Submittals: Project record documents, operation and maintenance data, warranties, and bonds.
- H. Section 02 41 00 - Demolition: Demolition of whole structures and parts thereof; site utility demolition.
- I. Individual Product Specification Sections:
  - 1. Advance notification to other sections of openings required in work of those sections.
  - 2. Limitations on cutting structural members.

**1.03 REFERENCE STANDARDS**

- A. CFC Ch. 33 - Fire Safety During Construction and Demolition.
- B. CFC Ch. 35 - California Fire Code - Chapter 35 - Welding and Other Hot Work.
- C. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations.

**1.04 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

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- B. Cutting and Patching: Submit written request in advance of cutting or alteration that affects:
  - 1. Structural integrity of any element of Project.
  - 2. Integrity of weather exposed or moisture resistant element.
  - 3. Efficiency, maintenance, or safety of any operational element.
  - 4. Visual qualities of sight exposed elements.
  - 5. Work of District or separate Contractor.
  - 6. Include in request:
    - a. Identification of Project.
    - b. Location and description of affected work. Include shop drawings as necessary to identify locations and communicate descriptions.
    - c. Necessity for cutting or alteration.
    - d. Description of proposed work and products to be used.
    - e. Effect on work of District or separate Contractor.
    - f. Effect on existing construction of District and, if applicable, work for Project being provided by District under separate contract.
    - g. Written permission of affected separate Contractor.
    - h. Date and time work will be executed.
  - 7. Include written evidence that those performing work under separate contract for District have been notified and acknowledge that cutting and patching work will be occurring. Include written permission for intended cutting and patching, included scheduled times.
- C. Project Record Documents: Accurately record actual locations of capped and active utilities.

## 1.05 PROJECT CONDITIONS

- A. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.
- B. Noise Control: Provide methods, means, and facilities to minimize noise produced by construction operations.
- C. Pest and Rodent Control: Provide methods, means, and facilities to prevent pests and insects from damaging the work.
- D. Rodent Control: Provide methods, means, and facilities to prevent rodents from accessing or invading premises.
- E. Pollution Control: Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations. Comply with federal, state, and local regulations.

## PART 2 PRODUCTS

### 2.01 PATCHING MATERIALS

- A. New Materials: As specified in product sections; match existing products and work for patching and extending work.

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- B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.
- C. Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01 60 00 - Product Requirements.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that existing conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.
- B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.
- C. Examine and verify specific conditions described in individual specification sections.
- D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.
- E. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

### **3.02 PREPARATION**

- A. Clean substrate surfaces prior to applying next material or substance.
- B. Seal cracks or openings of substrate prior to applying next material or substance.
- C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

### **3.03 PREINSTALLATION MEETINGS**

- A. When required in individual specification sections, convene a preinstallation meeting at the site prior to commencing work of the section.
- B. Require attendance of parties directly affecting, or affected by, work of the specific section.
- C. Notify Architect four days in advance of meeting date.
- D. Prepare agenda and preside at meeting:
  - 1. Review conditions of examination, preparation and installation procedures.
  - 2. Review coordination with related work.
- E. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, District, participants, and those affected by decisions made.

### **3.04 GENERAL INSTALLATION REQUIREMENTS**

- A. Dimensions for Accessibility:
  - 1. Conventions: See CBC Figure 11B-104. Dimensions that are not stated as "maximum" or "minimum" are absolute.

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2. Tolerances shall be per CBC 11B-104.1.1 "Construction and manufacturing tolerances. All dimensions are subject to conventional industry tolerances except where the requirement is stated as a range with specific minimum and maximum end points."
- B. In addition to compliance with regulatory requirements, conduct construction operations in compliance with ASTM F477 and NFPA 241, including applicable recommendations in Appendix A.
- C. When welding or doing other hot work, comply with CFC Ch. 35.
- D. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.
- E. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.
- F. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.
- G. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.
- H. Make neat transitions between different surfaces, maintaining texture and appearance.

### 3.05 ALTERATIONS

- A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
  1. Verify that construction and utility arrangements are as indicated.
  2. Report discrepancies to Architect before disturbing existing installation.
  3. Beginning of alterations work constitutes acceptance of existing conditions.
- B. Keep areas in which alterations are being conducted separated from other areas that are still occupied.
  1. Provide, erect, and maintain temporary dustproof partitions of construction specified in Section 01 50 00 .
- C. Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage.
  1. Where openings in exterior enclosure exist, provide construction to make exterior enclosure weatherproof.
  2. Insulate existing ducts or pipes that are exposed to outdoor ambient temperatures by alterations work.
- D. Remove existing work as indicated and as required to accomplish new work.
  1. Remove rotted wood, corroded metals, and deteriorated masonry and concrete; replace with new construction specified.
  2. Remove items indicated on drawings.
  3. Relocate items indicated on drawings.
  4. Where new surface finishes are to be applied to existing work, perform removals, patch, and prepare existing surfaces as required to receive new finish; remove existing finish if necessary for successful application of new finish.
  5. Where new surface finishes are not specified or indicated, patch holes and damaged surfaces to match adjacent finished surfaces as closely as possible.

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- E. Services (Including but not limited to Plumbing, Electrical, and Telecommunications): Remove, relocate, and extend existing systems to accommodate new construction.
  - 1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components; if necessary, modify installation to allow access or provide access panel.
  - 2. Where existing systems or equipment are not active and Contract Documents require reactivation, put back into operational condition; repair supply, distribution, and equipment as required.
  - 3. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
    - a. Disable existing systems only to make switchovers and connections; minimize duration of outages.
    - b. Provide temporary connections as required to maintain existing systems in service.
  - 4. Verify that abandoned services serve only abandoned facilities.
  - 5. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification; patch holes left by removal using materials specified for new construction.
- F. Protect existing work to remain.
  - 1. Prevent movement of structure; provide shoring and bracing if necessary.
  - 2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
  - 3. Repair adjacent construction and finishes damaged during removal work.
- G. Adapt existing work to fit new work: Make as neat and smooth transition as possible.
  - 1. When existing 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 line of division and make recommendation to Architect.
  - 2. 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.
  - 3. Where a change of plane of 1/4 inch or more occurs in existing work, submit recommendation for providing a smooth transition for Architect review and request instructions.
  - 4. Trim existing wood doors as necessary to clear new floor finish. Refinish trim as required.
- H. Patching: Where the existing surface is not indicated to be refinished, patch to match the surface finish that existed prior to cutting. Where the surface is indicated to be refinished, patch so that the substrate is ready for the new finish.
- I. Refinish existing surfaces as indicated:
  - 1. Where rooms or spaces are indicated to be refinished, refinish all visible existing surfaces to remain to the specified condition for each material, with a neat transition to adjacent finishes.

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- 2. If mechanical or electrical work is exposed accidentally during the work, re-cover and refinish to match.
- J. Clean existing systems and equipment.
- K. Remove demolition debris and abandoned items from alterations areas and dispose of off-site; do not burn or bury.
- L. Do not begin new construction in alterations areas before demolition is complete.
- M. Comply with all other applicable requirements of this section.

### 3.06 CUTTING AND PATCHING

- A. Whenever possible, execute the work by methods that avoid cutting or patching.
- B. See Alterations article above for additional requirements.
- C. Perform whatever cutting and patching is necessary to:
  - 1. Complete the work.
  - 2. Fit products together to integrate with other work.
  - 3. Provide openings for penetration of mechanical, electrical, and other services.
  - 4. Match work that has been cut to adjacent work.
  - 5. Repair areas adjacent to cuts to required condition.
  - 6. Repair new work damaged by subsequent work.
  - 7. Remove samples of installed work for testing when requested.
  - 8. Remove and replace defective and non-complying work.
- D. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.
  - 1. Coordinate installation or application of products for integrated Work.
  - 2. Uncover completed Work as necessary to install or apply products out of sequence.
  - 3. Remove and replace defective or non-conforming Work.
- E. After uncovering existing Work, inspect conditions affecting proper accomplishment of Work.
- F. Temporary Supports: Provide supports to ensure structural integrity of the Work. Provide devices and methods to protect other portions of Project from damage.
- G. Beginning of cutting or patching shall be interpreted to mean that existing conditions were found by Contractor to be acceptable.
- H. Employ skilled and experienced installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.
- I. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.
  - 1. Use a diamond grit abrasive saw or similar cutter for smooth edges. Do not overcut corners.
- J. Restore work with new products in accordance with requirements of Contract Documents.
- K. Fit work neat and tight allowing for expansion and contraction.

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- L. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- M. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material , to full thickness of the penetrated element.
- N. Patching:
  - 1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
  - 2. Match color, texture, and appearance.
  - 3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.
- O. Finishing: Refinish surfaces to match adjacent and similar finishes as used for the Project.
  - 1. For continuous surfaces, refinish to nearest intersection or natural break.
  - 2. For an assembly, refinish entire unit.

### **3.07 PROGRESS CLEANING**

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
- B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
- C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.
- D. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.

### **3.08 PROTECTION OF INSTALLED WORK**

- A. Protect installed work from damage by construction operations.
- B. Provide special protection where specified in individual specification sections.
- C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
- D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
- E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
- F. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
- G. Remove protective coverings when no longer needed; reuse or recycle coverings if possible.

### **3.09 PROJECT CLOSEOUT CONFERENCE**

- A. Schedule and conduct a project closeout conference, at a time convenient to District and Architect, but no later than 90 days prior to the scheduled date of Substantial Completion.

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1. Conduct the conference to review requirements and responsibilities related to Project closeout.
2. Attendees: Authorized representatives of District, Commissioning Authority (CxA), Architect, and relevant consultants; Contractor and project superintendent; major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
3. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:
  - a. Preparation of record documents.
  - b. Commissioning.
  - c. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
  - d. Submittal of written warranties.
  - e. Coordination of separate contracts.
  - f. District's partial occupancy requirements.
  - g. Installation of District's furniture, fixtures, and equipment.
  - h. Responsibility for removing temporary facilities and controls.
4. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, District, participants, and those affected by decisions made.

### 3.10 ADJUSTING

- A. Adjust operating products and equipment to ensure smooth and unhindered operation.

### 3.11 FINAL CLEANING

- A. Cleaning and Disposal Requirements, General: Conduct cleaning and disposal operations in compliance with all applicable codes, ordinances and regulations, including environmental protection laws, rules and practices.
- B. Execute final cleaning prior to final project assessment.
  1. Clean areas to be occupied by District prior to final completion before District occupancy.
- C. Substantial Completion Review Cleaning, General: Execute a thorough cleaning prior to Substantial Completion review by Architect and District. Employ experienced workers or professional cleaners for cleaning operations for Substantial Completion review.
- D. Use cleaning materials that are nonhazardous.
  1. Cleaning Agents and Materials: Use only those cleaning agents and materials which will not create hazards to health or property and which will not damage or degrade surfaces.
    - a. Use only those cleaning agents, materials and methods recommended by manufacturer of the material to be cleaned.
    - b. Use cleaning materials only on surfaces recommended by cleaning agent manufacturer.

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- c. Before use, review cleaning agents and materials with DSA for suitability and compatibility. Use no cleaning agents and materials without approval as noted above.
- 2. Cleaning Procedures: All cleaning processes, agents and materials shall be subject to Architect, District and/or DSA review and approval. Processes and degree of cleanliness shall be as directed by Architect, District and/or DSA.
- E. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.
- F. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.
- G. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
- H. Clean filters of operating equipment.
- I. Clean site; sweep paved areas, rake clean landscaped surfaces.
- J. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

### 3.12 CLOSEOUT PROCEDURES

- A. Make submittals that are required by governing or other authorities.
  - 1. Provide copies to Architect and District.
- B. Accompany Architect, Construction Manager, and District Representative on preliminary inspection to determine items to be listed for completion or correction in the Contractor's Correction Punch List for Contractor's comprehensive list of items to be completed or corrected.
  - 1. As authorized by the District; Architect and Architect's and District's consultants, as appropriate, will attend a meeting at the Project site to review Contract closeout procedures and to review the list of items to be completed and corrected (punch list) to make the Work ready for acceptance by the District.
  - 2. This meeting shall be scheduled not earlier than 14 days prior to the date anticipated for the Substantial Completion review.
- C. Notify Architect when work is considered ready for Architect's Substantial Completion inspection.
- D. Submit written certification containing Contractor's Correction Punch List, that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Architect's Substantial Completion inspection.
- E. Clearing and Cleaning: Prior to the Substantial Completion review, Contractor shall conduct a thorough cleaning and clearing of the Project area, including removal of construction facilities and temporary controls.
- F. District will occupy all of the building as specified in Section 01 10 00.

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- G. Conduct Substantial Completion inspection and create Final Correction Punch List containing Architect's and Contractor's comprehensive list of items identified to be completed or corrected and submit to Architect.
1. Correction (Punch) List: Contractor shall prepare and distribute at the preliminary Contract closeout review meeting, a typewritten, comprehensive list of items to be completed and corrected (punch list) to make the Work ready for acceptance by the District.
    - a. The punch list shall include all items to be completed or corrected prior to the Contractor's application for final payment.
    - b. The punch list shall identify items by location (room number or name) and consecutive number. For example, 307-5 would identify item 5 in Room 307, Roof-4 would identify item 4 on Roof.
    - c. Contractor shall prepare separate lists according to categories used for Drawings. For example, provide lists for Architectural.
    - d. Verbal comments will be made to the Contractor by the DSA, the Architect and the Architect's and District's consultants, if in attendance, during the walk-through. These comments will indicate generally the additions and corrections to be made to the punch list. Such comments shall not be considered to be comprehensive; Contractor shall use the comments as guidance in preparing the punch list for the Substantial Completion review.
  2. Substantial Completion Meeting: On a date mutually agreed by the District, Architect, and Contractor, a meeting shall be conducted at the Project site to determine whether the Work is satisfactory and complete for filing a Notice of Completion (Substantial Completion).
    - a. Contractor shall provide three working days notice to Architect for requested date of Substantial Completion meeting.
    - b. The DSA, the Architect and the Architect's and District's consultants, as authorized by the District, will attend the Substantial Completion meeting.
    - c. In addition to conducting a walk-through of the facility and reviewing the punch list, the purpose of the meeting shall include submission of warranties, guarantees and bonds to the District, submission of operation and maintenance data (manuals), provision of specified extra materials to the District, and submission of other Contract closeout documents and materials as required and if not already submitted.
    - d. The DSA, the Architect and Architect's consultants, as appropriate, will conduct a walk-through of the facility with the Contractor and review the punch list.
    - e. Contractor shall correct the punch list and record additional items as may identified during the walk-through, including notations of corrective actions to be taken.
    - f. Contractor shall retype the punch list and distribute it within three working days to those attending the meeting.
    - g. If additional site visits by the DSA, the Architect and the Architect's and District's consultants are required to review completion and correction of the Work, the costs of additional visits shall be reimbursed to the District by the Contractor by deducting

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such costs from the Final Payment.

- H. Correct items of work listed in Final Correction Punch List and comply with requirements for access to District-occupied areas.
- I. Notify Architect when work is considered finally complete and ready for Architect's Substantial Completion final inspection.
  - 1. Architect's Certification of Substantial Completion:
    - a. When Architect determines that list of items to be completed and corrected (Punch List) is sufficiently complete for District to occupy Project for the use to which it is intended.
    - b. Architect will complete and issue to the District and Contractor a Certificate of Substantial Completion using:
      - 1) The American Institute of Architects Form G704 - Certificate of Substantial Completion
      - 2) or other form if directed by the District.
- J. Complete items of work determined by Architect listed in executed Certificate of Substantial Completion.

### **3.13 FINAL PAYMENT**

- A. After completion of all items listed for completion and correction, after submission of all documents and products and after final cleaning, submit final Application for Payment, identifying total adjusted Contract Sum, previous payments and sum remaining due.
- B. Payment will not be made until the following are accomplished:
  - 1. All Project Record Documents have been transferred and accepted by District.
  - 2. All extra materials and maintenance stock have been transferred and received by District.
  - 3. All warranty documents and operation and maintenance data have been received and accepted by District.
  - 4. All liens have been released or bonded by Contractor.
  - 5. Contractor's surety has consented to Final Payment.
  - 6. All documentation required by DSA has been completed.

### **END OF SECTION**

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**SECTION 01 74 19**  
**CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL**

**PART 1 GENERAL**

**1.01 WASTE MANAGEMENT REQUIREMENTS**

- A. Comply with the requirements Section 5.408 of the California Green Building Standards Code.
  - 1. Recycle and/or salvage for reuse a minimum of 65 percent of the nonhazardous construction and demolition waste in accordance with Section 504.8.1.1, 5.408.1.2, or 5.408.1.3; or meet a local construction and demolition waste management ordinance, whichever is more stringent.
- B. District requires that this project generate the least amount of trash and waste possible.
- C. Employ processes that ensure the generation of as little waste as possible due to error, poor planning, breakage, mishandling, contamination, or other factors.
- D. Minimize trash/waste disposal in landfills; reuse, salvage, or recycle as much waste as economically feasible.
- E. Required Recycling, Salvage, and Reuse: The following may not be disposed of in landfills or by incineration:
  - 1. Aluminum and plastic beverage containers.
  - 2. Corrugated cardboard.
  - 3. Wood pallets.
  - 4. Clean dimensional wood.
  - 5. Land clearing debris, including brush, branches, logs, and stumps; see Section 31 10 00 - Site Clearing for use options.
    - a. Comply with California Green Code (CGC) 5.408.3; Excavated soil and land clearing debris: 100 percent of trees, stumps, rocks and associated vegetation and soils resulting primarily from land clearing shall be reused or recycled.
      - 1) Exception: Reuse, either on-or off-site, of vegetation or soil contaminated by disease or pest infestation.
  - 6. Concrete: May be crushed and used as riprap, aggregate, sub-base material, or fill.
  - 7. Bricks: May be used on project if whole, or crushed and used as landscape cover, sub-base material, or fill.
  - 8. Concrete masonry units: May be used on project if whole, or crushed and used as sub-base material or fill.
  - 9. Asphalt paving: May be recycled into paving for project.
  - 10. Metals, including packaging banding, metal studs, sheet metal, structural steel, piping, reinforcing bars, door frames, and other items made of steel, iron, galvanized steel, stainless steel, aluminum, copper, zinc, lead, brass, and bronze.
  - 11. Glass.
  - 12. Gypsum drywall and plaster.

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13. Carpet, carpet cushion, carpet tile, and carpet remnants, both new and removed: DuPont (<http://flooring.dupont.com>) and Interface ([www.interfaceinc.com](http://www.interfaceinc.com)) conduct reclamation programs.
14. Roofing.
15. Paint.
16. Plastic sheeting.
17. Rigid foam insulation.
18. Windows, doors, and door hardware.
19. Plumbing fixtures.
20. Mechanical and electrical equipment.
21. Fluorescent lamps (light bulbs).
22. Acoustical ceiling tile and panels.
23. Materials which could be hazardous and subject to special disposal regulations include but are not limited to the following: CalGreen Section 5.408.2
  - a. Lead-Based Paint
  - b. Asbestos: Found in older pipe insulation, asphalt floor tiles, linoleum, insulation, etc.
  - c. Polychlorinated Biphenyls (PCBs):
    - 1) Found in electrical oil filled equipment manufactured prior to 1978 such as transformers, switches and fluorescent lamp ballasts.
    - 2) Also found in adhesive, sealant, caulk, glazing putty, roofing material, pesticide vehicle, ink, paper, fabric dye, gaskets, and hydraulic fluid.
  - d. HVAC Refrigerants: Containing Fluorinated and Chlorinated compounds.
  - e. Drinking Fountain Refrigerants: Containing Fluorinated and Chlorinated compounds.
  - f. Fluorescent Light Tubes: Contain mercury.
  - g. EXIT signs and Smoke Detectors: May contain unregulated, radioactive tritium. · Required to be returned to manufacturer.
  - h. Contaminated Soils.
  - i. Pressure Treated Lumber.
- F. Contractor shall submit periodic Waste Disposal Reports; all landfill disposal, recycling, salvage, and reuse must be reported regardless of to whom the cost or savings accrues; use the same units of measure on all reports.
  1. Contractor's quantitative reports for construction waste materials as a condition of approval of progress payments.
- G. Contractor shall develop and follow a Waste Management Plan designed to implement these requirements. CalGreen Section 5.408.1.1.
- H. The following sources may be useful in developing the Waste Management Plan:
  1. California Recycling Department, at [www.bsc.ca.gov/Home/CALGreen.aspx](http://www.bsc.ca.gov/Home/CALGreen.aspx).
  2. General information contacts regarding construction and demolition waste:

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- a. EPA Construction and demolition (C&D) debris website:  
[www.epa.gov/epawaste/conserve/imr/cdm/](http://www.epa.gov/epawaste/conserve/imr/cdm/).
  - b. Directory of Wood-Framed Building Deconstruction and Reused Building Materials Companies: [www.fpl.fs.fed.us/documnts/fplgtr/fpl\\_gtr150.pdf](http://www.fpl.fs.fed.us/documnts/fplgtr/fpl_gtr150.pdf).
  - c. Additional resources to be developed by Contractor with assistance from District and **Contractor, as requested.**
3. Recycling Haulers and Markets: The source list below contains local haulers and markets for recyclable materials. This list is provided for information only and is not necessarily comprehensive; other haulers and markets are acceptable.
- a. CAL-MAX: [www.calrecycle.ca.gov/calmax/](http://www.calrecycle.ca.gov/calmax/).
    - 1) A free service designed to help businesses find markets for non-hazardous materials they have traditionally discarded.
  - b. General Recycling/Reuse Centers: For information on qualified local solid waste haulers contact the California Department of Resources Recycling and Recovery - CalRecycle. The website lists wastes recycling facilities in counties throughout the State of California.
    - 1) <http://www.calrecycle.ca.gov/default.asp>
- I. Methods of trash/waste disposal that are not acceptable are:
- 1. Burning on the project site.
  - 2. Burying on the project site.
  - 3. Dumping or burying on other property, public or private.
  - 4. Other illegal dumping or burying.
  - 5. Incineration, either on- or off-site.
- J. Regulatory Requirements: Contractor is responsible for knowing and complying with regulatory requirements, including but not limited to Federal, state and local requirements, pertaining to legal disposal of all construction and demolition waste materials.

## 1.02 RELATED REQUIREMENTS

- A. Section 01 30 00 - Administrative Requirements: Additional requirements for project meetings, reports, submittal procedures, and project documentation.
- B. Section 01 50 00 - Temporary Facilities and Controls: Additional requirements related to trash/waste collection and removal facilities and services.
- C. Section 01 60 00 - Product Requirements: Waste prevention requirements related to delivery, storage, and handling.
- D. Section 01 70 00 - Execution and Closeout Requirements: Trash/waste prevention procedures related to demolition, cutting and patching, installation, protection, and cleaning.
- E. Section 31 10 00 - Site Clearing: Handling and disposal of land clearing debris.

## 1.03 DEFINITIONS

- A. Clean: Untreated and unpainted; not contaminated with oils, solvents, caulk, or the like.

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- B. Construction and Demolition Waste: Solid wastes typically including building materials, packaging, trash, debris, and rubble resulting from construction, remodeling, repair and demolition operations.
  - 1. Debris that is not hazardous as defined in CalGreen Section 5.408.2 and California Code of Regulations, Title 22, Section 66261.3 et seq.
  - 2. This term includes, but is not limited to, asphalt concrete, Portland cement concrete, brick, lumber, gypsum wallboard, cardboard and other associated packaging, roofing material, ceramic tile, carpeting, plastic pipe, and steel.
  - 3. 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. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.
- D. Diversion: Avoidance of demolition and construction waste sent to landfill or incineration. Diversion does not include using materials for landfill, alternate daily cover on landfills, or materials used as fuel in waste-to-energy processes.
- E. Enforcement Agency (EA). Enforcement agency as defined in CA Public Resources Code 40130.
- F. Hazardous: Exhibiting the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity or reactivity.
- G. Landfill, Inert waste or Inert Disposal Facility:
  - 1. 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.
- H. Landfill, Class III:
  - 1. A landfill that accepts non-hazardous resources such as household, commercial, and industrial waste, resulting from construction, remodeling, repair, and demolition operations.
  - 2. 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).
- I. Mixed Debris: Loads that include commingled recyclable and non-recyclable materials generated at the construction site.
- J. 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.
- K. Nonhazardous: Exhibiting none of the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity, or reactivity.
- L. Nontoxic: Neither immediately poisonous to humans nor poisonous after a long period of exposure.
- M. Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product for reuse by others.

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- N. Recycle: To remove a waste material from the project site to another site for remanufacture into a new product for reuse by others.
- O. Recycling: The process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for the purpose of using the altered form. Recycling does not include burning, incinerating, or thermally destroying waste.
- P. Recycling Center: A facility that receives only C&D 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.
- Q. Return: To give back reusable items or unused products to vendors for credit.
- R. Reuse: To reuse a construction waste material in some manner on the project site.
- S. Salvage: To remove a waste material from the project site to another site for resale or reuse by others.
- T. Sediment: Soil and other debris that has been eroded and transported by storm or well production run-off water.
- U. Separated for Reuse:
  - 1. Materials, including commingled recyclables.
  - 2. Separated or kept separate from the solid waste stream for the purpose of:
    - a. Additional sorting or processing those materials for reuse or recycling.
      - 1) In order to return them to the economic mainstream in the form of raw material for new, reused, or reconstituted products.
    - b. Products shall meet the quality standards necessary to be used in the marketplace.
    - c. Includes materials that have been "source separated".
- V. Solid Waste:
  - 1. All putrescible and nonputrescible solid, semisolid, and liquid wastes, including:
    - a. Garbage, trash, refuse, paper, rubbish, ashes, industrial wastes, demolition and construction wastes.
    - b. Abandoned vehicles and parts thereof.
    - c. Discarded home and industrial appliances.
    - d. Dewatered, treated, or chemically fixed sewage sludge which is not hazardous waste.
    - e. Manure, vegetable or animal solid and semisolid wastes.
    - f. Other discarded solid and semisolid wastes.
  - 2. "Solid waste" does not include hazardous waste, radioactive waste, or medical waste as defined or regulated by State law.
- W. Source Separation: The act of keeping different types of waste materials separate beginning from the first time they become waste.
  - 1. 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

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products which meet the quality standards necessary to be used in the marketplace.

- X. Toxic: Poisonous to humans either immediately or after a long period of exposure.
- Y. Trash: Any product or material unable to be reused, returned, recycled, or salvaged.
- Z. Waste: Extra material or material that has reached the end of its useful life in its intended use. Waste includes salvageable, returnable, recyclable, and reusable material.
- AA. Waste Hauler: A company that possesses a valid permit from the local waste management authority to collect and transport solid wastes from individuals or businesses for the purpose of recycling or disposal in the locality.

#### 1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Submit Waste Management Plan within 30 calendar days after receipt of Notice to Proceed, or prior to any trash or waste removal, whichever occurs sooner; submit projection of all trash and waste that will require disposal and alternatives to landfilling.
  - 1. Submit four copies of CWMP for review.
    - a. Contractor's Construction Waste and Recycling Plan must be approved by the Architect and Construction Manager prior to the start of Work.
  - 2. Approval of the Contractor's CWMP shall not relieve the Contractor of responsibility for adequate and continuing control of pollutants and other environmental protection measures.
- C. Waste Management Plan: Include the following information:
  - 1. Analysis of the trash and waste projected to be generated during the entire project construction cycle, including types and quantities.
  - 2. Landfill Options: The name, address, and telephone number of the landfill(s) where trash/waste will be disposed of, the applicable landfill tipping fee(s), and the projected cost of disposing of all project trash/waste in the landfill(s).
  - 3. Landfill Alternatives: List all waste materials that will be diverted from landfills by reuse, salvage, or recycling.
    - a. List each material proposed to be salvaged, reused, or recycled.
    - b. List the local market for each material.
  - 4. Meetings: Describe regular meetings to be held to address waste prevention, reduction, recycling, salvage, reuse, and disposal.
  - 5. Materials Handling Procedures: Describe the means by which materials to be diverted from landfills will be protected from contamination and prepared for acceptance by designated facilities; include separation procedures for recyclables, storage, and packaging.
  - 6. Transportation: Identify the destination and means of transportation of materials to be recycled; i.e. whether materials will be site-separated and self-hauled to designated centers, or whether mixed materials will be collected by a waste hauler.
  - 7. Recycling Incentives: Describe procedures required to obtain credits, rebates, or similar incentives.

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- D. Waste Disposal Reports: Submit at specified intervals, with details of quantities of trash and waste, means of disposal or reuse, and costs; show both totals to date and since last report.
1. Submit updated Report with each Application for Progress Payment; failure to submit Report will delay payment.
    - a. Inert materials shall achieve a construction waste diversion rate of at least 95 percent.
      - 1) These materials include, but are not limited to, concrete, asphalt and rock.
      - 2) Earthwork is not included.
      - 3) Excavated soil shall not be included in any of the calculations used to ensure compliance with this specification section.
    - b. The overall diversion rate must be based on weight.
    - c. The diversion rate of individual materials can be measured in either weight or volume, but the rate shall be converted into the units selected for calculating the overall diversion rate.
      - 1) All individual material diversions must be converted to a consistent set of units when calculating the overall diversion rate for the all reports and submittals required for the Work.
    - d. Conversion rate numbers shall be based on standard conversion rate data for construction projects provided by the California Integrated Waste Management Board (CIWMB). This data is available at the following internet location, <http://www.calrecycle.ca.gov/LGCentral/Library/dsg/ICandD.htm>.
  2. Submit Report on a form acceptable to District.
  3. Landfill Disposal: Include the following information:
    - a. Identification of material.
    - b. Amount, in tons or cubic yards, of trash/waste material from the project disposed of in landfills.
    - c. State the identity of landfills, total amount of tipping fees paid to landfill, and total disposal cost.
    - d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.
  4. Recycled and Salvaged Materials: Include the following information for each:
    - a. Identification of material, including those retrieved by installer for use on other projects.
    - b. Amount, in tons or cubic yards, date removed from the project site, and receiving party.
    - c. Transportation cost, amount paid or received for the material, and the net total cost or savings of salvage or recycling each material.
    - d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.
    - e. Certification by receiving party that materials will not be disposed of in landfills or by incineration.

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5. Material Reused on Project: Include the following information for each:
  - a. Identification of material and how it was used in the project.
  - b. Amount, in tons or cubic yards.
  - c. Include weight tickets as evidence of quantity.
6. Other Disposal Methods: Include information similar to that described above, as appropriate to disposal method.

## **PART 2 PRODUCTS**

### **2.01 PRODUCT SUBSTITUTIONS**

- A. See Section 01 60 00 - Product Requirements for substitution submission procedures.
- B. For each proposed product substitution, submit the following information in addition to requirements specified in Section 01 60 00:
  1. Relative amount of waste produced, compared to specified product.
  2. Cost savings on waste disposal, compared to specified product, to be deducted from the Contract Sum.
  3. Proposed disposal method for waste product.
  4. Markets for recycled waste product.

## **PART 3 EXECUTION**

### **3.01 WASTE MANAGEMENT PROCEDURES**

- A. See Section 01 30 00 for additional requirements for project meetings, reports, submittal procedures, and project documentation.
- B. See Section 01 50 00 for additional requirements related to trash/waste collection and removal facilities and services.
- C. See Section 01 60 00 for waste prevention requirements related to delivery, storage, and handling.
- D. See Section 01 70 00 for trash/waste prevention procedures related to demolition, cutting and patching, installation, protection, and cleaning.

### **3.02 WASTE MANAGEMENT PLAN IMPLEMENTATION**

- A. Manager: Designate an on-site person or persons responsible for instructing workers and overseeing and documenting results of the Waste Management Plan.
- B. Communication: Distribute copies of the Waste Management Plan to job site foreman, each subcontractor, District, and Architect.
- C. Instruction: Provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse, and return methods to be used by all parties at the appropriate stages of the project.
- D. Meetings: Discuss trash/waste management goals and issues at project meetings.
  1. Prebid meeting.

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2. Preconstruction meeting.
  3. Regular job-site meetings.
- E. Facilities: Provide specific facilities for separation and storage of materials for recycling, salvage, reuse, return, and trash disposal, for use by all contractors and installers.
1. As a minimum, provide:
    - a. Separate area for storage of materials to be reused on-site, such as wood cut-offs for blocking.
    - b. Separate dumpsters for each category of recyclable.
    - c. Recycling bins at worker lunch area.
  2. Provide containers as required.
  3. Provide temporary enclosures around piles of separated materials to be recycled or salvaged.
  4. Provide materials for barriers and enclosures that are nonhazardous, recyclable, or reusable to the maximum extent possible; reuse project construction waste materials if possible.
  5. Locate enclosures out of the way of construction traffic.
  6. Provide adequate space for pick-up and delivery and convenience to subcontractors.
  7. If an enclosed area is not provided, clearly lay out and label a specific area on-site.
  8. Keep recycling and trash/waste bin areas neat and clean and clearly marked in order to avoid contamination of materials.
- F. Hazardous Wastes: Separate, store, and dispose of hazardous wastes according to applicable regulations.
- G. Recycling: Separate, store, protect, and handle at the site identified recyclable waste products in order to prevent contamination of materials and to maximize recyclability of identified materials. Arrange for timely pickups from the site or deliveries to recycling facility in order to prevent contamination of recyclable materials.
- H. Reuse of Materials On-Site: Set aside, sort, and protect separated products in preparation for reuse.
- I. Salvage: Set aside, sort, and protect products to be salvaged for reuse off-site.

### 3.03 DISPOSAL OPERATIONS AND WASTE HAULING

- A. Remove waste materials from Project Site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.
1. Except for items or materials to be salvaged, recycled, or otherwise reused.
  2. Except as otherwise specified, do not allow waste materials that are to be disposed of to accumulate on site.
  3. 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.
  4. Become familiar with the conditions for acceptance of new construction, excavation and demolition materials at recycling facilities, prior to delivering materials.

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5. Deliver to facilities that can legally accept new construction, excavation and demolition materials for purpose of re-use, recycling, composting, or disposal.
6. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
7. Do not burn or bury waste materials on or off site. Appropriate on-site topical application of ground gypsum or wood, or use of site paving as granulated fill is considered reuse, not waste.

#### **3.04 PLAN AND REPORT FORMS**

- A. See suggested forms on the following pages.

**END OF SECTION**

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## CONTRACTOR'S CONSTRUCTION WASTE AND RECYCLING PLAN

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

Project Title:						
Contract or Work Order No.:						
Contractor's Name:						
Street Address:						
City:				State:		Zip:
Phone: (    )				Fax: (    )		
E-Mail Address:						
Prepared by: (Print Name)						
Date Submitted:						
Project Period:		From:			TO:	
Reuse, Recycling or Disposal Processes To Be Used						
Describe the types of recycling processes or disposal activities that will be used for material generated in the project. Indicate the type of process or activity by number, types of materials, and estimated quantities that will be recycled or disposed in the sections below:						
01 - Reuse of building materials or salvage items on site (i.e. crushed base or red clay brick)						
02 - Salvaging building materials or salvage items at an offsite salvage or re-use center (i.e. lighting, fixtures)						
03 - Recycling source separated materials on site (i.e. crushing asphalt/concrete for reuse or grinding for mulch)						
04 - Recycling source separated materials at an offsite recycling center (i.e. scrap metal or green materials)						
05 - Recycling commingled loads of C&D materials at an offsite mixed debris recycling center or transfer station						
06 - Recycling material as Alternative Daily Cover at landfills						
07 - Delivery of soils or mixed inerts to an inert landfill for disposal (inert fill).						
08 - Disposal at a landfill or transfer station.						
09 - Other (please describe) _____						
Types of Material To Be Generated						
Use these codes to indicate the types of material that will be generated on the project						
A = Asphalt		C = Concrete		M = Metals		I = Mixed Inert    G = Green Materials
D = Drywall		P/C=Paper/Cardboard		W/C = Wire/Cable		S= Soils (Non Hazardous)
M/C = Miscellaneous Construction Debris		R = Reuse/Salvage		W = Wood		O = Other (describe)
Facilities Used: Provide Name of Facility and Location (City)						
Total Truck Loads: Provide Number of Trucks Hauled from Site During Reporting Period						
Total Quantities: If scales are available at sites, report in tons. If not, quantify by cubic yards. For salvage/reuse items, quantify by estimated weight (or units).						
SECTION I - RE-USED/RECYCLED MATERIALS						
Include all recycling activities for source separated or mixed material recycling centers where recycling will occur.						
Type of Material	Type of Activity	Facility to be Used/Location	Total Truck Loads	Total Quantities		
				Tons	Cubic YD	Other Wt.
(ex.) M	04	ABC Metals, Los Angeles	24	355		
a. Total Diversion						

# CONTRACTOR'S CONSTRUCTION WASTE AND RECYCLING PLAN

Continued

SECTION II - DISPOSED MATERIALS						
Include all disposal activities for landfills, transfer stations, or inert landfills where no recycling will occur.						
Type of Material	Type of Activity	Facility to be Used/Location	Total Truck Loads	Total Quantities		
				Tons	Cubic YD	Other Wt.
(ex.) D	08	DEF Landfill, Los Angeles	2	35		
b. Total Disposal				0	0	0

SECTION III - TOTAL MATERIALS GENERATED			
This section calculates the total materials to be generated during the project period (Reuse/Recycle + Disposal = Generation)			
	Tons	Cubic YD	Other Wt.
a. Total Reused/Recycled	0	0	0
b. Total Disposed	0	0	0
c. Total Generated	0	0	0

SECTION IV - CONTRACTOR'S LANDFILL DIVERSION RATE CALCULATION			
Add totals from Section I + Section II			
	Tons	Cubic YD	Other Wt.
a. Materials Re-Used and Recycled	0		
b. Materials Disposed	0		
c. Total Materials Generated (a. + b. = c.)	0	0	0
d. Landfill Diversion Rate (Tonnage Only)*			

\* Use tons only to calculate recycling percentages: Tons Reused/Recycled/Tons Generated = % Recycled

Contractor's Comments (Provide any additional information pertinent to planned reuse, recycling, or disposal activities):

## Notes:

1. Suggested Conversion Factors: From Cubic Yards to Tons  
(Use when scales are not available)

- a. Asphalt: .61 (ex. 1000 CY Asphalt = 610 tons. Applies to broken chunks of asphalt)
- b. Concrete: .93 (ex. 1000 CY Concrete = 930 tons. Applies to broken chunks of concrete)

c. Ferrous Metals: .22 (ex. 1000 CY Ferrous Metal = 220 tons)

d. Non-Ferrous Metals: .10 (ex. 1000 CY Non-Ferrous Metals = 100 tons)

e. Drywall Scrap: .20

f. Wood Scrap: .16

# CONTRACTOR'S REUSE, RECYCLING, AND DISPOSAL REPORT

(Submit With Each Progress Payment)

Project Title:						
Contract or Work Order No.:						
Contractor's Name:						
Street Address:						
City:				State:		Zip:
Phone: (    )				Fax: (    )		
E-Mail Address:						
Prepared by: (Print Name)						
Date Submitted:						
Project Period:		From:		TO:		
Reuse, Recycling or Disposal Processes to Be Used						
Describe the types of recycling processes or disposal activities that will be used for material generated in the project. Indicate the type of process or activity by number, types of materials, and estimated quantities that will be recycled or disposed in the sections below:						
01 - Reuse of building materials or salvage items on site (i.e. crushed base or red clay brick)						
02 - Salvaging building materials or salvage items at an offsite salvage or re-use center (i.e. lighting, fixtures)						
03 - Recycling source separated materials on site (i.e. crushing asphalt/concrete for reuse or grinding for mulch)						
04 - Recycling source separated materials at an offsite recycling center (i.e. scrap metal or green materials)						
05 - Recycling commingled loads of C&D materials at an offsite mixed debris recycling center or transfer station						
06 - Recycling material as Alternative Daily Cover at landfills						
07 - Delivery of soils or mixed inerts to an inert landfill for disposal (inert fill).						
08 - Disposal at a landfill or transfer station.						
09 - Other (please describe) _____						
Types of Material To Be Generated						
Use these codes to indicate the types of material that will be generated on the project						
A = Asphalt		C = Concrete		M = Metals		I = Mixed Inert    G = Green Materials
D = Drywall		P/C=Paper/Cardboard		W/C = Wire/Cable		S= Soils (Non-Hazardous)
M/C = Miscellaneous Construction Debris		R = Reuse/Salvage		W = Wood		O = Other (describe)
Facilities Used: Provide Name of Facility and Location (City)						
Total Truck Loads: Provide Number of Trucks Hauled from Site During Reporting Period						
Total Quantities: If scales are available at sites, report in tons. If not, quantify by cubic yards. For salvage/reuse items, quantify by estimated weight (or units).						
SECTION I - RE-USED/RECYCLED MATERIALS						
Include all recycling activities for source separated or mixed material recycling centers where recycling will occur.						
Type of Material	Type of Activity	Facility to be Used/Location	Total Truck Loads	Total Quantities		
				Tons	Cubic YD	Other Wt.
(ex.) M	04	ABC Metals, Los Angeles	24	355		
a. Total Diversion						

# CONTRACTOR'S REUSE, RECYCLING, AND DISPOSAL REPORT

Continued

SECTION II - DISPOSED MATERIALS						
Include all disposal activities for landfills, transfer stations, or inert landfills where no recycling will occur.						
Type of Material	Type of Activity	Facility to be Used/Location	Total Truck Loads	Total Quantities		
				Tons	Cubic YD	Other Wt.
(ex.) D	08	DEF Landfill, Los Angeles	2	35		
b. Total Disposal						

SECTION III - TOTAL MATERIALS GENERATED			
This section calculates the total materials to be generated during the project period (Reuse/Recycle + Disposal = Generation)			
	Tons	Cubic YD	Other Wt.
a. Total Reused/Recycled			
b. Total Disposed			
c. Total Generated			

SECTION IV - CONTRACTOR'S LANDFILL DIVERSION RATE CALCULATION			
Add totals from Section I + Section II			
	Tons	Cubic YD	Other Wt.
a. Materials Re-Used and Recycled			
b. Materials Disposed			
c. Total Materials Generated (a. + b. = c.)			
d. Landfill Diversion Rate (Tonnage Only)*			

\* Use tons only to calculate recycling percentages: Tons Reused/Recycled/Tons Generated = % Recycled

Contractor's Comments (Provide any additional information pertinent to planned reuse, recycling, or disposal activities):

Notes:	
1. Suggested Conversion Factors: From Cubic Yards to Tons (Use when scales are not available)	c. Ferrous Metals: .22 (ex. 1000 CY Ferrous Metal = 220 tons)
a. Asphalt: .61 (ex. 1000 CY Asphalt = 610 tons. Applies to broken chunks of asphalt)	d. Non-Ferrous Metals: .10 (ex. 1000 CY Non-Ferrous Metals = 100 tons)
b. Concrete: .93 (ex. 1000 CY Concrete = 930 tons. Applies to broken chunks of concrete)	e. Drywall Scrap: .20
	f. Wood Scrap: .16

**SECTION 01 78 00  
CLOSEOUT SUBMITTALS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Project record documents.
- B. Operation and maintenance data.
- C. Warranties and bonds.

**1.02 RELATED REQUIREMENTS**

- A. Owner issued Bidding Instructions and General Conditions: Performance bond and labor and material payment bonds, warranty, and correction of work.
- B. Section 01 30 00 - Administrative Requirements: Submittals procedures, shop drawings, product data, and samples.
- C. Section 01 45 33 - Code-Required Special Inspections: Construction oversight procedures by DSA regarding the execution, approval, and closeout of this building project.
- D. Section 01 70 00 - Execution and Closeout Requirements: Contract closeout procedures.
- E. Individual Product Sections: Specific requirements for operation and maintenance data.
- F. Individual Product Sections: Warranties required for specific products or Work.
  - 1. Special Project warranty requirements for specific products or elements of the Work; commitments and agreements for continuing services to District.

**1.03 DEFINITIONS**

- A. Warranty: Assurance to District by Contractor, installer, supplier, manufacturer or other party responsible as warrantor, for the quantity, quality, performance and other representations of a product, system service of the Work, in whole or in part, for the duration of the specified period of time.
- B. Guarantee: Assurance to District by Contractor or product manufacturer or other specified party, as guarantor, that the specified warranty will be fulfilled by the guarantor in the event of default by the warrantor.
- C. Standard Product Warranty: Preprinted, written warranty published by product manufacturer for particular products and specifically endorsed by the manufacturer to the District.
- D. Special Project Warranty: Written warranty required by or incorporated into Contract Documents, to extend time limits provided by standard warranty or to provide greater rights for District.
- E. Correction Period: As defined in the Conditions of the Contract, Correction Period shall be synonymous with "warranty period", "guarantee period" and similar terms used in the Contract Specifications.

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#### 1.04 SUBMITTALS

- A. Advance Submittals: For equipment and systems, or component parts of systems, put into service during construction and operated by District, submit documents within ten days of start of operation by District.
- B. Final Completion Submittals: Prior to application for final payment, Contractor shall submit 3 copies the following:
  - 1. Agency Document Submittals: Submit to District all documents required by authorities having jurisdiction, including serving utilities and other agencies. Submit original versions of all permit cards, with final sign-off by inspectors. Submit all certifications of inspections and tests.
    - a. Contractor shall also complete all required contractor forms and obtain DSA approval of these same forms. Comply with "Final Certification of Construction" per Title 24 Part 1 section 4-339.
      - 1) Form-6.C: Verified Report – Contractor: From each Contractor having a contract with the District.
  - 2. Final Specifications Submittals: Submit to District all documents and products required by Specifications to be submitted, including the following:
    - a. Project record drawings and specifications.
    - b. Operating and maintenance data.
    - c. Guarantees, warranties and bonds.
    - d. Keys and keying schedule.
    - e. Spare parts and extra stock.
    - f. Test reports and certificates of compliance.
  - 3. Certificates of Compliance and Test Report Submittals: Submit to District certificates and reports as specified and as required by authorities having jurisdiction, including the following:
    - a. Sterilization of water systems.
    - b. Sanitary sewer system tests.
    - c. Gas system tests.
    - d. Lighting, power and signal system tests.
    - e. Ventilation equipment and air balance tests.
    - f. Fire sprinkler system tests.
    - g. Fire detection system, smoke alarms and dampers.
    - h. Roofing inspections and tests.
  - 4. Lien and Bonding Company Releases: Submit to District, with copy to Architect, evidence of satisfaction of encumbrances on Project by completion and submission of The American Institute of Architects Forms:
    - a. G706 - Contractor's Affidavit of Payment of Debts and Claims;
    - b. G706A - Contractor's Affidavit of Release of Liens;
    - c. (if applicable) G707 - Consent of Surety;
    - d. or forms as as agreed to by the District.

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- e. Comply also with other requirements of District, as directed.
  - f. All signatures shall be notarized.
- 5. Subcontractor List: Submit to two copies to District and two copies to Architect of updated Subcontractor and Materials Supplier List.
- 6. Warranty Documents: Prepare and submit to District all warranties and bonds as specified in Contract General Conditions and this Section.
- C. Project Record Documents: Submit documents to Architect with claim for final Application for Payment.
- D. Operation and Maintenance Data:
  - 1. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Architect will review draft and return one copy with comments.
  - 2. For equipment, or component parts of equipment put into service during construction and operated by District, submit completed documents within ten days after acceptance.
  - 3. Submit one copy of completed documents 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Architect comments. Revise content of all document sets as required prior to final submission.
  - 4. Submit two sets of revised final documents in final form within 10 days after final inspection.
- E. Warranties and Bonds:
  - 1. For equipment or component parts of equipment put into service during construction with District's permission, submit documents within 10 days after acceptance.
  - 2. Make other submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.
  - 3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty period.

#### 1.05 WARRANTIES AND GUARANTEES

- A. General:
  - 1. Provide all warranties and guarantees with District named as beneficiary.
  - 2. For equipment and products, or components thereof, bearing a manufacturer's warranty or guarantee that extends for a period of time beyond the Contractor's warranty and guarantee, so state in the warranty or guarantee.
- B. Provisions for Special Warranties: Refer to Conditions of the Contract for terms of the Contractor's special warranty of workmanship and materials.
- C. General Warranty and Guarantee Requirements:
  - 1. Warranty shall be an agreement to repair or replace, without cost and undue hardship to District, Work performed under the Contract which is found to be defective during the Correction Period (warranty or guarantee) period.
  - 2. Repairs and replacements due to improper maintenance or operation, or due to normal wear, usage and weathering are excluded from warranty requirements unless otherwise

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specified.

- D. Specific Warranty and Guarantee Requirements: Specific requirements are included in product Specifications Sections of Divisions 03 through 33, including content and limitations.
- E. Disclaimers and Limitations:
  - 1. Manufacturer's disclaimers and limitations on product warranties and guarantees shall not relieve Contractor of responsibility for warranty and guarantee requirements.
  - 2. This applies to the Work that incorporates such products, nor shall they relieve suppliers, manufacturers, and installers required to countersign special warranties with Contractor.
- F. Related Damages and Losses: When correcting warranted Work that has been found defective, remove and replace other Work that has been damaged as a result of such defect or that must be removed and replaced to provide access for correction of warranted Work.
- G. Reinstatement of Warranty:
  - 1. When Work covered by a warranty has been found defective and has been corrected by replacement or rebuilding, reinstate the warranty by written endorsement.
  - 2. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.
- H. Replacement Cost:
  - 1. Upon determination that Work covered by a warranty has been found to be defective, replace or reconstruct the Work to a condition acceptable to District, complying with applicable requirements of the Contract Documents.
  - 2. Contractor shall be responsible for all costs for replacing or reconstructing defective Work regardless of whether District has benefited from use of the Work through a portion of its anticipated useful service life.
- I. District's Recourse:
  - 1. Written warranties made to the District shall be in addition to implied warranties, and shall not limit the duties, obligations, rights and remedies otherwise available under law, nor shall warranty periods be interpreted as limitations on time in which the District can enforce such other duties, obligations, rights, or remedies.
  - 2. Rejection of Warranties:
    - a. The District reserves the right to reject warranties and to limit selections to products with warranties not in conflict with requirements of the Contract Documents.
- J. Warranty as Condition of Acceptance:
  - 1. District reserves the right to refuse to accept Work for the Project where a special warranty, certification, or similar commitment shall be required on such Work or part of the Work, until evidence is presented that entities required to countersign such commitments are willing to do so.

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## PART 2 PRODUCTS - NOT USED

## PART 3 EXECUTION

### 3.01 PROJECT RECORD DOCUMENTS

- A. Record Documents are to be maintained and submitted in searchable live electronic format (PDF).
  - 1. Develop in compliance with Section 01 30 00 - Administrative Requirements.
  - 2. Acceptable markup software:
    - a. Adobe Acrobat Professional.
    - b. Bluebeam Revu.
- B. Maintain on site one set of the following record documents; record actual revisions to the Work:
  - 1. Contract Drawings.
  - 2. Project Manual with Specifications.
  - 3. Addenda.
  - 4. Change Orders and other modifications to the Contract.
  - 5. Reviewed shop drawings, product data, and samples.
  - 6. Manufacturer's instruction for assembly, installation, and adjusting.
- C. Ensure entries are complete and accurate, enabling future reference by District.
- D. Store record documents separate from documents used for construction.
- E. Record information concurrent with construction progress.
- F. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
  - 1. Manufacturer's name and product model and number.
  - 2. Product substitutions or alternates utilized.
  - 3. Changes made by Addenda and modifications.
  - 4. Provide copies of all approved addenda, directives, corrections, and change orders affecting the associated project.
    - a. These copies shall be included with the "Bid Set" and/or "Record Set" listed above and formatted as detailed above.
- G. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
  - 1. Reproducible set of Contract Drawings will be provided to Contractor by District through Architect or DSA.
  - 2. Measured depths of foundations in relation to finish first floor datum.
  - 3. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.

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4. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
5. Field changes of dimension and detail.
6. Details not on original Contract drawings.
  - a. Application of copies of details produced and provided by Architect during construction will be accepted.
- H. Submission: Submit Record Documents in searchable (live text and redlines mark-ups; not scanned) PDF format to Architect prior to final Application for Payment.
  1. Maintain one additional paper copy and one in PDF format (on CD) of the fire suppression and fire protection detection system drawings and specifications at the building premises.
    - a. One copy is to be kept on site for a period of three years to comply with CFC section 901.6.2.

### **3.02 OPERATION AND MAINTENANCE DATA**

- A. Source Data: For each product or system, list names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.
- B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.
- C. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.
- D. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

### **3.03 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES**

- A. For Each Product, Applied Material, and Finish:
  1. Product data, with catalog number, size, composition, and color and texture designations.
  2. Information for re-ordering custom manufactured products.
- B. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.
- C. Moisture protection and weather-exposed products: Include product data listing applicable reference standards, chemical composition, and details of installation. Provide recommendations for inspections, maintenance, and repair.
- D. Additional information as specified in individual product specification sections.
- E. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.

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### 3.04 WARRANTIES AND BONDS

- A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with District's permission, leave date of beginning of time of warranty until Date of Substantial completion is determined.
- B. Project Warranty and Guarantee Forms:
  - 1. Example forms for special Project warranties and guarantees are included at the end of this Section.
  - 2. Prepare written documents utilizing the appropriate form, ready for execution by the Contractor, or the Contractor and subcontractor, supplier or manufacturer.
    - a. Submit a draft to District through Architect for approval prior to final execution.
  - 3. Refer to product Specifications Sections of Divisions 2 through 33 for specific content requirements, and particular requirements for submittal of special warranties.
  - 4. Prepare standard warranties and guarantees, excepting manufacturers' standard printed warranties and guarantees, on Contractor's, subcontractor's, material supplier's, or manufacturer's own letterhead, addressed to District.
  - 5. Warranty and guarantee letters shall be signed by all responsible parties and by Contractor in every case, with modifications only as approved in advance by District to suit the conditions pertaining to the warranty or guarantee.
- C. Manufacturer's Guarantee Form:
  - 1. Manufacturer's guarantee form may be used in lieu of special Project form included at the end of this Section.
  - 2. Manufacturer's guarantee form shall contain appropriate terms and identification, ready for execution by the required parties.
  - 3. If proposed terms and conditions restrict guarantee coverage or require actions by District beyond those specified, submit draft of guarantee to District through Architect for review and acceptance before performance of the Work.
  - 4. In other cases, submit draft of guarantee to District through Architect for approval prior to final execution of guarantee.
- D. Signatures: Signatures shall be by person authorized to sign warranties, guarantees and bonds on behalf of entity providing such warranty, guarantee or bond.
- E. Co-Signature: All installer's warranties and bonds shall be co-signed by Contractor. Manufacturer's guarantees will not require co-signature.
- F. Verify that documents are in proper form, contain full information, and are notarized.
- G. Co-execute submittals when required.
- H. Retain warranties and bonds until time specified for submittal.
- I. Manual: Bind in commercial quality 8-1/2 by 11 inch three D side ring binders with durable plastic covers.
- J. Cover: Identify each binder with typed or printed title WARRANTIES AND BONDS, with title of Project; name, address and telephone number of Contractor and equipment supplier; and name of responsible company principal.

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1. If more than one volume of warranties, guarantees and bonds is produced, identify volume number on binder.
- K. Table of Contents: Neatly typed, in the sequence of the Table of Contents of the Project Manual, with each item identified with the number and title of the specification section in which specified, and the name of product or work item.
- L. Separate each warranty or bond with index tab sheets keyed to the Table of Contents listing. Provide full information, using separate typed sheets as necessary. List Subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.
- M. Form of Warranty and Bond Submittals:
  1. Prior to final Application and Certificate for Payment, compile two copies of each required warranty, guarantee and bond, properly executed by Contractor, or jointly by Contractor, subcontractor, supplier, or manufacturer.
  2. Collect and assemble all written warranties and guarantees into binders and deliver binders to District for final review and acceptance.
  3. Include Table of Contents for binder, neatly typed, following order and Section numbers and titles as used in the Project Manual.
  4. Provide heavy paper dividers with celluloid or plastic covered tabs for each separate warranty.
    - a. Mark tabs to identify products or installation, and Section number and title.
  5. Include on separate typed sheet, if information is not contained in warranty or guarantee form, a description of the product or installation, and the name, address, telephone number and responsible person for applicable installer, supplier and manufacturer.
  6. When operating and maintenance data manuals are required for warranted construction, include additional copies of each required warranty and guarantee in each required manual.
    - a. Coordinate with requirements listed in the prior articles for operating and maintenance data manuals.

### 3.05 TIME OF WARRANTY AND BOND SUBMITTALS

- A. Submission of Preliminary Copies:
  1. Unless otherwise specified, obtain preliminary copies of warranties, guarantees and bonds within ten days of completion of applicable item or Work.
  2. Prepare and submit preliminary copies for review as specified herein.
- B. Submission of Final Copies:
  1. Submit fully executed copies of warranties, guarantees and bonds within ten days of date identified in Certificate of Completion but no later than three days prior to date of final Application for Payment.
- C. Date of Warranties and Bonds:
  1. Unless otherwise directed or specified, commencement date of warranty, guarantee and bond periods shall be the date established in the Certificate of Completion.
  2. Warranties for Work accepted in advance of date stated in Certificate of Completion:

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- a. When a designated system, equipment, component parts or other portion of the Work is completed and occupied or put to beneficial use by District:
  - 1) By separate agreement with Contractor, prior to completion date established in the Certificate of Completion, submit properly executed warranties to District within ten days of completion of that designated portion of the Work.
  - 2) List date of commencement of warranty, guarantee or bond period as the date established in the Certificate of Completion.
- 3. Warranties for Work not accepted as of date established in the Certificate of Completion:
  - a. Submit documents within ten days after acceptance, listing date of acceptance as beginning of warranty, guarantee or bond period.
- D. Duration of Warranties and Guarantees:
  - 1. Unless otherwise specified or prescribed by law, warranty and guarantee periods shall be not less than the Correction Period required by the Conditions of the Contract.
  - 2. In no case, the period is to be less than one year from the date established for completion of the Project in the Certificate of Completion.
  - 3. See product Specifications Sections of the Project Manual for extended warranty and guarantee beyond the minimum one year duration.

**END OF SECTION**

Grossmont Union High School District Valhalla High School <b>Battery Replacement</b> RCA Project No. 1-30-56		Closeout Submittals 01 78 00 - 9
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**SECTION 01 78 00.01  
WARRANTY FORM LETTER**

**FOR CONTRACTOR'S / SUBCONTRACTOR'S / MANUFACTURER'S WARRANTY**

CONTRACTOR'S/SUBCONTRACTOR'S/SUPPLIER'S LETTERHEAD

**SPECIAL LIMITED PROJECT WARRANTY FOR \_\_\_\_\_ WORK.**

We, the undersigned, do hereby warrant that the portion of the Work described above which we have provided for Battery Replacement is in accordance with the Contract Documents and that all such Work as installed will fulfill or exceed all minimum warranty requirements. We agree to repair or replace Work installed by us, together with any adjacent Work which is displaced or damaged by so doing, that proves to be defective in workmanship, material, or function within a period of (years), commencing (date identified in Certificate of Completion, unless otherwise directed) and terminating (date).

The following terms and conditions apply to this warranty (obtain District 's approval before submission):

In the event of our failure to comply with the above-mentioned conditions within a reasonable time period determined by the District , after notification in writing, we, the undersigned, all collectively and separately, hereby authorize the District to have said defective Work repaired or replaced to be made good, and agree to pay to the District upon demand all moneys that the District may expend in making good said defective Work, including all collection costs and reasonable attorney fees.

**LOCAL REPRESENTATIVE: FOR WARRANTY MAINTENANCE, REPAIR, OR REPLACEMENT SERVICE, CONTACT:**

(Name) \_\_\_\_\_  
(Address) \_\_\_\_\_  
(City) \_\_\_\_\_ (State) \_\_\_\_\_ (ZIP) \_\_\_\_\_  
(Phone) \_\_\_\_\_ / \_\_\_\_\_  
(signed) \_\_\_\_\_  
(Date) \_\_\_\_\_ (Typed Name) \_\_\_\_\_  
(Title) \_\_\_\_\_ (Firm) \_\_\_\_\_

**CONTRACTOR:**

State License No: \_\_\_\_\_  
(signed) \_\_\_\_\_  
(Date) \_\_\_\_\_ (Typed Name) \_\_\_\_\_  
(Title) \_\_\_\_\_ (Firm) \_\_\_\_\_

**FORM LETTER**

Grossmont Union High School District Valhalla High School <b>Battery Replacement</b> RCA Project No. 1-30-56		Warranty Form Letter 01 78 00.01 - 1
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## FORM LETTER

### FOR CONTRACTOR'S / MANUFACTURER'S GUARANTEE

CONTRACTOR'S / MANUFACTURER'S LETTERHEAD

#### SPECIAL LIMITED PROJECT [☐ WARRANTY] [☐ GUARANTEE] FOR \_\_\_\_\_ WORK.

We, the undersigned, do hereby [☐ warrant] [☐ guarantee] that the portion of the Work described above which [☐ we have provided] [☐ was provided by (Installer or Subcontractor's Name)\_\_\_\_] for Battery Replacement in accordance with the Contract Documents and that all such Work as installed will fulfill or exceed all minimum warranty requirements. We agree to repair or replace Work installed by [☐ us,] [☐ (Installer or Subcontractor's Name)\_\_\_\_] together with any adjacent Work which is displaced or damaged by so doing, that proves to be defective in workmanship, material, or function within a period of (years), commencing (date indicated in Certificate of Completion, unless otherwise directed) and terminating (date).

The following terms and conditions apply to this [☐ warranty] [☐ guarantee] (obtain District's approval before submission):

In the event of our failure to comply with the above-mentioned conditions within a reasonable time period determined by the District, after notification in writing, we, the undersigned, all collectively and separately, hereby authorize the District to have said defective Work repaired or replaced to be made good, and agree to pay to the District upon demand all moneys that the District may expend in making good said defective Work, including all collection costs and reasonable attorney fees.

#### LOCAL REPRESENTATIVE: FOR WARRANTY MAINTENANCE, REPAIR, OR REPLACEMENT SERVICE, CONTACT:

(Name) \_\_\_\_\_  
(Address) \_\_\_\_\_  
(City) \_\_\_\_\_ (State) \_\_\_\_\_ (ZIP) \_\_\_\_\_  
(Phone) \_\_\_\_\_ / \_\_\_\_\_  
(signed) \_\_\_\_\_  
(Date) \_\_\_\_\_ (Typed Name) \_\_\_\_\_  
(Title) \_\_\_\_\_ (Firm) \_\_\_\_\_

#### CONTRACTOR:

State License No: \_\_\_\_\_  
(signed) \_\_\_\_\_  
(Date) \_\_\_\_\_ (Typed Name) \_\_\_\_\_  
(Title) \_\_\_\_\_ (Firm) \_\_\_\_\_

## FORM LETTER

Grossmont Union High School District Valhalla High School <b>Battery Replacement</b> RCA Project No. 1-30-56		Warranty Form Letter 01 78 00.01 - 2
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END OF SECTION

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## SECTION 02 41 00 DEMOLITION

### PART 1 GENERAL

#### 1.01 SECTION INCLUDES

- A. Selective demolition of building elements for alteration purposes.

#### 1.02 RELATED REQUIREMENTS

- A. Section 01 10 00 - Summary: Limitations on Contractor's use of site and premises.
- B. Section 01 10 00 - Summary: Description of items to be removed by District.
- C. Section 01 60 00 - Product Requirements: Handling and storage of items removed for salvage and relocation.
- D. Section 01 74 19 - Construction Waste Management and Disposal: Limitations on disposal of removed materials; requirements for recycling.

#### 1.03 REFERENCE STANDARDS

- A. 29 CFR 1926 - U.S. Occupational Safety and Health Standards.
- B. CFC Ch. 33 - Fire Safety During Construction and Demolition.
- C. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations.

#### 1.04 DEFINITIONS

- A. Remove: Remove and legally dispose of items, except those identified for use in recycling, re-use, and salvage programs.
- B. Environmental Pollution and Damage: The presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human or animal life; affect other species of importance to humanity; or degrade the utility of the environment for aesthetic, cultural or historical purposes.
- C. Inert Fill: A permitted facility that accepts inert waste such as asphalt and concrete exclusively for the purpose of disposal.
  - 1. Inert Solids/Inert Waste: Non-liquid solid waste including, but not limited to, soil and concrete, that does not contain hazardous substances or soluble pollutants at concentrations in excess of water-quality standards established by a regional water board and does not contain significant quantities of decomposable solid waste.
- D. Class III Landfill: A landfill that accepts non-hazardous materials 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 State of California.
- E. Demolition Waste: Building materials and solid waste resulting from construction, remodeling, repair, cleanup, or demolition operations that are not hazardous. This term includes, but is not limited to, asphalt concrete, Portland cement concrete, brick, lumber, gypsum wallboard,

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cardboard and other associated packaging, roofing material, ceramic tile, carpeting, plastic pipe, and steel. The materials may include rock, soil, tree stumps, and other vegetative matter resulting from land clearing and landscaping for construction or land development projects.

- F. Chemical Waste: Includes petroleum products, bituminous materials, salts, acids, alkalis, herbicides, pesticides, organic chemicals and inorganic wastes.
- G. 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.
- H. Reuse: The use, in the same or similar form as it was produced, of a material which might otherwise be discarded.
- I. 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.

#### 1.05 ADMINISTRATIVE REQUIREMENTS

- A. Pre-Construction Conference: Conduct a pre-construction conference one week prior to the start of the work of this section; require attendance by all affected trades.
- B. Convene a conference at the Project site 3 days prior to starting demolition to review the Drawings and Specifications, requirements of authorities having jurisdiction, instructions and requirements of serving utilities, sequencing and interface considerations and project conditions.
- C. Conference shall be attended by DSA, supervisory and quality control personnel of Contractor and all subcontractors performing this and directly-related Work.
- D. Submit minutes of meeting to District, Project Inspector and Architect, for Project record purposes.
- E. Sequencing: Ensure that utility connections are achieved in an orderly and expeditious manner.
  - 1. Refer to sequence requirements specified in Section 01 10 00 - Summary; and construction progress schedule requirements specified in Section 01 30 00 - Administrative Requirements.

#### 1.06 MATERIALS OWNERSHIP

- A. Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain property of Grossmont Union High School District, demolished materials shall become the Contractor's property and shall be removed, recycled, or disposed from Project site in an appropriate and legal manner.
  - 1. Arrange a meeting no less than ten (10) days prior to demolition with the District or DSA and other designated representatives to review any salvagable items to determine if District wants to retain ownership, and discuss Contractor's Waste Management and Recycling Plan.

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### 1.07 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Project Record Documents: Accurately record actual locations of capped and active utilities and subsurface construction.
  - 1. Record drawings: Identify and accurately locate capped utilities and other subsurface structural, electrical, or mechanical conditions.

### 1.08 SCHEDULING

- A. Schedule Work to precede new construction.
- B. Describe demolition removal procedures and schedule.
- C. Perform work between the hours of 8am and 5pm, subject to noise abatement regulations and District's approval for noise considerations.

## PART 2 PRODUCTS -- NOT USED

## PART 3 EXECUTION

### 3.01 GENERAL PROCEDURES AND PROJECT CONDITIONS

- A. Conform to the relevant Article of the General Conditions, local Air Quality Management District and other applicable regulatory procedures when discovering hazardous or contaminated materials.
- B. Field Measurements and Conditions:
  - 1. Survey existing conditions and correlate with requirements indicated to determine extent of demolition and recycling required.
  - 2. In addition to provisions of the Conditions of the Contract, verify dimensions and field conditions prior to construction. Verify condition of substrate and adjoining Work before proceeding with demolition Work. If conflict is found notify DSA, Project Inspector and Architect.
- C. Comply with governing EPA notification regulations before starting demolition. Comply with hauling and disposal regulations of authorities having jurisdiction. Obtain and pay for all permits required.
- D. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
  - 1. Obtain required permits.
  - 2. Comply with applicable requirements of NFPA 241 and CFC Ch. 33.
  - 3. Use physical barriers to prevent access to areas that could be hazardous to workers or the public.
  - 4. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
  - 5. Do not close or obstruct roadways or sidewalks without permit.

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6. Conduct operations to minimize obstruction of public and private entrances and exits; do not obstruct required exits at any time; protect persons using entrances and exits from removal operations.
7. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon or limit access to their property.
- E. Do not begin removal until receipt of notification to proceed from District.
- F. Protect existing structures and other elements that are not to be removed.
  1. Provide bracing and shoring.
  2. Prevent movement or settlement of adjacent structures.
  3. Stop work immediately if adjacent structures appear to be in danger.
- G. Hazardous Materials: Comply with 29 CFR 1926 and state and local regulations.
- H. Remove materials to be re-installed or retained in manner to prevent damage. Store and protect in accordance with requirements of Section 01 60 00 - Product Requirements.
- I. Damages: Promptly repair damages to adjacent facilities caused by demolition operations.

### **3.02 SELECTIVE DEMOLITION FOR ALTERATIONS**

- A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
  1. Verify that construction and utility arrangements are as indicated.
  2. Report discrepancies to Architect before disturbing existing installation.
  3. Beginning of demolition work constitutes acceptance of existing conditions that would be apparent upon examination prior to starting demolition.
- B. Remove existing work as indicated and as required to accomplish new work.
  1. Remove items indicated on drawings.
- C. Protect existing work to remain.
  1. Prevent movement of structure; provide shoring and bracing if necessary.
  2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
  3. Repair adjacent construction and finishes damaged during removal work.
  4. Patch as specified for patching new work.

### **3.03 DEBRIS AND WASTE REMOVAL**

- A. Remove debris, junk, and trash from site.
- B. Remove from site all materials not to be reused on site; comply with requirements of Section 01 74 19 - Waste Management.
- C. Leave site in clean condition, ready for subsequent work.
- D. Clean up spillage and wind-blown debris from public and private lands.

### **END OF SECTION**

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**SECTION 03 30 00  
CAST-IN-PLACE CONCRETE**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Concrete formwork.
- B. Concrete foundations and anchor bolts.
- C. Concrete reinforcement.
- D. Joint devices associated with concrete work.
- E. Concrete curing.

**1.02 RELATED REQUIREMENTS**

- A. Section 32 13 13 - Site Concrete: Sidewalks, curbs and gutters.

**1.03 REFERENCE STANDARDS**

- A. ACI 117 - Specifications for Tolerances for Concrete Construction and Materials.
- B. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete.
- C. ACI 301 - Specifications for Structural Concrete.
- D. ACI 302.1R - Guide to Concrete Floor and Slab Construction.
- E. ACI 302.2R - Guide for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials.
- F. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete.
- G. ACI 305R - Guide to Hot Weather Concreting.
- H. ACI 306R - Guide to Cold Weather Concreting.
- I. ACI 308R - Guide to External Curing of Concrete.
- J. ACI 318 - Building Code Requirements for Structural Concrete and Commentary.
- K. ACI 347R - Guide to Formwork for Concrete.
- L. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
- M. ASTM C33/C33M - Standard Specification for Concrete Aggregates.
- N. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
- O. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete.
- P. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or (50-mm) Cube Specimens).
- Q. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic-Cement Concrete.
- R. ASTM C171 - Standard Specification for Sheet Materials for Curing Concrete.
- S. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete.

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- T. ASTM C579 - Standard Test Methods for Compressive Strength of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing, and Polymer Concretes.
- U. ASTM C827/C827M - Standard Test Method for Change in Height at Early Ages of Cylindrical Specimens of Cementitious Mixtures.
- V. ASTM C1107/C1107M - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink).
- W. ASTM C1602/C1602M - Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete.
- X. ASTM D1709 - Standard Test Methods for Impact Resistance of Plastic Film by the Free-Falling Dart Method.
- Y. ASTM D695 - Standard Test Method for Compressive Properties of Rigid Plastics.
- Z. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs.

#### 1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements and installation instructions.
  - 1. Including printed statement of VOC content and material safety data sheets.
- C. Mix Design: Submit proposed concrete mix design.
  - 1. Indicate proposed mix design complies with requirements of ACI 301, Section 4 - Concrete Mixtures.
  - 2. Indicate proposed mix design complies with requirements of ACI 318, Chapter 19 - Concrete: Design and Durability Requirements, and Chapter 26 - Construction Documents and Inspection..
- D. Samples: Submit samples of underslab vapor retarder to be used.
- E. Test Reports: Submit report for each test or series of tests specified.
- F. Mix Design: Submit mix designs prepared, stamped and signed by a Civil Engineer licensed in the State of California.
- G. Quality Control Submittals:
  - 1. Field tests: Submit reports of all slump, strength and air content tests as required by authorities having jurisdiction and as indicated on the Drawings and specified herein.
  - 2. Delivery tickets: Have available copies of delivery tickets complying with ASTM C94/C94M for each load of concrete delivered to site. Include on the tickets the additional information specified in the ASTM document.
- H. Manufacturer's Installation Instructions: For concrete accessories, indicate installation procedures and interface required with adjacent construction.
- I. Project Record Documents: Accurately record actual locations of embedded utilities and components that are concealed from view upon completion of concrete work.

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## 1.05 QUALITY ASSURANCE

- A. Perform work of this section in accordance with ACI 301 and ACI 318.
  - 1. Maintain one copy of each document on site.
- B. Follow recommendations of ACI 305R when concreting during hot weather .
- C. When air temperature in the shade and away from artificial heat falls below 40 degrees F, or when concrete without special protection is likely to be subject to freezing temperatures before expiration of specified curing period, follow recommendations of ACI 306R when concreting during cold weather.
- D. Regulatory Requirements:
  - 1. Conform to California Building Code (CBC) Chapter 19A requirement, as amended and adopted by authorities having jurisdiction.
  - 2. Chemical products field-applied to concrete shall comply with applicable air quality requirements of authorities having jurisdiction.
    - a. Comply with Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions, CALGreen Section 5.504.4 Finish material pollutant control; 5.504.4.1 Adhesives, sealants and caulks; 5.504.4.3 Paints and coatings.
- E. Testing Agency Services: District will engage an independent testing and inspection agency to conduct tests and perform other services specified for quality control during construction, as required by Sections 01 40 00 - Quality Requirements and Section 01 45 33 - Code-Required Special Inspections.
- F. Coordination: Coordinate the placement of joint devices with erection of concrete formwork and placement of form accessories. Coordinate concrete requirements with Work specified for underground utilities and mechanical and electrical equipment pads and bases.

## 1.06 DELIVERY AND HANDLING

- A. Protection During Concrete Placement: Provide protective coverings and runways, and use appropriate equipment and means of access to Work areas to avoid soiling or damage to existing conditions.
- B. Runoff: Prevent run off of water contaminated by construction agents and chemicals from soiling existing surfaces and from contaminating existing and future landscape areas.

## PART 2 PRODUCTS

### 2.01 FORMWORK

- A. Formwork Design and Construction: Comply with guidelines of ACI 347R to provide formwork that will produce concrete complying with tolerances of ACI 117.
- B. Form Materials: Contractor's choice of standard products with sufficient strength to withstand hydrostatic head without distortion in excess of permitted tolerances.
  - 1. Form Facing for Exposed Finish Concrete: Contractor's choice of materials that provides a smooth, stain-free final appearance.
  - 2. Earth Cuts: Do not use earth cuts as forms for vertical surfaces. Natural rock formations that maintain a stable vertical edge may be used as side forms.

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3. Form Coating: Release agent that does not adversely affect concrete or interfere with application of coatings.

## 2.02 REINFORCEMENT MATERIALS

- A. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi).
  1. Type: Deformed billet-steel bars.
  2. Finish: Unfinished, unless otherwise indicated.
- B. Reinforcement Accessories:
  1. Tie Wire: Annealed, minimum 16 gauge, 0.0508 inch.
  2. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for adequate support of reinforcement during concrete placement.
  3. Provide galvanized, plastic, or plastic coated steel components for placement within 1-1/2 inches of weathering or wet surfaces.

## 2.03 CONCRETE MATERIALS

- A. Cement: ASTM C150/C150M, Type II - Moderate Portland type.
  1. Cement used in contact with soil shall be Type V - Sulfate Resistant.
  2. Acquire cement for entire project from same source.
- B. Fine and Coarse Aggregates: ASTM C33/C33M.
  1. Acquire aggregates for entire project from same source.
- C. Water: ASTM C1602/C1602M; clean, potable, and not detrimental to concrete.

## 2.04 ADMIXTURES

- A. Chemical Admixture:
  1. Use no admixtures not included in mix design. Products of the following manufacturers are specified and will be acceptable provided they comply with referenced standards all other requirements of the Contract Documents:
    - a. Manufacturers:
      - 1) BASF Building Systems: [www.buildingsystems.basf.com](http://www.buildingsystems.basf.com).
      - 2) Dayton Superior Corporation: [www.daytonsuperior.com](http://www.daytonsuperior.com).
      - 3) Euclid Chemical Co.: [www.euclidchemical.com](http://www.euclidchemical.com).
      - 4) L&M Construction Chemicals, Inc.: [www.lmcc.com](http://www.lmcc.com).
      - 5) Larsen Products Corp.: [www.larsenproducts.com](http://www.larsenproducts.com).
      - 6) MeadowBurke Co.: [meadowburke.com](http://meadowburke.com).
      - 7) W.R. Meadows, Inc.: [www.wrmeadows.com](http://www.wrmeadows.com).
      - 8) Sika Corporation; [www.us.sika.com](http://www.us.sika.com).
      - 9) Simpson Strong-Tie: [www.strongtie.com](http://www.strongtie.com)
      - 10) Specialty Products Group: [www.SPGGoGreen.com](http://www.SPGGoGreen.com).
      - 11) US Spec Division of US Mix Products Co.: [www.usspec.com](http://www.usspec.com).

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- 12) Substitutions: See Section 01 60 00 - Product Requirements.
- B. Do not use chemicals that result in soluble chloride ions in excess of 0.1 percent by weight of cement.
  - C. Water Reducing and Accelerating Admixture: ASTM C494/C494M Type E.
    - 1. Manufacturers:
      - a. Euclid Chemical Company; ACCELGUARD 80: [www.euclidchemical.com/#sle](http://www.euclidchemical.com/#sle).
      - b. Accelguard 80 by Euclid Chemical Co.
      - c. Pozzutec 20 by Master Builders Technology, Inc.
      - d. Substitutions: See Section 01 60 00 - Product Requirements.
  - D. Water Reducing and Retarding Admixture: ASTM C494/C494M Type D.
    - 1. Manufacturers:
      - a. L.M. Scofield Company: [www.scofield.com](http://www.scofield.com).
      - b. Eucon Retarder 75 by Euclid Chemical Co.
      - c. Pozzolith R by Master Builders Technology, Inc.
      - d. Plastiment by Sika Corporation.
      - e. Substitutions: See Section 01 60 00 - Product Requirements.
  - E. Water Reducing Admixture: ASTM C494/C494M Type A.
    - 1. Manufacturers:
      - a. Euclid Chemical Company; EUCON NW: [www.euclidchemical.com/#sle](http://www.euclidchemical.com/#sle).
      - b. Eucon WR-75 by Euclid Chemical Co.
      - c. Pozzolith Normal or Polyheed by Master Builders Technology, Inc.
      - d. Plastocrete 161 by Sika Corporation.
      - e. Substitutions: See Section 01 60 00 - Product Requirements.

## 2.05 ACCESSORY MATERIALS

- 1. Sheet Material: ASTM E1745, Class A; stated by manufacturer as suitable for installation in contact with soil or granular fill under concrete slabs. Single ply polyethylene is prohibited.
- 2. Performance Requirements:
  - a. Comply with ACI 302.1R and ACI 302.2R.
  - b. Water Vapor Permeance: Not more than 0.010 perms, maximum.
    - 1) Permeance as tested after conditioning (ASTM E1745).
  - c. Comply with ASTM E1745 Class A.
  - d. Puncture Resistance, ASTM D1709: 2,300 gms.
- 3. Accessory Products: Vapor retarder manufacturer's recommended tape, adhesive, mastic, prefabricated boots, etc., for sealing seams and penetrations.
- 4. Manufacturers:

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- a. Fortifiber Building Systems Group; Moistop Ultra 15, 15 mils thick (0.010 max. permeance), Class A, unreinforced polyolefin: [www.fortifiber.com/#sle](http://www.fortifiber.com/#sle).
  - b. ISI Building Products; Viper VaporCheck II 15-mil (Class A): [www.isibp.com/#sle](http://www.isibp.com/#sle).
  - c. Raven Industries; VaporBlock VB15, 15 mils thick (0.01 perms), Class A, unreinforced polyolefin: [ravenefd.com](http://ravenefd.com),
  - d. Reef Industries, Inc.; Vaporguard, 15 mil (E-96 0.000 perms), Class B: [www.reefindustries.com](http://www.reefindustries.com)
  - e. Stego Industries, LLC; Stego Wrap Vapor Barrier, 15 mils: [www.stegoindustries.com](http://www.stegoindustries.com).
  - f. W. R. Meadows, Inc; PERMINATOR Class A - 15 mils (0.38 mm): [www.wrmeadows.com/#sle](http://www.wrmeadows.com/#sle).
  - g. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Non-Shrink Cementitious Grout: Premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents.
- 1. Grout: Comply with ASTM C1107/C1107M.
  - 2. Height Change, Plastic State; when tested in accordance with ASTM C827/C827M:
    - a. Maximum: Plus 4 percent.
    - b. Minimum: Plus 1 percent.
  - 3. Minimum Compressive Strength at 48 Hours: 2,000 pounds per square inch.
  - 4. Minimum Compressive Strength at 28 Days: 8,000 pounds per square inch.
  - 5. Flowable Products:
    - a. Dayton Superior Corporation: [www.daytonsuperior.com/#sle](http://www.daytonsuperior.com/#sle).
    - b. L&M Construction Chemicals, Inc, a subsidiary of Laticrete International, Inc; DURAGROUT: [www.laticrete.com/our-products/concrete-construction-chemicals/#sle](http://www.laticrete.com/our-products/concrete-construction-chemicals/#sle).
    - c. Sika Corporation; SikaGrout 328: [www.us.sika.com](http://www.us.sika.com).
    - d. SpecChem, LLC; SC Precision Grout: [www.specchemllc.com/#sle](http://www.specchemllc.com/#sle).
    - e. US SPEC; MP Grout: [www.usspec.com](http://www.usspec.com).
    - f. W. R. Meadows, Inc; 588-10K: [www.wrmeadows.com/#sle](http://www.wrmeadows.com/#sle).
    - g. W. R. Meadows, Inc; 1428 HP: [www.wrmeadows.com/#sle](http://www.wrmeadows.com/#sle).
    - h. Substitutions: See Section 01 60 00 - Product Requirements.
  - 6. Low-Slump, Dry Pack Products:
    - a. Dayton Superior Corporation; Dri Pak Precast Grout: [www.daytonsuperior.com/#sle](http://www.daytonsuperior.com/#sle).
    - b. L&M Construction Chemicals, Inc, a subsidiary of Laticrete International, Inc; Duragrout: [www.lmcc.com/#sle](http://www.lmcc.com/#sle).
    - c. Sika Corporation; SikaGrout 212: [www.us.sika.com](http://www.us.sika.com).
    - d. US SPEC; GP Grout: [www.usspec.com](http://www.usspec.com).
    - e. Substitutions: See Section 01 60 00 - Product Requirements.

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- C. Non-Shrink Epoxy Grout: Moisture-insensitive, two-part; consisting of epoxy resin, non-metallic aggregate, and activator.
  - 1. Composition: High solids content material exhibiting positive expansion when tested in accordance with ASTM C827/C827M.
    - a. Maximum Height Change: Plus 4 percent.
    - b. Minimum Height Change: Plus 1 percent.
  - 2. Minimum Compressive Strength at 7 days, ASTM C579: 12,000 pounds per square inch.  
OR
  - 3. Minimum Compressive Strength at 7 days, ASTM D695: 12,000 pounds per square inch.
  - 4. Manufacturers:
    - a. Euclid Chemical Company; E3-DEEP POUR: [www.euclidchemical.com/#sle](http://www.euclidchemical.com/#sle).
    - b. Dayton Superior Corporation: [www.daytonsuperior.com/#sle](http://www.daytonsuperior.com/#sle).
    - c. Euclid Chemical Co.; [www.euclidchemical.com](http://www.euclidchemical.com).
    - d. Five Star Products, Inc; Five Star DP Epoxy Grout: [www.fivestarproducts.com](http://www.fivestarproducts.com).
    - e. L&M Construction Chemicals, Inc.; [www.lmcc.com](http://www.lmcc.com).
    - f. Sika Corporation; Sika Grout Pak 42: [www.us.sika.com](http://www.us.sika.com).
    - g. SpecChem, LLC; SpecPoxy Grout: [www.specchemllc.com](http://www.specchemllc.com).
    - h. US Mix Products Co.; [www.usspec.com](http://www.usspec.com).
    - i. W.R. Meadows, Inc.; REZI-WELD 3/2: [www.wrmeadows.com](http://www.wrmeadows.com).
    - j. Substitutions: See Section 01 60 00 - Product Requirements.

## 2.06 BONDING AND JOINTING PRODUCTS

## 2.07 CURING MATERIALS

- A. Curing Compound, Naturally Dissipating: Clear, water-based, liquid membrane-forming compound; complying with ASTM C309.
  - 1. Application: Use at concrete slab on grade.
  - 2. Product dissipates within 4 to 6 weeks.
  - 3. Provide product containing fugitive red dye.
  - 4. Manufacturers:
    - a. Dayton Superior Corporation: [www.daytonsuperior.com/#sle](http://www.daytonsuperior.com/#sle).
    - b. Euclid Chemical Company; COLOR-CRETE CURE AND SEAL VOC: [www.euclidchemical.com/#sle](http://www.euclidchemical.com/#sle).
    - c. SpecChem, LLC; SpecRez: [www.specchemllc.com/#sle](http://www.specchemllc.com/#sle).
    - d. Paul M. Wolff Co.; SHUR-CURE: [www.paulwolffco.com](http://www.paulwolffco.com).
    - e. W. R. Meadows, Inc; 1100-Clear: [www.wrmeadows.com/#sle](http://www.wrmeadows.com/#sle).
    - f. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Moisture-Retaining Sheet: ASTM C171.
  - 1. Curing paper, regular.

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2. Polyethylene film, white opaque, minimum nominal thickness of 4 mil, 0.004 inch.
  3. White-burlap-polyethylene sheet, weighing not less than 3.8 ounces per square yard.
- C. Water: Potable, not detrimental to concrete.

## 2.08 CONCRETE MIX DESIGN

- A. Mix Design: Contractor shall coordinate with the Testing Laboratory of Record, under supervision of Civil Engineer licensed in the State of California, to determine mix proportions to fulfill specified requirements for strength, aggregate, size and workability of concrete.
- B. Proportioning Normal Weight Concrete: Comply with ACI 211.1 recommendations.
  1. Comply with Chapter 19A requirements.
- C. Concrete Strength: Establish required average strength for each type of concrete on the basis of field experience or trial mixtures, as specified in ACI 301.
- D. Admixtures: Add acceptable admixtures as recommended in ACI 211.1 and at rates recommended or required by manufacturer.
- E. Normal Weight Concrete:
  1. Compressive Strength, when tested in accordance with ASTM C39/C39M at 28 days: As indicated on Structural Drawings.
  2. Proportions: For normal weight concrete, in accordance with ACI 301, and as noted on the Drawings.
  3. Structural Concrete: Structural concrete strengths (including non-structural floor slabs on grade), aggregate sizes and slumps indicated on Structural Drawings.
  4. Water/Cement Ratio for Concrete in Contact with Soil: Not to exceed 0.45, unless otherwise indicated on Structural Drawings.
  5. Water-Cement Ratio: Maximum 50 percent by weight.
  6. Maximum Slump: 4 inches.
  7. Maximum Aggregate Size: 3/4 inch.

## 2.09 MIXING

- A. Transit Mixers: Comply with ASTM C94/C94M.
- B. Adding Water: If concrete arrives on-site with slump less than suitable for placement, do not add water that exceeds the maximum water-cement ratio or exceeds the maximum permissible slump.

## PART 3 EXECUTION

### 3.01 EXAMINATION

- A. Verify lines, levels, and dimensions before proceeding with work of this section.
- B. Verify that concrete cover requirements are met in formwork construction and reinforcement placement.
- C. Verify that all embedded products and formed openings and recesses are correctly placed.

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### 3.02 PREPARATION

- A. Formwork: Comply with requirements of ACI 301. Design and fabricate forms to support all applied loads until concrete is cured, and for easy removal without damage to concrete.
- B. Verify that forms are clean and free of rust before applying release agent.
- C. Coordinate placement of embedded items with erection of concrete formwork and placement of form accessories.

### 3.03 INSTALLING REINFORCEMENT AND OTHER EMBEDDED ITEMS

- A. Comply with requirements of ACI 301. Clean reinforcement of loose rust and mill scale, and accurately position, support, and secure in place to achieve not less than minimum concrete coverage required for protection.

### 3.04 CONCRETE MIXING

- A. Concrete Mixing, General: Comply with ACI 318 as adopted by CBC, Title 24, Part 2, Chapter 19A and ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete. Introduce and mix admixtures in compliance with manufacturer's instructions and recommendations.

### 3.05 PLACING CONCRETE

- A. Notify District's Inspector and DSA at least 2 working days in advance of placing concrete.
- B. Place concrete in accordance with ACI 304R. General: Comply with ACI 318 as adopted by CBC, Title 24, Part 2, Chapter 19A and as follows:
  - 1. Schedule continuous placement of concrete to prevent the formation of cold joints.
  - 2. Ready mix concrete shall be delivered in accordance with ASTM C94/C94M. Concrete shall be placed within 90 minutes after start of mixing.
  - 3. Provide construction joints if concrete for a particular element or component cannot be placed in a continuous operation.
  - 4. Deposit concrete as close as possible to its final location, to avoid segregation.
- C. Placement in Forms: Limit horizontal layers to depths which can be properly consolidated, but in no event greater than 24 inches.
  - 1. Consolidate concrete by means of mechanical vibrators, inserted vertically in freshly placed concrete in a systematic pattern at close intervals. Penetrate previously placed concrete to ensure that separate concrete layers are knitted together.
  - 2. Vibrate concrete sufficiently to achieve consistent consolidation without segregation of coarse aggregates.
  - 3. Do not use vibrators to move concrete laterally.
- D. Notify Architect not less than 48 hours prior to commencement of placement operations.
- E. Ensure reinforcement and inserts are not disturbed during concrete placement.
- F. Place concrete continuously without construction (cold) joints wherever possible; where construction joints are necessary, before next placement prepare joint surface by removing laitance and exposing the sand and sound surface mortar, by sandblasting or high-pressure water jetting.

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### 3.06 CONCRETE FINISHING

- A. Repair surface defects, immediately after removing formwork.

### 3.07 CURING AND PROTECTION

- A. Comply with requirements of ACI 308R. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
- B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
  - 1. Normal concrete: Not less than seven days.
- C. Formed Surfaces: Cure by moist curing with forms in place for full curing period.
- D. Surfaces Not in Contact with Forms:
  - 1. Initial Curing: Start as soon as free water has disappeared and before surface is dry. Keep continuously moist for not less than three days by water-fog spray or saturated burlap.
  - 2. Final Curing: Begin after initial curing but before surface is dry.
    - a. Moisture-Retaining Sheet: Lap strips not less than 3 inches and seal with waterproof tape or adhesive; secure at edges.
    - b. Curing Compound: Apply in two coats at right angles, using application rate recommended by manufacturer.

### 3.08 MISCELLANEOUS CONCRETE ITEMS

- A. Filling In: Fill in holes and openings left in concrete structures for passage of Work specified in other Sections, after such Work is in place. Mix, place, and cure concrete as specified to blend with in-place construction. Provide other miscellaneous concrete filling shown or required to complete Work. Use non-shrink grout where required or indicated.
- B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.
- C. Equipment Bases and Foundations: Provide machine and equipment bases and foundations as shown on drawings. Set anchor bolts for machines and equipment to template at correct elevations, complying with diagrams or templates of manufacturer furnishing machines and equipment.

### 3.09 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field quality control tests, as specified in Section 01 40 00 - Quality Requirements.
- B. Provide free access to concrete operations at project site and cooperate with appointed firm.
- C. Submit proposed mix design of each class of concrete to inspection and testing firm for review prior to commencement of concrete operations.
- D. Field Certifications: For all concrete, provide signed copy of batch plant's certificate stating quantity of each material, amount of water, admixtures, departure time and date accompanying each load of materials or concrete.

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- E. Field Tests of Concrete: Perform tests in accordance with applicable California Building Code requirements, ACI 301 and requirements of authorities having jurisdiction.
- F. Tests of concrete and concrete materials may be performed at any time to ensure conformance with specified requirements.
- G. Compressive Strength Tests: ASTM C39/C39M. For each test, mold and cure four concrete test cylinders. Obtain test samples for every 2,000 sq ft - 50 cu yd or less of slab and structural concrete of each class of concrete placed (CBC requirement).
  - 1. Test one cylinder at 7 days and two at 28 days after placement.
  - 2. Maintain fourth cylinder to be tested at 56 days only if 28-day test fails to meet strength requirement.
  - 3. Take one additional test cylinder during cold weather concreting and cure it at job site under same conditions as concrete it represents. Test cold weather cylinder at 28 days.
- H. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.
- I. Perform one slump test for each set of test cylinders taken, following procedures of ASTM C143/C143M.

### 3.10 DEFECTIVE CONCRETE

- A. Test Results: The testing agency shall report test results in writing to Architect and Contractor within 24 hours of test.
- B. Defective Concrete: Concrete not complying with required lines, details, dimensions, tolerances or specified requirements.
- C. Repair or replacement of defective concrete will be determined by the Architect. The cost of additional testing shall be borne by Contractor when defective concrete is identified.
  - 1. Obtain repair details from Architect (Structural Engineer) and approved by DSA before proceeding.
- D. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Architect for each individual area.

### 3.11 PROTECTION

- A. Do not permit traffic over unprotected concrete floor surface until fully cured.
- B. Protect concrete from marring and damage due to weather and construction activities.
  - 1. Protective measures shall include providing temporary coverings, and be in accordance with Section 01 50 00 - Temporary Facilities and Controls, and shall prohibit all non-essential construction activities, including cleaning and maintenance of construction equipment.
  - 2. In particular, protect concrete floor slabs from oil, paint and other products that might penetrate and degrade concrete surface.

## END OF SECTION

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**SECTION 05 40 00**  
**COLD-FORMED METAL FRAMING**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Formed steel stud exterior wall framing.

**1.02 RELATED REQUIREMENTS**

- A. Section 09 22 36 - Lath.
- B. Section 09 24 00 - Cement Plastering.

**1.03 REFERENCE STANDARDS**

- A. AISI S100 - North American Specification for the Design of Cold-Formed Steel Structural Members.
- B. ASTM A283/A283M - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates.
- C. ASTM A36/A36M - Standard Specification for Carbon Structural Steel.
- D. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- E. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable.
- F. ASTM C955 - Standard Specification for Cold-Formed Steel Structural Framing Members.
- G. AWS B2.1/B2.1M - Specification for Welding Procedure and Performance Qualification.
- H. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer.
- I. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic").

**1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Coordinate with work of other sections that is to be installed in or adjacent to the metal framing system, including but not limited to structural anchors, cladding anchors, utilities, insulation, and firestopping.

**1.05 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Manufacturer's Qualification Statement.
- C. Welders' Qualification Statement: Welders' certificates in accordance with AWS B2.1/B2.1M and dated no more than 12 months before the start of scheduled welding work.

**1.06 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Company specializing in manufacturing the types of products specified in this section, and with minimum three years of documented experience.

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- B. Welder Qualifications: Welding processes and welding operators qualified in accordance with AWS D1.1/D1.1M and AWS D1.3/D1.3M and dated no more than 12 months before start of scheduled welding work.
- C. Installer Qualifications: Company specializing in performing the work of this section with minimum three years documented experience.

## **PART 2 PRODUCTS**

### **2.01 MANUFACTURERS**

- A. Metal Framing:
  - 1. CEMCO: [www.cemcosteel.com/#sle](http://www.cemcosteel.com/#sle).
    - a. ICC ESR-3016.
    - b. ICC ESR-2012.
    - c. Intertek CCRR-0224.
  - 2. ClarkDietrich Building Systems: [www.clarkdietrich.com](http://www.clarkdietrich.com).
    - a. Intertek CCRR-0206.
    - b. Intertek CCRR-0224.
  - 3. Marino: [www.marinoware.com/#sle](http://www.marinoware.com/#sle).
    - a. ICC ESR-4062.
  - 4. SCAFCO Corporation: [www.scafco.com/#sle](http://www.scafco.com/#sle).
  - 5. Steel Construction Systems: [www.steelconsystems.com/#sle](http://www.steelconsystems.com/#sle).
  - 6. The Steel Network, Inc: [www.SteelNetwork.com/#sle](http://www.SteelNetwork.com/#sle).
  - 7. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Framing Connectors and Accessories:
  - 1. Same manufacturer as metal framing.
  - 2. ClarkDietrich Building Systems: [www.clarkdietrich.com](http://www.clarkdietrich.com).
  - 3. Simpson Strong Tie: [www.strongtie.com](http://www.strongtie.com).
  - 4. Substitutions: See Section 01 60 00 - Product Requirements.

### **2.02 FRAMING SYSTEM**

- A. Provide primary and secondary framing members, bridging, bracing, plates, gussets, clips, fittings, reinforcement, and fastenings as required to provide a complete framing system.
- B. Design Requirements: Provide completed framing system having the following characteristics:
  - 1. Design: Calculate structural characteristics of cold-formed steel framing members according to AISI S100.
  - 2. Structural Performance: Design, engineer, fabricate, and erect to withstand specified design loads for project conditions within required limits.
  - 3. Design Loads: In accordance with applicable codes.
  - 4. Live load deflection meeting the following, unless otherwise indicated:

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- a. Exterior Walls with Flexible Finish: Maximum horizontal deflection under wind load of 1/180 of span.
  - b. Exterior Walls with Plaster Finish: Maximum horizontal deflection under wind load of 1/360 of span.
  - c. Design non-axial loadbearing framing to accommodate not less than 1/2 in vertical deflection.
5. Able to tolerate movement of components without damage, failure of joint seals, undue stress on fasteners, or other detrimental effects when subject to seasonal or cyclic day/night temperature ranges.
6. Able to accommodate construction tolerances, deflection of building structural members, and clearances of intended openings.

### 2.03 FRAMING MATERIALS

- A. Studs and Track: ASTM C955; studs formed to channel, C- or Sigma-shaped with punched web; U-shaped track in matching nominal width and compatible height.
  1. Gauge and Depth: As indicated on drawings.
  2. Galvanized in accordance with ASTM A653/A653M, G60/Z180 coating, hot dipped.
    - a. Provide minimum G60 coating for applications other than interior non-loadbearing walls.
  3. Provide components fabricated from ASTM A1008/A1008M Designation SS (structural steel).
- B. Framing Connectors: Factory-made, formed steel sheet.
  1. Material: ASTM A653/A653M SS Grade 33 and 40 (minimum), with G90/Z275 hot dipped galvanized coating for base metal thickness less than 10 gauge, 0.1345 inch, and factory punched holes and slots.
  2. Structural Performance: Maintain load and movement capacity required by applicable code, when evaluated in accordance with AISI S100.
  3. Fixed Connections: Provide non-movement connections for tie-down to foundation, floor-to-floor tie-down, roof-to-wall tie-down, joist hangers, gusset plates, and stiffeners.
  4. Wall Stud Bridging Connections: Provide mechanical load-transferring devices that accommodate wind load torsion and weak axis buckling induced by axial compression loads. Provide bridging connections where indicated on the drawings and per Steel Stud Manufacturers Association standards, whichever is greater.
  5. Products:
    - a. ClarkDietrich; FastBridge Clip: [www.clarkdietrich.com/#sle](http://www.clarkdietrich.com/#sle).
    - b. Simpson Strong Tie: [www.strongtie.com](http://www.strongtie.com).
    - c. Substitutions: See Section 01 60 00 - Product Requirements.

### 2.04 FASTENERS

- A. Provide bolts, nuts, screws, powder driven fasteners, clips, washers and other fasteners as indicated on Drawings and as necessary for proper erection of items specified herein.

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- B. Self-Drilling, Self-Tapping Screws, Bolts, Nuts and Washers: Hot dip galvanized per ASTM A153/A153M.
- C. Anchorage Devices: Powder actuated, Drilled expansion bolts, and Screws with sleeves.
- D. Welding: Comply with AWS D1.1/D1.1M.

## 2.05 ACCESSORIES

- A. Bracing, Furring, Bridging: Formed sheet steel, thickness determined for conditions encountered; finish to match framing components; as indicated on Drawings.
  - 1. Standard Structural Steel Shapes and Plates: ASTM A36/A36M.
  - 2. Miscellaneous Steel Items: ASTM A283/A283M, grade optional.
  - 3. Flat-Rolled Carbon Steel Sheets: ASTM A1008/A1008M.
  - 4. Cold-Rolled Carbon Steel Sheets: ASTM A1008/A1008M.
  - 5. Backing Plates: Galvanized sheet metal for attachment and support of products to be attached to framing.
    - a. As indicated on Drawings.
- B. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.
- C. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20 Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.
- D. Water-Resistive Barrier: As specified in Section 07 25 00.

## PART 3 EXECUTION

### 3.01 EXAMINATION

- A. Verify that substrate surfaces are ready to receive work.
- B. Verify field measurements and adjust installation as required.

### 3.02 INSTALLATION OF STUDS

- A. Configuration: Place and align tracks and install framing to configurations indicated on Drawings.
- B. Install components in accordance with Steel Stud manufacturers' instructions and ASTM C 1007 requirements.
- C. Install studs full length in one piece. Splicing of studs is not permitted.
- D. Install studs, brace, and reinforce to develop full strength and achieve design requirements.
- E. Install intermediate studs above and below openings to align with wall stud spacing.
- F. Attach backing plates to studs for attachment of fixtures anchored to walls.
- G. Install framing between studs for attachment of mechanical and electrical items, and to prevent stud rotation.
- H. Backing and Blocking: Install sheet metal backing as indicated and as required to support all products attached to wall or ceiling after completion of finish surface, including electrical fixtures, electrical panels, hardware, equipment, handrails, and trim. Cut ends of runner and

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backing plates to each stud.

- I. Touch-up field welds and damaged galvanized surfaces with primer.

### 3.03 TOLERANCES

- A. Maximum Variation from True Position: 1/8 inch in 10 feet (3 mm in 3 m).
- B. Maximum Variation of any Member from Plane: 1/8 inch in 10 feet (3 mm in 3 m).

**END OF SECTION**

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**SECTION 05 50 00  
METAL FABRICATIONS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Shop fabricated steel items.
- B. Requirements for materials and equipment for post-installed mechanical and adhesive anchors in concrete.
- C. Pipe bollards.

**1.02 RELATED REQUIREMENTS**

- A. Section 03 30 00 - Cast-in-Place Concrete: Placement of metal fabrications in concrete.

**1.03 REFERENCE STANDARDS**

- A. AISC 201 - AISC Certification Program for Structural Steel Fabricators, Standard for Steel Building Structures.
- B. ASTM A193/A193M - Standard Specification for Alloy-Steel and Stainless Steel Bolting for High Temperature or High Pressure Service and Other Special Purpose Applications.
- C. ASTM A36/A36M - Standard Specification for Carbon Structural Steel.
- D. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
- E. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
- F. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
- G. ASTM B633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel.
- H. ASTM E329 - Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection.
- I. ASTM F3125/F3125M - Standard Specification for High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi and 150 ksi Minimum Tensile Strength, and Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength.
- J. ASTM F594 - Standard Specification for Stainless Steel Nuts.
- K. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination.
- L. AWS B2.1/B2.1M - Specification for Welding Procedure and Performance Qualification.
- M. AWS D1.1/D1.1M - Structural Welding Code - Steel.
- N. AWS D1.2/D1.2M - Structural Welding Code - Aluminum.
- O. IAS AC172 - Accreditation Criteria for Fabricator Inspection Programs for Structural Steel.
- P. SSPC-PA 1 - Shop, Field, and Maintenance Painting of Steel.
- Q. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer.

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- R. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic").

#### **1.04 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. ICC ES Reports: If requested, ICC Evaluation Service report indicating conformance with ICC-ES Acceptance Criteria.
- C. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.
  - 1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.
- D. Welders' Qualification Statement: Welders' certificates in accordance with AWS B2.1/B2.1M and dated no more than 12 months before start of scheduled welding work.
- E. Fabricator's Qualification Statement: Provide documentation showing steel fabricator is accredited under IAS AC172 or AISC 201.

#### **1.05 QUALITY ASSURANCE**

- A. Welder Qualifications: Welding processes and welding operators qualified in accordance with AWS D1.1/D1.1M and AWS D1.2/D1.2M and dated no more than 12 months before start of scheduled welding work.
- B. Fabricator Qualifications: A qualified steel fabricator that is accredited by IAS AC172 or AISC 201.
- C. Testing Agency Qualifications: An independent agency qualified according to ASTM E329 and Section 01 45 33 for testing indicated.
- D. Installer Training: Prior to beginning the work, manufacturer or manufacturer's representative shall provide on-site training for all contractor's personnel who will be installing anchors.

### **PART 2 PRODUCTS**

#### **2.01 REGULATORY REQUIREMENTS**

- A. Conform to applicable requirements of California Building Code (CBC), Title 24, Part 2, as amended and adopted by authorities having jurisdiction.
  - 1. Comply with Title 24, Part 9, California Fire Code Chapter 35 "Welding and Other Hot Work."

#### **2.02 MATERIALS - STEEL**

- A. Steel Sections: ASTM A36/A36M, for channels, angles and plates.
- B. Pipe: ASTM A53/A53M, Grade B Schedule 40, black finish.
- C. Mechanical Fasteners: Same material as or compatible with materials being fastened; type consistent with design and specified quality level.
- D. Bolts, Nuts, and Washers: ASTM F3125/F3125M, Type 1, plain.
- E. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.

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- F. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.
  - 1. Comply with SSPC-PA 1. Coordinate with requirements specified in Section 09 91 13 - Exterior Painting .
    - a. Coordinate primer with finish paint and coating, as applicable, to provide sound foundation for field-applied topcoats despite prolonged exposure during construction.
- G. Galvanize all exterior steel members to comply with ASTM A123/A123M. Provide minimum 1.7 oz/sq ft galvanized coating.
- H. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.

## 2.03 FABRICATION

- A. Hot-dip galvanize fabricated ferrous items, indicated as remaining unpainted, after fabrication. Field connections shall be bolted or screwed where possible. Avoid field cutting and welding which damage galvanized coating.
- B. Fit and shop assemble items in largest practical sections, for delivery to site.
- C. Fabricate items with joints tightly fitted and secured.
- D. Continuously seal joined members by intermittent welds and plastic filler.
- E. Joints Exposed to Weather or Water: Fabricate to keep water out, or provide adequate drainage of water that penetrates.
- F. Steel Tubing and Piping Fabrication: Unless otherwise indicated, close ends with plate stock so no exposed ends of tubing and piping. Grind all edges.
- G. Connections, General:
  - 1. Component parts of built-up members shall be well-pinned with closely-fitted contact.
  - 2. Conceal connections where possible.
  - 3. Otherwise, make countersinks for concealment after fabrication, except where noted.
- H. Welding: Conform to AWS D1.1/D1.1M recommendations.
  - 1. Do not field weld galvanized components to remain unfinished.
  - 2. Provide continuous welds at welded corners and seams.
  - 3. Grind exposed welds smooth and flush with base material.
  - 4. Re-weld to fill holes. Putties and fillers are not acceptable.
- I. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.
- J. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.
  - 1. Bolted and Screwed Connections:
    - a. Provide holes and connections for work specified in other Sections.
    - b. Use bolts for field connections only.
    - c. Provide washers under heads and nuts bearing on wood.

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- d. Draw all nuts tight and nick threads of permanent connections.
  - e. Use beveled washers where bearing is on sloped surfaces.
  - f. Where screws must be used for permanent connections in ferrous metal, use flat head type, countersunk, with screw slots filled and finished smooth and flush.
- K. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

## 2.04 FABRICATED ITEMS

- A. Rough Hardware
  - 1. Provide bent or otherwise custom fabricated bolts, plates, anchors, hangers, dowels, and other miscellaneous steel and iron shapes as indicated on Drawings.
- B. Other Products and Fabrications
  - 1. Other Products and Fabrications: Provide all materials not specifically described but required for a complete and proper installation, as selected by the Contractor, subject to review and acceptance by Construction Manager and Architect.
- C. Bollards: Steel pipe, concrete filled, as detailed; galvanized finish.
- D. Ledge Angles, Shelf Angles, Channels, and Plates Not Attached to Structural Framing: For support of metal decking; prime paint finish.

## 2.05 POST INSTALLED CONCRETE ANCHORS

- A. Manufacturers:
  - 1. Manufacturers: Provide products as indicated on the approved Structural Drawings.
  - 2. Substitutions: Substitutions of products from manufacturer's not listed are not permitted.
    - a. Substitution of structural anchors requires structural calculations and DSA approval.
- B. Materials:
  - 1. Interior Use: For use in conditioned environments free from potential moisture, provide zinc plated carbon steel anchors.
  - 2. Exterior Use:
    - a. In exposed or potentially wet environments, and for attachment of exterior cladding materials, provide stainless steel anchors.
    - b. Stainless steel nuts and washers shall be of matching alloy group of equal or greater strength than the rod.
    - c. Avoid installing stainless steel anchors in contact with galvanically dissimilar metals.
  - 3. Deformed Reinforcing Bars: Deformed steel rebar conforming to ASTM A615/A615M Grade 60. Permissible sizes as described in each adhesive products ICC report.
- C. Mechanical Anchors:
  - 1. Expansion, screw or undercut anchors having current ICC approval for use in cracked and uncracked concrete, with a published ICC Evaluation Service report.
    - a. Type and size as indicated on drawings.

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2. Basis of Design Approved Products conforming to this specification are acceptable for anchoring to concrete are as indicated on Drawings:
    - a. Hilti, Inc. Tulsa, OK; Hilti Kwik Bolt TZ Carbon and Stainless Steel Anchors in Cracked and Uncracked Concrete (ICC Report ESR-1917); [www.us.hilti.com](http://www.us.hilti.com).
    - b. Substitutions: See Section 01 60 00 - Product Requirements.
  3. Basis of Design Approved Products conforming to this specification are acceptable for anchoring to grouted masonry are as follows:
    - a. Simpson Wedge-All Wedge Anchor (ICC-ES ESR-1396)
    - b. Hilti Kwik Bolt 3 Expansion Anchor (ICC-ES ESR-1385)
    - c. Hilti Kwik Bolt TZ Expansion Anchor (ICC-ES ESR-3785)
    - d. Simpson Titen HD Screw Anchor (ICC-ES ESR-1056)
    - e. Substitutions: See Section 01 60 00 - Product Requirements.
- D. Adhesive Anchors:
1. Cartridge Injection Adhesive Anchors: Threaded carbon steel rod, inserts, or reinforcing dowels complete with required nuts, washers, adhesive system and manufacturer's installation instructions.
    - a. Type and size as indicated on drawings.
    - b. Current ICC approval for use in cracked and uncracked concrete with a published ICC Evaluation Service report required.
  2. Interior Use: Unless otherwise indicated on the Drawings, provide:
    - a. Carbon steel threaded rods conforming to specification as indicated on structural drawings. Where no specification and grade are indicated, provide: ASTM A193/A193M Type B7 with zinc plating in accordance with ASTM B633, Type III Fe/Zn 5 (SC1).
  3. Exterior Use: As indicated on the Drawings, provide stainless steel anchors.
    - a. Stainless steel anchors shall be AISI Type 304 and Type 316 stainless steel provided with stainless steel nuts and washers of matching alloy group and minimum proof stress equal to or greater than the specified minimum full-size tensile strength of the externally threaded fastener.
    - b. All nuts shall conform to ASTM F594, unless otherwise specified.
  4. Basis of Design Approved Products conforming to this specification are acceptable for anchoring to concrete are as indicated on Drawings:
  5. Basis of Design Approved Products conforming to this specification are acceptable for anchoring to grouted masonry are as indicated on Drawings:
- E. Power-Driven/Powder Actuated Fasteners
1. Use only if approved by Architect, generally not permitted where not specifically indicated or in load-bearing installations; as follows.
    - a. Hilti, Inc.; Hilti Low Velocity Power Driven Fasteners (ICC Report ESR-1663); [www.us.hilti.com](http://www.us.hilti.com).

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- b. Simpson Strong-Tie Company, Inc.; Simpson Strong-Tie® Powder-Actuated Fasteners, Threaded Studs and Assemblies (ICC Report ESR-2138); [www.strongtie.com](http://www.strongtie.com).

## 2.06 FINISHES - STEEL

- A. Mechanical Finishes: Complete finishing prior to fabrication wherever possible.
  - 1. After fabrication, finish all joints, bends, abrasions, and other surface blemishes to match finish.
  - 2. Protect finish on exposed surfaces by using temporary protective covering.
- B. Prime Painting: One coat.
- C. Galvanizing of Structural Steel Members: Galvanize all exterior steel members after fabrication to ASTM A123/A123M requirements. Provide minimum 1.7 oz/sq ft galvanized coating.

## 2.07 FABRICATION TOLERANCES

- A. Squareness: 1/8 inch maximum difference in diagonal measurements.
- B. Maximum Offset Between Faces: 1/16 inch.
- C. Maximum Misalignment of Adjacent Members: 1/16 inch.
- D. Maximum Bow: 1/8 inch in 48 inches.
- E. Maximum Deviation From Plane: 1/16 inch in 48 inches.

## PART 3 EXECUTION

### 3.01 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive work.
- B. Field Inspection of Fabricated Products: Prior to installation, inspect products for damage and verify markings and dimensions against reviewed submittals.
- C. Environmental Conditions: Do not install products intended for interior locations when spaces are uncovered and unprotected from inclement weather.
- D. Coordination: Coordinate metal fabrications Work with Work specified in other Sections so that related Work shall be accurately and properly joined.
- E. Post Installed Anchors
  - 1. Verification of Conditions
    - a. Base Material Strength: Unless otherwise specified, do not drill holes in concrete until concrete has achieved full design strength.
    - b. Temperature of concrete surface and ambient air temperature must meet manufacturer's requirements prior to use of adhesive anchor products.
    - c. Embedded Items:
      - 1) Identify position of reinforcing steel and other embedded items prior to drilling holes for anchors.
      - 2) Exercise care in coring or drilling to avoid damaging existing reinforcing or embedded items.

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- 3) Take precautions as necessary to avoid damaging anything embedded in the concrete including electrical/telecommunications conduit, gas pipes, and plumbing pipes.
  - 4) Notify the Architect if reinforcing steel or other embedded items are encountered during drilling.
- d. Beginning of installation indicates acceptance of existing conditions.

### 3.02 PREPARATION

- A. Clean and strip primed steel items to bare metal where site welding is required.
- B. Supply setting templates to the appropriate entities for steel items required to be cast into concrete.
- C. Make provision for erection loads with temporary bracing. Keep work in alignment.
- D. Obtain Architect's review prior to site cutting or making adjustments not indicated on Drawings and reviewed shop drawings.

### 3.03 INSTALLATION

- A. Install items plumb and level, accurately fitted, free from distortion or defects.
- B. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
- C. Field weld components as indicated on drawings.
- D. Perform field welding in accordance with AWS D1.1/D1.1M.
- E. Obtain approval prior to site cutting or making adjustments not scheduled.

### 3.04 INSTALLATION OF POST-INSTALLED ANCHORS

- A. Installation shall comply with all manufacturer's instructions and current ICC ESR report.
- B. Post-Installed Anchors in Hardened Concrete.
  1. Drilled-in anchors and/or powder driven pins in existing non-prestressed reinforced concrete: use care and caution to avoid cutting or damaging the existing reinforcing bars.
  2. Maintain a minimum clearance of one inch between the reinforcement and the drilled-in anchor and/or pin.
- C. Manufacturer shall provide on-site training for all personnel who will be installing post-installed adhesive anchors at the beginning of the work. Installation of anchors must be performed by a certified installer.
- D. Where manufacturer recommends use of special tools for installation of anchors, such tools shall be used, unless otherwise permitted specifically by the Engineer.
- E. Drill holes with rotary impact hammer drills using carbide-tipped bits. Bits must be of type required and permitted by ICC ESR report.
  1. Drill holes with rotary impact hammer drills using carbide-tipped bits or core drills using diamond core bits.
  2. Drill bits shall be of diameters as specified by the anchor manufacturer.

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3. Unless otherwise shown on the Drawings, all holes shall be drilled perpendicular to the concrete surface.
  4. Where anchors are to be installed in cored holes, use core bits with matched tolerances as specified by the manufacturer.
  5. Cored holes may only be used if acceptable to the Engineer and in compliance with ICC ESR report.
- F. Holes shall be cleared of debris after holes are drilled per manufacturer's instructions.
1. For adhesive installations, at a minimum, holes shall be blown out with oil-free compressed air and shall be brushed with a wire or nylon brush.
  2. Holes shall than be blown out one additional time with oil-free compressed air.
  3. Additional hole cleaning requirements may be required by manufacturer and ICC ESR Report.
- G. During adhesive curing time period, the temperature of the substrate shall be kept above the minimum substrate temperature as defined by the manufacturer. Contractor shall determine the appropriate means and methods to ensure that the temperature is kept above the required minimum temperature required before adhesive installation is begun.

### 3.05 TOLERANCES

- A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.
- B. Maximum Offset From True Alignment: 1/4 inch.
- C. Maximum Out-of-Position: 1/4 inch.

### 3.06 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field quality control tests, as specified in Section 01 45 33 - Code-Required Special Inspections.
- B. Inspection: Special inspection of post-installed anchors shall be provided as required by the ICC-ES report for that anchor and not less than the requirements of the Structural Drawings and the following (whichever is the most restrictive):
  1. Continuously observe the installation of all anchors, or as specified in the ICC report.
    - a. Minimum anchor embedments, proof loads and torques shall be as shown on the Drawings.
    - b. Load Testing: Per Structural General Notes on Drawings.
    - c. Verify anchor type, anchor dimensions, hole dimensions, anchor spacing, edge distances, anchor embedment and adherence to the manufacturer's published installation instructions.
    - d. For adhesive anchors also verify hole cleaning technique, adhesive expiration date and proper mixing and dispensing.
  2. Subsequent inspection of installation will be required when there is a change of personnel doing the installation. Change is defined as any one or more persons drilling or preparing holes, or installing anchors.
  3. Visually inspect 100% of all installed anchors.

C. Reporting:

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1. Daily reports shall reference the applicable ICC-ES report number, indicate that all specified criteria were complied with and provide itemized verification of all inspected items.
  2. Special Inspector shall immediately report any deviations from the requirements to the Architect.
- D. Defective Work:
1. Installations that are not accepted by the Special Inspector shall be considered defective.
  2. Provide additional testing and inspection to determine acceptability of defective work, as directed by the Architect at Contractor's expense.

### **3.07 REPAIR OF DEFECTIVE WORK**

- A. Remove and replace misplaced, defective or malfunctioning anchors at Contractor's expense. Replacement of anchors requires signed structural detail, unless otherwise noted.
- B. Fill empty anchor holes and patch failed anchor locations with high-strength, non-shrink non-metallic grout.

**END OF SECTION**

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## **SECTION 07 92 00 JOINT SEALANTS**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A. Nonsag gunnable joint sealants.
- B. Self-leveling pourable joint sealants.
- C. Joint backings and accessories.
- D. District-provided field quality control.

#### **1.02 RELATED REQUIREMENTS**

- A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions: Additional requirements for sealants and primers.

#### **1.03 REFERENCE STANDARDS**

- A. ASTM C661 - Standard Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer.
- B. ASTM C920 - Standard Specification for Elastomeric Joint Sealants.
- C. ASTM C1193 - Standard Guide for Use of Joint Sealants.
- D. ASTM C1330 - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants.
- E. ASTM C1521 - Standard Practice for Evaluating Adhesion of Installed Weatherproofing Sealant Joints.
- F. ASTM D2240 - Standard Test Method for Rubber Property--Durometer Hardness.
- G. SWRI (VAL) - SWR Institute Validated Products Directory.

#### **1.04 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data for Sealants: Submit manufacturer's technical data sheets for each product to be used, that includes the following.
  - 1. Physical characteristics, including movement capability, VOC content, hardness, cure time, and color availability.
  - 2. List of backing materials approved for use with the specific product.
  - 3. Substrates that product is known to satisfactorily adhere to and with which it is compatible.
  - 4. Substrates the product should not be used on.
  - 5. Substrates for which use of primer is required.
  - 6. Installation instructions, including precautions, limitations, and recommended backing materials and tools.

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7. Sample product warranty.
8. Certification by manufacturer indicating that product complies with specification requirements.
9. SWRI Validation: Provide currently available sealant product validations as listed by SWRI (VAL) for specified sealants.
- C. Product Data for Accessory Products: Submit manufacturer's technical data sheet for each product to be used, including physical characteristics, installation instructions, and recommended tools.
- D. Color Cards for Selection: Where sealant color is not specified, submit manufacturer's color cards showing standard colors available for selection.
- E. Samples for Verification: Where custom sealant color is specified, obtain directions from Architect and submit at least two physical samples for verification of color of each required sealant.
- F. Installation Plan: Submit at least four weeks prior to start of installation.
- G. Preinstallation Field Adhesion Test Plan: Submit at least two weeks prior to start of installation.
- H. Preinstallation Field Adhesion Test Reports: Submit filled out Preinstallation Field Adhesion Test Reports log within 10 days after completion of tests; include bagged test samples and photographic records.
- I. Installation Log: Submit filled out log for each length or instance of sealant installed.
- J. Installer's Qualification Statement.

#### 1.05 QUALITY ASSURANCE

- A. Maintain one copy of each referenced document covering installation requirements on site.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- C. Installer Qualifications: Company specializing in performing the work of this section and with at least three years of documented experience.
- D. District will employ an independent testing agency to perform the field quality control inspection and testing as referenced in PART 3 of this section and as follows, to prepare and submit the field quality control plan and log, and to provide recommendations of remedies in the case of failure.
  1. Contractor shall cooperate with testing agency and repair failures discovered and destructive test location damage.
- E. Field Adhesion Test Procedures:
  1. Allow sealants to fully cure as recommended by manufacturer before testing.
  2. Have a copy of the test method document available during tests.
  3. Take photographs or make video records of each test, with joint identification provided in the photos/videos; for example, provide small erasable whiteboard positioned next to joint.

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4. Record the type of failure that occurred, other information required by test method, and the information required on the Field Quality Control Log.
  5. When performing destructive tests, also inspect the opened joint for proper installation characteristics recommended by manufacturer, and report any deficiencies.
  6. Deliver the samples removed during destructive tests in separate sealed plastic bags, identified with project, location, test date, and test results, to District.
  7. If any combination of sealant type and substrate does not show evidence of minimum adhesion or shows cohesion failure before minimum adhesion, report results to Architect.
- F. Destructive Field Adhesion Test: Test for adhesion in accordance with ASTM C1521, using Destructive Tail Procedure.
1. Sample: At least 18 inches long.
  2. Minimum Elongation Without Adhesive Failure: Consider the tail at rest, not under any elongation stress; multiply the stated movement capability of the sealant in percent by two; then multiply 1 inch by that percentage; if adhesion failure occurs before the "1 inch mark" is that distance from the substrate, the test has failed.
  3. If either adhesive or cohesive failure occurs prior to minimum elongation, take necessary measures to correct conditions and re-test; record each modification to products or installation procedures.
  4. Record results on Field Quality Control Log.
  5. Repair failed portions of joints.
- G. Field Adhesion Tests of Joints: Test for adhesion using most appropriate method in accordance with ASTM C1521, or other applicable method as recommended by manufacturer.

## 1.06 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective work within a five year period after Date of Substantial Completion.
- C. Warranty: Include coverage for installed sealants and accessories that fail to achieve watertight seal , exhibit loss of adhesion or cohesion, or do not cure.

## PART 2 PRODUCTS

### 2.01 MANUFACTURERS

- A. Non-Sag Sealants: Permits application in joints on vertical surfaces without sagging or slumping.
  1. Adhesives Technology Corporation: [www.atcepoxy.com](http://www.atcepoxy.com).
  2. Bostik Inc: [www.bostik-us.com](http://www.bostik-us.com).
  3. Dow Corning Corporation: [www.dowcorning.com/construction/sle](http://www.dowcorning.com/construction/sle).
  4. Fortifiber Building Systems Group: [www.fortifiber.com/sle](http://www.fortifiber.com/sle).
  5. Hilti, Inc: [www.us.hilti.com/#sle](http://www.us.hilti.com/#sle).
  6. Master Builders Solutions by BASF: [www.master-builders-solutions.basf.us/en-us/#sle](http://www.master-builders-solutions.basf.us/en-us/#sle).

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7. Momentive Performance Materials, Inc (formerly GE Silicones): [www.momentive.com/sle](http://www.momentive.com/sle).
  8. Pecora Corporation: [www.pecora.com](http://www.pecora.com).
  9. QUIKRETE Companies: [www.quikrete.com/#sle](http://www.quikrete.com/#sle).
  10. Sherwin-Williams Company: [www.sherwin-williams.com](http://www.sherwin-williams.com).
  11. Sika Corporation: [www.usa-sika.com](http://www.usa-sika.com).
  12. Specified Technologies Inc: [www.stifirestop.com/#sle](http://www.stifirestop.com/#sle).
  13. Tremco Commercial Sealants & Waterproofing: [www.tremcosealants.com/#sle](http://www.tremcosealants.com/#sle).
  14. W.R. Meadows, Inc: [www.wrmeadows.com/sle](http://www.wrmeadows.com/sle).
  15. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Self-Leveling Sealants: Pourable or self-leveling sealant that has sufficient flow to form a smooth, level surface when applied in a horizontal joint.
1. Adhesives Technology Corporation: [www.atcepoxy.com](http://www.atcepoxy.com).
  2. Bostik Inc: [www.bostik-us.com](http://www.bostik-us.com).
  3. Dayton Superior Corporation: [www.daytonsuperior.com](http://www.daytonsuperior.com).
  4. Dow Corning Corporation: [www.dowcorning.com/construction/sle](http://www.dowcorning.com/construction/sle).
  5. Master Builders Solutions by BASF: [www.master-builders-solutions.basf.us/en-us/#sle](http://www.master-builders-solutions.basf.us/en-us/#sle).
  6. Pecora Corporation: [www.pecora.com](http://www.pecora.com).
  7. QUIKRETE Companies: [www.quikrete.com/#sle](http://www.quikrete.com/#sle).
  8. Sherwin-Williams Company: [www.sherwin-williams.com](http://www.sherwin-williams.com).
  9. Sika Corporation: [www.usa-sika.com](http://www.usa-sika.com).
  10. Tremco Commercial Sealants & Waterproofing: [www.tremcosealants.com/#sle](http://www.tremcosealants.com/#sle).
  11. W.R. Meadows, Inc: [www.wrmeadows.com/sle](http://www.wrmeadows.com/sle).
  12. Substitutions: See Section 01 60 00 - Product Requirements.

## 2.02 JOINT SEALANT APPLICATIONS

- A. Scope:
1. Exterior Joints: Seal open joints, whether or not the joint is indicated on drawings, unless specifically indicated not to be sealed. Exterior joints to be sealed include, but are not limited to, the following items.
    - a. Wall expansion and control joints.
      - 1) Unit Masonry.
      - 2) Cement Plastering System.
      - 3) Metal and Composite Panels.
      - 4) Siding.
    - b. Construction joints in cast-in-place concrete
    - c. Joints between door, window, and other frames and adjacent construction.
    - d. Joints between different exposed materials.

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- e. Openings below ledge angles in masonry.
  - f. Control and expansion joints in ceilings and other overhead surfaces.
  - g. Other joints indicated below.
2. Interior Joints: Do not seal interior joints unless specifically indicated to be sealed. Interior joints to be sealed include, but are not limited to, the following items.
- a. Joints between door, window, and other frames and adjacent construction.
  - b. Control and expansion joints on exposed interior surfaces of exterior walls.
  - c. Perimeter joints of exterior openings where indicated.
  - d. Control and expansion joints in tile.
  - e. In sound-rated wall and ceiling assemblies, gaps at electrical outlets, wiring devices, piping, and other openings; between wall/ceiling and other construction; and other flanking sound paths.
    - 1) Exception: Such gaps and openings in gypsum board finished stud walls and suspended ceilings.
    - 2) Exception: Through-penetrations in sound-rated assemblies that are also fire-rated assemblies.
  - f. Other joints indicated below.
3. Do not seal the following types of joints.
- a. Intentional weepholes in masonry.
  - b. Joints indicated to be treated with manufactured expansion joint cover or some other type of sealing device.
  - c. Joints where sealant is specified to be provided by manufacturer of product to be sealed.
  - d. Joints where installation of sealant is specified in another section.
  - e. Joints between suspended panel ceilings/grid and walls.
- B. Type EP-1 - Exterior Joints: Use non-sag non-staining silicone sealant at storefront and openings, unless otherwise indicated.
- C. Type SM-1 - Lap Joints in Sheet Metal Fabrications: Butyl rubber, non-curing.
- D. Type CP-1 - Control and Expansion Joints in Concrete Paving: Self-leveling polyurethane "traffic-grade" sealant.
- E. Type IP-1 - Interior Joints: Use non-sag polyurethane sealant, unless otherwise indicated.
- F. Type IA-1 - Wall and Ceiling Joints in Non-Wet Areas: Acrylic emulsion latex sealant.
- G. Sound-Rated Assemblies: Walls and ceilings identified as "STC-rated", "sound-rated", or "acoustical".

## 2.03 JOINT SEALANTS - GENERAL

- A. Sealants and Primers: Provide products with levels of volatile organic compound (VOC) content as indicated in Section 01 61 16.
- B. Colors: As indicated on the drawings. Match adjacent surface.

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## 2.04 NONSAG JOINT SEALANTS

- A. Type NS-1 - Non-Staining Silicone Sealant: ASTM C920, Grade NS, Uses M and A; not expected to withstand continuous water immersion or traffic.
1. Movement Capability: Plus and minus 50 percent, minimum.
  2. Hardness Range: 15 to 35, Shore A, when tested in accordance with ASTM C661.
  3. Color: To be selected by Architect from manufacturer's full range.
  4. Cure Type: Single-component, neutral moisture curing.
  5. Service Temperature Range: Minus 20 to 180 degrees F.
  6. Manufacturers:
    - a. Dow; DOWSIL 790 Silicone Building Sealant: [www.dow.com/#sle](http://www.dow.com/#sle).
    - b. Dow; DOWSIL 791 Silicone Weatherproofing Sealant: [www.dow.com/#sle](http://www.dow.com/#sle).
    - c. Dow; DOWSIL 795 Silicone Building Sealant: [www.dow.com/#sle](http://www.dow.com/#sle).
    - d. Momentive Performance Materials, Inc (formerly GE Silicones): [www.momentive.com/sle](http://www.momentive.com/sle).
    - e. Pecora Corporation; Pecora 864 NST (Non-Staining Technology): [www.pecora.com/#sle](http://www.pecora.com/#sle).
    - f. Sika Corporation; Sikasil WS-290: [www.usa-sika.com/#sle](http://www.usa-sika.com/#sle).
    - g. Sika Corporation; Sikasil WS-295: [www.usa-sika.com/#sle](http://www.usa-sika.com/#sle).
    - h. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Silicone Sealant: ASTM C920, Grade NS, Uses M and A; not expected to withstand continuous water immersion or traffic.
1. Color: To be selected by Architect from manufacturer's full range.
  2. Cure Type: Single-component, neutral moisture curing
  3. Service Temperature Range: Minus 65 to 180 degrees F.
  4. Manufacturers:
    - a. Fortifiber Building Systems Group; Moistop Sealant: [www.fortifiber.com/#sle](http://www.fortifiber.com/#sle).
    - b. Dow; DOWSIL 999-A Building and Glazing Sealant: [www.dow.com/#sle](http://www.dow.com/#sle).
    - c. Pecora Corporation; Pecora 890FTS (Field Tintable Smooth): [www.pecora.com/#sle](http://www.pecora.com/#sle).
    - d. Momentive Performance Materials, Inc (formerly GE Silicones): [www.momentive.com/sle](http://www.momentive.com/sle).
    - e. Sherwin-Williams Company; Silicone Rubber All Purpose Sealant: [www.sherwin-williams.com/#sle](http://www.sherwin-williams.com/#sle).
    - f. Sika Corporation; Sikasil GP: [www.usa-sika.com/#sle](http://www.usa-sika.com/#sle).
    - g. Substitutions: See Section 01 60 00 - Product Requirements.
- C. Type FS-1 - Mildew-Resistant Silicone Sealant: ASTM C920, Grade NS, Uses M and A; single component, mildew resistant; not expected to withstand continuous water immersion or traffic.
1. Color: White.

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2. Manufacturers:
  - a. BASF Construction Chemicals-Building Systems; OmniPlus, by Sonneborn Building Products Div.: [www.buildingsystems.basf.com](http://www.buildingsystems.basf.com).
  - b. Dow Corning Corporation; 786 Silicone Sealant: [www.dowcorning.com](http://www.dowcorning.com).
  - c. Momentive Performance Materials, Inc (GE Silicones products); Silpruf SCS 1700 Sanitary: [www.momentive.com](http://www.momentive.com).
  - d. Pecora Corporation; Pecora 898 NST (Non-Staining Technology): [www.pecora.com/#sle](http://www.pecora.com/#sle).
  - e. Sika Corporation; Sikasil GP: [www.usa-sika.com/#sle](http://www.usa-sika.com/#sle).
  - f. Substitutions: See Section 01 60 00 - Product Requirements.
- D. Type ST-1 - Silyl-Terminated Polyether (STPE) and Polyurethane (STPU) Sealant: ASTM C920, Grade NS, Uses M and A; single component; not expected to withstand continuous water immersion or traffic.
  1. Hardness Range: 20 to 40, Shore A, when tested in accordance with ASTM C661.
  2. Color: To be selected by Architect from manufacturer's full range.
  3. Service Temperature Range: Minus 40 to 180 degrees F.
  4. Manufacturers:
    - a. Sherwin-Williams Company; Stampede 100 Low-Modulus Hybrid Urethane Sealant: [www.sherwin-williams.com/#sle](http://www.sherwin-williams.com/#sle).
    - b. Substitutions: See Section 01 60 00 - Product Requirements.
- E. Type PS-1 - Polyurethane Sealant: ASTM C920, Grade NS, Uses M and A; single or multi-component; not expected to withstand continuous water immersion or traffic.
  1. Hardness Range: 20 to 35, Shore A, when tested in accordance with ASTM C661.
  2. Color: To be selected by Architect from manufacturer's full range.
  3. Service Temperature Range: Minus 40 to 180 degrees F.
  4. Manufacturers:
    - a. Master Builders Solutions; MasterSeal NP1: [www.master-builders-solutions.com/en-us/#sle](http://www.master-builders-solutions.com/en-us/#sle).
    - b. Sherwin-Williams Company; Stampede-1/-TX Polyurethane Sealant: [www.sherwin-williams.com/#sle](http://www.sherwin-williams.com/#sle).
    - c. Sika Corporation; Sikaflex-1a: [www.usa-sika.com/#sle](http://www.usa-sika.com/#sle).
    - d. Sika Corporation; Sikaflex-15 LM: [www.usa-sika.com/#sle](http://www.usa-sika.com/#sle).
    - e. W. R. Meadows, Inc; POURTHANE NS: [www.wrmeadows.com/#sle](http://www.wrmeadows.com/#sle).
    - f. Substitutions: See Section 01 60 00 - Product Requirements.
- F. Non-Sag "Traffic-Grade" Polyurethane Sealant: ASTM C920, Grade NS, Uses M and A; single or multi-component; explicitly approved by manufacturer for continuous water immersion and traffic without the necessity to recess sealant below traffic surface.
  1. Movement Capability: Plus and minus 25 percent, minimum.
  2. Color: To be selected by Architect from manufacturer's full range.

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3. Service Temperature Range: Minus 40 to 180 degrees F.

## 2.05 SELF-LEVELING SEALANTS

- A. Self-Leveling Silicone Sealant: ASTM C920, Grade P, Uses M and A; single or multicomponent, explicitly approved by manufacturer for traffic exposure when recessed below traffic surface; not expected to withstand continuous water immersion.
  1. Movement Capability: Plus 100 percent, minus 50 percent, minimum.
  2. Hardness Range: 0 to 15, Shore A, when tested in accordance with ASTM C661.
  3. Color: To be selected by Architect from manufacturer's full range.
  4. Service Temperature Range: Minus 40 to 180 degrees F.
  5. Manufacturers:
    - a. Sika Corporation; Sikasil 728SL: [www.usa-sika.com/#sle](http://www.usa-sika.com/#sle).
    - b. Substitutions: See Section 01 60 00 - Product Requirements.
  6. Hardness Range: 35 to 55, Shore A, when tested in accordance with ASTM C661.
  7. Color: To be selected by Architect from manufacturer's full range.
  8. Service Temperature Range: Minus 40 to 180 degrees F.
  9. Manufacturers:
    - a. Pecora Corporation: [www.pecora.com](http://www.pecora.com).
    - b. Sherwin-Williams Company; Stampede 1SL Polyurethane Sealant: [www.sherwin-williams.com/#sle](http://www.sherwin-williams.com/#sle).
    - c. Sika Corporation; Sikaflex-1c SL: [www.usa-sika.com/#sle](http://www.usa-sika.com/#sle).
    - d. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Self-Leveling Polysulfide Sealant: ASTM C920, Grade P, Uses M and A; multicomponent; explicitly approved by manufacturer for traffic exposure and continuous water immersion.
  1. Movement Capability: Plus and minus 25 percent.
  2. Hardness Range: 30 to 55, Shore A, when tested in accordance with ASTM C661.
  3. Color: To be selected by Architect from manufacturer's full range.
  4. Service Temperature Range: Minus 40 to 180 degrees F.
  5. Manufacturers:
    - a. W.R. Meadows, Inc; Deck-O-Seal (pourable): [www.wrmeadows.com/#sle](http://www.wrmeadows.com/#sle).
    - b. Substitutions: See Section 01 60 00 - Product Requirements.
- C. Semi-Rigid Self-Leveling Polyurea Joint Filler: Two-component, 100 percent solids; intended for filling cracks and control joints not subject to significant movement; rigid enough to support concrete edges under traffic.
  1. Durometer Hardness, Type A: 75, minimum, after seven days when tested in accordance with ASTM D2240.
  2. Color: To be selected by Architect from manufacturer's standard colors.
  3. Joint Width, Minimum: 1/8 inch.

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4. Joint Depth: Provide product suitable for joints from 1/8 inch to 1 inch in depth excluding space for backer rod.
5. Manufacturers:
  - a. Adhesives Technology Corporation: [www.atcepoxy.com/#sle](http://www.atcepoxy.com/#sle).
  - b. ARDEX Engineered Cements; ARDEX ARDISEAL RAPID PLUS: [www.ardexamericas.com/#sle](http://www.ardexamericas.com/#sle).
  - c. Euclid Chemical Company; EUCO QWIKjoint UVR: [www.euclidchemical.com/#sle](http://www.euclidchemical.com/#sle).
  - d. Nox-Crete Inc; DynaFlex JF-85: [www.nox-crete.com/#sle](http://www.nox-crete.com/#sle).
  - e. Substitutions: See Section 01 60 00 - Product Requirements.

## 2.06 ACCESSORIES

- A. Backer Rod: Cylindrical cellular foam rod with surface that sealant will not adhere to, compatible with specific sealant used, and recommended by backing and sealant manufacturers for specific application.
  1. Type for Joints Subject to Pedestrian or Vehicular Traffic: ASTM C1330; Type B - Bi-Cellular Polyethylene.
  2. Closed Cell and Bi-Cellular: 25 to 33 percent larger in diameter than joint width.
- B. Backing Tape: Self-adhesive polyethylene tape with surface that sealant will not adhere to and recommended by tape and sealant manufacturers for specific application.
- C. Masking Tape: Self-adhesive, nonabsorbent, non-staining, removable without adhesive residue, and compatible with surfaces adjacent to joints and sealants.
- D. Joint Cleaner: Non-corrosive and non-staining type, type recommended by sealant manufacturer; compatible with joint forming materials.
- E. Primers: Type recommended by sealant manufacturer to suit application; non-staining.

## PART 3 EXECUTION

### 3.01 EXAMINATION

- A. Verify that joints are ready to receive work.
- B. Verify that backing materials are compatible with sealants.
- C. Verify that backer rods are of the correct size.
- D. Preinstallation Adhesion Testing: Install a sample for each test location indicated in the test plan.
  1. Test each sample as specified in PART 1 under QUALITY ASSURANCE article.
  2. Notify Architect of date and time that tests will be performed, at least seven days in advance.
  3. Record each test on Preinstallation Adhesion Test Log as indicated.
  4. If any sample fails, review products and installation procedures, consult manufacturer, or take whatever other measures are necessary to ensure adhesion; re-test in a different location; if unable to obtain satisfactory adhesion, report to Architect.

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5. After completion of tests, remove remaining sample material and prepare joint for new sealant installation.

### 3.02 PREPARATION

- A. Remove loose materials and foreign matter that could impair adhesion of sealant.
- B. Clean joints, and prime as necessary, in accordance with manufacturer's instructions.
- C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.
- D. Mask elements and surfaces adjacent to joints from damage and disfigurement due to sealant work; be aware that sealant drips and smears may not be completely removable.

### 3.03 INSTALLATION

- A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.
- B. Perform installation in accordance with ASTM C1193.
- C. Perform acoustical sealant application work in accordance with ASTM C919.
- D. Measure joint dimensions and size joint backers to achieve the following, unless otherwise indicated:
  1. Width/depth ratio of 2:1.
  2. Neck dimension no greater than 1/3 of the joint width.
  3. Surface bond area on each side not less than 75 percent of joint width.
- E. Install bond breaker backing tape where backer rod cannot be used.
- F. Install sealant free of air pockets, foreign embedded matter, ridges, and sags, and without getting sealant on adjacent surfaces.
- G. Do not install sealant when ambient temperature is outside manufacturer's recommended temperature range, or will be outside that range during the entire curing period, unless manufacturer's approval is obtained and instructions are followed.
- H. Nonsag Sealants: Tool surface concave, unless otherwise indicated; remove masking tape immediately after tooling sealant surface.

### 3.04 FIELD QUALITY CONTROL

- A. District will employ an independent testing agency to perform field quality control inspection and testing as specified in PART 1 under QUALITY ASSURANCE article.
- B. Non-Destructive Adhesion Testing: If there are any failures in first 100 linear feet, notify Architect immediately.
- C. Destructive Adhesion Testing: If there are any failures in first 1000 linear feet, notify Architect immediately.
- D. Remove and replace failed portions of sealants using same materials and procedures as indicated for original installation.
- E. Repair destructive test location damage immediately after evaluation and recording of results.

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### 3.05 POST-OCCUPANCY

- A. Post-Occupancy Inspection: Perform visual inspection of entire length of project sealant joints at a time that joints have opened to their greatest width; i.e. at low temperature in thermal cycle. Report failures immediately and repair.

**END OF SECTION**

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## SECTION 09 22 36 LATH

### PART 1 GENERAL

#### 1.01 SECTION INCLUDES

- A. Metal lath for cement plaster.
- B. Furring for metal lath.

#### 1.02 RELATED REQUIREMENTS

- A. Section 09 24 00 - Cement Plastering.

#### 1.03 REFERENCE STANDARDS

- A. ASTM C841 - Standard Specification for Installation of Interior Lathing and Furring.
- B. ASTM C847 - Standard Specification for Metal Lath.
- C. ASTM C954 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs From 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness.
- D. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.
- E. 2019 CBC Sections 2504, 2507, and 2510.
- F. Plaster Assemblies Manual - Technical Information Services Bureau (TSIB) of Western Walls & Ceilings Contractors Association (WWCCA); Current Edition.

#### 1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on furring and lathing components, structural characteristics, material limitations, and finish.

#### 1.05 QUALITY ASSURANCE

- A. Maintain one copy of each installation standard referenced on site throughout the duration of lathing and plastering work.
- B. Installer Qualifications: Company specializing in performing the work of this section with at least three years of documented experience.

### PART 2 PRODUCTS

#### 2.01 MANUFACTURERS

- A. Metal Lath: All products listed are "or equal".
  - 1. Brand X Metals: [www.brandxmetals.com](http://www.brandxmetals.com).
  - 2. CEMCO: [www.cemcosteel.com/#sle](http://www.cemcosteel.com/#sle).

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3. Clarkwestern Dietrich Building Systems LLC: [www.clarkdietrich.com/#sle](http://www.clarkdietrich.com/#sle).
4. Fry Reglet: [www.fryreglet.com](http://www.fryreglet.com).
5. Pittcon Industries: [www.pittconindustries.com](http://www.pittconindustries.com).
6. Structa Wire Corporation; Structalath: [www.structawire.com/#sle](http://www.structawire.com/#sle).
7. Substitutions: See Section 01 60 00 - Product Requirements.

## **2.02 FRAMING AND LATH ASSEMBLIES**

- A. Provide completed assemblies with the following characteristics: See also CBC Table 1604A.3.
  1. Maximum Deflection of Vertical Assemblies: 1:360 under lateral point load of 100 lbs.
- B. Fire Rated Assemblies: Provide components complying with requirements for fire rated assemblies specified in the section where the plaster finish is specified.

## **2.03 FRAMING MATERIALS**

- A. Furring Channels: Formed steel, minimum 0.020 inch thick, 3/8 inch deep by 7/8 inch high, splicing permitted; galvanized.

## **2.04 LATH**

- A. Diamond Mesh Metal Lath: ASTM C847, galvanized; self-furring.
  1. Weight: To suit application comply with deflection criteria and as specified in ASTM C841 or ASTM C1063 for framing spacing.
  2. Minimum Weight: 3.4 lb/sq yd.
- B. Strip Mesh: Expanded metal lath, same weight as lath, 2 inch wide by 24 inch long; same finish as lath.
- C. Beads, Screeds, Joint Accessories, and Other Trim: Depth governed by plaster thickness, maximum possible lengths.
  1. Material: Formed galvanized sheet steel, expanded metal flanges.

## **2.05 ACCESSORIES**

- A. Anchorage: Tie wire, nails, and other metal supports, of type and size to suit application; to rigidly secure materials in place, galvanized per ASTM C1063.
- B. Fasteners: Self-piercing tapping screws; ASTM C1002 or ASTM C954.

# **PART 3 EXECUTION**

## **3.01 EXAMINATION**

- A. Verify existing conditions before starting work.
- B. Verify that substrates are ready to receive work and conditions are suitable for application.
- C. Do not begin until unacceptable conditions have been corrected.
- D. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

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### 3.02 INSTALLATION - GENERAL

- A. Install interior lath and furring for gypsum plaster in accordance with ASTM C841.
- B. Install metal lath and furring for Portland cement plaster in accordance with ASTM C1063.

### 3.03 LATH INSTALLATION

- A. Apply lath taut, with long dimension perpendicular to supports.
- B. Attach metal lath to supports using screws at maximum 12 inches on center.
- C. Continuously reinforce internal angles with corner mesh, except where the metal lath returns 3 inches from corner to form the angle reinforcement; fasten at perimeter edges only.
- D. Place corner bead with mesh at external wall corners; fasten at outer edges of lath only.
- E. Place base screeds at termination of plaster areas; secure rigidly in place.
- F. Place 4 inch wide strips of lath centered over junctions of dissimilar backing materials, and secure rigidly in place.
- G. Place lath vertically above each top corner and each side of door frames to 6 inches above ceiling line.
- H. Place casing beads at terminations of plaster finish. Butt and align ends, cope or miter at corners. Secure rigidly in place, maximum 12 inches on centers..
- I. Place additional strip mesh diagonally at corners of lathed openings. Secure rigidly in place.

### 3.04 TOLERANCES

- A. Install accessories to lines and levels.
- B. Maximum Variation from True Lines and Levels: 1/8 inch in 10 feet.
- C. Maximum Variation from True Position: 1/8 inch.

**END OF SECTION**

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**SECTION 09 24 00  
CEMENT PLASTERING**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Cement plastering.

**1.02 RELATED REQUIREMENTS**

- A. Section 05 40 00 - Cold-Formed Metal Framing: Structural metal framing for plaster.
- B. Section 09 22 36 - Lath: Lath, beads, screeds, and joint accessories for plaster base.

**1.03 REFERENCE STANDARDS**

- A. ASTM C150/C150M - Standard Specification for Portland Cement.
- B. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes.
- C. ASTM C926 - Standard Specification for Application of Portland Cement-Based Plaster.
- D. ASTM C932 - Standard Specification for Surface-Applied Bonding Compounds for Exterior Plastering.

**1.04 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements for submittals procedures.
- B. Product Data: Provide data on plaster materials and trim accessories.
- C. Evaluation Service Reports: Show compliance with specified requirements.
- D. Samples:
  - 1. Submit two samples, 8 by 8 inch in size illustrating finish color and texture.
  - 2. Submit two samples of each type trim accessory.
- E. Installer's Qualification Statement.

**1.05 QUALITY ASSURANCE**

- A. Installer Qualifications: Company specializing in performing the work of this section with minimum three years documented experience.
- B. Copies of Documents at Project Site: Maintain at the project site a copy of each referenced document that prescribes execution requirements.

**1.06 FIELD CONDITIONS**

- A. Exterior Plaster Work: Do not apply plaster when substrate or ambient air temperature is 40 degrees F or lower, or when temperature is expected to drop below 40 degrees F within 48 hours of application.
- B. Interior Plaster Work: Maintain minimum ambient temperature of 50 degrees F during installation of plaster and until fully cured.

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## PART 2 PRODUCTS

### 2.01 CEMENT PLASTER APPLICATIONS

- A. Lath Plaster Base: Metal lath.
  - 1. Plaster Type: Factory prepared plaster mix.
  - 2. Number of Coats: Three.
  - 3. First Coat: Apply to a nominal thickness of 3/8 inch.
  - 4. Second Coat: Apply to a nominal thickness of 3/8 inch.
  - 5. Leveling Coat: Apply to a nominal thickness of 1/32 to 1/16 inch.
  - 6. Finish: Acrylic.

### 2.02 FACTORY PREPARED CEMENT PLASTER

- A. Exterior Portland cement plaster system made of scratch and brown base coat, leveling coat with reinforcing mesh, and acrylic finish coat; install in accordance with ASTM C926.
  - 1. Provide weather resistive barrier as part of the system.
  - 2. Manufacturers:
    - a. BASF Wall Systems: [www.wallsystems.basf.com/#sle](http://www.wallsystems.basf.com/#sle).
    - b. Dryvit; Commercial Cement Plaster (CCP) 4: [www.dryvit.com](http://www.dryvit.com).
    - c. LaHabra; FastWall 300: [www.lahabrastucco.com/#sle](http://www.lahabrastucco.com/#sle).
    - d. Omega Products International, Inc.; Super Cement with Crack Isolation System: [omega-products.com](http://omega-products.com).
    - e. Parex USA, Inc; Armourwall 300: [www.parexusa.com/#sle](http://www.parexusa.com/#sle).
    - f. Sto Corp; Sto Powerwall: [www.stocorp.com/#sle](http://www.stocorp.com/#sle).
    - g. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Premixed One-Coat Base: Mixture of Type I Portland cement complying with ASTM C150/C150M, hydrated lime complying with ASTM C207, fibers and other approved ingredients; install in accordance with ASTM C926.
  - 1. Manufacturers:
    - a. Omega Products International, Inc.; Diamond Wall Insulating One Coat System: [omega-products.com](http://omega-products.com).
- C. Premixed Base Coats: Mixture of cement, aggregate, fibers, and proprietary admixtures for scratch and brown coats; install in accordance with ASTM C926.
- D. Premixed Leveling Coat: Acrylic polymer-based blend approved for use with plaster manufacturer's base coat and finish materials.
- E. Painted Finish Coating: See Section 09 91 13.
- F. Primer: Acrylic, as recommended by coating manufacturer and compatible with plaster base coat.
- G. Premixed Textured Coating: Polymer modified acrylic coating, integrally colored, and trowel applied to substrates prepared in accordance with manufacturer's written installation

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instructions.

1. Color: To match approved sample.

### **2.03 ACCESSORIES**

- A. Lath: See Section 09 22 36.
- B. Finishing Accessories: See Section 09 22 36.
- C. Bonding Compound: Provide type recommended for bonding plaster to solid surfaces, complying with ASTM C932.
- D. Reinforcing Mesh: 4.5 oz/sq yd alkali-resistant mesh.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify existing conditions are acceptable prior to starting this work.
- B. Verify lath is flat, secured to substrate, and joint and surface perimeter accessories are properly in place.
- C. Verify mechanical and electrical equipment and services located within areas to receive this work have been properly tested and approved.

### **3.02 PREPARATION**

- A. Roughen smooth concrete surfaces and apply bonding compound in accordance with manufacturer's written installation instructions.

### **3.03 INSTALLATION - WATER-RESISTIVE BARRIER**

- A. Where the cement plaster is installed as part of a barrier wall system, install 2 layers of water-resistive barrier in accordance with water-resistive barrier manufacturer's instructions. Integrate water-resistive barrier with all flashing accessories, adjacent water-resistive barriers, doors, windows, penetrations, and cladding transitions.
- B. Apply water-resistive barrier horizontally with upper layer lapped over lower layer minimum 2 inches.
- C. Lap water-resistive barrier minimum 6 inches at vertical joints.
- D. In two layer applications, start with two horizontal layers at bottom of exterior wall or structure.

### **3.04 MIXING**

- A. Mix only as much plaster as can be used prior to initial set.
- B. Mix materials dry, to uniform color and consistency, before adding water.
- C. Protect mixtures from frost or freezing temperatures, contamination, and excessive evaporation.

### **3.05 APPLICATION**

- A. Apply plaster in accordance with manufacturer's written instructions and comply with ASTM C926.

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- B. Base Coats:
  - 1. Apply base coat(s) to fully embed lath and to specified thickness.
  - 2. Follow guidelines in ASTM C926 and manufacturer's written installation instructions for moist curing base coats and application of subsequent coats.
- C. Leveling Coat:
  - 1. Apply leveling coat to specified thickness.
  - 2. Fully embed reinforcing mesh in leveling coat.
- D. Finish Coats:
  - 1. Cement Plaster:
    - a. Apply with sufficient material and pressure to ensure complete coverage of base to specified thickness.
    - b. Apply desired surface texture while mix is still workable.
    - c. Float to a consistent finish.
  - 2. Primer and Acrylic Coatings:
    - a. Remove surface contaminants such as dust and dirt without damaging substrate.
    - b. Apply primer in accordance with manufacturer's instructions.
    - c. Apply finish coating in number of coats and to thickness recommended by manufacturer.
    - d. Finish coat to match existing texture.
- E. Finish Painting Overcoat: See Section 09 91 13 - Exterior Painting.

### **3.06 TOLERANCES**

- A. Maximum Variation from True Flatness: 1/4 inch in 10 feet.

### **3.07 REPAIR**

- A. Patching: Remove loose, damaged or defective plaster and replace with plaster of same composition; finish to match surrounding area.

## **END OF SECTION**

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**SECTION 23 00 10**  
**MECHANICAL GENERAL REQUIREMENTS**

**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. Work includes, but is not limited to, the following:
  - 1. Labor, material, equipment and transportation to complete the Work as shown on the drawings, specified herein and/or implied thereby.
  - 2. A requirement of the plumbing sections shall be to provide make-up water and drain final connections to systems and equipment.
  - 3. It is the intent of the project that the installation be coordinated to provide a complete and usable facility.
- B. Work not included in this division:
  - 1. Painting, except as hereinafter specified. See Division 9 for painting.
  - 2. Electrical, except for controls hereinafter specified. See Division 26 for electrical.
- C. Related Sections include the following:
  - 1. Division 23 Section 23 09 80 "Mechanical Commissioning."
  - 2. Division 23 Section 23 00 50 "Basic Mechanical Materials and Methods."

**1.02 DEFINITIONS**

- A. Unless otherwise specified, "all clarification from," "field direction by," "submittals to," "approved by," "processed by," "permission from," and like mentioned herein shall mean from/by/to Architect.
- B. "Provide" means furnish and install referenced item with all appurtenances.
- C. "Shall" indicates a mandatory requirement.
- D. "Air conditioning" is defined as the treatment and/or handling of any air to any degree by the systems shown on the drawings and herein specified and is not restricted to refrigerated cooling.

**1.03 DELIVERY AND STORAGE OF MATERIALS**

- A. Provide for the safety and good condition of all materials and equipment until final acceptance by the Owner. Protect all materials and equipment from damage from any cause whatever, and provide adequate and proper storage facilities during the progress of the work. Replace all damaged and defective work, material or equipment prior to filing application for final acceptance. Properly protect all openings to equipment, piping, ductwork, accessories, etc. from dirt, dust, and debris prior to and during installation of the work. Ductwork stored at the jobsite shall be covered to protect from dirt, dust, debris, fire proofing, etc.

**1.04 CODES AND STANDARDS**

- A. Work and materials shall be in full accordance with the latest rules and regulations of the Local Fire Marshal; the National Electric Code (NEC); the Uniform Plumbing Code; the California Plumbing Code; California Administrative Code, Title 24, (CAL/OSHA); Local Building Codes; the

Uniform Mechanical Code; the California Mechanical Code; Vol. II of the Uniform Building Code; Volume I and II of the California Building Code; SMACNA "Guidelines for Seismic Restraints of Mechanical Systems"; and other applicable codes, laws or regulations of bodies lawfully empowered and having jurisdiction over this project. Nothing in the plans or specifications shall be construed to permit work not conforming to these codes. When codes conflict with one another, provide larger, higher or more restrictive standards without additional costs.

#### **1.05 PERMITS**

- A. Obtain all permits, patent rights, and licenses that are required for the performing of this work by all laws, ordinances, rules and regulations, or orders of any officer and/or body. Provide all notices necessary in connection therewith, and pay all fees relating thereto and all costs and expenses incurred on account thereof. No work shall be covered before inspection by the jurisdictional authorities and observation by the Architect or the owner's designated representatives.

#### **1.06 EXPLANATION AND PRECEDENCE OF DRAWINGS**

- A. Drawings and specifications are intended to be read together so that any work mentioned in one and not the other shall be executed the same as if mentioned in both.
- B. For purposes of clearness and legibility, drawings are essentially diagrammatic. The size and location of equipment is drawn to scale wherever possible. Contractor shall make use of data in the contract documents and shall verify this information at the building site.
- C. Where the contract specifications and/or drawings are in conflict, obtain clarification of such during bidding. Where addenda for clarification of such is not timely, base the bid on the higher standards or more restrictive requirements; prior to fabrication, obtain written clarification.
- D. The drawings indicate required size and points of termination of pipes, and suggest proper routes to conform to structure, avoid obstructions and preserve clearances. It is not intended that drawings indicate necessary offsets. The Contractor shall make the installation in such a manner as to conform to the structure, avoid obstructions, preserve headroom and keep openings and passageways clear, without further instructions or costs to the Owner.
- E. It is intended that apparatus be located symmetrical with architectural elements. Refer to architectural details in completing the correlating work.
- F. The Contractor shall study drawings and specifications including, and not limited to, architectural, structural, mechanical, plumbing, fire protection, and electrical to determine conflict with ordinances and statutes. Errors or omissions shall be reported in writing, and changes shall be included in the as-built drawings and the additional work performed at no cost to the Owner.
- G. Submittal of bid shall indicate the Contractor has examined the site and drawings and has included required allowances in his bid. No allowance shall be made for any error resulting from Contractor's failure to visit job site and to review drawings and specifications. Bid shall include costs for required drawings and changes as outline above, all at no cost to owner.

#### **1.07 RECORD DRAWINGS**

- A. In addition for requirements for shop drawings specified elsewhere, provide and maintain on the job one complete set of blue line prints of the record drawings for all the mechanical and

plumbing work. Carefully record on this set of prints, work including piping, valves, etc., which is installed differently from that indicated in the specifications and on the drawings; locate dimensionally from fixed points. The depth shall be indicated for all plugged wyes, tees and capped lines.

- B. These record drawings shall be continuously kept up-to-date, and shall be available for inspection at all times. Existing lines discovered shall be indicated on these drawings.
- C. At completion of work, provide a neat and legible reproducible set of these up-to-date record drawings which shall be individually signed and dated by the Contractor and the job inspector as to their accuracy.
- D. Record drawings shall be submitted for acceptance and approval to the Architect and Mechanical Engineer before final certificate of acceptance will be issued.
- E. Record drawings shall show the exact location of all control sensor devices.

#### **1.08 CUTTING AND PATCHING**

- A. Perform all cutting and fitting required for work of this section in rough construction of the building. Obtain permission of the Structural Engineer prior to cutting any structural building elements.
- B. All patching of finished construction of building shall be performed under the sections of specifications covering these materials by the trades at no additional cost to the Owner.
- C. All cutting of concrete work by Contractor shall be by core drilling or concrete saw. No cutting or coring shall be done without first obtaining the permission of the Architect and Owner.
- D. All patching of existing surfaces shall match existing material and finish.

#### **1.09 DAMAGE BY LEAKS**

- A. Contractor shall be responsible for damage to the grounds, walks, roads, buildings, finishes, surfaces, materials, equipment, piping systems, electrical systems and their equipment and contents, caused by leaks in the piping systems being installed or having been installed herein. He shall repair at his expense all damage so caused. All repair work shall be done as directed by the Architect and Owner.

#### **1.10 EMERGENCY REPAIRS**

- A. The Owner reserves the right to make emergency repairs as required to keep equipment in operation without voiding the Contractor's guarantee bond nor relieving the Contractor of his responsibilities.

#### **1.11 LOCATIONS**

- A. Coordinate in advance of the work, requirements for openings, equipment maintenance clearances, recesses and chases in the walls, partitions, equipment housekeeping pads, framing or openings. Should furnishing this information be neglected, delayed or incorrect and additional cutting is found to be required, the cost of same shall be borne by the Contractor. Nothing in this paragraph shall be construed to relieve the Contractor of the responsibility for providing and paying for the required core drilling and openings in existing work.
- B. Diagrammatic Indications on Drawings are:
  - 1. Approximate only.

2. At various locations shown distorted for clarity.
- C. Exact Locations Shall:
  1. Be as required for proper installation in available space.
  2. Avoid interference with architectural, electrical and structural features.
  3. Be coordinated with the work of other trades toward the general purpose of having the work progress rapidly and smoothly with a minimum interference between one trade and another.
  4. Preserve headroom and keep openings and passageways clear.
  5. Have a neat arrangement symmetrical to the building lines, light and tile pattern.
  6. Be reasonably accessible for hung ceiling areas for maintenance from the floor below. Equipment, valves, and other items requiring maintenance, adjustment and/or observation shall be accessible.

#### **1.12 SUPPORTS, EQUIPMENT PADS, STAGING, ETC.**

- A. Construction supports required for the proper installation of equipment shall be in accordance with the drawings, manufacturer's requirements, seismic requirements, and applicable codes. Check architectural and structural drawings for equipment pads by others. Provide staging, scaffolds, platforms, ladders or similar facilities required to properly install the work.

#### **1.13 INTERRUPTION OF UTILITIES**

- A. The Contractor shall schedule and coordinate all interruptions of utilities with the Architect and Owner within 30 days after award of contract. The Contractor shall submit to the Owner a schedule of proposed interruptions. At least 72 hours prior to the interruption, the contractor shall submit a request indicating the proposed date and duration of interruption, the work to be accomplished, the areas which will be affected and a proposed contingency plan to be followed in the event that normal service or facilities cannot be restored on schedule. Do not commence work until the time, date, and contingency have been approved in writing by the Architect and Owner.
- B. Provide any labor and materials necessary to restore services on a contingency basis should normal service or facilities not be restored on schedule.
- C. Preparatory work associated with each interruption shall be performed during normal work hours. The actual interruption required for tie-in shall be performed between 8 P.M. and 5 A.M. Maximum shutdown during this period of any system shall be 4 hours.

#### **1.14 SUBSTITUTIONS**

- A. If substitutions of controls or equipment requires any changes in the architectural, structural, mechanical, plumbing or electrical work from that shown on the drawings(including all environmental characteristics), the extra cost of the equipment or architectural, structural, mechanical, plumbing or electrical work shall be responsibility of the Contractor requesting the substitution. All substitutions shall be approved by the Architect before purchase by the contractor.
- B. If the Contractor proposes substitutions of any equipment specified herein or on the drawings, it shall be the Contractor's responsibility to obtain approval from the Architect for such equipment as well as approval for anchorage of such equipment from the Architect, Structural

Engineer, and governing approval agencies (Department of the State Architects - DSA),. All costs required for such approval shall be the responsibility of the Contractor requesting the substitution.

#### **1.15 PREPARATION OF SUBMITTALS**

- A. Prior to commencement of work and in accordance with the General Requirements, submit for review six copies of proposed equipment and material submittals. The Contractor shall verify the delivery dates are compatible with the specified construction schedule; and verify the equipment is sized to accommodate the conditions specified. Submittals shall include manufacturer's names and model numbers and shall comply with specifications and drawings. The Contractor shall bear the cost of changes necessary to accommodate substitutions if substitution is approved.
- B. Provide formal submittal to Architect. Review of the formal submittal is only for general conformance with design concept of project and general compliance with the information given in the contract documents. The Contractor is responsible for confirmation and correlation of the dimensions, quantities and sizes, for information that pertains to fabrication methods or construction techniques, and for coordination of work of all trades. Deviations from Drawings and Specifications shall be clearly and completely indicated (by a separate letter) in the formal submittals. Reviewed Submittals shall not relieve the Contractor of responsibility for errors or deviations.
  - 1. Where specific model numbers and/or manufacturers are specified or shown, it is the intent of the contract documents to procure the specified item(s). Alternate equipment may not be used unless data is submitted for consideration as a substitution in accordance with General Requirements and this section.
  - 2. Model numbers used may not indicate all features or options required for this specific installation. Modify the specified models to comply with the requirements, as specified or shown.
  - 3. Product Data for Proposed Substitutions:
    - a. Submit copies of complete data, with drawings and samples as appropriate, including:
      - 1) Comparison of the qualities of the proposed substitution with that specified.
      - 2) Changes required in other elements of the work because of the substitution.
      - 3) Affect on construction schedule.
      - 4) Cost data comparing the proposed substitution with the product specified.
      - 5) Availability of maintenance service and source of replacement materials.
      - 6) Reference to three (3) projects similar to this where such equipment is installed and operating to two (2) or more years.
    - b. Acceptance of substitutions is entirely at the discretion of the Architect.
- C. Formal submittals shall be complete with catalog data and information properly marked to indicate equality of material (where substitution is allowed and desired), adequacy in capacity and performance to meet minimum capacities or performance as specified or indicated. Arrange the submittals in the same sequence as these Specifications and indicate the Section

and Paragraph number (in the upper right-hand side with tabs) for which each submittal is intended. Incomplete submittals shall be rejected.

- D. Do not fabricate order or deliver materials or equipment until formal submittals have been approved. Where material or equipment is used without such permission, it is deemed that the material or equipment shall be in complete compliance with drawings and specifications, without additional cost where such compliance is lacking and may be required to be altered in the field.
- E. Submittals shall be bound and shall include, at a minimum, the following:
  - 1. Complete bill of materials listing equipment furnished.
  - 2. Catalog cut sheets of every component being provided (highlighted).
  - 3. Provide completed blue-line shop drawings of the packaged equipment detailing all field connection points.
  - 4. Dimensions, clearance requirements, weights, and capacities.
  - 5. Wiring diagrams showing control interface as applicable.
  - 6. Warranty sheets.
  - 7. Pressure drops as applicable.
- F. Contractor shall incur all costs for time spent by Engineer for review of more than two submittals on each item. Costs shall be based on Engineer's hourly billing rate schedule at the time of review. Rate schedule available upon request. Engineer shall invoice the contractor upon completion of review and shall be paid by the contractor within 30 days of date of invoice. Failure to remit will withdraw approval (if any) of submittals in question.

#### **1.16 SHOP DRAWINGS:**

- A. Proceed with preparation of shop drawings immediately upon receiving an authorization to proceed for the project. Shop drawings shall be originally prepared by the contractor. Provide minimum 1/4" scale shop drawings in electronic format. Submit a complete set in one package prior to material fabrication, order and installation.
- B. Include:
  - 1. Duct and pipe elevations and sizes.
  - 2. Double line ductwork and piping (4" and larger).
  - 3. Actual size of purchased equipment from certified shop drawings.
  - 4. Access panels including ceiling panels.
  - 5. Access clearances for equipment.
  - 6. Actual locations of ceiling diffusers/ supply registers and return registers.
  - 7. Actual locations of manual volume dampers.
  - 8. Locations of structural penetrations such as beams.
  - 9. Actual location of control panels and power connections to equipment.
  - 10. Color coded duct and piping based on material used.
  - 11. Label and tag schedule for equipment.
  - 12. Duct transitions to clear beams or tight areas.

13. Room temperature sensor locations.
  14. Point of connection to utilities outside the building.
  15. Sections or 3-dimensional drawings of congested areas.
  16. Gridlines.
  17. Duct and piping supports on roof.
- C. Coordinate with other trades in preparation of shop drawings.
  - D. Submit a copy of coordinated shop drawings to General Contractor for distribution to other trades, including electrical and fire sprinkler contractor.
  - E. Submit to commissioning agent for approval to assure design intent is met.
  - F. Prior to fabrication and upon receiving approval from commissioning agent, submit a complete set of shop drawings at one time to the mechanical engineer.

#### **1.17 ELECTRICAL REQUIREMENTS**

- A. Coordinate the following items with Division 26:
  1. Power wiring
  2. Power Supply Voltage Requirements
  3. Safety switches
  4. Combination controllers
  5. Disconnect switches
  6. Motor starters
  7. Circuit breakers
  8. Motor-control equipment forming part of motor control centers or switchgear assemblies
  9. Electrical connections of the mechanical equipment to the electrical power source shall be coordinated with and provided under Division 26.

#### **1.18 MOTORS**

- A. Before order is placed for electrical devices, the Contractor shall check with the Electrical contractor and verify requirements as to type, mounting and current characteristics as well as to any special delivery instructions. Motors provided under Division 23 shall be minimum of 10% normal rating above brake horsepower (BHP) rating of equipment driven.

#### **1.19 TESTS**

- A. Contractor shall make tests required by legally constituted authorities and as listed below.
  1. Tests shall be made in the presence of the Owner or his representative and a duly authorized inspector. The Owner or his representative shall be notified 5 days before tests are made.
  2. Concealed work and insulated work shall remain uncovered until required testing has been performed and approved by the Owner. If work to be tested is covered before the approval of the Owner or his authorized representative has been obtained, it shall be uncovered for testing at the Contractor's expense.

3. Obtain required documents of certification indicating approval, acceptance and compliance with the requirements of all administrative authorities having jurisdiction over the work. No final payment shall be made until all such certificates are delivered to the Owner.
4. Furnish labor, materials, instruments and bear other costs in connection with all tests.
5. Piping systems, except as hereinafter noted, shall be given hydrostatic (with water) test of a least 150% of the maximum operating pressure but no less than 150 psig.
6. Before making test, remove or valve off from the system, gauges, traps, and other apparatus or equipment which may be damaged by test pressure.
7. Install a calibrated test pressure gauge in the system to observe any loss in pressure. Maintain the required test pressure for a sufficient length of time to enable an inspection to be made of all joints and connections. Perform tests after installation and prior to acceptance.
8. Final pressures at the end of the test period shall be no more or less than that caused by expansion or contraction of the test medium due to temperature changes.
9. After tests have been made and leaks repaired, clean and flush systems as hereinafter specified. Water piping shall be left under supply main pressure for the balance of the construction period.
10. Tests for mechanical, plumbing, and fire protection systems are specified within their own section. Equipment and ductwork system tests are specified in the test and balance section.
11. Provide necessary provisions and tests for maintaining the operational condition and cleanliness of existing systems.

#### **1.20 LABOR AND MATERIALS**

- A. Labor shall be carefully skilled for this kind of work, and under the direction of a competent foreman.
- B. Materials shall be new, in perfect condition and of domestic manufacturer. Materials for similar uses to be of same type and manufacturer.
- C. Equipment shall bear the manufacturer's label showing performance characteristics. Identifying size number shall be given only when it is not practicable or customary to show performance characteristics.
- D. Valves, pipe, fittings, etc., shall bear the manufacturer's name or trademark.
- E. Unless otherwise specified herein, equipment and fixtures shall be installed in accordance with the manufacturer's recommendations, including recommended service and removal clearances.

#### **1.21 PROTECTION AND CLEAN-UP**

- A. Protection: Provide for the safety and good condition of materials and equipment until final acceptance of the Architect. Protect materials and equipment from dirt, dust, debris, and damage from any cause whatever, and provide adequate and proper storage facilities during the progress of the work and replace all damaged and defective material, equipment or work precedent to filing application for final acceptance.
- B. Cleaning:



1. Unless a more stringent requirement is specified, thoroughly clean all parts of the piping, ductwork, fixtures, apparatus and equipment. All parts shall be thoroughly cleaned of dirt, dust, debris, cement, plaster and other materials, and all grease and oil spots removed. Such surfaces shall be carefully wiped and all cracks and corners scraped out. Clean all systems, including piping and ductwork prior to test.
2. Exposed rough metal work shall be carefully brushed down with steel brushes to remove rust and other spots and left in clean condition to receive painter's finish. Where factory prime coat has been damaged, this Contractor shall be responsible for restoration of same.

## **1.22 ACCESS PANELS**

- A. Access Doors and Panels:
  1. Wherever volume dampers, fire dampers, smoke fire dampers, controls, valves or other items or parts of the installation which require periodic inspection or adjustments are concealed by permanent non-removable construction, an access door shall be provided. Rating of access panel shall be determined by rating of wall or ceiling in which panel is installed. Types to be as approved and as appropriate for the surface and construction in which it is installed. Verify all locations with Architect and other trades.
  2. Access doors and panels shall be of sufficient size and shall be located properly to assure service to the intended item.

## **1.23 MAINTENANCE, OPERATION INSTRUCTION**

- A. General: Thoroughly instruct the Owner's operators in every detail of operation of the system. Provide the Owner with a list of all equipment, giving the manufacturer's name, model number, serial number, parts list and complete internal wiring diagrams. All directions for operation furnished by the manufacturer shall be carefully saved and turned over to the Owner, together with written sequence of operation, operating and maintenance instructions for each system and its equipment. Instruction shall consist of a minimum of four 8-hour periods over consecutive days and shall be 30% classroom and 70% at site location. Coordinate scheduling of instruction times with Owner's operators.
- B. Specific Data: Submit four complete sets of the following data to the Owner for approval and commissioning agent for review prior to acceptance of the installation, complete and at one time; (partial or separate data will not be accepted) data shall consist of the following:
  1. Valve Directory: Indicating valve number, location, function and normal operating position for each.
  2. Color code schedule.
  3. Equipment: List of name plates, including name plate data.
  4. Manufacturer's Literature: Copies of manufacturer's instructions for operation and maintenance of all mechanical equipment, including replacement parts lists and drawings. Mark or highlight brochure literature indicating the models, sizes, capacities, curve operating points, etc., in a manner to clearly indicate the equipment installed. Remove all pages or sheets from the bulletin and catalogs that do not pertain to equipment installed on the project.

5. Written Instructions: Typewritten instructions for operation and maintenance of the system composed of OPERATING INSTRUCTIONS, MAINTENANCE INSTRUCTIONS and a MAINTENANCE SCHEDULE.
  - a. OPERATING INSTRUCTIONS shall contain a brief description of the system. Adjustments requiring the technical knowledge of the service agency personnel shall not be included in the operating instructions. The fact such adjustments are required, however, shall be noted.
  - b. MAINTENANCE INSTRUCTIONS shall list each item of equipment requiring inspection, lubrication or service and describe the performance of such maintenance.
  - c. MAINTENANCE SCHEDULE shall list each item of equipment requiring maintenance, shall show the exact type of maintenance on every component of each item of equipment, and shall show when each item of equipment should be inspected or services.
6. Instructions: Operating personnel shall be instructed in the operation of the system in accordance with typewritten, approved instructions.
- C. Binders: Provide complete sets of the above data in loose-leaf ring-type binders with permanent covers, with identification on front and on spine.

#### **1.24 SPECIAL REQUIREMENTS**

- A. During the guarantee period and as directed by the Owner, make any additional tests, adjustment, etc., that may be required and correct any defects or deficiencies arising from operation of the systems. Operational tests shall be made during both heating and cooling seasons and on all systems.
- B. Completion:
  1. The entire mechanical system shall be commissioned in accordance with ASHRAE Guideline 1-1996 and the requirements of this specification. A final commissioning report shall be approved by the Owner, Architect, and Mechanical Engineer prior to final acceptance of the work.
  2. When the installation is complete and adjustments specified herein have been made, the system, shall be operated for a period of one week, during which time it shall be demonstrated to the Owner or his representative as being completed and operating in conformance with these specifications. The Contractor shall schedule all work so that this time period, which is to confirm a "bug-free" system, will occur before the total project is accepted for substantial completion by Owner.
  3. The work hereunder shall not be reviewed for final acceptance until operating and maintenance data, manufacturer's literature, valve directories, piping identification code directory, and nameplates specified herein have been approved and properly posted in the building.

#### **1.25 WARRANTY/GUARANTEE**

- A. The contractor shall warranty/guarantee that materials, apparatus, and equipment furnished and installed under the mechanical division of these specifications shall be new and free from all defects. Should any defects develop, within one year (unless a longer period is listed in other sections of the specifications) from the date of final acceptance by the owner or from

the date of certificate of substantial completion, whichever is earlier, due to inferior or faulty materials and/or workmanship, the trouble shall be corrected by this Contractor without expense to the Owner. Any defective materials or inferior workmanship noticed at the time of installation or during the guarantee period shall be corrected immediately to the entire satisfaction of the Owner.

B. The work shall be installed of such materials and in such a manner that:

1. The operation of all parts of the system shall be noiseless to the extent that no objectionable sound of operation will be heard outside of the rooms enclosing the apparatus or equipment.
2. Apparatus or equipment shall operate in accordance with detailed specifications covering each item.
3. Contractor shall, at his own expense, make any adjustments or changes required to produce a condition of quietness satisfactory to the Engineer or his representative. Such adjustments or changes shall not reduce the performance or quantities called for on the drawings.
4. Contractor shall guarantee that his installation of all materials and equipment will meet the performance requirements of these specifications and that all equipment will deliver the specified or required capacities.
5. The Owner reserves the right to make temporary or emergency repairs as necessary to keep equipment in operating condition without voiding the guarantee contained herein nor relieving the Contractor of his responsibilities during the guarantee period.
6. Contractor shall be responsible for all damage to any part of the premises caused by leaks or break in pipe lines, fixtures or equipment furnished and installed under his contract for a period of one year after date of acceptance of the project by Owner. He shall replace in kind, at his own expense, any and all items so damaged to the complete satisfaction of the Owner.

END OF SECTION

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**SECTION 23 00 50**  
**BASIC MECHANICAL MATERIALS AND METHODS**

**1.01 SUMMARY**

- A. This Section includes the following basic mechanical materials and methods to complement other Division 23 Sections.
  - 1. Piping materials and installation instructions common to most piping systems.
  - 2. Concrete base construction requirements.
  - 3. Escutcheons.
  - 4. Dielectric fittings.
  - 5. Flexible connectors.
  - 6. Mechanical sleeve seals.
  - 7. Equipment nameplate data requirements.
  - 8. Labeling and identifying mechanical systems and equipment is specified in Division 23 Section "Identification for HVAC Piping and Equipment."
  - 9. Nonshrink grout for equipment installations.
  - 10. Field-fabricated metal and wood equipment supports.
  - 11. Installation requirements common to equipment specification sections.
  - 12. Cutting and patching.
  - 13. Touchup painting and finishing.
- B. Pipe and pipe fitting materials are specified in Division 23 piping system Sections.
- C. Related Sections include the following:

**1.02 DEFINITIONS**

- A. Finished Spaces: Spaces other than mechanical and electrical equipment rooms, furred spaces, pipe and duct shafts, unheated spaces immediately below roof, spaces above ceilings, unexcavated spaces, crawl spaces, and tunnels.
- B. Exposed, Interior Installations: Exposed to view indoors. Examples include finished occupied spaces and mechanical equipment rooms.
- C. Exposed, Exterior Installations: Exposed to view outdoors, or subject to outdoor ambient temperatures and weather conditions. Examples include rooftop locations.
- D. Concealed, Interior Installations: Concealed from view and protected from physical contact by building occupants. Examples include above ceilings and in duct shafts.
- E. Concealed, Exterior Installations: Concealed from view and protected from weather conditions and physical contact by building occupants, but subject to outdoor ambient temperatures. Examples include installations within unheated shelters.
- F. The following are industry abbreviations for rubber materials:
  - 1. CR: Chlorosulfonated polyethylene synthetic rubber.
  - 2. EPDM: Ethylene propylene diene terpolymer rubber.

### **1.03 SUBMITTALS**

- A. Product Data: For dielectric fittings, flexible connectors, mechanical sleeve seals, and identification materials and devices.
- B. LEED Submittals: Provide cost data breakdown, recycle content and manufacturer name and location.
- C. Shop Drawings: Detail fabrication and installation for metal and wood supports and anchorage for mechanical materials and equipment.
- D. Coordination Drawings: For access panel and door locations.
- E. Coordination Drawings: Detail major elements, components, and systems of mechanical equipment and materials in relationship with other systems, installations, and building components. Show space requirements for installation and access. Indicate if sequence and coordination of installations are important to efficient flow of the Work. Include the following:
  - 1. Planned piping layout, including valve and specialty locations and valve-stem movement.
  - 2. Clearances for installing and maintaining insulation.
  - 3. Clearances for servicing and maintaining equipment, accessories, and specialties, including space for disassembly required for periodic maintenance.
  - 4. Equipment and accessory service connections and support details.
  - 5. Exterior wall and foundation penetrations.
  - 6. Fire-rated wall and floor penetrations.
  - 7. Sizes and location of required concrete pads and bases.
  - 8. Scheduling, sequencing, movement, and positioning of large equipment into building during construction.
  - 9. Floor plans, elevations, and details to indicate penetrations in floors, walls, and ceilings and their relationship to other penetrations and installations.
  - 10. Reflected ceiling plans to coordinate and integrate installation of air outlets and inlets, light fixtures, communication system components, sprinklers, and other ceiling-mounted items.
- F. Samples: Of color, lettering style, and other graphic representation required for each identification material and device.

### **1.04 QUALITY ASSURANCE**

- A. Equipment Selection: Equipment of higher electrical characteristics, physical dimensions, capacities, and ratings may be furnished provided such proposed equipment is approved in writing and connecting mechanical and electrical services, circuit breakers, conduit, motors, bases, and equipment spaces are increased. Additional costs shall be approved in advance by appropriate Contract Modification for these increases. If minimum energy ratings or efficiencies of equipment are specified, equipment must meet design and commissioning requirements.

### **1.05 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver pipes and tubes with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe end damage and prevent entrance of dirt, debris, and moisture.
- B. Protect stored pipes and tubes from moisture and dirt. Elevate above grade. Do not exceed structural capacity of floor, if stored inside.
- C. Protect flanges, fittings, and piping specialties from moisture and dirt.
- D. Store plastic pipes protected from direct sunlight. Support to prevent sagging and bending.

### **1.06 SEQUENCING AND SCHEDULING**

- A. Coordinate mechanical equipment installation with other building components.
- B. Arrange for pipe spaces, chases, slots, and openings in building structure during progress of construction to allow for mechanical installations.
- C. Coordinate installation of required supporting devices and set sleeves in poured-in-place concrete and other structural components, as they are constructed.
- D. Sequence, coordinate, and integrate installations of mechanical materials and equipment for efficient flow of the Work. Coordinate installation of large equipment requiring positioning before closing in building.
- E. Coordinate connection of mechanical systems with exterior underground and overhead utilities and services. Comply with requirements of governing regulations, franchised service companies, and controlling agencies.
- F. Coordinate requirements for access panels and doors if mechanical items requiring access are concealed behind finished surfaces. Access panels and doors are specified in Division 8 Section.
- G. Coordinate installation of identifying devices after completing covering and painting, if devices are applied to surfaces. Install identifying devices before installing acoustical ceilings and similar concealment.

## **PART 2 - PRODUCTS**

### **2.01 MANUFACTURERS**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Dielectric Unions:
    - a. Epco Sales Inc.
    - b. Watts Industries, Inc.; Water Products Div.
    - c. Zurn Industries, Inc.; Wilkins Div.
  - 2. Dielectric Flanges:
    - a. Epco Sales Inc.
    - b. Watts Industries, Inc.; Water Products Div.
  - 3. Dielectric-Flange Insulating Kits:
    - a. Calpico, Inc.

- b. Central Plastics Co.
- 4. Dielectric Couplings:
  - a. Calpico, Inc.
  - b. Lochinvar Corp.
- 5. Dielectric Nipples:
  - a. Grinnell Corp.; Grinnell Supply Sales Co.
  - b. Victaulic Co. of America.
- 6. Mechanical Sleeve Seals:
  - a. Calpico, Inc.
  - b. Metraflex Co.
  - c. Thunderline/Link-Seal.

## **2.02 PIPE AND PIPE FITTINGS**

- A. Refer to individual Division 23 piping Sections for pipe and fitting materials and joining methods.
- B. Pipe Threads: ASME B1.20.1 for factory-threaded pipe and pipe fittings.

## **2.03 JOINING MATERIALS**

- A. Refer to individual Division 23 piping Sections for special joining materials not listed below.
- B. Pipe-Flange Gasket Materials: Suitable for chemical and thermal conditions of piping system contents.
  - 1. ASME B16.21, nonmetallic, flat, asbestos-free, 1/8-inch maximum thickness, unless thickness or specific material is indicated.
    - a. Full-Face Type: For flat-face, Class 125, cast-iron and cast-bronze flanges.
    - b. Narrow-Face Type: For raised-face, Class 250, cast-iron and steel flanges.
  - 2. AWWA C110, rubber, flat face, 1/8 inch thick, unless otherwise indicated; and full-face or ring type, unless otherwise indicated.
- C. Flange Bolts and Nuts: ASME B18.2.1, carbon steel, unless otherwise indicated.
- D. Plastic, Pipe-Flange Gasket, Bolts, and Nuts: Type and material recommended by piping system manufacturer, unless otherwise indicated.
- E. Solder Filler Metals: ASTM B 32.
  - 1. Alloy E: Approximately 95 percent tin and 5 percent antimony, lead free.
- F. Brazing Filler Metals: AWS A5.8.
  - 1. BCuP Series: Copper-phosphorus alloys.
  - 2. BAg1: Silver alloy.
- G. Welding Filler Metals: Comply with AWS D10.12 for welding materials appropriate for wall thickness and chemical analysis of steel pipe being welded.
- H. Flanged, Ductile-Iron Pipe Gasket, Bolts, and Nuts: AWWA C110, rubber gasket, carbon-steel bolts and nuts.
- I. Couplings: Iron-body sleeve assembly, fabricated to match OD of plain-end, pressure pipes.



1. Sleeve: ASTM A 126, Class B, gray iron.
2. Followers: ASTM A 47 malleable iron or ASTM A 536 ductile iron.
3. Gaskets: Rubber.
4. Bolts and Nuts: AWWA C111.
5. Finish: Enamel paint.

#### **2.04 DIELECTRIC FITTINGS**

- A. General: Assembly or fitting with insulating material isolating joined dissimilar metals, to prevent galvanic action and stop corrosion.
- B. Description: Combination of copper alloy and ferrous; threaded, solder, plain, and weld-neck end types and matching piping system materials.
- C. Insulating Material: Suitable for system fluid, pressure, and temperature.
- D. Dielectric Unions: Factory-fabricated, union assembly, for 250-psig minimum working pressure at 180 deg F.
- E. Dielectric Flanges: Factory-fabricated, companion-flange assembly, for 150- or 300-psig minimum working pressure as required to suit system pressures.
- F. Dielectric-Flange Insulation Kits: Field-assembled, companion-flange assembly, full-face or ring type. Components include neoprene or phenolic gasket, phenolic or polyethylene bolt sleeves, phenolic washers, and steel backing washers.
  1. Provide separate companion flanges and steel bolts and nuts for 150- or 300-psig minimum working pressure as required to suit system pressures.
- G. Dielectric Couplings: Galvanized-steel coupling with inert and noncorrosive, thermoplastic lining; threaded ends; and 300-psig minimum working pressure at 225 deg F.
- H. Dielectric Nipples: Electroplated steel nipple with inert and noncorrosive, thermoplastic lining; plain, threaded, or grooved ends; and 300-psig minimum working pressure at 225 deg F.

#### **2.05 MECHANICAL SLEEVE SEALS**

- A. Description: Modular design, with interlocking rubber links shaped to continuously fill annular space between pipe and sleeve. Include connecting bolts and pressure plates.

#### **2.06 PIPING SPECIALTIES**

- A. Sleeves: The following materials are for wall, floor, slab, and roof penetrations:
  1. Steel Sheet Metal: 0.0239-inch minimum thickness, galvanized, round tube closed with welded longitudinal joint.
  2. Steel Pipe: ASTM A 53, Type E, Grade A, Schedule 40, galvanized, plain ends.
  3. Cast Iron: Cast or fabricated "wall pipe" equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.
  4. Stack Sleeve Fittings: Manufactured, cast-iron sleeve with integral clamping flange. Include clamping ring and bolts and nuts for membrane flashing.
    - a. Underdeck Clamp: Clamping ring with setscrews.
  5. PE: Manufactured, reusable, tapered, cup shaped, smooth outer surface, with nailing flange for attaching to wooden forms.

- B. Escutcheons: Manufactured wall, ceiling, and floor plates; deep-pattern type if required to conceal protruding fittings and sleeves.
  - 1. ID: Closely fit around pipe, tube, and insulation of insulated piping.
  - 2. OD: Completely cover opening.
  - 3. Cast Brass: Split casting, with concealed hinge and set screw.
    - a. Finish: Rough brass.
    - b. Finish: Polished chrome-plate.
  - 4. Stamped Steel: One piece, with spring clips and chrome-plated finish.
  - 5. Stamped Steel: Split plate, with concealed hinge, spring clips, and chrome-plated finish.
  - 6. Cast-Iron Floor Plate: One-piece casting.

## **2.07 GROUT**

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

## **PART 3 - EXECUTION**

### **3.01 PIPING SYSTEMS - COMMON REQUIREMENTS**

- A. General: Install piping as described below, unless piping Sections specify otherwise. Individual Division 23 piping Sections specify unique piping installation requirements.
- B. General Locations and Arrangements: Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated, unless deviations to layout are approved on Coordination Drawings.
- C. Install piping at indicated slope.
- D. Install components with pressure rating equal to or greater than system operating pressure.
- E. Install piping in concealed interior and exterior locations, except in equipment rooms and service areas.
- F. Install piping free of sags and bends.
- G. Install exposed interior and exterior piping at right angles or parallel to building walls. Diagonal runs are prohibited, unless otherwise indicated.
- H. Install piping tight to slabs, beams, joists, columns, walls, and other building elements. Allow sufficient space above removable ceiling panels to allow for ceiling panel removal.
- I. Install piping to allow application of insulation plus 1-inch clearance around insulation.
- J. Locate groups of pipes parallel to each other, spaced to permit valve servicing.
- K. Install fittings for changes in direction and branch connections.

- L. Install couplings according to manufacturer's written instructions.
- M. Install pipe escutcheons for pipe penetrations of concrete and masonry walls, wall board partitions, and suspended ceilings according to the following:
  - 1. Chrome-Plated Piping: Cast brass, one piece, with set screw, and polished chrome-plated finish.
  - 2. Uninsulated Piping Wall Escutcheons: Cast brass or stamped steel, with set screw.
  - 3. Uninsulated Piping Floor Plates in Utility Areas: Cast-iron floor plates.
  - 4. Insulated Piping: Cast brass or stamped steel; with concealed hinge, spring clips, and chrome-plated finish.
  - 5. Piping in Utility Areas: Cast brass or stamped steel, with set-screw or spring clips.
- N. Sleeves are not required for core drilled holes.
- O. Permanent sleeves are not required for holes formed by PE removable sleeves.
- P. Install sleeves for pipes passing through concrete and masonry walls, gypsum-board partitions, and concrete floor and roof slabs.
  - 1. Cut sleeves to length for mounting flush with both surfaces.
    - a. Exception: Extend sleeves installed in floors of mechanical equipment areas or other wet areas 2 inches above finished floor level. Extend cast-iron sleeve fittings below floor slab as required to secure clamping ring if ring is specified.
  - 2. Build sleeves into walls and slabs as work progresses.
  - 3. Install sleeves large enough to provide 1/4-inch annular clear space between sleeve and pipe or pipe insulation. Use the following sleeve materials:
    - a. Steel Pipe Sleeves: For pipes smaller than 6-inch NPS.
    - b. Steel, Sheet-Metal Sleeves: For pipes 6-inch NPS and larger, penetrating gypsum-board partitions.
    - c. Stack Sleeve Fittings: For pipes penetrating floors with membrane waterproofing. Secure flashing between clamping flanges. Install section of cast-iron soil pipe to extend sleeve to 2 inches above finished floor level. Refer to Division 7 Sections for flashing.
      - 1) Seal space outside of sleeve fittings with nonshrink, nonmetallic grout.
  - 4. Except for underground wall penetrations, seal annular space between sleeve and pipe or pipe insulation, using elastomeric joint sealants. Refer to Division 7 Sections for materials.
  - 5. Use Type S, Grade NS, Class 25, Use O, neutral-curing silicone sealant, unless otherwise indicated.
- Q. Aboveground, Exterior-Wall, Pipe Penetrations: Seal penetrations using sleeves and mechanical sleeve seals. Size sleeve for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.
  - 1. Install steel pipe for sleeves smaller than 6 inches in diameter.
  - 2. Install cast-iron "wall pipes" for sleeves 6 inches in diameter and larger.

3. Assemble and install mechanical sleeve seals according to manufacturer's written instructions. Tighten bolts that cause rubber sealing elements to expand and make watertight seal.
- R. Underground, Exterior-Wall, Pipe Penetrations: Install cast-iron "wall pipes" for sleeves. Seal pipe penetrations using mechanical sleeve seals. Size sleeve for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.
  1. Assemble and install mechanical sleeve seals according to manufacturer's written instructions. Tighten bolts that cause rubber sealing elements to expand and make watertight seal.
- S. Fire-Barrier Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at pipe penetrations. Seal pipe penetrations with firestopping materials. Refer to Division 7 Sections for materials.
- T. Verify final equipment locations for roughing-in.
- U. Refer to equipment specifications in other Sections of these Specifications for roughing-in requirements.
- V. Piping Joint Construction: Join pipe and fittings as follows and as specifically required in individual piping specification Sections:
  1. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.
  2. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.
  3. Soldered Joints: Construct joints according to AWS's "Soldering Manual," Chapter "The Soldering of Pipe and Tube"; or CDA's "Copper Tube Handbook."
  4. Brazed Joints: Construct joints according to AWS's "Brazing Handbook," Chapter "Pipe and Tube."
  5. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:
    - a. Note internal length of threads in fittings or valve ends, and proximity of internal seat or wall, to determine how far pipe should be threaded into joint.
    - b. Apply appropriate tape or thread compound to external pipe threads, unless dry seal threading is specified.
    - c. Align threads at point of assembly.
    - d. Tighten joint with wrench. Apply wrench to valve end into which pipe is being threaded.
    - e. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.
  6. Welded Joints: Construct joints according to AWS D10.12, "Recommended Practices and Procedures for Welding Low Carbon Steel Pipe," using qualified processes and welding operators according to "Quality Assurance" Article.
  7. Flanged Joints: Align flange surfaces parallel. Select appropriate gasket material, size, type, and thickness for service application. Install gasket concentrically positioned. Assemble joints by sequencing bolt tightening to make initial contact of flanges and

gaskets as flat and parallel as possible. Use suitable lubricants on bolt threads. Tighten bolts gradually and uniformly using torque wrench.

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

### **3.02 EQUIPMENT INSTALLATION - COMMON REQUIREMENTS**

- A. Install equipment to provide maximum possible headroom, if mounting heights are not indicated.
- B. Install equipment according to approved submittal data. Portions of the Work are shown only in diagrammatic form. Refer conflicts to Architect.
- C. Install equipment level and plumb, parallel and perpendicular to other building systems and components in exposed interior spaces, unless otherwise indicated.
- D. Install mechanical equipment to facilitate service, maintenance, and repair or replacement of components. Connect equipment for ease of disconnecting, with minimum interference to other installations. Extend grease fittings to accessible locations.
- E. Install equipment giving right of way to piping installed at required slope.
- F. Install flexible connectors on equipment side of shutoff valves, horizontally and parallel to equipment shafts if possible.

### **3.03 PAINTING AND FINISHING**

- A. Refer to Division 9 Section "Painting" for paint materials, surface preparation, and application of paint.
- B. Apply paint to exposed piping according to the following, unless otherwise indicated:
  1. Interior, Ferrous Piping: Use semigloss, acrylic-enamel finish. Include finish coat over enamel undercoat and primer.
  2. Interior, Galvanized-Steel Piping: Use semigloss, acrylic-enamel finish. Include two finish coats over galvanized metal primer.
  3. Interior, Ferrous Supports: Use semigloss, acrylic-enamel finish. Include finish coat over enamel undercoat and primer.
  4. Exterior, Ferrous Piping: Use semigloss, acrylic-enamel finish. Include two finish coats over rust-inhibitive metal primer.
  5. Exterior, Galvanized-Steel Piping: Use semigloss, acrylic-enamel finish. Include two finish coats over galvanized metal primer.

- 6. Exterior, Ferrous Supports: Use semigloss, acrylic-enamel finish. Include two finish coats over rust-inhibitive metal primer.
- C. Paint visible sheet metal behind ceiling inlets and outlets flat black.
- D. Do not paint piping specialties with factory-applied finish.
- E. Damage and Touchup: Repair marred and damaged factory-painted finishes with materials and procedures to match original factory finish.

### **3.04 CONCRETE BASES**

- A. Construct concrete bases of dimensions indicated, but not less than 4 inches larger in both directions than supported unit. Follow supported equipment manufacturer's setting templates for anchor bolt and tie locations. Use 3000-psig, 28-day compressive-strength concrete and reinforcement as specified in Division 3 Section "Cast-in-Place Concrete."

### **3.05 ERECTION OF METAL SUPPORTS AND ANCHORAGE**

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

### **3.06 ERECTION OF WOOD SUPPORTS AND ANCHORAGE**

- A. Cut, fit, and place wood grounds, nailers, blocking, and anchorage to support and anchor mechanical materials and equipment.
- B. Select fastener sizes that will not penetrate members if opposite side will be exposed to view or will receive finish materials. Tighten connections between members. Install fasteners without splitting wood members.
- C. Attach to substrates as required to support applied loads.

### **3.07 CUTTING AND PATCHING**

- A. Cut, channel, chase, and drill floors, walls, partitions, ceilings, and other surfaces necessary for mechanical installations. Perform cutting by skilled mechanics of trades involved.
- B. Repair cut surfaces to match adjacent surfaces.

### **3.08 GROUTING**

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

END OF SECTION

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**SECTION 23 05 29**  
**HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT**

**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. This Section includes the following hangers and supports for mechanical system piping and equipment:
  - 1. Steel pipe hangers and supports.
  - 2. Trapeze pipe hangers.
  - 3. Metal framing systems.
  - 4. Thermal-hanger shield inserts.
  - 5. Fastener systems.
  - 6. Pipe stands.
  - 7. Pipe positioning systems.
  - 8. Equipment supports.
- B. Related Sections include the following:
  - 1. Division 05 Section "Metal Fabrications" for structural-steel shapes and plates for trapeze hangers for pipe and equipment supports.
  - 2. Division 21 Section "Wet-Pipe Sprinkler Systems" for pipe hangers for fire-protection piping.
  - 3. Division 23 Section "Vibration and Seismic Controls for HVAC Piping and Equipment" for vibration isolation devices.
  - 4. Division 23 Section "Expansion Fittings and Loops for HVAC Piping" for pipe guides and anchors.
  - 5. Division 23 Section "Metal Ducts" for duct hangers and supports.

**1.02 DEFINITIONS**

- A. MSS: Manufacturers Standardization Society for The Valve and Fittings Industry Inc.
- B. Terminology: As defined in MSS SP-90, "Guidelines on Terminology for Pipe Hangers and Supports."

**1.03 PERFORMANCE REQUIREMENTS**

- A. Delegated Design: Design trapeze pipe hangers and equipment supports, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- B. Structural Performance: Hangers and supports for HVAC piping and equipment shall withstand the effects of gravity loads and stresses within limits and under conditions indicated according to ASCE/SEI 7.
  - 1. Design supports for multiple pipes, including pipe stands, capable of supporting combined weight of supported systems, system contents, and test water.

2. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.
3. Design seismic-restraint hangers and supports for piping and equipment and obtain approval from authorities having jurisdiction.

#### **1.04 SUBMITTALS**

- A. Product Data: For the following:
  1. Steel pipe hangers and supports.
  2. Thermal-hanger shield inserts.
  3. Powder-actuated fastener systems.
  4. Pipe positioning systems.
- B. LEED Submittals: Provide cost data breakdown, recycle content and manufacturer name and location.
- C. Shop Drawings: Signed and sealed by a qualified professional engineer. Show fabrication and installation details and include calculations for the following:
  1. Trapeze pipe hangers. Include Product Data for components.
  2. Metal framing systems. Include Product Data for components.
  3. Pipe stands. Include Product Data for components.
  4. Equipment supports.
- D. Delegated-Design Submittal: For trapeze hangers indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
  1. Detail fabrication and assembly of trapeze hangers.
  2. Design Calculations: Calculate requirements for designing trapeze hangers.
- E. Welding Certificates.

#### **1.05 QUALITY ASSURANCE**

- A. Welding: Qualify procedures and personnel according to AWS D1.1, "Structural Welding Code--Steel."
- B. Welding: Qualify procedures and personnel according to the following:
  1. AWS D1.1, "Structural Welding Code--Steel."

### **PART 2 - PRODUCTS**

#### **2.01 MANUFACTURERS**

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

## **2.02 STEEL PIPE HANGERS AND SUPPORTS**

- A. Description: MSS SP-58, Types 1 through 58, factory-fabricated components. Refer to Part 3 "Hanger and Support Applications" Article for where to use specific hanger and support types.
- B. Manufacturers:
  - 1. B-Line Systems, Inc.; a division of Cooper Industries.
  - 2. ERICO/Michigan Hanger Co.
  - 3. Grinnell Corp.
  - 4. National Pipe Hanger Corporation.
  - 5. PHD Manufacturing, Inc.
  - 6. PHS Industries, Inc.
  - 7. Piping Technology and Products, Inc.
  - 8. Tolco, Inc.
- C. Galvanized, Metallic Coatings: Pregalvanized or hot dipped.
- D. Nonmetallic Coatings: Plastic coating, jacket, or liner.
- E. Padded Hangers: Hanger with fiberglass or other pipe insulation pad or cushion for support of bearing surface of piping.

## **2.03 TRAPEZE PIPE HANGERS**

- A. Description: MSS SP-69, Type 59, shop- or field-fabricated pipe-support assembly made from structural-steel shapes with MSS SP-58 hanger rods, nuts, saddles, and U-bolts.

## **2.04 METAL FRAMING SYSTEMS**

- A. Description: MFMA-3, shop- or field-fabricated pipe-support assembly made of steel channels and other components.
- B. Manufacturers:
  - 1. B-Line Systems, Inc.; a division of Cooper Industries.
  - 2. ERICO/Michigan Hanger Co.; ERISTRUT Div.
  - 3. Power-Strut Div.; Tyco International, Ltd.
  - 4. Unistrut Corp.; Tyco International, Ltd.
  - 5. Thomas & Betts Corporation
  - 6. Tolco, Inc.
- C. Coatings: Manufacturer's standard finish, unless bare metal surfaces are indicated.
- D. Nonmetallic Coatings: Plastic coating, jacket, or liner.

## **2.05 THERMAL-HANGER SHIELD INSERTS**

- A. Description: 100-psig- minimum, compressive-strength insulation insert encased in sheet metal shield.
- B. Manufacturers:
  - 1. ERICO/Michigan Hanger Co.
  - 2. Pipe Shields, Inc.

3. Rilco Manufacturing Company, Inc.
- C. Insulation-Insert Material for Cold Piping: Water-repellent treated, ASTM C 533, Type I calcium silicate or ASTM C 552, Type II cellular glass with vapor barrier.
- D. Insulation-Insert Material for Hot Piping: Water-repellent treated, ASTM C 533, Type I calcium silicate or ASTM C 552, Type II cellular glass.
- E. For Trapeze or Clamped Systems: Insert and shield shall cover entire circumference of pipe.
- F. For Clevis or Band Hangers: Insert and shield shall cover lower 180 degrees of pipe.
- G. Insert Length: Extend 2 inches beyond sheet metal shield for piping operating below ambient air temperature.

## **2.06 FASTENER SYSTEMS**

- A. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.
  1. Manufacturers:
    - a. Hilti, Inc.
    - b. ITW Ramset/Red Head.
    - c. Masterset Fastening Systems, Inc.
- B. Mechanical-Expansion Anchors: Insert-wedge-type zinc-coated or stainless steel, for use in hardened portland cement concrete with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.
  1. Manufacturers:
    - a. B-Line Systems, Inc.; a division of Cooper Industries.
    - b. Hilti, Inc.
    - c. ITW Ramset/Red Head.

## **2.07 PIPE STAND FABRICATION**

- A. Pipe Stands, General: Shop or field-fabricated assemblies made of manufactured corrosion-resistant components to support roof-mounted piping.
- B. Compact Pipe Stand: One-piece plastic unit with integral-rod-roller, pipe clamps, or V-shaped cradle to support pipe, for roof installation without membrane penetration.
  1. Manufacturers:
    - a. ERICO/Michigan Hanger Co.
    - b. MIRO Industries.
- C. Low-Type, Single-Pipe Stand: One-piece plastic base unit with plastic roller, for roof installation without membrane penetration.
  1. Manufacturers:
    - a. MIRO Industries.
- D. High-Type, Single-Pipe Stand: Assembly of base, vertical and horizontal members, and pipe support, for roof installation without membrane penetration.
  1. Manufacturers:

- a. ERICO/Michigan Hanger Co.
  - b. MIRO Industries.
  - c. Portable Pipe Hangers.
- 2. Base: Plastic.
- 3. Vertical Members: Two or more cadmium-plated-steel or stainless-steel, continuous-thread rods.
- 4. Horizontal Member: Cadmium-plated-steel or stainless-steel rod with plastic or stainless-steel, roller-type pipe support.
- E. High-Type, Multiple-Pipe Stand: Assembly of bases, vertical and horizontal members, and pipe supports, for roof installation without membrane penetration.
  - 1. Manufacturers:
    - a. Portable Pipe Hangers.
  - 2. Bases: One or more plastic.
  - 3. Vertical Members: Two or more protective-coated-steel channels.
  - 4. Horizontal Member: Protective-coated-steel channel.
  - 5. Pipe Supports: Galvanized-steel, clevis-type pipe hangers.
- F. Curb-Mounting-Type Pipe Stands: Shop- or field-fabricated pipe support made from structural-steel shape, continuous-thread rods, and rollers for mounting on permanent stationary roof curb.

## **2.08 PIPE POSITIONING SYSTEMS**

- A. Description: IAPMO PS 42, system of metal brackets, clips, and straps for positioning piping in pipe spaces for plumbing fixtures for commercial applications.
- B. Manufacturers:
  - 1. C & S Mfg. Corp.
  - 2. HOLDRITE Corp.; Hubbard Enterprises.
  - 3. Samco Stamping, Inc.

## **2.09 EQUIPMENT SUPPORTS**

- A. Description: Welded, shop- or field-fabricated equipment support made from structural-steel shapes.

## **2.10 MISCELLANEOUS MATERIALS**

- A. Structural Steel: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.
- B. Grout: ASTM C 1107, factory-mixed and -packaged, dry, hydraulic-cement, nonshrink and nonmetallic grout; suitable for interior and exterior applications.
  - 1. Properties: Nonstaining, noncorrosive, and nongaseous.
  - 2. Design Mix: 5000-psi, 28-day compressive strength.

## **PART 3 - EXECUTION**

### **3.01 HANGER AND SUPPORT APPLICATIONS**

- A. Specific hanger and support requirements are specified in Sections specifying piping systems and equipment.
- B. Comply with MSS SP-69 for pipe hanger selections and applications that are not specified in piping system Sections.
- C. Use hangers and supports with galvanized, metallic coatings for piping and equipment that will not have field-applied finish.
- D. Use nonmetallic coatings on attachments for electrolytic protection where attachments are in direct contact with copper tubing.
- E. Use padded hangers for piping that is subject to scratching.
- F. Horizontal-Piping Hangers and Supports: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
  - 1. Adjustable, Steel Clevis Hangers (MSS Type 1): For suspension of noninsulated or insulated stationary pipes, NPS 1/2 to NPS 30.
  - 2. Yoke-Type Pipe Clamps (MSS Type 2): For suspension of 120 to 450 deg F pipes, NPS 4 to NPS 16, requiring up to 4 inches of insulation.
  - 3. Carbon- or Alloy-Steel, Double-Bolt Pipe Clamps (MSS Type 3): For suspension of pipes, NPS 3/4 to NPS 24, requiring clamp flexibility and up to 4 inches of insulation.
  - 4. Steel Pipe Clamps (MSS Type 4): For suspension of cold and hot pipes, NPS 1/2 to NPS 24, if little or no insulation is required.
  - 5. Pipe Hangers (MSS Type 5): For suspension of pipes, NPS 1/2 to NPS 4, to allow off-center closure for hanger installation before pipe erection.
  - 6. Adjustable Swivel Split- or Solid-Ring Hangers (MSS Type 6): For suspension of noninsulated stationary pipes, NPS 3/4 to NPS 8.
  - 7. Adjustable, Steel Band Hangers (MSS Type 7): For suspension of noninsulated stationary pipes, NPS 1/2 to NPS 8.
  - 8. Adjustable Band Hangers (MSS Type 9): For suspension of noninsulated stationary pipes, NPS 1/2 to NPS 8.
  - 9. Adjustable Swivel-Ring Band Hangers (MSS Type 10): For suspension of noninsulated stationary pipes, NPS 1/2 to NPS 2.
  - 10. Split Pipe-Ring with or without Turnbuckle-Adjustment Hangers (MSS Type 11): For suspension of noninsulated stationary pipes, NPS 3/8 to NPS 8.
  - 11. Extension Hinged or 2-Bolt Split Pipe Clamps (MSS Type 12): For suspension of noninsulated stationary pipes, NPS 3/8 to NPS 3.
  - 12. U-Bolts (MSS Type 24): For support of heavy pipes, NPS 1/2 to NPS 30.
  - 13. Clips (MSS Type 26): For support of insulated pipes not subject to expansion or contraction.
  - 14. Pipe Saddle Supports (MSS Type 36): For support of pipes, NPS 4 to NPS 36, with steel pipe base stanchion support and cast-iron floor flange.

15. Pipe Stanchion Saddles (MSS Type 37): For support of pipes, NPS 4 to NPS 36, with steel pipe base stanchion support and cast-iron floor flange and with U-bolt to retain pipe.
  16. Adjustable Pipe Saddle Supports (MSS Type 38): For stanchion-type support for pipes, NPS 2-1/2 to NPS 36, if vertical adjustment is required, with steel pipe base stanchion support and cast-iron floor flange.
  17. Single Pipe Rolls (MSS Type 41): For suspension of pipes, NPS 1 to NPS 30, from 2 rods if longitudinal movement caused by expansion and contraction might occur.
  18. Adjustable Roller Hangers (MSS Type 43): For suspension of pipes, NPS 2-1/2 to NPS 20, from single rod if horizontal movement caused by expansion and contraction might occur.
  19. Complete Pipe Rolls (MSS Type 44): For support of pipes, NPS 2 to NPS 42, if longitudinal movement caused by expansion and contraction might occur but vertical adjustment is not necessary.
  20. Pipe Roll and Plate Units (MSS Type 45): For support of pipes, NPS 2 to NPS 24, if small horizontal movement caused by expansion and contraction might occur and vertical adjustment is not necessary.
  21. Adjustable Pipe Roll and Base Units (MSS Type 46): For support of pipes, NPS 2 to NPS 30, if vertical and lateral adjustment during installation might be required in addition to expansion and contraction.
- G. Vertical-Piping Clamps: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Extension Pipe or Riser Clamps (MSS Type 8): For support of pipe risers, NPS 3/4 to NPS 20.
  2. Carbon- or Alloy-Steel Riser Clamps (MSS Type 42): For support of pipe risers, NPS 3/4 to NPS 20, if longer ends are required for riser clamps.
- H. Hanger-Rod Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Steel Turnbuckles (MSS Type 13): For adjustment up to 6 inches for heavy loads.
  2. Steel Clevises (MSS Type 14): For 120 to 450 deg F piping installations.
  3. Swivel Turnbuckles (MSS Type 15): For use with MSS Type 11, split pipe rings.
  4. Malleable-Iron Sockets (MSS Type 16): For attaching hanger rods to various types of building attachments.
  5. Steel Weldless Eye Nuts (MSS Type 17): For 120 to 450 deg F piping installations.
- I. Building Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Steel or Malleable Concrete Inserts (MSS Type 18): For upper attachment to suspend pipe hangers from concrete ceiling.
  2. Top-Beam C-Clamps (MSS Type 19): For use under roof installations with bar-joist construction to attach to top flange of structural shape.
  3. Side-Beam or Channel Clamps (MSS Type 20): For attaching to bottom flange of beams, channels, or angles.
  4. Center-Beam Clamps (MSS Type 21): For attaching to center of bottom flange of beams.

5. Welded Beam Attachments (MSS Type 22): For attaching to bottom of beams if loads are considerable and rod sizes are large.
  6. C-Clamps (MSS Type 23): For structural shapes.
  7. Top-Beam Clamps (MSS Type 25): For top of beams if hanger rod is required tangent to flange edge.
  8. Side-Beam Clamps (MSS Type 27): For bottom of steel I-beams.
  9. Steel-Beam Clamps with Eye Nuts (MSS Type 28): For attaching to bottom of steel I-beams for heavy loads.
  10. Linked-Steel Clamps with Eye Nuts (MSS Type 29): For attaching to bottom of steel I-beams for heavy loads, with link extensions.
  11. Malleable Beam Clamps with Extension Pieces (MSS Type 30): For attaching to structural steel.
  12. Welded-Steel Brackets: For support of pipes from below, or for suspending from above by using clip and rod. Use one of the following for indicated loads:
    - a. Light (MSS Type 31): 750 lb.
    - b. Medium (MSS Type 32): 1500 lb.
    - c. Heavy (MSS Type 33): 3000 lb.
  13. Side-Beam Brackets (MSS Type 34): For sides of steel or wooden beams.
  14. Plate Lugs (MSS Type 57): For attaching to steel beams if flexibility at beam is required.
  15. Horizontal Travelers (MSS Type 58): For supporting piping systems subject to linear horizontal movement where headroom is limited.
- J. Saddles and Shields: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Steel Pipe-Covering Protection Saddles (MSS Type 39): To fill interior voids with insulation that matches adjoining insulation.
  2. Protection Shields (MSS Type 40): Of length recommended in writing by manufacturer to prevent crushing insulation.
  3. Thermal-Hanger Shield Inserts: For supporting insulated pipe.
- K. Spring Hangers and Supports: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Restraint-Control Devices (MSS Type 47): Where indicated to control piping movement.
  2. Spring Cushions (MSS Type 48): For light loads if vertical movement does not exceed 1-1/4 inches.
  3. Spring-Cushion Roll Hangers (MSS Type 49): For equipping Type 41 roll hanger with springs.
  4. Spring Sway Braces (MSS Type 50): To retard sway, shock, vibration, or thermal expansion in piping systems.
  5. Variable-Spring Hangers (MSS Type 51): Preset to indicated load and limit variability factor to 25 percent to absorb expansion and contraction of piping system from hanger.



6. Variable-Spring Base Supports (MSS Type 52): Preset to indicated load and limit variability factor to 25 percent to absorb expansion and contraction of piping system from base support.
7. Variable-Spring Trapeze Hangers (MSS Type 53): Preset to indicated load and limit variability factor to 25 percent to absorb expansion and contraction of piping system from trapeze support.
8. Constant Supports: For critical piping stress and if necessary to avoid transfer of stress from one support to another support, critical terminal, or connected equipment. Include auxiliary stops for erection, hydrostatic test, and load-adjustment capability. These supports include the following types:
  - a. Horizontal (MSS Type 54): Mounted horizontally.
  - b. Vertical (MSS Type 55): Mounted vertically.
  - c. Trapeze (MSS Type 56): Two vertical-type supports and one trapeze member.
- L. Comply with MSS SP-69 for trapeze pipe hanger selections and applications that are not specified in piping system Sections.
- M. Comply with MFMA-102 for metal framing system selections and applications that are not specified in piping system Sections.
- N. Use powder-actuated fasteners or mechanical-expansion anchors instead of building attachments where required in concrete construction.
- O. Use pipe positioning systems in pipe spaces behind plumbing fixtures to support supply and waste piping for plumbing fixtures.

### **3.02 HANGER AND SUPPORT INSTALLATION**

- A. Steel Pipe Hanger Installation: Comply with MSS SP-69 and MSS SP-89. Install hangers, supports, clamps, and attachments as required to properly support piping from building structure.
- B. Trapeze Pipe Hanger Installation: Comply with MSS SP-69 and MSS SP-89. Arrange for grouping of parallel runs of horizontal piping and support together on field-fabricated trapeze pipe hangers.
  1. Pipes of Various Sizes: Support together and space trapezes for smallest pipe size or install intermediate supports for smaller diameter pipes as specified above for individual pipe hangers.
  2. Field fabricate from ASTM A 36/A 36M, steel shapes selected for loads being supported. Weld steel according to AWS D1.1.
- C. Metal Framing System Installation: Arrange for grouping of parallel runs of piping and support together on field-assembled metal framing systems.
- D. Thermal-Hanger Shield Installation: Install in pipe hanger or shield for insulated piping.
- E. Fastener System Installation:
  1. Install powder-actuated fasteners for use in lightweight concrete or concrete slabs less than 4 inches thick in concrete after concrete is placed and completely cured. Use operators that are licensed by powder-actuated tool manufacturer. Install fasteners according to powder-actuated tool manufacturer's operating manual.

2. Install mechanical-expansion anchors in concrete after concrete is placed and completely cured. Install fasteners according to manufacturer's written instructions.
- F. Pipe Stand Installation:
1. Pipe Stand Types except Curb-Mounting Type: Assemble components and mount on smooth roof surface. Do not penetrate roof membrane.
  2. Curb-Mounting-Type Pipe Stands: Assemble components or fabricate pipe stand and mount on permanent, stationary roof curb. Refer to Division 07 Sections for roof accessories and curbs.
- G. Pipe Positioning System Installation: Install support devices to make rigid supply and waste piping connections to each plumbing fixture. Refer to Division 22 Sections for plumbing fixtures.
- H. Install hangers and supports complete with necessary inserts, bolts, rods, nuts, washers, and other accessories.
- I. Equipment Support Installation: Fabricate from welded-structural-steel shapes.
- J. Install hangers and supports to allow controlled thermal and seismic movement of piping systems, to permit freedom of movement between pipe anchors, and to facilitate action of expansion joints, expansion loops, expansion bends, and similar units.
- K. Install lateral bracing with pipe hangers and supports to prevent swaying.
- L. Install building attachments within concrete slabs or attach to structural steel. Install additional attachments at concentrated loads, including valves, flanges, and strainers, NPS 2-1/2 and larger and at changes in direction of piping. Install concrete inserts before concrete is placed; fasten inserts to forms and install reinforcing bars through openings at top of inserts.
- M. Load Distribution: Install hangers and supports so piping live and dead loads and stresses from movement will not be transmitted to connected equipment.
- N. Pipe Slopes: Install hangers and supports to provide indicated pipe slopes and so maximum pipe deflections allowed by ASME B31.1 (for power piping) and ASME B31.9 (for building services piping) are not exceeded.
- O. Insulated Piping: Comply with the following:
1. Attach clamps and spacers to piping.
    - a. Piping Operating above Ambient Air Temperature: Clamp may project through insulation.
    - b. Piping Operating below Ambient Air Temperature: Use thermal-hanger shield insert with clamp sized to match OD of insert.
    - c. Do not exceed pipe stress limits according to ASME B31.1 for power piping and ASME B31.9 for building services piping.
  2. Install MSS SP-58, Type 39, protection saddles if insulation without vapor barrier is indicated. Fill interior voids with insulation that matches adjoining insulation.
    - a. Option: Thermal-hanger shield inserts may be used. Include steel weight-distribution plate for pipe NPS 4 and larger if pipe is installed on rollers.
  3. Install MSS SP-58, Type 40, protective shields on cold piping with vapor barrier. Shields shall span an arc of 180 degrees.

- a. Option: Thermal-hanger shield inserts may be used. Include steel weight-distribution plate for pipe NPS 4 and larger if pipe is installed on rollers.
- 4. Shield Dimensions for Pipe: Not less than the following:
  - a. NPS 1/4 to NPS 3-1/2: 12 inches long and 0.048 inch thick.
  - b. NPS 4: 12 inches long and 0.06 inch thick.
  - c. NPS 5 and NPS 6: 18 inches long and 0.06 inch thick.
  - d. NPS 8 to NPS 14: 24 inches long and 0.075 inch thick.
  - e. NPS 16 to NPS 24: 24 inches long and 0.105 inch thick.
- 5. Pipes NPS 8 and Larger: Include wood inserts.
- 6. Insert Material: Length at least as long as protective shield.
- 7. Thermal-Hanger Shields: Install with insulation same thickness as piping insulation.

### **3.03 EQUIPMENT SUPPORTS**

- A. Fabricate structural-steel stands to suspend equipment from structure overhead or to support equipment above floor.
- B. Grouting: Place grout under supports for equipment and make smooth bearing surface.
- C. Provide lateral bracing, to prevent swaying, for equipment supports.

### **3.04 METAL FABRICATIONS**

- A. Cut, drill, and fit miscellaneous metal fabrications for trapeze pipe hangers and equipment supports.
- B. Fit exposed connections together to form hairline joints. Field weld connections that cannot be shop welded because of shipping size limitations.
- C. Field Welding: Comply with AWS D1.1 procedures for shielded metal arc welding, appearance and quality of welds, and methods used in correcting welding work, and with the following:
  - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
  - 2. Obtain fusion without undercut or overlap.
  - 3. Remove welding flux immediately.
  - 4. Finish welds at exposed connections so no roughness shows after finishing and contours of welded surfaces match adjacent contours.

### **3.05 ADJUSTING**

- A. Hanger Adjustments: Adjust hangers to distribute loads equally on attachments and to achieve indicated slope of pipe.
- B. Trim excess length of continuous-thread hanger and support rods to 1-1/2 inches.

### **3.06 PAINTING**

- A. Touch Up: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.
  - 1. Apply paint by brush or spray to provide minimum dry film thickness of 2.0 mils.

- B. Touch Up: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint on miscellaneous metal are specified in Division 09 painting Sections.
- C. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

END OF SECTION

**SECTION 23 05 93**  
**TESTING, ADJUSTING, AND BALANCING FOR HVAC**

**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. This Section includes testing, adjusting, and balancing HVAC systems to produce design objectives, including the following:
  - 1. Balancing airflow within distribution systems, including submains, branches, and terminals, to indicated quantities according to specified tolerances.
  - 2. Adjusting total HVAC systems to provide indicated quantities.
  - 3. Measuring electrical performance of HVAC equipment.
  - 4. Setting quantitative performance of HVAC equipment.
  - 5. Verifying that automatic control devices are functioning properly.
  - 6. Measuring sound and vibration.
  - 7. Reporting results of the activities and procedures specified in this Section.
- B. Related Sections include the following:
  - 1. Division 23 Section 23 09 80 "Mechanical Commissioning."
  - 2. Testing and adjusting requirements unique to particular systems and equipment are included in the Sections that specify those systems and equipment.
  - 3. Field quality-control testing to verify that workmanship quality for system and equipment installation is specified in system and equipment Sections.

**1.02 DEFINITIONS**

- A. Adjust: To regulate fluid flow rate and air patterns at the terminal equipment, such as to reduce fan speed or adjust a damper.
- B. Balance: To proportion flows within the distribution system, including submains, branches, and terminals, according to design quantities.
- C. Draft: A current of air, when referring to localized effect caused by one or more factors of high air velocity, low ambient temperature, or direction of airflow, whereby more heat is withdrawn from a person's skin than is normally dissipated.
- D. Procedure: An approach to and execution of a sequence of work operations to yield repeatable results.
- E. Report Forms: Test data sheets for recording test data in logical order.
- F. Static Head: The pressure due to the weight of the fluid above the point of measurement. In a closed system, static head is equal on both sides of the pump.
- G. Suction Head: The height of fluid surface above the centerline of the pump on the suction side.
- H. System Effect: A phenomenon that can create undesired or unpredicted conditions that cause reduced capacities in all or part of a system.

- I. System Effect Factors: Allowances used to calculate a reduction of the performance ratings of a fan when installed under conditions different from those presented when the fan was performance tested.
- J. Terminal: A point where the controlled medium, such as fluid or energy, enters or leaves the distribution system.
- K. Test: A procedure to determine quantitative performance of a system or equipment.
- L. Testing, Adjusting, and Balancing Agent: The entity responsible for performing and reporting the testing, adjusting, and balancing procedures.
- M. AABC: Associated Air Balance Council.
- N. AMCA: Air Movement and Control Association.
- O. CTI: Cooling Tower Institute.
- P. NEBB: National Environmental Balancing Bureau.
- Q. SMACNA: Sheet Metal and Air Conditioning Contractors' National Association.

### **1.03 SUBMITTALS**

- A. Quality-Assurance Submittals: Within 30 days from the Contractor's Notice to Proceed, submit 2 copies of evidence that the testing, adjusting, and balancing Agent and this Project's testing, adjusting, and balancing team members meet the qualifications specified in the "Quality Assurance" Article below.
- B. LEED Submittals: Provide cost data breakdown, recycle content and manufacturer name and location.
- C. Contract Documents Examination Report: Within 45 days from the Contractor's Notice to Proceed, submit 2 copies of the Contract Documents review report as specified in Part 3 of this Section.
- D. Strategies and Procedures Plan: Within 60 days from the Contractor's Notice to Proceed, submit 2 copies of the testing, adjusting, and balancing strategies and step-by-step procedures as specified in Part 3 "Preparation" Article below. Include a complete set of report forms intended for use on this Project.
- E. Certified Testing, Adjusting, and Balancing Reports: Submit 2 copies of reports prepared, as specified in this Section, on approved forms certified by the testing, adjusting, and balancing Agent.
- F. Sample Report Forms: Submit 2 sets of sample testing, adjusting, and balancing report forms.
- G. Warranty: Submit 2 copies of special warranty specified in the "Warranty" Article below.

### **1.04 QUALITY ASSURANCE**

- A. Agent Qualifications: Engage a testing, adjusting, and balancing agent certified by either AABC or NEBB.
- B. Testing, Adjusting, and Balancing Conference: Meet with the Owner's and the Architect's representatives on approval of the testing, adjusting, and balancing strategies and procedures plan to develop a mutual understanding of the details. Ensure the participation of testing, adjusting, and balancing team members, equipment manufacturers' authorized service representatives, HVAC controls Installer, and other support personnel. Provide 7 days' advance notice of scheduled meeting time and location.

1. Agenda Items: Include at least the following:
  - a. Submittal distribution requirements.
  - b. Contract Documents examination report.
  - c. Testing, adjusting, and balancing plan.
  - d. Work schedule and Project site access requirements.
  - e. Coordination and cooperation of trades and subcontractors.
  - f. Coordination of documentation and communication flow.
- C. Certification of Testing, Adjusting, and Balancing Reports: Certify the testing, adjusting, and balancing field data reports. This certification includes the following:
  1. Review field data reports to validate accuracy of data and to prepare certified testing, adjusting, and balancing reports.
  2. Certify that the testing, adjusting, and balancing team complied with the approved testing, adjusting, and balancing plan and the procedures specified and referenced in this Specification.
- D. Testing, Adjusting, and Balancing Reports: Use standard forms from AABC's "National Standards for Testing, Adjusting, and Balancing."
- E. Testing, Adjusting, and Balancing Reports: Use standard forms from NEBB's "Procedural Standards for Testing, Adjusting, and Balancing of Environmental Systems."
- F. Instrumentation Type, Quantity, and Accuracy: As described in AABC national standards.
- G. Instrumentation Type, Quantity, and Accuracy: As described in NEBB's "Procedural Standards for Testing, Adjusting, and Balancing of Environmental Systems," Section II, "Required Instrumentation for NEBB Certification."
- H. Instrumentation Calibration: Calibrate instruments at least every 6 months or more frequently if required by the instrument manufacturer.

#### **1.05 PROJECT CONDITIONS**

- A. Partial Owner Occupancy: The Owner may occupy completed areas of the building before Substantial Completion. Cooperate with the Owner during testing, adjusting, and balancing operations to minimize conflicts with the Owner's operations.

#### **1.06 COORDINATION**

- A. Coordinate the efforts of factory-authorized service representatives for systems and equipment, HVAC controls installers, and other mechanics to operate HVAC systems and equipment to support and assist testing, adjusting, and balancing activities.
- B. Notice: Provide 7 days' advance notice for each test. Include scheduled test dates and times.
- C. Perform testing, adjusting, and balancing after leakage and pressure tests on air distribution systems have been satisfactorily completed.

#### **1.07 WARRANTY**

- A. General Warranty: The national project performance guarantee specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.

- B. National Project Performance (or special) Guarantee: Provide a guarantee on AABC'S "National Standards" (or NEBB) forms stating that AABC (or NEBB) will assist in completing the requirements of the Contract Documents if the testing, adjusting, and balancing Agent fails to comply with the Contract Documents. Guarantee includes the following provisions:
  - 1. The certified Agent has tested and balanced systems according to the Contract Documents.
  - 2. Systems are balanced to optimum performance capabilities within design and installation limits.

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

## **PART 3 - EXECUTION**

### **3.01 EXAMINATION**

- A. Examine Contract Documents to become familiar with project requirements and to discover conditions in systems' designs that may preclude proper testing, adjusting, and balancing of systems and equipment.
  - 1. Contract Documents are defined in the General and Supplementary Conditions of the Contract.
  - 2. Verify that balancing devices, such as test ports, gage cocks, thermometer wells, flow-control devices, balancing valves and fittings, and manual volume dampers, are required by the Contract Documents. Verify that quantities and locations of these balancing devices are accessible and appropriate for effective balancing and for efficient system and equipment operation.
- B. Examine approved submittal data of HVAC systems and equipment.
- C. Examine Architect's and Engineer's design data, including HVAC system descriptions, statements of design assumptions for environmental conditions and systems' output, and statements of philosophies and assumptions about HVAC system and equipment controls.
- D. Examine equipment performance data, including fan and pump curves. Relate performance data to project conditions and requirements, including system effects that can create undesired or unpredicted conditions that cause reduced capacities in all or part of a system. Calculate system effect factors to reduce the performance ratings of HVAC equipment when installed under conditions different from those presented when the equipment was performance tested at the factory. To calculate system effects for air systems, use tables and charts found in AMCA 201, "Fans and Systems," Sections 7 through 10; or in SMACNA's "HVAC Systems--Duct Design," Sections 5 and 6. Compare this data with the design data and installed conditions.
- E. Examine system and equipment installations to verify that they are complete and that testing, cleaning, adjusting, and commissioning specified in individual Specification Sections have been performed.
- F. Examine system and equipment test reports.
- G. Examine HVAC system and equipment installations to verify that indicated balancing devices, such as test ports, gage cocks, thermometer wells, flow-control devices, balancing valves and



fittings, and manual volume dampers, are properly installed, and their locations are accessible and appropriate for effective balancing and for efficient system and equipment operation.

- H. Examine systems for functional deficiencies that cannot be corrected by adjusting and balancing.
- I. Examine air-handling equipment to ensure clean filters have been installed, bearings are greased, belts are aligned and tight, and equipment with functioning controls is ready for operation.
- J. Examine fan coil units to verify that they are accessible and their controls are connected and functioning.
- K. Examine plenums, utilized for outside air, to verify that they are airtight. Verify that pipe penetrations and other holes are sealed.
- L. Examine heat-transfer coils for correct piping connections and for clean and straight fins.
- M. Examine equipment for installation and for properly operating safety interlocks and controls.
- N. Examine automatic temperature system components to verify the following:
  - 1. Dampers, valves, and other controlled devices operate by the intended controller.
  - 2. Dampers and valves are in the position indicated by the controller.
  - 3. Integrity of valves and dampers for free and full operation and for tightness of fully closed and fully open positions.
  - 4. Automatic modulating and shutoff valves are properly connected.
  - 5. Thermostats are located to avoid adverse effects of sunlight, drafts, and cold walls.
  - 6. Sensors are located to sense only the intended conditions.
  - 7. Sequence of operation for control modes is according to the Contract Documents.
  - 8. Controller set points are set at design values. Observe and record system reactions to changes in conditions. Record default set points if different from design values.
  - 9. Interlocked systems are operating.
  - 10. Changeover from heating to cooling mode occurs according to design values.
- O. Report deficiencies discovered before and during performance of testing, adjusting, and balancing procedures.

### **3.02 PREPARATION**

- A. Prepare a testing, adjusting, and balancing plan that includes strategies and step-by-step procedures.
- B. Complete system readiness checks and prepare system readiness reports. Verify the following:
  - 1. Permanent electrical power wiring is complete.
  - 2. Automatic temperature-control systems are operational.
  - 3. Equipment and duct access doors are securely closed.
  - 4. Balance, smoke, and fire dampers are open.
  - 5. Isolating and balancing valves are open and control valves are operational.

6. Ceilings are installed in critical areas where air-pattern adjustments are required and access to balancing devices is provided.
7. Windows and doors can be closed so design conditions for system operations can be met.

### **3.03 GENERAL TESTING AND BALANCING PROCEDURES**

- A. Perform testing and balancing procedures on each system according to the procedures contained in AABC national standards (or NEBB's Procedural Standards for Testing Adjusting, and Balancing of Environmental Systems") and this Section.
- B. Perform testing and balancing procedures on each system according to the procedures contained in NEBB's "Procedural Standards for Testing, Adjusting, and Balancing of Environmental Systems" and this Section.
- C. Cut insulation, ducts, pipes, and equipment cabinets for installation of test probes to the minimum extent necessary to allow adequate performance of procedures. After testing and balancing, close probe holes and patch insulation with new materials identical to those removed. Restore vapor barrier and finish according to the insulation Specifications for this Project.
- D. Mark equipment settings with paint or other suitable, permanent identification material, including damper-control positions, valve indicators, fan-speed-control levers, and similar controls and devices, to show final settings.

### **3.04 FUNDAMENTAL AIR SYSTEMS' BALANCING PROCEDURES**

- A. Prepare test reports for both fans and outlets. Obtain manufacturer's outlet factors and recommended testing procedures. Crosscheck the summation of required outlet volumes with required fan volumes.
- B. Prepare schematic diagrams of systems' "as-built" duct layouts.
- C. Determine the best locations in main and branch ducts for accurate duct airflow measurements.
- D. Check the airflow patterns from the outside-air louvers and dampers and the return- and exhaust-air dampers, through the supply-fan discharge and mixing dampers.
- E. Locate start-stop and disconnect switches, electrical interlocks, and motor starters.
- F. Verify that motor starters are equipped with properly sized thermal protection.
- G. Check dampers for proper position to achieve desired airflow path.
- H. Check for airflow blockages.
- I. Check condensate drains for proper connections and functioning.
- J. Check for proper sealing of air-handling unit components.

### **3.05 CONSTANT-VOLUME AIR SYSTEMS' BALANCING PROCEDURES**

- A. The procedures in this Article apply to constant-volume supply-, return-, and exhaust-air systems. Additional procedures are required for variable-air-volume, and process exhaust-air systems. These additional procedures are specified in other articles in this Section.
- B. Adjust fans to deliver total design airflows within the maximum allowable rpm listed by the fan manufacturer.

1. Measure fan static pressures to determine actual static pressure as follows:
    - a. Measure outlet static pressure as far downstream from the fan as practicable and upstream from restrictions in ducts such as elbows and transitions.
    - b. Measure static pressure directly at the fan outlet or through the flexible connection.
    - c. Measure inlet static pressure of single-inlet fans in the inlet duct as near the fan as possible, upstream from flexible connection and downstream from duct restrictions.
    - d. Measure inlet static pressure of double-inlet fans through the wall of the plenum that houses the fan.
  2. Measure static pressure across each air-handling unit component.
    - a. Simulate dirty filter operation and record the point at which maintenance personnel must change filters.
  3. Measure static pressures entering and leaving other devices such as sound traps, heat recovery equipment, and air washers under final balanced conditions.
  4. Compare design data with installed conditions to determine variations in design static pressures versus actual static pressures. Compare actual system effect factors with calculated system effect factors to identify where variations occur. Recommend corrective action to align design and actual conditions.
  5. Adjust fan speed higher or lower than design with the approval of the Architect. Make required adjustments to pulley sizes, motor sizes, and electrical connections to accommodate fan-speed changes.
  6. Do not make fan-speed adjustments that result in motor overload. Consult equipment manufacturers about fan-speed safety factors. Modulate dampers and measure fan-motor amperage to ensure no overload will occur. Measure amperage in full cooling, full heating, and economizer modes to determine the maximum required brake horsepower.
- C. Adjust volume dampers for main duct, submain ducts, and major branch ducts to design airflows within specified tolerances.
1. Measure static pressure at a point downstream from the balancing damper and adjust volume dampers until the proper static pressure is achieved.
    - a. Where sufficient space in submains and branch ducts is unavailable for Pitot-tube traverse measurements, measure airflow at terminal outlets and inlets and calculate the total airflow for that zone.
  2. Remeasure each submain and branch duct after all have been adjusted. Continue to adjust submains and branch ducts to design airflows within specified tolerances.
- D. Measure terminal outlets and inlets without making adjustments.
1. Measure terminal outlets using a direct-reading hood or the outlet manufacturer's written instructions and calculating factors.
- E. Adjust terminal outlets and inlets for each space to design airflows within specified tolerances of design values. Make adjustments using volume dampers rather than extractors and the dampers at the air terminals.

1. Adjust each outlet in the same room or space to within specified tolerances of design quantities without generating noise levels above the limitations prescribed by the Contract Documents.
2. Adjust patterns of adjustable outlets for proper distribution without drafts.

### **3.06 MOTORS**

- A. Motors, 1/2 HP and Larger: Test at final balanced conditions and record the following data:
  1. Manufacturer, model, and serial numbers.
  2. Motor horsepower rating.
  3. Motor rpm.
  4. Efficiency rating if high-efficiency motor.
  5. Nameplate and measured voltage, each phase.
  6. Nameplate and measured amperage, each phase.
  7. Starter thermal-protection-element rating.
- B. Motors Driven by Variable-Frequency Controllers: Test for proper operation at speeds varying from minimum to maximum. Test the manual bypass for the controller to prove proper operation. Record observations, including controller manufacturer, model and serial numbers, and nameplate data.

### **3.07 TEMPERATURE TESTING**

- A. During testing, adjusting, and balancing, report need for adjustment in temperature regulation within the automatic temperature-control system.
- B. Measure indoor wet- and dry-bulb temperatures every other hour for a period of 2 successive 8-hour days, in each separately controlled zone, to prove correctness of final temperature settings. Measure when the building or zone is occupied.
- C. Measure outside-air, wet- and dry-bulb temperatures.

### **3.08 TEMPERATURE-CONTROL VERIFICATION**

- A. Verify that controllers are calibrated and commissioned.
- B. Check transmitter and controller locations and note conditions that would adversely affect control functions.
- C. Record controller settings and note variances between set points and actual measurements.
- D. Verify operation of limiting controllers (i.e., high- and low-temperature controllers).
- E. Verify free travel and proper operation of control devices such as damper and valve operators.
- F. Verify sequence of operation of control devices. Note air pressures and device positions and correlate with airflow measurements. Note the speed of response to input changes.
- G. Confirm interaction of electrically operated switch transducers.
- H. Confirm interaction of interlock and lockout systems.
- I. Verify main control supply-air pressure and observe compressor and dryer operations.
- J. Record voltages of power supply and controller output. Determine if the system operates on a grounded or nongrounded power supply.

- K. Note operation of electric actuators using spring return for proper fail-safe operations.

### **3.09 TOLERANCES**

- A. Set HVAC system airflow rates within the following tolerances:
  - 1. Supply, Return and Exhaust Fans: Plus 10 percent to minus 5 percent.
  - 2. Air Outlets and Inlets: Plus 10 percent to minus 5 percent.

### **3.10 REPORTING**

- A. Initial Construction-Phase Report: Based on examination of the Contract Documents as specified in "Examination" Article above, prepare a report on the adequacy of design for systems' balancing devices. Recommend changes and additions to systems' balancing devices to facilitate proper performance measuring and balancing. Recommend changes and additions to HVAC systems and general construction to allow access for performance measuring and balancing devices.
- B. Status Reports: As Work progresses, prepare reports to describe completed procedures, procedures in progress, and scheduled procedures. Include a list of deficiencies and problems found in systems being tested and balanced. Prepare a separate report for each system and each building floor for systems serving multiple floors.

### **3.11 FINAL REPORT**

- A. General: Typewritten, or computer printout in letter-quality font, on standard bond paper, in 3-ring binder, tabulated and divided into sections by tested and balanced systems.
- B. Include a certification sheet in front of binder signed and sealed by the certified testing and balancing engineer.
  - 1. Include a list of the instruments used for procedures, along with proof of calibration.
- C. Final Report Contents: In addition to the certified field report data, include the following:
  - 1. Fan curves.
  - 2. Manufacturers' test data.
  - 3. Field test reports prepared by system and equipment installers.
  - 4. Other information relative to equipment performance, but do not include approved Shop Drawings and Product Data.
- D. General Report Data: In addition to the form titles and entries, include the following data in the final report, as applicable:
  - 1. Title page.
  - 2. Name and address of testing, adjusting, and balancing Agent.
  - 3. Project name.
  - 4. Project location.
  - 5. Architect's name and address.
  - 6. Engineer's name and address.
  - 7. Contractor's name and address.
  - 8. Report date.

9. Signature of testing, adjusting, and balancing Agent who certifies the report.
10. Summary of contents, including the following:
  - a. Design versus final performance.
  - b. Notable characteristics of systems.
  - c. Description of system operation sequence if it varies from the Contract Documents.
11. Nomenclature sheets for each item of equipment.
12. Data for terminal units, including manufacturer, type size, and fittings.
13. Notes to explain why certain final data in the body of reports vary from design values.
14. Test conditions for fans and pump performance forms, including the following:
  - a. Settings for outside-, return-, and exhaust-air dampers.
  - b. Conditions of filters.
  - c. Cooling coil, wet- and dry-bulb conditions.
  - d. Face and bypass damper settings at coils.
  - e. Fan drive settings, including settings and percentage of maximum pitch diameter.
  - f. Variable speed drive settings for variable-air-volume systems.
  - g. Settings for supply-air, static-pressure controller.
  - h. Other system operating conditions that affect performance.
- E. System Diagrams: Include schematic layouts of air distribution systems. Present with single-line diagrams and include the following:
  1. Quantities of outside, supply, return, and exhaust airflows.
  2. Duct, outlet, and inlet sizes.
  3. Pipe and valve sizes and locations.
  4. Balancing stations.
- F. Air-Handling Unit Test Reports: For air-handling and fan coil units with coils, include the following:
  1. Unit Data: Include the following:
    - a. Unit identification.
    - b. Location.
    - c. Make and type.
    - d. Model number and unit size.
    - e. Manufacturer's serial number.
    - f. Unit arrangement and class.
    - g. Discharge arrangement.
    - h. Sheave make, size in inches, and bore.
    - i. Sheave dimensions, center-to-center and amount of adjustments in inches.
    - j. Number of belts, make, and size.
    - k. Number of filters, type, and size.

2. Motor Data: Include the following:
    - a. Make and frame type and size.
    - b. Horsepower and rpm.
    - c. Volts, phase, and hertz.
    - d. Full-load amperage and service factor.
    - e. Sheave make, size in inches, and bore.
    - f. Sheave dimensions, center-to-center and amount of adjustments in inches.
  3. Test Data: Include design and actual values for the following:
    - a. Total airflow rate in cfm.
    - b. Total system static pressure in inches wg.
    - c. Fan rpm.
    - d. Discharge static pressure in inches wg.
    - e. Filter static-pressure differential in inches wg.
    - f. Cooling coil static-pressure differential in inches wg.
    - g. Heating coil static-pressure differential in inches wg.
    - h. Outside airflow in cfm.
    - i. Return airflow in cfm.
    - j. Outside-air damper position.
    - k. Return-air damper position.
- G. Fan Test Reports: For supply and exhaust fans, include the following:
1. Fan Data: Include the following:
    - a. System identification.
    - b. Location.
    - c. Make and type.
    - d. Model number and size.
    - e. Manufacturer's serial number.
    - f. Arrangement and class.
    - g. Sheave make, size in inches, and bore.
    - h. Sheave dimensions, center-to-center and amount of adjustments in inches.
  2. Motor Data: Include the following:
    - a. Make and frame type and size.
    - b. Horsepower and rpm.
    - c. Volts, phase, and hertz.
    - d. Full-load amperage and service factor.
    - e. Sheave make, size in inches, and bore.
    - f. Sheave dimensions, center-to-center and amount of adjustments in inches.
    - g. Number of belts, make, and size.

3. Test Data: Include design and actual values for the following:
  - a. Total airflow rate in cfm.
  - b. Total system static pressure in inches wg.
  - c. Fan rpm.
  - d. Discharge static pressure in inches wg.
  - e. Suction static pressure in inches wg.
- H. Round, Flat-Oval, and Rectangular Duct Traverse Reports: Include a diagram with a grid representing the duct cross-section and record the following:
  1. Report Data: Include the following:
    - a. System and air-handling unit number.
    - b. Location and zone.
    - c. Traverse air temperature in deg F.
    - d. Duct static pressure in inches wg.
    - e. Duct size in inches.
    - f. Duct area in sq. ft..
    - g. Design airflow rate in cfm.
    - h. Design velocity in fpm.
    - i. Actual airflow rate in cfm.
    - j. Actual average velocity in fpm.
    - k. Barometric pressure in psig.
  - I. Compressor and Condenser Reports: For refrigerant side of unitary systems, stand-alone refrigerant compressors, air-cooled condensing units, include the following:
    1. Unit Data: Include the following:
      - a. Unit identification.
      - b. Location.
      - c. Unit make and model number.
      - d. Manufacturer's compressor serial numbers.
      - e. Compressor make.
      - f. Compressor model and serial numbers.
      - g. Refrigerant weight in lb.
      - h. Low ambient temperature cutoff in deg F.
    2. Test Data: Include design and actual values for the following:
      - a. Entering-air, dry-bulb temperature in deg F.
      - b. Leaving-air, dry-bulb temperature in deg F.
      - c. Control settings.
      - d. Unloader set points.
      - e. Low-pressure-cutout set point in psig.



- f. High-pressure-cutout set point in psig.
  - g. Suction pressure in psig.
  - h. Suction temperature in deg F.
  - i. Condenser refrigerant pressure in psig.
  - j. Condenser refrigerant temperature in deg F.
  - k. Oil pressure in psig.
  - l. Oil temperature in deg F.
  - m. Voltage at each connection.
  - n. Amperage for each phase.
  - o. The kW input.
  - p. Crankcase heater kW.
  - q. Number of fans.
  - r. Condenser fan rpm.
  - s. Condenser fan airflow rate in cfm.
  - t. Condenser fan motor make, frame size, rpm, and horsepower.
  - u. Condenser fan motor voltage at each connection.
  - v. Condenser fan motor amperage for each phase.
- J. Instrument Calibration Reports: For instrument calibration, include the following:
- 1. Report Data: Include the following:
    - a. Instrument type and make.
    - b. Serial number.
    - c. Application.
    - d. Dates of use.
    - e. Dates of calibration.

### **3.12 ADDITIONAL TESTS**

- A. Within 90 days of completing testing, adjusting, and balancing, perform additional testing and balancing to verify that balanced conditions are being maintained throughout and to correct unusual conditions.
- B. Seasonal Periods: If initial testing, adjusting, and balancing procedures were not performed during near-peak summer and winter conditions, perform additional inspections, testing, and adjusting during near-peak summer and winter conditions.

END OF SECTION

**SECTION 23 07 19**  
**HVAC PIPING INSULATION**

**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. Section includes insulating the following HVAC piping systems:
  - 1. Condensate drain piping, indoors.
  - 2. Refrigerant suction and hot-gas piping, indoors and outdoors.

**1.02 ACTION SUBMITTALS**

- A. Product Data: For each type of product indicated. Include thermal conductivity, water-vapor permeance thickness, and jackets (both factory and field applied if any).
- B. LEED Submittals:
  - 1. Product Data for Credit IEQ 4.1: For adhesives and sealants, documentation including printed statement of VOC content.
  - 2. Laboratory Test Reports for Credit IEQ 4: For adhesives and sealants, documentation indicating that products comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- C. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
  - 1. Detail application of protective shields, saddles, and inserts at hangers for each type of insulation and hanger.

**1.03 INFORMATIONAL SUBMITTALS**

- A. Qualification Data: For qualified Installer.
- B. Material Test Reports: From a qualified testing agency acceptable to authorities having jurisdiction indicating, interpreting, and certifying test results for compliance of insulation materials, sealers, attachments, cements, and jackets, with requirements indicated. Include dates of tests and test methods employed.
- C. Field quality-control reports.

**1.04 QUALITY ASSURANCE**

- A. Installer Qualifications: Skilled mechanics who have successfully completed an apprenticeship program or another craft training program certified by the Department of Labor, Bureau of Apprenticeship and Training.
- B. Surface-Burning Characteristics: For insulation and related materials, as determined by testing identical products according to ASTM E 84, by a testing and inspecting agency acceptable to authorities having jurisdiction. Factory label insulation and jacket materials and adhesive, mastic, tapes, and cement material containers, with appropriate markings of applicable testing agency.
  - 1. Insulation Installed Indoors: Flame-spread index of 25 or less, and smoke-developed index of 50 or less.

### **1.05 DELIVERY, STORAGE, AND HANDLING**

- A. Packaging: Insulation material containers shall be marked by manufacturer with appropriate ASTM standard designation, type and grade, and maximum use temperature.

### **1.06 COORDINATION**

- A. Coordinate sizes and locations of supports, hangers, and insulation shields specified in Section 23 05 29 "Hangers and Supports for HVAC Piping and Equipment."
- B. Coordinate clearance requirements with piping Installer for piping insulation application. Before preparing piping Shop Drawings, establish and maintain clearance requirements for installation of insulation and field-applied jackets and finishes and for space required for maintenance.

### **1.07 SCHEDULING**

- A. Schedule insulation application after pressure testing systems and, where required, after installing and testing heat tracing. Insulation application may begin on segments that have satisfactory test results.
- B. Complete installation and concealment of plastic materials as rapidly as possible in each area of construction.

## **PART 2 - PRODUCTS**

### **2.01 INSULATION MATERIALS**

- A. Comply with requirements in "Piping Insulation Schedule, General," "Indoor Piping Insulation Schedule," articles for where insulating materials shall be applied.
- B. Products shall not contain asbestos, lead, mercury, or mercury compounds.
- C. Products that come in contact with stainless steel shall have a leachable chloride content of less than 50 ppm when tested according to ASTM C 871.
- D. Insulation materials for use on austenitic stainless steel shall be qualified as acceptable according to ASTM C 795.
- E. Foam insulation materials shall not use CFC or HCFC blowing agents in the manufacturing process.
- F. Flexible Elastomeric Insulation: Closed-cell, sponge- or expanded-rubber materials. Comply with ASTM C 534, Type I for tubular materials.
  - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Aeroflex USA, Inc.; Aerocel.
    - b. Armacell LLC; AP Armaflex.
    - c. K-Flex USA; Insul-Lock, Insul-Tube, and K-FLEX LS.
- G. Mineral-Fiber, Preformed Pipe Insulation:
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Johns Manville; Micro-Lok.
    - b. Knauf Insulation; 1000-Degree Pipe Insulation.

- c. Owens Corning; Fiberglas Pipe Insulation.
- 2. Type I, 850 deg F (454 deg C) Materials: Mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C 547, Type I, Grade A, without factory-applied jacket.

## **2.02 ADHESIVES**

- A. Materials shall be compatible with insulation materials, jackets, and substrates and for bonding insulation to itself and to surfaces to be insulated unless otherwise indicated.
- B. Mineral-Fiber Adhesive: Comply with MIL-A-3316C, Class 2, Grade A.
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; CP-127.
    - b. Eagle Bridges - Marathon Industries; 225.
    - c. Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; 85-60/85-70.
    - d. Mon-Eco Industries, Inc.; 22-25.
  - 2. For indoor applications, adhesive shall have a VOC content of 80 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
  - 3. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

## **PART 3 - EXECUTION**

### **3.01 EXAMINATION**

- A. Examine substrates and conditions for compliance with requirements for installation tolerances and other conditions affecting performance of insulation application.
  - 1. Verify that systems to be insulated have been tested and are free of defects.
  - 2. Verify that surfaces to be insulated are clean and dry.
  - 3. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.02 PREPARATION**

- A. Surface Preparation: Clean and dry surfaces to receive insulation. Remove materials that will adversely affect insulation application.
- B. Surface Preparation: Clean and prepare surfaces to be insulated. Before insulating, apply a corrosion coating to insulated surfaces as follows:
  - 1. Stainless Steel: Coat 300 series stainless steel with an epoxy primer 5 mils (0.127 mm) thick and an epoxy finish 5 mils (0.127 mm) thick if operating in a temperature range between 140 and 300 deg F (60 and 149 deg C). Consult coating manufacturer for appropriate coating materials and application methods for operating temperature range.
  - 2. Carbon Steel: Coat carbon steel operating at a service temperature between 32 and 300 deg F (0 and 149 deg C) with an epoxy coating. Consult coating manufacturer for

appropriate coating materials and application methods for operating temperature range.

### **3.03 GENERAL INSTALLATION REQUIREMENTS**

- A. Install insulation materials, accessories, and finishes with smooth, straight, and even surfaces; free of voids throughout the length of piping including fittings, valves, and specialties.
- B. Install insulation materials, forms, vapor barriers or retarders, jackets, and thicknesses required for each item of pipe system as specified in insulation system schedules.
- C. Install accessories compatible with insulation materials and suitable for the service. Install accessories that do not corrode, soften, or otherwise attack insulation or jacket in either wet or dry state.
- D. Install insulation with longitudinal seams at top and bottom of horizontal runs.
- E. Install multiple layers of insulation with longitudinal and end seams staggered.
- F. Do not weld brackets, clips, or other attachment devices to piping, fittings, and specialties.
- G. Keep insulation materials dry during application and finishing.
- H. Install insulation with tight longitudinal seams and end joints. Bond seams and joints with adhesive recommended by insulation material manufacturer.
- I. Install insulation with least number of joints practical.
- J. Where vapor barrier is indicated, seal joints, seams, and penetrations in insulation at hangers, supports, anchors, and other projections with vapor-barrier mastic.
  - 1. Install insulation continuously through hangers and around anchor attachments.
  - 2. For insulation application where vapor barriers are indicated, extend insulation on anchor legs from point of attachment to supported item to point of attachment to structure. Taper and seal ends at attachment to structure with vapor-barrier mastic.
  - 3. Install insert materials and install insulation to tightly join the insert. Seal insulation to insulation inserts with adhesive or sealing compound recommended by insulation material manufacturer.
  - 4. Cover inserts with jacket material matching adjacent pipe insulation. Install shields over jacket, arranged to protect jacket from tear or puncture by hanger, support, and shield.
- K. Apply adhesives, mastics, and sealants at manufacturer's recommended coverage rate and wet and dry film thicknesses.
- L. Cut insulation in a manner to avoid compressing insulation more than 75 percent of its nominal thickness.
- M. Finish installation with systems at operating conditions. Repair joint separations and cracking due to thermal movement.
- N. Repair damaged insulation facings by applying same facing material over damaged areas. Extend patches at least 4 inches (100 mm) beyond damaged areas. Adhere, staple, and seal patches similar to butt joints.
- O. For above-ambient services, do not install insulation to the following:
  - 1. Vibration-control devices.
  - 2. Testing agency labels and stamps.

3. Nameplates and data plates.
4. Manholes.
5. Handholes.
6. Cleanouts.

### **3.04 PENETRATIONS**

- A. Insulation Installation at Roof Penetrations: Install insulation continuously through roof penetrations.
  1. Seal penetrations with flashing sealant.
  2. For applications requiring only indoor insulation, terminate insulation above roof surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.
  3. Extend jacket of outdoor insulation outside roof flashing at least 2 inches (50 mm) below top of roof flashing.
  4. Seal jacket to roof flashing with flashing sealant.
- B. Insulation Installation at Interior Wall and Partition Penetrations (That Are Not Fire Rated): Install insulation continuously through walls and partitions.
- C. Insulation Installation at Fire-Rated Wall and Partition Penetrations: Install insulation continuously through penetrations of fire-rated walls and partitions.
  1. Comply with requirements in Section 07 84 00 "Firestopping" for firestopping and fire-resistive joint sealers.
- D. Insulation Installation at Floor Penetrations:
  1. Pipe: Install insulation continuously through floor penetrations.
  2. Seal penetrations through fire-rated assemblies. Comply with requirements in Section 07 84 00 "Firestopping."

### **3.05 GENERAL PIPE INSULATION INSTALLATION**

- A. Requirements in this article generally apply to all insulation materials except where more specific requirements are specified in various pipe insulation material installation articles.
- B. Insulation Installation on Fittings, Valves, Strainers, Flanges, and Unions:
  1. Install insulation over fittings, valves, strainers, flanges, unions, and other specialties with continuous thermal and vapor-retarder integrity unless otherwise indicated.
  2. Insulate pipe elbows using preformed fitting insulation or mitered fittings made from same material and density as adjacent pipe insulation. Each piece shall be butted tightly against adjoining piece and bonded with adhesive. Fill joints, seams, voids, and irregular surfaces with insulating cement finished to a smooth, hard, and uniform contour that is uniform with adjoining pipe insulation.
  3. Insulate tee fittings with preformed fitting insulation or sectional pipe insulation of same material and thickness as used for adjacent pipe. Cut sectional pipe insulation to fit. Butt each section closely to the next and hold in place with tie wire. Bond pieces with adhesive.

4. Cover segmented insulated surfaces with a layer of finishing cement and coat with a mastic. Install vapor-barrier mastic for below-ambient services and a breather mastic for above-ambient services. Reinforce the mastic with fabric-reinforcing mesh. Trowel the mastic to a smooth and well-shaped contour.

### **3.06 INSTALLATION OF MINERAL-FIBER INSULATION**

- A. Insulation Installation on Straight Pipes and Tubes:
  1. Secure each layer of preformed pipe insulation to pipe with wire or bands and tighten bands without deforming insulation materials.
  2. Where vapor barriers are indicated, seal longitudinal seams, end joints, and protrusions with vapor-barrier mastic and joint sealant.
  3. For insulation with factory-applied jackets on above-ambient surfaces, secure laps with outward-clinched staples at 6 inches (150 mm) o.c.
  4. For insulation with factory-applied jackets on below-ambient surfaces, do not staple longitudinal tabs. Instead, secure tabs with additional adhesive as recommended by insulation material manufacturer and seal with vapor-barrier mastic and flashing sealant.
- B. Insulation Installation on Pipe Fittings and Elbows:
  1. Install preformed sections of same material as straight segments of pipe insulation when available.
  2. When preformed insulation elbows and fittings are not available, install mitered sections of pipe insulation, to a thickness equal to adjoining pipe insulation. Secure insulation materials with wire or bands.

### **3.07 FIELD-APPLIED JACKET INSTALLATION**

- A. Where PVC jackets are indicated, install with 1-inch overlap at longitudinal seams and end joints; for horizontal applications. Seal with manufacturer's recommended adhesive.
  1. Apply two continuous beads of adhesive to seams and joints, one bead under lap and the finish bead along seam and joint edge.

### **3.08 FIELD QUALITY CONTROL**

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
- B. Perform tests and inspections.
- C. Tests and Inspections:
  1. Inspect pipe, fittings, strainers, and valves, randomly selected by Architect, by removing field-applied jacket and insulation in layers in reverse order of their installation. Extent of inspection shall be limited to three locations of straight pipe for each pipe service defined in the "Piping Insulation Schedule, General" Article.
- D. All insulation applications will be considered defective Work if sample inspection reveals noncompliance with requirements.

### **3.09 PIPING INSULATION SCHEDULE, GENERAL**

- A. Acceptable preformed pipe and tubular insulation materials and thicknesses are identified for each piping system and pipe size range. If more than one material is listed for a piping system, selection from materials listed is Contractor's option.
- B. Items Not Insulated: Unless otherwise indicated, do not install insulation on the following:
  - 1. Drainage piping located in crawl spaces.
  - 2. Underground piping.
  - 3. Chrome-plated pipes and fittings unless there is a potential for personnel injury.

### **3.10 INDOOR PIPING INSULATION SCHEDULE**

- A. Condensate and Equipment Drain Water below 60 Deg F (16 Deg C):
  - 1. All Pipe Sizes: Insulation shall be the following: Retain one or more of six subparagraphs below.
    - a. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1/2 inch (13 mm) thick.
- B. Refrigerant Suction and Hot-Gas Piping:
  - 1. All Pipe Sizes: Insulation shall be one of the following:
    - a. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1 inch thick.
    - b. Flexible Elastomeric: 1 inch thick.
- C. Refrigerant Suction and Hot-Gas Flexible Tubing:
  - 1. All Pipe Sizes: Insulation shall be one of the following:
    - a. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1 inch thick.
    - b. Flexible Elastomeric: 1 inch thick

### **3.11 OUTDOOR, ABOVEGROUND PIPING INSULATION SCHEDULE**

- A. Refrigerant Suction and Hot-Gas Piping:
  - 1. All Pipe Sizes: Insulation shall be one of the following:
    - a. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1-1/2 inch thick.
    - b. Flexible Elastomeric: 1-1/2 inch thick.
- B. Refrigerant Suction and Hot-Gas Flexible Tubing:
  - 1. All Pipe Sizes: Insulation shall be one of the following:
    - a. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1-1/2 inch thick.
    - b. Flexible Elastomeric: 1-1/2 inch thick.

### **3.12 INDOOR, FIELD-APPLIED JACKET SCHEDULE**

- A. Install jacket over insulation material. For insulation with factory-applied jacket, install the field-applied jacket over the factory-applied jacket.
- B. If more than one material is listed, selection from materials listed is Contractor's option.
- C. Piping, Concealed:



1. None.
- D. Piping, Exposed:

1. None.

**3.13 OUTDOOR, FIELD-APPLIED JACKET SCHEDULE**

- A. Install jacket over insulation material. For insulation with factory-applied jacket, install the field-applied jacket over the factory-applied jacket.
- B. If more than one material is listed, selection from materials listed is Contractor's option.
- C. Piping, Concealed:
1. None.
- D. Piping, Exposed:
1. PVC: 30 mils thick.

END OF SECTION

**SECTION 23 09 00**  
**INSTRUMENTATION AND CONTROL FOR HVAC**

**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. Furnish all labor, materials, equipment, and service necessary for a complete and operating temperature and lighting control system, utilizing Direct Digital Controls as shown on the drawings and as described herein. Drawings are diagrammatic only.
- B. All labor, material, equipment and software not specifically referred to herein or on the plans, that is required to meet the functional intent of this specification, shall be provided without additional cost to the Owner.
- C. The Owner shall be the named license holder of all software associated with any and all incremental work on the project(s).

**1.02 SYSTEM DESCRIPTION**

- A. The entire temperature and lighting control system shall be comprised of a network of interoperable, stand-alone digital controllers communicating via LonMark/LonTalk communication protocols to a Network Area Controller (NAC). Temperature Control System products shall be manufactured by Honeywell. Equivalent LonWorks products must be approved in writing by the consulting Engineer and be submitted for approval ten (10) days prior to the date of the bid submittal.
- B. The Temperature and Lighting Control System as provided in this Division shall be based on the Honeywell WEBs System incorporating the Niagara Framework™. Equivalent products must be approved in writing by the consulting Engineer and be submitted for approval ten (10) days prior to the date of the bid submittal. Systems not developed on the Niagara Framework platform are unacceptable.

**1.03 SUBMITTAL**

- A. Eight copies of shop drawings of the components and devices for the entire control system shall be submitted and shall consist of a complete list of equipment and materials, including manufacturers catalog data sheets and installation instructions for all controllers, valves, dampers, sensors, routers, etc. Shop drawings shall also contain complete wiring and schematic diagrams, software descriptions, calculations, and any other details required to demonstrate that the system has been coordinated and will properly function as a system. Terminal identification for all control wiring shall be shown on the shop drawings. A complete written Sequence of Operation shall also be included with the submittal package.
- B. Submittal shall also include a trunk cable schematic diagram depicting operator workstations, control panel locations and a description of the communication type, media and protocol.
- C. Submittal shall also include a complete point list of all points to be connected to the temperature and lighting control system. Controls Contractor shall provide necessary point lists, protocol documentation, and factory support information for systems provided.
- D. Submittal shall also include a copy of each of the graphics developed for the Graphic User Interface including a flowchart (site map) indicating how the graphics are to be linked to one another for system navigation. The graphics are intended to be 80% - 90% complete at this

stage with the only remaining changes to be based on review comments from the A/E design team and/or Owner.

- E. Include the following display graphics for each of the sites:
1. Site plan view of entire campus identifying each building – include the display of outside air temperature & humidity.
  2. Individual buildings, including room layout with display of all space temperatures and occupied mode, outside air temperature & humidity.
  3. Mechanical equipment display for each AC unit to include space temperature, heating and cooling setpoints, supply air temperature, fan status, occupied mode, outside temperature & humidity.
  4. Boiler and hot water pumps showing all related points.
  5. Page showing all room temperatures, room temperature setpoints, occupied mode, AC unit fan status and AC unit mode (heating or cooling).
  6. Page showing integrated lighting control points and other miscellaneous points.
- F. Upon completion of the work, provide a complete set of 'as-built' drawings and application software on compact disk. Drawings shall be provided as AutoCAD™ or Visio™ compatible files. Eight copies of the 'as-built' drawings shall be provided in addition to the documents on compact disk. Controls Contractor shall provide as-builts for their portions of work.

#### **1.04 SPECIFICATION NOMENCLATURE**

- A. Acronyms used in this specification are as follows:

NAC	Network Area Controller
IDC	Interoperable Digital Controller
IBC	Interoperable BACnet Controller
GUI	Graphical User Interface
WBI	Web Browser Interface
POT	Portable Operator's Terminal
PMI	Power Measurement Interface
DDC	Direct Digital Controls
LAN	Local Area Network
WAN	Wide Area Network
OOT	Object Oriented Technology
PICS	Product Interoperability Compliance Statement

#### **1.05 AGENCY AND CODE APPROVALS**

- A. All products of the temperature and lighting control system shall be provided with the following agency approvals. Verification that the approvals exist for all submitted products shall be provided with the submittal package. Systems or products not currently offering the following approvals are not acceptable.
1. UL-916; Energy Management Systems
  2. C-UL listed to Canadian Standards Association C22.2 No. 205-M1983 "signal Equipment"
  3. CE

4. FCC, Part 15, Subpart J, Class A Computing Devices

**1.06 SOFTWARE LICENSE AGREEMENT**

- A. The Owner shall agree to the manufacturer's standard software and firmware licensing agreement as a condition of this contract. Such license shall grant use of all programs and application software to Owner as defined by the manufacturer's license agreement, but shall protect manufacturer's rights to disclosure of trade secrets contained within such software.
- B. The Owner shall be the named license holder of all software associated with any and all incremental work on the project(s). In addition, the Owner shall receive ownership of all job specific configuration documentation, data files, and application-level software developed for the project. This shall include all custom, job specific software code and documentation for all configuration and programming that is generated for a given project and/or configured for use with the Server(s), and any related LAN / WAN / Intranet and Internet connected routers and devices. Any and all required IDs and passwords for access to any component or software program shall be provided to the owner. The owner shall determine which organizations to be named in the SI organization ID ("orgid") of all software licenses. Owner shall be free to direct the modification of the "orgid" in any software license, regardless of supplier.

**1.07 DELIVERY, STORAGE AND HANDLING**

- A. Provide factory-shipping cartons for each piece of equipment and control device. Maintain cartons through shipping, storage, and handling as required to prevent equipment damage. Store equipment and materials inside and protected from weather.

**1.08 JOB CONDITIONS**

- A. Cooperation with Other Trades: Coordinate the Work of this section with that of other sections to ensure that the Work will be carried out in an orderly fashion. It shall be this Contractor's responsibility to check the Contract Documents for possible conflicts between his Work and that of other crafts in equipment location, pipe, duct and conduit runs, electrical outlets and fixtures, air diffusers, and structural and architectural features.

**PART 2 - MATERIALS**

**2.01 ACCEPTABLE CONTROL MANUFACTURER/CONTRACTOR**

- A. Honeywell "Authorized Controls Integrator" – R & R Controls Inc.  
4564 B Alvarado Canyon Road  
San Diego, CA 92120  
ph. 619-516-1880  
fx. 619 516-1881

**2.02 GENERAL**

- A. The temperature and lighting control system shall be comprised of a network of interoperable, stand-alone digital controllers, a computer system, graphical user interface software, printers, network devices, valves, dampers, sensors, and other devices as specified herein. All systems and software within temperature and lighting control system shall be Year 2000 compliant and shall be supported by compliance documentation from the manufacturer.

- B. The installed system shall provide secure password access to all features, functions and data contained in the overall temperature and lighting control system.

### **2.03 OPEN, INTEROPERABLE, INTEGRATED ARCHITECTURES**

- A. The intent of this specification is to provide a peer-to-peer networked, stand-alone, distributed control system with the capability to integrate ANSI/ASHRAE Standard 135-2001 BACnet, LonWorks technology, MODBUS, OPC, and other open and proprietary communication protocols in one open, interoperable system.
- B. The supplied computer software shall employ object-oriented technology (OOT) for representation of all data and control devices within the system. In addition, adherence to industry standards including ANSI / ASHRAE™ Standard 135-2001, BACnet and LonMark to assure interoperability between all system components is required. For each LonWorks device that does not have LonMark certification, the device supplier must provide an XIF file and a resource file for the device. For each BACnet device, the device supplier must provide a PICS document showing the installed device's compliance level. Minimum compliance is Level 3; with the ability to support data read and write functionality. Physical connection of BACnet devices shall be via Ethernet (BACnet Ethernet/IP,) and/or RS-485 (BACnet MSTP) as specified.
- C. All components and controllers supplied under this Division shall be true "peer-to-peer" communicating devices. Components or controllers requiring "polling" by a host to pass data shall not be acceptable.
- D. The supplied system must incorporate the ability to access all data using standard Web browsers without requiring proprietary operator interface and configuration programs. An Open Database Connectivity (ODBC) or Structured Query Language (SQL) compliant server database is required for all system database parameter storage. This data shall reside on a supplier-installed server for all database access. Systems requiring proprietary database and user interface programs shall not be acceptable.
- E. A hierarchical topology is required to assure reasonable system response times and to manage the flow and sharing of data without unduly burdening the customer's internal Intranet network. Systems employing a "flat" single tiered architecture shall not be acceptable.
  - 1. Maximum acceptable response time from any alarm occurrence (at the point of origin) to the point of annunciation shall not exceed 5 seconds for network connected user interfaces.
  - 2. Maximum acceptable response time from any alarm occurrence (at the point of origin) to the point of annunciation shall not exceed 60 seconds for remote or dial-up connected user interfaces.

### **2.04 NETWORKS**

- A. The Local Area Network (LAN) shall be a 100 Megabits/sec Ethernet network supporting BACnet, Java, XML, HTTP, and SOAP for maximum flexibility for integration of building data with enterprise information systems and providing support for multiple Network Area Controllers (NACs), user workstations and, if specified, a local server.
- B. Local area network minimum physical and media access requirements:
  - 1. Ethernet; IEEE standard 802.3
  - 2. Cable; 100 Base-T, UTP-8 wire, category 5
  - 3. Minimum throughput; 100 Mbps.

## **2.05 NETWORK ACCESS**

- A. Remote Access.
  - 1. For Local Area Network installations, provide access to the LAN from a remote location, via the Internet. The Owner shall provide a connection to the Internet to enable this access via high-speed cable modem, asynchronous digital subscriber line (ADSL) modem, ISDN line, T1 Line or via the customer's Intranet to a corporate server providing access to an Internet Service Provider (ISP). Customer agrees to pay monthly access charges for connection and ISP.

## **2.06 NETWORK AREA CONTROLLER (NAC)**

- A. The Network Area Controller (NAC) shall provide the interface between the LAN or WAN and the field control devices, and provide global supervisory control functions over the control devices connected to the NAC. It shall be capable of executing application control programs to provide:
  - 1. Calendar functions
  - 2. Scheduling
  - 3. Trending
  - 4. Alarm monitoring and routing
  - 5. Time synchronization
  - 6. Integration of LonWorks controller data and BACnet controller data
  - 7. Network Management functions for all LonWorks based devices
- B. The Network Area Controller must provide the following hardware features as a minimum:
  - 1. One Ethernet Port – 10/100 Mbps
  - 2. One RS-232 port
  - 3. One LonWorks Interface Port – 78KB FTT-10A
  - 4. One RS-485 ports
  - 5. Battery Backup
  - 6. Flash memory for long term data backup (If battery backup or flash memory is not supplied, the controller must contain a hard disk with at least 1 gigabyte storage capacity)
  - 7. The NAC must be capable of operation over a temperature range of 32 to 122°F
  - 8. The NAC must be capable of withstanding storage temperatures of between 0 and 158°F
  - 9. The NAC must be capable of operation over a humidity range of 5 to 95% RH, non-condensing
- C. The NAC shall provide multiple user access to the system and support for ODBC or SQL. A database resident on the NAC shall be an ODBC-compliant database or must provide an ODBC data access mechanism to read and write data stored within it.
- D. The NAC shall support standard Web browser access via the Intranet/Internet. It shall support a minimum of 32 simultaneous users.
- E. Event Alarm Notification and actions

1. The NAC shall provide alarm recognition, storage; routing, management, and analysis to supplement distributed capabilities of equipment or application specific controllers.
  2. The NAC shall be able to route any alarm condition to any defined user location whether connected to a local network or remote via dial-up telephone connection, or wide-area network.
  3. Alarm generation shall be selectable for annunciation type and acknowledgement requirements including but limited to:
    - a. To alarm
    - b. Return to normal
    - c. To fault
    - d. Provide for the creation of a minimum of eight of alarm classes for the purpose of routing types and or classes of alarms, i.e.: security, HVAC, Fire, etc.
  4. Provide timed (schedule) routing of alarms by class, object, group, or node.
  5. Provide alarm generation from binary object "runtime" and /or event counts for equipment maintenance. The user shall be able to reset runtime or event count values with appropriate password control.
- F. Control equipment and network failures shall be treated as alarms and annunciated.
- G. Alarms shall be annunciated in any of the following manners as defined by the user:
1. Screen message text
  2. Email of the complete alarm message to multiple recipients. Provide the ability to route and email alarms based on:
    - a. Day of week
    - b. Time of day
    - c. Recipient
  3. Pagers via paging services that initiate a page on receipt of email message
  4. Graphic with flashing alarm object(s)
  5. Printed message, routed directly to a dedicated alarm printer
- H. The following shall be recorded by the NAC for each alarm (at a minimum):
1. Time and date
  2. Location (building, floor, zone, office number, etc.)
  3. Equipment (air handler #, access way, etc.)
  4. Acknowledge time, date, and user who issued acknowledgement.
  5. Number of occurrences since last acknowledgement.
- I. Alarm actions may be initiated by user defined programmable objects created for that purpose.
- J. Defined users shall be given proper access to acknowledge any alarm, or specific types or classes of alarms defined by the user.
- K. A log of all alarms shall be maintained by the NAC and/or a server (if configured in the system) and shall be available for review by the user.

- L. Provide a “query” feature to allow review of specific alarms by user-defined parameters.
- M. A separate log for system alerts (controller failures, network failures, etc.) shall be provided and available for review by the user.
- N. An Error Log to record invalid property changes or commands shall be provided and available for review by the user.

## **2.07 Data Collection and Storage**

- A. The NAC shall have the ability to collect data for any property of any object and store this data for future use.
- B. The data collection shall be performed by log objects, resident in the NAC that shall have, at a minimum, the following configurable properties:
  - 1. Designating the log as interval or deviation.
  - 2. For interval logs, the object shall be configured for time of day, day of week and the sample collection interval.
  - 3. For deviation logs, the object shall be configured for the deviation of a variable to a fixed value. This value, when reached, will initiate logging of the object.
  - 4. For all logs, provide the ability to set the maximum number of data stores for the log and to set whether the log will stop collecting when full, or rollover the data on a first-in, first-out basis.
  - 5. Each log shall have the ability to have its data cleared on a time-based event or by a user-defined event or action.
- C. All log data shall be stored in a relational database in the NAC and the data shall be accessed from a server (if the system is so configured) or a standard Web browser.
- D. All log data, when accessed from a server, shall be capable of being manipulated using standard SQL statements.
- E. All log data shall be available to the user in the following data formats:
  - 1. HTML
  - 2. XML
  - 3. Plain Text
  - 4. Comma or tab separated values
- F. Systems that do not provide log data in HTML and XML formats at a minimum shall not be acceptable.
- G. The NAC shall have the ability to archive its log data either locally (to itself), or remotely to a server or other NAC on the network. Provide the ability to configure the following archiving properties, at a minimum:
  - 1. Archive on time of day
  - 2. Archive on user-defined number of data stores in the log (buffer size)
  - 3. Archive when log has reached it’s user-defined capacity of data stores
  - 4. Provide ability to clear logs once archived

## **2.08 AUDIT LOG**



- A. Provide and maintain an Audit Log that tracks all activities performed on the NAC. Provide the ability to specify a buffer size for the log and the ability to archive log based on time or when the log has reached its user-defined buffer size. Provide the ability to archive the log locally (to the NAC), to another NAC on the network, or to a server. For each log entry, provide the following data:
  - 1. Time and date
  - 2. User ID
  - 3. Change or activity: i.e., Change setpoint, add or delete objects, commands, etc.

## **2.09 DATABASE BACKUP AND STORAGE**

- A. The NAC shall have the ability to automatically backup its database. The database shall be backed up based on a user-defined time interval.
- B. Copies of the current database and, at the most recently saved database shall be stored in the NAC. The age of the most recently saved database is dependent on the user-defined database save interval.
- C. The NAC database shall be stored, at a minimum, in XML format to allow for user viewing and editing, if desired. Other formats are acceptable as well, as long as XML format is supported.

## **2.10 INTEROPERABLE DIGITAL CONTROLLER (IDC)**

- A. Controls shall be Honeywell Excel 10 microprocessor based Interoperable LonWorks Controllers (IDC) or approved equal. Where possible, all Interoperable Digital Controllers shall bear the applicable LonMark™ interoperability logo on each product delivered.
- B. HVAC control shall be accomplished using LonMark™ based devices where the application has a LonMark profile defined. Where LonMark devices are not available for a particular application, devices based on LonWorks shall be acceptable. For each LonWorks device that does not have LonMark certification, the device supplier must provide an XIF file for the device. Publicly available specifications for the Applications Programming Interface (API) must be provided for each LonWorks / LonMark controller defining the programming or setup of each device. The Controls Contractor shall provide all programming, documentation and programming tools necessary to set up and configure the supplied devices per the specified sequences of operation.
- C. The Controls Contractor shall run the LonWorks network trunk to the nearest Network Area Controller (NAC). Coordinate locations of the NAC to ensure that maximum network wiring distances, as specified by the LonWorks wiring guidelines, are not exceeded. A maximum of 126 devices may occupy any one LonWorks trunk and must be installed using the appropriate trunk termination device. All LonWorks and LonMark devices must be supplied using FTT-10A LonWorks communications transceivers.
- D. The Network Area Controller (NAC) will provide all scheduling, alarming, trending, and network management for the LonMark / LonWorks based devices.
- E. The IDCs shall communicate with the NAC at a baud rate of not less than 78.8K baud. The IDC shall provide LED indication of communication and controller performance to the technician, without cover removal.
- F. All IDCs shall be fully application programmable and shall at all times maintain their LONMARK certification, if so certified. Controllers offering application selection only (non-

programmable), require a 10% spare point capacity to be provided for all applications. All control sequences within or programmed into the IDC shall be stored in non-volatile memory, which is not dependent upon the presence of a battery, to be retained.

- G. The Controls Contractor supplying the IDC's shall provide documentation for each device, with the following information at a minimum:
  - 1. Network Variable Inputs (nvi's); name and type
  - 2. Network Variable Outputs (nvo's); name and type
  - 3. Network configuration parameters (nci, nco); name and type
- H. It is the responsibility of the Division 15 contractor to ensure that the proper Network Variable Inputs and Outputs (nvi and nvo) are provided in each IDC, as required by the point charts.
- I. The supplier of any programmable IDC shall provide one copy of the manufacturer's programming tool, with documentation, to the owner.

## **2.11 GRAPHICAL USER INTERFACE SOFTWARE**

- A. Operating System: WEBSTATION-AX™
- B. The GUI shall employ browser-like functionality for ease of navigation. It shall include a tree view (similar to Windows Explorer) for quick viewing of, and access to, the hierarchical structure of the database. In addition, menu-pull downs, and toolbars shall employ buttons, commands and navigation to permit the operator to perform tasks with a minimum knowledge of the HVAC Control System and basic computing skills. These shall include, but are not limited to, forward/backward buttons, home button, and a context sensitive locator line (similar to a URL line), that displays the location and the selected object identification.
- C. Real-Time Displays. The GUI, shall at a minimum, support the following graphical features and functions:
  - 1. Graphic screens shall be developed using any drawing package capable of generating a GIF, BMP, or JPG file format. Use of proprietary graphic file formats shall not be acceptable. In addition to, or in lieu of a graphic background, the GUI shall support the use of scanned pictures.
  - 2. Graphic screens shall have the capability to contain objects for text, real-time values, animation, color spectrum objects, logs, graphs, HTML or XML document links, schedule objects, hyperlinks to other URL's, and links to other graphic screens.
  - 3. Graphics shall support layering and each graphic object shall be configurable for assignment to a layer. A minimum of six layers shall be supported.
  - 4. Modifying common application objects, such as schedules, calendars, and set points shall be accomplished in a graphical manner.
    - a. Schedule times will be adjusted using a graphical slider, without requiring any keyboard entry from the operator.
    - b. Holidays shall be set by using a graphical calendar without requiring any keyboard entry from the operator.
  - 5. Commands to start and stop binary objects shall be done by right-clicking the selected object and selecting the appropriate command from the pop-up menu. No entry of text shall be required.

6. Adjustments to analog objects, such as set points, shall be done by right-clicking the selected object and using a graphical slider to adjust the value. No entry of text shall be required.
- D. System Configuration. At a minimum, the GUI shall permit the operator to perform the following tasks, with proper password access:
  1. Create, delete or modify control strategies.
  2. Add/delete objects to the system.
  3. Tune control loops through the adjustment of control loop parameters.
  4. Enable or disable control strategies.
  5. Generate hard copy records or control strategies on a printer.
  6. Select points to be alarmable and define the alarm state.
  7. Select points to be trended over a period of time and initiate the recording of values automatically.
- E. On-Line Help. Provide a context sensitive, on-line help system to assist the operator in operation and editing of the system. On-line help shall be available for all applications and shall provide the relevant data for that particular screen. Additional help information shall be available through the use of hypertext. All system documentation and help files shall be in HTML format.
- F. Security. Each operator shall be required to log on to that system with a user name and password in order to view, edit, add, or delete data. System security shall be selectable for each operator. The system administrator shall have the ability to set passwords and security levels for all other operators. Each operator password shall be able to restrict the operators' access for viewing and/or changing each system application, full screen editor, and object. Each operator shall automatically be logged off of the system if no keyboard or mouse activity is detected. This auto log-off time shall be set per operator password. All system security data shall be stored in an encrypted format.
- G. System Diagnostics. The system shall automatically monitor the operation of all workstations, printers, modems, network connections, building management panels, and controllers. The failure of any device shall be annunciated to the operator.
- H. Alarm Console
  1. The system will be provided with a dedicated alarm window or console. This window will notify the operator of an alarm condition, and allow the operator to view details of the alarm and acknowledge the alarm. The use of the Alarm Console can be enabled or disabled by the system administrator.
  2. When the Alarm Console is enabled, a separate alarm notification window will supersede all other windows on the desktop and shall not be capable of being minimized or closed by the operator. This window will notify the operator of new alarms and un-acknowledged alarms. Alarm notification windows or banners that can be minimized or closed by the operator shall not be acceptable.

## **2.12 WEB BROWSER CLIENTS**

- A. The system shall be capable of supporting an unlimited number of clients using a standard Web browser such as Internet Explorer™ or Netscape Navigator™. Systems requiring

additional software (to enable a standard Web browser) to be resident on the client machine, or manufacture-specific browsers shall not be acceptable.

- B. The Web browser software shall run on any operating system and system configuration that is supported by the Web browser. Systems that require specific machine requirements in terms of processor speed, memory, etc., in order to allow the Web browser to function with the FMCS, shall not be acceptable.
- C. The Web browser shall provide the same view of the system, in terms of graphics, schedules, calendars, logs, etc., and provide the same interface methodology as is provided by the Graphical User Interface. Systems that require different views or that require different means of interacting with objects such as schedules, or logs, shall not be permitted.
- D. The Web browser client shall support at a minimum, the following functions:
  - 1. User log-on identification and password shall be required. If an unauthorized user attempts access, a blank web page shall be displayed. Security using Java authentication and encryption techniques to prevent unauthorized access shall be implemented.
  - 2. Graphical screens developed for the GUI shall be the same screens used for the Web browser client. Any animated graphical objects supported by the GUI shall be supported by the Web browser interface.
  - 3. HTML programming shall not be required to display system graphics or data on a Web page. HTML editing of the Web page shall be allowed if the user desires a specific look or format.
  - 4. Storage of the graphical screens shall be in the Network Area Controller (NAC), without requiring any graphics to be stored on the client machine. Systems that require graphics storage on each client are not acceptable.
  - 5. Real-time values displayed on a Web page shall update automatically without requiring a manual “refresh” of the Web page.
  - 6. Users shall have administrator-defined access privileges. Depending on the access privileges assigned, the user shall be able to perform the following:
    - a. Modify common application objects, such as schedules, calendars, and set points in a graphical manner.
    - b. Schedule times will be adjusted using a graphical slider, without requiring any keyboard entry from the operator.
    - c. Holidays shall be set by using a graphical calendar, without requiring any keyboard entry from the operator.
    - d. Commands to start and stop binary objects shall be done by right-clicking the selected object and selecting the appropriate command from the pop-up menu. No entry of text shall be required.
    - e. View logs and charts
    - f. View and acknowledge alarms
    - g. Setup and execute SQL queries on log and archive information
  - 7. The system shall provide the capability to specify a user’s (as determined by the log-on user identification) home page. Provide the ability to limit a specific user to just their defined home page. From the home page, links to other views, or pages in the system shall be possible, if allowed by the system administrator.

8. Graphic screens on the Web Browser client shall support hypertext links to other locations on the Internet or on Intranet sites, by specifying the Uniform Resource Locator (URL) for the desired link.

## **2.13 SERVER FUNCTIONS AND HARDWARE**

- A. A central server, located at the San Marcos Unified School District's Maintenance Office. The server shall support all Network Area Controllers (NAC) connected to the customer's network whether local or remote.
- B. Local connections shall be via an Ethernet LAN. Remote connections can be via ISDN, ADSL, T1 or dial-up connection.
- C. It shall be possible to provide access to all Network Area Controllers via a single connection to the server. In this configuration, each Network Area Controller can be accessed from a remote Graphical User Interface (GUI) or from a standard Web browser (WBI) by connecting to the server.
- D. The server shall provide the following functions, at a minimum:
  1. Global Data Access: The server shall provide complete access to distributed data defined anywhere in the system.
  2. Distributed Control: The server shall provide the ability to execute global control strategies based on control and data objects in any NAC in the network, local or remote.
  3. The server shall include a master clock service for its subsystems and provide time synchronization for all Network Area Controllers (NAC).
  4. The server shall accept time synchronization messages from trusted precision Atomic Clock Internet sites and update its master clock based on this data.
  5. The server shall provide scheduling for all Network Area Controllers and their underlying field control devices.
  6. The server shall provide demand limiting that operates across all Network Area Controllers. The server must be capable of multiple demand programs for sites with multiple meters and or multiple sources of energy. Each demand program shall be capable of supporting separate demand shed lists for effective demand control.
  7. The server shall implement the BACnet Command Prioritization scheme (16 levels) for safe and effective contention resolution of all commands issued to Network Area Controllers. Systems not employing this prioritization shall not be accepted.
  8. Each Network Area Controller supported by the server shall have the ability to archive its log data, alarm data and database to the server, automatically. Archiving options shall be user-defined including archive time and archive frequency.
  9. The server shall provide central alarm management for all Network Area Controllers supported by the server. Alarm management shall include:
    - a. Routing of alarms to display, printer, email and pagers
    - b. View and acknowledge alarms
    - c. Query alarm logs based on user-defined parameters
  10. The server shall provide central management of log data for all Network Area Controllers supported by the server. Log data shall include process logs, runtime and event counter logs, audit logs and error logs. Log data management shall include:

- a. Viewing and printing log data
- b. Exporting log data to other software applications
- c. Query log data based on user-defined parameters

## **2.14 SYSTEM PROGRAMMING**

- A. The Graphical User Interface software (GUI) shall provide the ability to perform system programming and graphic display engineering as part of a complete software package. Access to the programming functions and features of the GUI shall be through password access as assigned by the system administrator.
- B. A library of control, application, and graphic objects shall be provided to enable the creation of all applications and user interface screens. Applications are to be created by selecting the desired control objects from the library, dragging or pasting them on the screen, and linking them together using a built in graphical connection tool. Completed applications may be stored in the library for future use. Graphical User Interface screens shall be created in the same fashion. Data for the user displays is obtained by graphically linking the user display objects to the application objects to provide “real-time” data updates. Any real-time data value or object property may be connected to display its current value on a user display. Systems requiring separate software tools or processes to create applications and user interface displays shall not be acceptable.
- C. Programming Methods
  - 1. Provide the capability to copy objects from the supplied libraries, or from a user-defined library to the user’s application. Objects shall be linked by a graphical linking scheme by dragging a link from one object to another. Object links will support one-to-one, many-to-one, or one-to-many relationships. Linked objects shall maintain their connections to other objects regardless of where they are positioned on the page and shall show link identification for links to objects on other pages for easy identification. Links will vary in color depending on the type of link; i.e., internal, external, hardware, etc.
  - 2. Configuration of each object will be done through the object’s property sheet using fill-in the blank fields, list boxes, and selection buttons. Use of custom programming, scripting language, or a manufacturer-specific procedural language for configuration will not be accepted.
  - 3. The software shall provide the ability to view the logic in a monitor mode. When on-line, the monitor mode shall provide the ability to view the logic in real time for easy diagnosis of the logic execution. When off-line (debug), the monitor mode shall allow the user to set values to inputs and monitor the logic for diagnosing execution before it is applied to the system.
  - 4. All programming shall be done in real-time. Systems requiring the uploading, editing, and downloading of database objects shall not be allowed.
  - 5. The system shall support object duplication within a customer’s database. An application, once configured, can be copied and pasted for easy re-use and duplication. All links, other than to the hardware, shall be maintained during duplication.

## **2.15 LONWORKS NETWORK MANAGEMENT**

- A. The Graphical User Interface software (GUI) shall provide a complete set of integrated LonWorks network management tools for working with LonWorks networks. These tools shall

manage a database for all LonWorks devices by type and revision, and shall provide a software mechanism for identifying each device on the network. These tools shall also be capable of defining network data connections between LonWorks devices, known as “binding”. Systems requiring the use of third party LonWorks network management tools shall not be accepted.

- B. Network management shall include the following services: device identification, device installation, device configuration, device diagnostics, device maintenance and network variable binding.
- C. The network configuration tool shall also provide diagnostics to identify devices on the network, to reset devices, and to view health and status counters within devices.
- D. These tools shall provide the ability to “learn” an existing LonWorks network, regardless of what network management tool(s) were used to install the existing network, so that existing LonWorks devices and newly added devices are part of a single network management database.
- E. The network management database shall be resident in the Network Area Controller (NAC), ensuring that anyone with proper authorization has access to the network management database at all times. Systems employing network management databases that are not resident, at all times, within the control system, shall not be accepted.

## **2.16 OBJECT LIBRARIES**

- A. A standard library of objects shall be included for development and setup of application logic, user interface displays, system services, and communication networks.
- B. The objects in this library shall be capable of being copied and pasted into the user’s database and shall be organized according to their function. In addition, the user shall have the capability to group objects created in their application and store the new instances of these objects in a user-defined library.
- C. In addition to the standard libraries specified here, the supplier of the system shall maintain an on-line accessible (over the Internet) library, available to all registered users to provide new or updated objects and applications as they are developed.
- D. All control objects shall conform to the control objects specified in the BACnet specification.
- E. The library shall include applications or objects for the following functions, at a minimum:
  - 1. Scheduling Object. The schedule must conform to the schedule object as defined in the BACnet specification, providing 7-day plus holiday & temporary scheduling features and a minimum of 10 on/off events per day. Data entry to be by graphical sliders to speed creation and selection of on-off events.
  - 2. Calendar Object. . The calendar must conform to the calendar object as defined in the BACnet specification, providing 12-month calendar features to allow for holiday or special event data entry. Data entry to be by graphical “point-and-click” selection. This object must be “linkable” to any or all scheduling objects for effective event control.
  - 3. Duty Cycling Object. Provide a universal duty cycle object to allow repetitive on/off time control of equipment as an energy conserving measure. Any number of these objects may be created to control equipment at varying intervals
  - 4. Temperature Override Object. Provide a temperature override object that is capable of overriding equipment turned off by other energy saving programs (scheduling, duty cycling etc.) to maintain occupant comfort or for equipment freeze protection.

5. Start-Stop Time Optimization Object. Provide a start-stop time optimization object to provide the capability of starting equipment just early enough to bring space conditions to desired conditions by the scheduled occupancy time. Also, allow equipment to be stopped before the scheduled un-occupancy time just far enough ahead to take advantage of the building's "flywheel" effect for energy savings. Provide automatic tuning of all start / stop time object properties based on the previous day's performance.
  6. Demand Limiting Object. Provide a comprehensive demand-limiting object that is capable of controlling demand for any selected energy utility (electric, oil, and gas). The object shall provide the capability of monitoring a demand value and predicting (by use of a sliding window prediction algorithm) the demand at the end of the user defined interval period (1-60 minutes). This object shall also accommodate a utility meter time sync pulse for fixed interval demand control. Upon a prediction that will exceed the user defined demand limit (supply a minimum of 6 per day), the demand limiting object shall issue shed commands to either turn off user specified loads or modify equipment set points to effect the desired energy reduction. If the list of sheddable equipment is not enough to reduce the demand to below the set point, a message shall be displayed on the users screen (as an alarm) instructing the user to take manual actions to maintain the desired demand. The shed lists are specified by the user and shall be selectable to be shed in either a fixed or rotating order to control which equipment is shed the most often. Upon suitable reductions in demand, the demand-limiting object shall restore the equipment that was shed in the reverse order in which it was shed. Each sheddable object shall have a minimum and maximum shed time property to effect both equipment protection and occupant comfort.
- F. The library shall include control objects for the following functions. All control objects shall conform to the objects as specified in the BACnet specification.
1. Analog Input Object - Minimum requirement is to comply with the BACnet standard for data sharing. Allow high, low and failure limits to be assigned for alarming. Also, provide a time delay filter property to prevent nuisance alarms caused by temporary excursions above or below the user defined alarm limits.
  2. Analog Output Object - Minimum requirement is to comply with the BACnet standard for data sharing.
  3. Binary Input Object - Minimum requirement is to comply with the BACnet standard for data sharing. The user must be able to specify either input condition for alarming. This object must also include the capability to record equipment run-time by counting the amount of time the hardware input is in an "on" condition. The user must be able to specify either input condition as the "on" condition.
  4. Binary Output Object - Minimum requirement is to comply with the BACnet standard for data sharing. Properties to enable minimum on and off times for equipment protection as well as interstart delay must be provided. The BACnet Command Prioritization priority scheme shall be incorporated to allow multiple control applications to execute commands on this object with the highest priority command being invoked. Provide sixteen levels of priority as a minimum. Systems not employing the BACnet method of contention resolution shall not be acceptable.
  5. PID Control Loop Object - Minimum requirement is to comply with the BACnet standard for data sharing. Each individual property must be adjustable as well as to be disabled



to allow proportional control only, or proportional with integral control, as well as proportional, integral and derivative control.

6. Comparison Object - Allow a minimum of two analog objects to be compared to select either the highest, lowest, or equality between the two linked inputs. Also, allow limits to be applied to the output value for alarm generation.
  7. Math Object - Allow a minimum of four analog objects to be tested for the minimum or maximum, or the sum, difference, or average of linked objects. Also, allow limits to be applied to the output value for alarm generation.
  8. Custom Programming Objects - Provide a blank object template for the creation of new custom objects to meet specific user application requirements. This object must provide a simple BASIC-like programming language that is used to define object behavior. Provide a library of functions including math and logic functions, string manipulation, and e-mail as a minimum. Also, provide a comprehensive on-line debug tool to allow complete testing of the new object. Allow new objects to be stored in the library for re-use.
  9. Interlock Object - Provide an interlock object that provides a means of coordination of objects within a piece of equipment such as an Air Handler or other similar types of equipment. An example is to link the return fan to the supply fan such that when the supply fan is started, the return fan object is also started automatically without the user having to issue separate commands or to link each object to a schedule object. In addition, the control loops, damper objects, and alarm monitoring (such as return air, supply air, and mixed air temperature objects) will be inhibited from alarming during a user-defined period after startup to allow for stabilization. When the air handler is stopped, the interlocked return fan is also stopped, the outside air damper is closed, and other related objects within the air handler unit are inhibited from alarming thereby eliminating nuisance alarms during the off period.
  10. Temperature Override Object - Provide an object whose purpose is to provide the capability of overriding a binary output to an "On" state in the event a user specified high or low limit value is exceeded. This object is to be linked to the desired binary output object as well as to an analog object for temperature monitoring, to cause the override to be enabled. This object will execute a Start command at the Temperature Override level of start/stop command priority unless changed by the user.
  11. Composite Object - Provide a container object that allows a collection of objects representing an application to be encapsulated to protect the application from tampering, or to more easily represent large applications. This object must have the ability to allow the user to select the appropriate parameters of the "contained" application that are represented on the graphical shell of this container.
- G. The object library shall include objects to support the integration of devices connected to the Network Area Controller (NAC). At a minimum, provide the following as part of the standard library included with the programming software:
1. LonMark/LonWorks devices. These devices shall include, but not be limited to, devices for control of HVAC, lighting, access, and metering. Provide LonMark manufacturer-specific objects to facilitate simple integration of these devices. All network variables defined in the LonMark profile shall be supported. Information (type and function)

regarding network variables not defined in the LonMark profile shall be provided by the device manufacturer.

2. For devices not conforming to the LonMark standard, provide a dynamic object that can be assigned to the device based on network variable information provided by the device manufacturer. Device manufacturer shall provide an XIF file, resource file and documentation for the device to facilitate device integration.
3. For BACnet devices, provide the following objects at a minimum:
  - a. Analog In
  - b. Analog Out
  - c. Analog Value
  - d. Binary
  - e. Binary In
  - f. Binary Out
  - g. Binary Value
  - h. Multi-State In
  - i. Multi-State Out
  - j. Multi-State Value
  - k. Schedule Export
  - l. Calendar Export
  - m. Trend Export
  - n. Device
4. For each BACnet object, provide the ability to assign the object a BACnet device and object instance number.
5. For BACnet devices, provide the following support at a minimum
  - a. Segmentation
  - b. Segmented Request
  - c. Segmented Response
  - d. Application Services
  - e. Read Property
  - f. Read Property Multiple
  - g. Write Property
  - h. Write Property Multiple
  - i. Confirmed Event Notification
  - j. Unconfirmed Event Notification
  - k. Acknowledge Alarm
  - l. Get Alarm Summary
  - m. Who-has
  - n. I-have

- o. Who-is
- p. I-am
- q. Subscribe COV
- r. Confirmed COV notification
- s. Unconfirmed COV notification
- t. Media Types
- u. Ethernet
- v. BACnet IP Annex J
- w. MSTP
- x. BACnet Broadcast Management Device (BBMD) function
- y. Routing

## **2.17 MODBUS SYSTEM INTEGRATION**

- A. The Network Area Controller shall support the integration of device data from Modbus RTU, ASCII, or TCP control system devices. The connection to the Modbus system shall be via an RS-232, RS485, or Ethernet IP as required by the device.
- B. Provide the required objects in the library, included with the Graphical User Interface programming software, to support the integration of the Modbus system data into the FPMS. Objects provided shall include at a minimum:
  - 1. Read/Write Modbus AI Registers
  - 2. Read/Write Modbus AO Registers
  - 3. Read/Write Modbus BI Registers
  - 4. Read/Write Modbus BO Registers
- C. The Network Area Controller shall perform all scheduling, alarming, logging and global supervisory control functions, of the Modbus system devices.
- D. The Controls Contractor shall provide a Modbus system communications driver. The equipment system vendor that provided the equipment utilizing Modbus shall provide documentation of the system's Modbus interface and shall provide factory support at no charge during system commissioning

## **2.18 OTHER CONTROL SYSTEM HARDWARE**

- A. Space Temperature Wall Module. Wall Module shall be Honeywell or equivalent.
  - 1. Wall module shall have a 20K Ohm NTC thermistor temperature sensor with operating range of 45 to 99 F under a locking cover/enclosure with UL 916 listing designed for mounting on a standard electrical switch box.
  - 2. Space temperature sensors shall be accurate to plus or minus one F degree.
  - 3. Where specified, space temperature sensors shall have a setpoint knob calibrated for warmer-cooler adjustments
  - 4. Where specified, wall module shall also have an after-hours override pushbutton and LED override indicator.

5. Insulating foam shall be installed on the back of all space temperature wall modules to prevent air infiltration from wall opening.
- B. Duct Mount and Outside Air Temperature Sensors: Temperature sensors with an accuracy of  $\pm 0.3^{\circ}\text{F}$ . Temperature sensors shall be Honeywell or equivalent.
  1. Outside air sensors shall include an integral sun shield.
  2. Duct sensors shall have sensor approximately in center of the duct, and shall have selectable lengths of 6, 12, and 18 inches.
  3. Multipoint averaging element sensors shall be provided where specified and shall have a minimum of one foot of sensor length for each square foot of duct area (provide multiple sensors if necessary).
  4. Pipe mount sensors shall have copper, or stainless steel separable wells.
- C. Current Sensitive Switches: Solid state, split core current switch that operates when the current level (sensed by the internal current transformer) exceeds the adjustable trip point shall be provided where specified. Current switches shall include an integral LED for indication of trip condition and a current level below trip set point.
- D. Humidity Sensors. Humidity sensors shall be Honeywell or equivalent.
  1. Duct and room sensors shall have a sensing range of 5% to 95%.
  2. Duct sensors shall be provided with a sampling chamber.
  3. Outdoor air humidity sensors shall have a sensing range of 20% to 95% RH. They shall have a compensated ambient temperature range of  $-40^{\circ}\text{F}$  to  $170^{\circ}\text{F}$ .
- E. Control Panels: Furnish control panels of code gauge steel with locking doors for mounting all devices as shown. Control panels shall meet all requirements of Title 24, California Administrative Code. All external wiring shall be connected to terminal strips mounted within the panel. A complete set of 'as-built' control drawings (relating to the controls within that panel) shall be furnished within each control panel.

## **PART 3 - EXECUTION**

### **3.01 INSTALLATION**

- A. All work described in this section shall be performed by a Honeywell "Authorized Controls Integrator" that has a successful history in the design and installation of integrated control systems using Niagara Framework™. The installing contractor shall have a local office located within 20 miles from San Marcos Unified School District and a minimum of ten years of integration experience installing Honeywell DDC control systems and shall provide documentation in the submittal package verifying the company's experience.
- B. The Controls Contractor shall have employees at the local branch that are fully trained and certified for the Honeywell WEBs Systems incorporating Niagara Framework™. Copies of the employees Niagara Training Certificates shall be included in the submittals.
- C. Install system and materials in accordance with manufacturer's instructions, and as detailed on the project drawing set.

- D. Drawings of the temperature and lighting control system network are diagrammatic only and any apparatus not shown, but required to make the system operative to the complete satisfaction of the Owner shall be furnished and installed without additional cost.
- E. Line and low voltage electrical connections to control equipment shown specified or shown on the control diagrams shall be furnished and installed by this contractor in accordance with these specifications.
- F. Controls Contractors shall have a C-10 License in good standing in the state of California.

### **3.02 WIRING**

- A. All electrical control wiring and power wiring to the control panels, NAC, computers and network components shall be installed in conduit and be the responsibility of the Controls Contractor.
- B. All wiring shall be in accordance with the National Electrical Code and any applicable local codes. All temperature and lighting control system wiring shall be installed in the conduit types allowed by the National Electrical Code or applicable local codes. Where plenum rated cable wiring is allowed it shall be run parallel to or at right angles to the structure, properly supported and installed in a neat and workmanlike manner.
- C. Echelon Compliant Direct Burial Cable shall be used for all underground communication bus wiring between buildings to prevent damage from moisture. The existing underground conduit systems are not watertight.

### **3.03 WARRANTY**

- A. Equipment, materials and workmanship incorporated into the work shall be warranted for a period of one year from the time of system acceptance.
- B. Within this period, upon notice by the Owner, any defects in the work provided under this section due to faulty materials, methods of installation or workmanship shall be promptly (within 48 hours after receipt of notice) repaired or replaced by this contractor at no expense to the Owner.

### **3.04 WARRANTY ACCESS**

- A. The Owner shall grant to this contractor, reasonable access to the temperature and lighting control system during the warranty period.
- B. The owner shall allow the contractor to access the temperature and lighting control system from a remote location for the purpose of diagnostics and troubleshooting, via the Internet, during the warranty period.

### **3.05 SOFTWARE LICENSE**

- A. The Owner shall be the named license holder of all software associated with any and all incremental work on the project(s). The owner, or his appointed agent, shall determine which organizations to be named in the "orgid" of all Niagara Framework software licenses.
- B. The owner, or his appointed agent, shall be free to direct the modification of the "orgid" in any Niagara Framework software license, regardless of supplier.
- C. The owner, or his appointed agent, shall receive ownership of all job specific software configuration documentation, data files, and application-level software developed for the project. This shall include all custom, job specific software code and documentation for all

configuration and programming that is generated for a given project and /or configured for use within Niagara Framework (Niagara) based controllers and/or servers and any related LAN / WAN / Intranet and Internet connected routers and devices. Any and all required Ids and passwords for access to any component or software program shall be provided to the owner.

### **3.06 ACCEPTANCE TESTING**

- A. Upon completion of the installation, this contractor shall load all system software and start-up the system. This contractor shall perform all necessary calibration, testing and de-bugging and perform all required operational checks to insure that the system is functioning in full accordance with these specifications.
- B. This contractor shall perform tests to verify proper performance of components, routines, and points. Repeat tests until proper performance results. This testing shall include a point-by-point log to validate 100% of the input and output points of the DDC system operation.
- C. Upon completion of the performance tests described above, repeat these tests, point by point as described in the validation log above in presence of Owner's Representative, as required. Properly schedule these tests so testing is complete at a time directed by the Owner's Representative. Do not delay tests so as to prevent delay of occupancy permits or building occupancy.
- D. System Acceptance: Satisfactory completion is when this contractor have performed successfully all the required testing to show performance compliance with the requirements of the Contract Documents to the satisfaction of the Owner's Representative. System acceptance shall be contingent upon completion and review of all corrected deficiencies.

### **3.07 OPERATOR INSTRUCTION, TRAINING**

- A. During system commissioning and at such time acceptable performance of the temperature and lighting control system hardware and software has been established this contractor shall provide both off-site and on-site operator instruction to the owner's operating personnel. Operator instruction shall be done during normal working hours and shall be performed by factory-trained personal that are familiar with the system hardware, software and accessories.
- B. This contractor shall provide 4 hours of instruction to the owner's designated personnel on the operation of the temperature and lighting control system and describe its intended use with respect to the programmed functions specified. Operator orientation of the systems shall include, but not be limited to; the overall operation program, equipment functions (both individually and as part of the total integrated system), commands, systems generation, advisories, and appropriate operator intervention required in responding to the System's operation. Contractor to provide local training facility that will accommodate up to 12 school district employees.

## **PART 4 - SEQUENCES OF OPERATION**

### **4.01 SEQUENCE OF OPERATION**

- A. Constant Volume Air Handling Unit, 1-Stage Cooling, 1-Stage Heating, with Economizer Enabled from Outside Air Dry Bulb Temperature.
- B. Constant Volume HVAC Unit Controller Software. The constant volume unit controller shall be configurable for air handlers with staged or analog heating and cooling, minimum or

modulating economizer outside or mixing damper dampers, and enthalpy or dry bulb economizer changeover. Controller shall comply with LonMark HVAC profile #8030.

1. Fan Off. Anytime the fan is off, all system heating and cooling shall be off, and the mixing dampers shall be positioned closed to the outside air.
2. Fan and Mode Control. System fan and heating/cooling temperature setpoints shall normally be placed in the occupied, standby, or unoccupied mode of operation and control via a system scheduler unique seven-day schedule. Prior to scheduled occupied periods, the unoccupied temperature setpoint shall be ramped up to the occupied setpoint over a time period proportional to the temperature difference between the room temperature and the occupied temperature setpoint such that at occupancy time the occupied temperature is reached. During unoccupied and standby periods the outside air damper shall be closed and the fan shall remain off until heating or cooling is demanded to satisfy the unoccupied and standby temperature setpoints. The standby mode of operation is for periods of temporary vacancy such as the lunch hour, and shall use owner determined temperature setpoints a degree or two away from the occupied comfort settings.
3. System shall automatically revert to the proper mode of operation after restoration of power after a power failure. Units shall restart at a random staggered time interval after power restoration.
4. Occupant Schedule Override Control. When any room HVAC system is operating in a mode other than OCCUPIED, each room temperature sensor wall module schedule override button shall provide the room occupant with ability to place the system in the occupied mode of operation for 60 (180 default, user programmable) minutes by pressing the module override button. Via the button, the occupant shall also have the ability to cancel the override command, or to place the system in the unoccupied mode when operating in the occupied mode. Via the module LED, the occupant shall have the ability to note the status of the system overrides as being in the override mode, override unoccupied mode, continuously occupied mode via a network command, or in the normal mode of operation (LED off).
5. Fan Fail Alarm. Any time the fan is commanded on and the fan differential pressure switch piped across the fan, or a fan current sensor, does not prove air flow or fan operation, a fan-failed alarm shall be presented to the operator station. This alarm check shall be delayed upon fan start for 10 seconds (adjustable) to give the system time to prove flow prior to creating a false alarm.
6. Temperature Control, Occupied Periods. Heating control shall operate with 6 cycles per hour, and cooling control shall operate with 4 cycles per hour unless the equipment manufacturer dictates other parameters. If the scheduler commands the fan to stop during periods of electric duct heating, the heater shall be de-energized and the fan shall continue to run for 60 seconds to dissipate the residual heater heat prior to stopping airflow. A staging PID algorithm with heating and cooling anticipation features shall be employed for all staging control. Upon a drop in space temperature below the heating setpoint, the lead duct heater shall be energized, the on time proportional to the heating load. After the lead heater stage becomes full on, a further increase in the heating load shall cause the lag heating stage to be cycled, the on time proportional to the increasing load. The reverse of this shall happen on a decrease in heating load. Upon a rise in space temperature above the cooling setpoint, the lead compressor/coil shall

be energized, the on time proportional to the cooling load. After the lead cooling stage becomes full on, a further increase in the cooling load shall cause the lag compressor/coil stage to be cycled, the on time proportional to the increasing load. The reverse of this shall happen on a decrease in cooling load.

7. If the space temperature drops or rises to either the heating or cooling unoccupied temperature setpoint during unoccupied periods, the system shall start and operate in the heating or cooling mode until the unoccupied temperature setpoints have been satisfied. The same operation shall occur for the standby mode of operation where specified.
8. Discharge Low Limit. If at any time the discharge airdrops below the user defined discharge air temperature low limit, an alarm shall be issued and the mixing dampers shall be driven closed to the outside air. As the temperature rises, the dampers shall modulate open to the minimum ventilation position and the alarm shall clear.
9. Wall Sensor Module. Wall temperature sensor module shall be located where shown on the plans, and shall include the temperature sensor, the occupied/unoccupied override selection push button with override status LED (where specified), a warmer-cooler setpoint adjustment knob (where specified), and a jack for connecting to the LonTalk communication network. The system owner determines the normal heating and cooling room temperature setpoints for all wall module sensors (such as 73F & 77F). The warmer-cooler adjustment knob on the wall module shall give room occupants the ability to vary these values by an owner determined increment, such as two degrees, by rotating the setpoint knob. The setpoint knob shall not affect Setpoints in use when the room is unoccupied.

## PART 5 - POINT LISTS

### 5.01 SUMMARY

- A. The points in the following table shall be accessible from the Graphical User Interface (GUI) and/or the Web browser interface (WBI). The supplier of the IDC and IBC devices shall ensure that the points listed in this table are accessible on their respective networks, by the Network Area Controller (NAC).
- B. The following abbreviations apply to the point table to indicate what level of functionality must be provided:

D = Display only  
 M = Modify value  
 A = Alarm  
 L = Log  
 S = Schedule  
 GC = Global supervisory control routine such as demand limiting

System Points						
Typical for all AC Units	D	M	A	L	S	GC
AC Unit S/S		X			X	X
AC Unit Status	X		X	X		



AC Unit Supply Air Temperature	X		X	X		
Space Temperature	X		X	X		
Space Cooling Setpoint		X		X		X
Space Heating Setpoint		X		X		X
Cooling Stage	X			X		
Heating Stage	X			X		
Smoke Detector	X		X			
Other misc. points						
MDF Room Temperature	X		X	X		

Note: Refer to the mechanical drawings for the lighting controls points

D = Display only

M = Modify value

A = Alarm

L = Log

S = Schedule

GC = Global supervisory control routine such as demand limiting

END OF SECTION

**SECTION 23 23 00**  
**REFRIGERANT PIPING**

**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. This Section includes refrigerant piping used for air-conditioning applications.

**1.02 PERFORMANCE REQUIREMENTS**

- A. Line Test Pressure for Refrigerant R-410A:
  - 1. Suction Lines for Air-Conditioning Applications: 300 psig (2068 kPa).
  - 2. Suction Lines for Heat-Pump Applications: 535 psig (3689 kPa).
  - 3. Hot-Gas and Liquid Lines: 535 psig (3689 kPa).

**1.03 ACTION SUBMITTALS**

- A. Product Data: For each type of valve and refrigerant piping specialty indicated.
- B. Shop Drawings: Show layout of refrigerant piping and specialties, including pipe, tube, and fitting sizes, flow capacities, valve arrangements and locations, slopes of horizontal runs, oil traps, double risers, wall and floor penetrations, and equipment connection details. Show interface and spatial relationships between piping and equipment.
  - 1. Shop Drawing Scale: 1/4 inch equals 1 foot (1:50).
  - 2. Refrigerant piping indicated on Drawings is schematic only. Size piping and design actual piping layout, including oil traps, double risers, specialties, and pipe and tube sizes to accommodate, as a minimum, equipment provided, elevation difference between compressor and evaporator, and length of piping to ensure proper operation and compliance with warranties of connected equipment.

**1.04 INFORMATIONAL SUBMITTALS**

- A. Welding certificates.
- B. Field quality-control test reports.

**1.05 CLOSEOUT SUBMITTALS**

- A. Operation and Maintenance Data: For refrigerant valves and piping specialties to include in maintenance manuals.

**1.06 QUALITY ASSURANCE**

- A. Welding: Qualify procedures and personnel according to ASME Boiler and Pressure Vessel Code: Section IX, "Welding and Brazing Qualifications."
- B. Comply with ASHRAE 15, "Safety Code for Refrigeration Systems."
- C. Comply with ASME B31.5, "Refrigeration Piping and Heat Transfer Components."

## **1.07 PRODUCT STORAGE AND HANDLING**

- A. Store piping in a clean and protected area with end caps in place to ensure that piping interior and exterior are clean when installed.

## **1.08 COORDINATION**

- A. Coordinate size and location of roof curbs, equipment supports, and roof penetrations.

## **PART 2 - PRODUCTS**

### **2.01 COPPER TUBE AND FITTINGS**

- A. Copper Tube: ASTM B 88, Type K or L (ASTM B 88M, Type A or B).
- B. Wrought-Copper Fittings: ASME B16.22.
- C. Wrought-Copper Unions: ASME B16.22.
- D. Solder Filler Metals: ASTM B 32. Use 95-5 tin antimony or alloy HB solder to join copper socket fittings on copper pipe.
- E. Brazing Filler Metals: AWS A5.8.
- F. Flexible Connectors:
  - 1. Body: Tin-bronze bellows with woven, flexible, tinned-bronze-wire-reinforced protective jacket.
  - 2. End Connections: Socket ends.
  - 3. Offset Performance: Capable of minimum 3/4-inch (20-mm) misalignment in minimum 7-inch- (180-mm-) long assembly.
  - 4. Pressure Rating: Factory test at minimum 500 psig (3450 kPa).
  - 5. Maximum Operating Temperature: 250 deg F (121 deg C).

### **2.02 VALVES AND SPECIALTIES**

- A. Diaphragm Packless Valves:
  - 1. Body and Bonnet: Forged brass or cast bronze; globe design with straight-through or angle pattern.
  - 2. Diaphragm: Phosphor bronze and stainless steel with stainless-steel spring.
  - 3. Operator: Rising stem and hand wheel.
  - 4. Seat: Nylon.
  - 5. End Connections: Socket, union, or flanged.
  - 6. Working Pressure Rating: 500 psig (3450 kPa).
  - 7. Maximum Operating Temperature: 275 deg F (135 deg C).
- B. Packed-Angle Valves:
  - 1. Body and Bonnet: Forged brass or cast bronze.
  - 2. Packing: Molded stem, back seating, and replaceable under pressure.
  - 3. Operator: Rising stem.
  - 4. Seat: Nonrotating, self-aligning polytetrafluoroethylene.

5. Seal Cap: Forged-brass or valox hex cap.
  6. End Connections: Socket, union, threaded, or flanged.
  7. Working Pressure Rating: 500 psig (3450 kPa).
  8. Maximum Operating Temperature: 275 deg F (135 deg C).
- C. Check Valves:
1. Body: Ductile iron, forged brass, or cast bronze; globe pattern.
  2. Bonnet: Bolted ductile iron, forged brass, or cast bronze; or brass hex plug.
  3. Piston: Removable polytetrafluoroethylene seat.
  4. Closing Spring: Stainless steel.
  5. Manual Opening Stem: Seal cap, plated-steel stem, and graphite seal.
  6. End Connections: Socket, union, threaded, or flanged.
  7. Maximum Opening Pressure: 0.50 psig (3.4 kPa).
  8. Working Pressure Rating: 500 psig (3450 kPa).
  9. Maximum Operating Temperature: 275 deg F (135 deg C).
- D. Service Valves:
1. Body: Forged brass with brass cap including key end to remove core.
  2. Core: Removable ball-type check valve with stainless-steel spring.
  3. Seat: Polytetrafluoroethylene.
  4. End Connections: Copper spring.
  5. Working Pressure Rating: 500 psig (3450 kPa).
- E. Solenoid Valves: Comply with ARI 760 and UL 429; listed and labeled by an NRTL.
1. Body and Bonnet: Plated steel.
  2. Solenoid Tube, Plunger, Closing Spring, and Seat Orifice: Stainless steel.
  3. Seat: Polytetrafluoroethylene.
  4. End Connections: Threaded.
  5. Electrical: Molded, watertight coil in NEMA 250 enclosure of type required by location with 1/2-inch (16-GRC) conduit adapter, and [24] [115] [208]-V ac coil.
  6. Working Pressure Rating: 400 psig (2760 kPa).
  7. Maximum Operating Temperature: 240 deg F (116 deg C).
  8. Manual operator.
- F. Safety Relief Valves: Comply with ASME Boiler and Pressure Vessel Code; listed and labeled by an NRTL.
1. Body and Bonnet: Ductile iron and steel, with neoprene O-ring seal.
  2. Piston, Closing Spring, and Seat Insert: Stainless steel.
  3. Seat Disc: Polytetrafluoroethylene.
  4. End Connections: Threaded.
  5. Working Pressure Rating: 400 psig (2760 kPa).

6. Maximum Operating Temperature: 240 deg F (116 deg C).
- G. Thermostatic Expansion Valves: Comply with ARI 750.
  1. Body, Bonnet, and Seal Cap: Forged brass or steel.
  2. Diaphragm, Piston, Closing Spring, and Seat Insert: Stainless steel.
  3. Packing and Gaskets: Non-asbestos.
  4. Capillary and Bulb: Copper tubing filled with refrigerant charge.
  5. Suction Temperature: [40 deg F (4.4 deg C)].
  6. Superheat: Adjustable.
  7. Reverse-flow option (for heat-pump applications).
  8. End Connections: Socket, flare, or threaded union.
- H. Hot-Gas Bypass Valves: Comply with UL 429; listed and labeled by an NRTL.
  1. Body, Bonnet, and Seal Cap: Ductile iron or steel.
  2. Diaphragm, Piston, Closing Spring, and Seat Insert: Stainless steel.
  3. Packing and Gaskets: Non-asbestos.
  4. Solenoid Tube, Plunger, Closing Spring, and Seat Orifice: Stainless steel.
  5. Seat: Polytetrafluoroethylene.
  6. Equalizer: Internal
  7. Electrical: Molded, watertight coil in NEMA 250 enclosure of type required by location with 1/2-inch (16-GRC) conduit adapter, and 24-V ac coil.
  8. End Connections: Socket.
  9. Throttling Range: Maximum 5 psig (34 kPa).
  10. Working Pressure Rating: 500 psig (3450 kPa).
  11. Maximum Operating Temperature: 240 deg F (116 deg C).
- I. Straight-Type Strainers:
  1. Body: Welded steel with corrosion-resistant coating.
  2. Screen: 100-mesh stainless steel.
  3. End Connections: Socket or flare.
  4. Working Pressure Rating: 500 psig (3450 kPa).
  5. Maximum Operating Temperature: 275 deg F (135 deg C).
- J. Angle-Type Strainers:
  1. Body: Forged brass or cast bronze.
  2. Drain Plug: Brass hex plug.
  3. Screen: 100-mesh monel.
  4. End Connections: Socket or flare.
  5. Working Pressure Rating: 500 psig (3450 kPa).
  6. Maximum Operating Temperature: 275 deg F (135 deg C).
- K. Moisture/Liquid Indicators:

1. Body: Forged brass.
  2. Window: Replaceable, clear, fused glass window with indicating element protected by filter screen.
  3. Indicator: Color coded to show moisture content in ppm.
  4. Minimum Moisture Indicator Sensitivity: Indicate moisture above 60 ppm.
  5. End Connections: Socket or flare.
  6. Working Pressure Rating: 500 psig (3450 kPa).
  7. Maximum Operating Temperature: 240 deg F (116 deg C).
- L. Replaceable-Core Filter Dryers: Comply with ARI 730.
1. Body and Cover: Painted-steel shell with ductile-iron cover, stainless-steel screws, and neoprene gaskets.
  2. Filter Media: 10 micron, pleated with integral end rings; stainless-steel support.
  3. Desiccant Media: Activated charcoal.
  4. Designed for reverse flow (for heat-pump applications).
  5. End Connections: Socket.
  6. Access Ports: NPS 1/4 (DN 8) connections at entering and leaving sides for pressure differential measurement.
  7. Maximum Pressure Loss: 2 psig (14 kPa).
  8. Working Pressure Rating: 500 psig (3450 kPa).
  9. Maximum Operating Temperature: 240 deg F (116 deg C).
- M. Permanent Filter Dryers: Comply with ARI 730.
1. Body and Cover: Painted-steel shell.
  2. Filter Media: 10 micron, pleated with integral end rings; stainless-steel support.
  3. Desiccant Media: Activated charcoal.
  4. Designed for reverse flow (for heat-pump applications).
  5. End Connections: Socket.
  6. Access Ports: NPS 1/4 (DN 8) connections at entering and leaving sides for pressure differential measurement.
  7. Maximum Pressure Loss: 2 psig (14 kPa).
  8. Working Pressure Rating: 500 psig (3450 kPa).
  9. Maximum Operating Temperature: 240 deg F (116 deg C).
- N. Mufflers:
1. Body: Welded steel with corrosion-resistant coating.
  2. End Connections: Socket or flare.
  3. Working Pressure Rating: 500 psig (3450 kPa).
  4. Maximum Operating Temperature: 275 deg F (135 deg C).

## **2.03 REFRIGERANTS**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Atofina Chemicals, Inc.
  - 2. DuPont Company; Fluorochemicals Div.
  - 3. Honeywell, Inc.; Genetron Refrigerants.
  - 4. INEOS Fluor Americas LLC.
- B. ASHRAE 34, R-410A: Pentafluoroethane/Difluoromethane.

## **PART 3 - EXECUTION**

### **3.01 PIPING APPLICATIONS FOR REFRIGERANT R-410A**

- A. Suction Lines NPS 1-1/2 (DN 40) and Smaller for Conventional Air-Conditioning Applications: Copper, Type ACR, annealed-temper tubing and wrought-copper fittings with brazed or soldered joints.
- B. Hot-Gas and Liquid Lines, and Suction Lines for Heat-Pump Applications: Copper, Type ACR or L (B), annealed- or drawn-temper tubing and wrought-copper fittings with brazed or soldered joints.

### **3.02 PIPING INSTALLATION**

- A. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems; indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved on Shop Drawings.
- B. Install refrigerant piping according to ASHRAE 15.
- C. Install piping in concealed locations unless otherwise indicated and except in equipment rooms and service areas.
- D. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.
- E. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.
- F. Install piping adjacent to machines to allow service and maintenance.
- G. Install piping free of sags and bends.
- H. Install fittings for changes in direction and branch connections.
- I. Select system components with pressure rating equal to or greater than system operating pressure.
- J. Refer to Section 23 09 00 "Instrumentation and Control for HVAC" and Section 23 09 93 "Sequence of Operations for HVAC Controls" for solenoid valve controllers, control wiring, and sequence of operation.
- K. Install piping as short and direct as possible, with a minimum number of joints, elbows, and fittings.

- L. Arrange piping to allow inspection and service of refrigeration equipment. Install valves and specialties in accessible locations to allow for service and inspection. Install access doors or panels as specified in Section 08 31 13 "Access Doors and Frames" if valves or equipment requiring maintenance is concealed behind finished surfaces.
- M. Install refrigerant piping in protective conduit where installed belowground.
- N. Install refrigerant piping in rigid or flexible conduit in locations where exposed to mechanical injury.
- O. Slope refrigerant piping as follows:
  - 1. Install horizontal hot-gas discharge piping with a uniform slope downward away from compressor.
  - 2. Install horizontal suction lines with a uniform slope downward to compressor.
  - 3. Install traps and double risers to entrain oil in vertical runs.
  - 4. Liquid lines may be installed level.
- P. When brazing or soldering, remove solenoid-valve coils and sight glasses; also remove valve stems, seats, and packing, and accessible internal parts of refrigerant specialties. Do not apply heat near expansion-valve bulb.
- Q. Install piping with adequate clearance between pipe and adjacent walls and hangers or between pipes for insulation installation.
- R. Identify refrigerant piping and valves according to Section 23 05 53 "Identification for HVAC Piping and Equipment."
- S. Install escutcheons for piping penetrations of walls, ceilings, and floors. Comply with requirements for escutcheons specified in Section 23 05 18 "Escutcheons for HVAC Piping."

### **3.03 PIPE JOINT CONSTRUCTION**

- A. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.
- B. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.
- C. Fill pipe and fittings with an inert gas (nitrogen or carbon dioxide), during brazing or welding, to prevent scale formation.
- D. Soldered Joints: Construct joints according to ASTM B 828 or CDA's "Copper Tube Handbook."
- E. Brazed Joints: Construct joints according to AWS's "Brazing Handbook," Chapter "Pipe and Tube."
  - 1. Use Type BcuP, copper-phosphorus alloy for joining copper socket fittings with copper pipe.
  - 2. Use Type BAg, cadmium-free silver alloy for joining copper with bronze or steel.
- F. Threaded Joints: Thread steel pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:
  - 1. Apply appropriate tape or thread compound to external pipe threads unless dry-seal threading is specified.
  - 2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.



- G. Steel pipe can be threaded, but threaded joints must be seal brazed or seal welded.
- H. Welded Joints: Construct joints according to AWS D10.12/D10.12M.
- I. Flanged Joints: Select appropriate gasket material, size, type, and thickness for service application. Install gasket concentrically positioned. Use suitable lubricants on bolt threads.

### **3.04 HANGERS AND SUPPORTS**

- A. Hanger, support, and anchor products are specified in Section 23 05 29 "Hangers and Supports for HVAC Piping and Equipment."
- B. Install the following pipe attachments:
  - 1. Adjustable steel clevis hangers for individual horizontal runs less than 20 feet (6 m) long.
  - 2. Roller hangers and spring hangers for individual horizontal runs 20 feet (6 m) or longer (on pipe sizes 1-1/2 inch and larger).
  - 3. Pipe Roller: MSS SP-58, Type 44 for multiple horizontal piping 20 feet (6 m) or longer, supported on a trapeze (on pipe sizes 1-1/2 inch and larger).
  - 4. Spring hangers to support vertical runs (on pipe sizes 1-1/2 inch and larger).
  - 5. Copper-clad hangers and supports for hangers and supports in direct contact with copper pipe.
- C. Install hangers for copper tubing with the following maximum spacing and minimum rod sizes:
  - 1. NPS 1/2 (DN 15): Maximum span, 60 inches (1500 mm); minimum rod size, 1/4 inch (6.4 mm).
  - 2. NPS 5/8 (DN 18): Maximum span, 60 inches (1500 mm); minimum rod size, 1/4 inch (6.4 mm).
  - 3. NPS 1 (DN 25): Maximum span, 72 inches (1800 mm); minimum rod size, 1/4 inch (6.4 mm).

### **3.05 FIELD QUALITY CONTROL**

- A. Perform tests and inspections and prepare test reports.
- B. Tests and Inspections:
  - 1. Comply with ASME B31.5, Chapter VI.
  - 2. Test refrigerant piping, specialties, and receivers. Isolate compressor, condenser, evaporator, and safety devices from test pressure if they are not rated above the test pressure.
  - 3. Test high- and low-pressure side piping of each system separately at not less than the pressures indicated in Part 1 "Performance Requirements" Article.
    - a. Fill system with nitrogen to the required test pressure.
    - b. System shall maintain test pressure at the manifold gage throughout duration of test.
    - c. Test joints and fittings with electronic leak detector or by brushing a small amount of soap and glycerin solution over joints.
    - d. Remake leaking joints using new materials, and retest until satisfactory results are achieved.

### **3.06 SYSTEM CHARGING**

- A. Charge system using the following procedures:
  - 1. Install core in filter dryers after leak test but before evacuation.
  - 2. Evacuate entire refrigerant system with a vacuum pump to 500 micrometers (67 Pa). If vacuum holds for 12 hours, system is ready for charging.
  - 3. Break vacuum with refrigerant gas, allowing pressure to build up to 2 psig (14 kPa).
  - 4. Charge system with a new filter-dryer core in charging line.

### **3.07 ADJUSTING**

- A. Adjust thermostatic expansion valve to obtain proper evaporator superheat.
- B. Adjust high- and low-pressure switch settings to avoid short cycling in response to fluctuating suction pressure.
- C. Adjust set-point temperature of air-conditioning or chilled-water controllers to the system design temperature.
- D. Perform the following adjustments before operating the refrigeration system, according to manufacturer's written instructions:
  - 1. Open shutoff valves in condenser water circuit.
  - 2. Verify that compressor oil level is correct.
  - 3. Open compressor suction and discharge valves.
  - 4. Open refrigerant valves except bypass valves that are used for other purposes.
  - 5. Check open compressor-motor alignment and verify lubrication for motors and bearings.
- E. Replace core of replaceable filter dryer after system has been adjusted and after design flow rates and pressures are established.

END OF SECTION

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**SECTION 23 81 26**  
**SPLIT-SYSTEM AIR-CONDITIONERS**

**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. This Section includes split-system air-conditioning units consisting of separate evaporator-fan and compressor-condenser components. Units are designed for exposed or concealed mounting, and may be connected to ducts.
- B. Related Sections include the following:
  - 1. Division 23 Section 23 09 80 "Mechanical Commissioning."

**1.02 SUBMITTALS**

- A. Product Data: Include rated capacities, furnished specialties, and accessories for each type of product indicated. Include performance data in terms of capacities, outlet velocities, static pressures, sound power characteristics, motor requirements, and electrical characteristics.
- B. LEED Submittals: Provide cost data breakdown, recycle content and manufacturer name and location.
- C. Shop Drawings: Diagram power, signal, and control wiring.
- D. Field quality-control test reports.
- E. Operation and Maintenance Data: For split-system air-conditioning units to include in emergency, operation, and maintenance manuals.
- F. Warranty: Special warranty specified in this Section.

**1.03 QUALITY ASSURANCE**

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Energy-Efficiency Ratio: Equal to or greater than prescribed by ASHRAE 90.1, "Energy Efficient Design of New Buildings except Low-Rise Residential Buildings."
- C. Coefficient of Performance: Equal to or greater than prescribed by ASHRAE 90.1, "Energy Efficient Design of New Buildings except Low-Rise Residential Buildings."
- D. Units shall be designed to operate with HCFC-free refrigerants.

**1.04 COORDINATION**

- A. Coordinate size, location, and connection details with roof curbs, equipment supports, and roof penetrations specified in Division 7 Section "Roof Accessories."

**1.05 WARRANTY**

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of split-system air-conditioning units that fail in materials or workmanship within specified warranty period.

1. Warranty Period: Five years from date of Substantial Completion on compressors and coils, and one year on parts.

#### **1.06 EXTRA MATERIALS**

- A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  1. Filters: One set of filters for each unit.

### **PART 2 - PRODUCTS**

#### **2.01 MANUFACTURERS**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  1. Carrier Air Conditioning; Div. of Carrier Corporation.
  2. Trane Company (The); Unitary Products Group.
  3. York International Corp.

#### **2.02 EXPOSED EVAPORATOR-FAN COMPONENTS**

- A. Chassis: Galvanized steel with flanged edges, removable panels for servicing, and insulation on back of panel.
  1. Insulation: Faced, glass-fiber duct liner.
  2. Drain Pans: Galvanized steel, with connection for drain; insulated.
  3. Ductless unit with finished enclosure exposed in room, adjustable deflection supply grille, return grille and wall mount or suspended support brackets.
- B. Refrigerant Coil: Copper tube, with mechanically bonded aluminum fins, complying with ARI 210/240, and with thermal-expansion valve.
- C. Fan: Forward-curved, double-width wheel of galvanized steel; directly connected to motor.
- D. Fan Motors: Comply with requirements in 23 Section "Common Motor Requirements for HVAC Equipment."
  1. Special Motor Features: Multi-tapped, variable speed with internal thermal protection and permanent lubrication.
- E. Disposable Filters: 1 inch thick, in fiberboard frames.
- F. Wiring Terminations: Connect motor to chassis wiring with plug connection.

#### **2.03 Concealed Evaporator-Fan Components:**

- A. Chassis: Galvanized steel with flanged edges, removable panels for servicing, and insulation on back of panel.
- B. Insulation: Faced, glass-fiber duct liner.
- C. Refrigerant Coil: Copper tube, with mechanically bonded aluminum fins and thermal-expansion valve. Comply with ARI 210/240.
- D. Water Coil: Copper tube, with mechanically bonded aluminum fins spaced no closer than 0.1 inch; leak tested to 300 psig underwater; with a two-position control valve.

- E. Electric Coil: Helical, nickel-chrome, resistance-wire heating elements; with refractory ceramic support bushings, automatic-reset thermal cutout, built-in magnetic contactors, manual-reset thermal cutout, airflow proving device, and one-time fuses in terminal box for overcurrent protection.
- F. Fan: Forward-curved, double-width wheel of galvanized steel; directly connected to motor.
- G. Fan Motors:
  - 1. Comply with NEMA designation, temperature rating, service factor, enclosure type, and efficiency requirements specified in Section 23 05 13 "Common Motor Requirements for HVAC Equipment."
  - 2. Multitapped, multispeed with internal thermal protection and permanent lubrication.
  - 3. Three-phase, permanently lubricated, ball-bearing motors with built-in thermal-overload protection.
  - 4. Wiring Terminations: Connect motor to chassis wiring with plug connection.
- H. ASHRAE compliance in "Airstream Surfaces" Subparagraph below may be required to comply with Project requirements or authorities having jurisdiction. Retain first subparagraph to comply with LEED Prerequisite IEQ 1.
- I. Airstream Surfaces: Surfaces in contact with the airstream shall comply with requirements in ASHRAE 62.1.
- J. Filters: Permanent, cleanable.
- K. Condensate Drain Pans: Provide factory supplied drainable condensate drain pan with connection at lowest point of pan.

#### **2.04 AIR-COOLED, COMPRESSOR-CONDENSER COMPONENTS**

- A. Casing: Steel, finished with baked enamel in color selected by Architect, with removable panels for access to controls, weep holes for water drainage, and mounting holes in base. Provide brass service valves, fittings, and gage ports on exterior of casing.
- B. Compressor: Hermetically sealed with crankcase heater and mounted on vibration isolation. Compressor motor shall have thermal- and current-sensitive overload devices, start capacitor, relay, and contactor.
  - 1. Compressor Type: Scroll.
  - 2. Two-speed compressor motor with manual-reset high-pressure switch and automatic-reset low-pressure switch.
  - 3. Refrigerant Charge: R-410a.
- C. Refrigerant Coil: Copper tube, with mechanically bonded aluminum fins, complying with ARI 210/240, and with liquid subcooler.
- D. Fan: Aluminum-propeller type, directly connected to motor.
- E. Motor: Permanently lubricated, with integral thermal-overload protection.
- F. Low Ambient Kit: Permits operation below 45 deg F.

#### **2.05 ACCESSORIES**

- A. Control equipment and sequence of operation are specified in Division 23 Sections "Instrumentation and Control for HVAC" and "Sequence of Operations for HVAC Controls."

- B. Refrigerant Line Kits: Soft-annealed copper suction and liquid lines factory cleaned, dried, pressurized, and sealed; factory-insulated suction line with flared fittings at both ends.

### **PART 3 - EXECUTION**

#### **3.01 INSTALLATION**

- A. Install units level and plumb.
- B. Install evaporator-fan components using manufacturer's standard mounting devices securely fastened to building structure.
- C. Install roof-mounting compressor-condenser components on equipment supports specified in Division 7 Section "Roof Accessories." Anchor units to supports with removable, cadmium-plated fasteners.
- D. Install seismic restraints.
- E. Install compressor-condenser components on restrained, spring isolators with a minimum static deflection of 1 inch. Refer to Division 23 Section "Vibration and Seismic Controls for HVAC Piping and Equipment."
- F. Install and connect pre-charged refrigerant tubing to component's quick-connect fittings. Install tubing to allow access to unit.

#### **3.02 CONNECTIONS**

- A. Piping installation requirements are specified in other Division 23 sections. Drawings indicate general arrangement of piping, fittings and specialties.
- B. Install piping adjacent to unit to allow service and maintenance.
- C. Ground equipment according to Division 26.
- D. Electrical Connections: Comply with requirements in Division 26 Sections for power wiring, switches, and motor controls.

#### **3.03 FIELD QUALITY CONTROL**

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust field-assembled components and equipment installation, including connections, and to assist in field testing. Report results in writing.
- B. Perform the following field tests and inspections and prepare test reports:
  - 1. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
  - 2. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
  - 3. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- C. Remove and replace malfunctioning units and retest as specified above.

#### **3.04 STARTUP SERVICE**

- A. Engage a factory-authorized service representative to perform startup service.

1. Complete installation and startup checks according to manufacturer's written instructions.

END OF SECTION



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## SECTION 26 01 00

### ELECTRICAL GENERAL PROVISIONS

#### PART 1 – GENERAL

##### SUMMARY

- 1.1 This Division of the specification outlines the provisions of the contract work to be performed under this Division.
- 1.2 This Section applies to and forms a part of each section of specifications in Division 26 and all work performed under Division 26, 27 and 28.
- 1.3 In addition, work in this Division is governed by the provisions of the bidding requirements, contract forms, general conditions and all sections under general requirements.
- 1.4 These specifications contain statements which may be more definitive or more restrictive than those contained in the General Conditions. Where these statements occur, they shall take precedence over the General Conditions.
- 1.5 Where the words 'provide' or 'provision' are used, it shall be definitely interpreted as 'furnishing and installing complete in operating condition'. Where the words 'as indicated' or 'as shown' are used, it shall mean as shown on contract drawings.
- 1.6 Where items are specified in the singular, this Division shall provide the quantity as shown on drawings plus any spares or extras mentioned on drawings or specifications. All specified and supplied equipment shall be new.

##### CONTRACTOR QUALIFICATIONS

- 1.7 The Contractor shall have a current California C-10 Electrical Contractor's license and all individuals working on this project shall have passed the Department of Industrial Relations Division of apprenticeship Standards – "Electrician Certification Program."

##### CODES, PERMITS AND FEES

- 1.8 Comply with all applicable laws, ordinances, rules, regulations, codes, or rulings of governmental units having jurisdiction as well as standards of NFPA and serving utility requirements.
- 1.9 Obtain permits, fees, inspections, meter and the like, associated with work in each section of this Division.
- 1.10 Installation procedures, methods and conditions shall comply with the latest requirements of the Federal Occupational Safety and Health Act (OSHA).

## EXAMINATION OF PREMISES

- 1.11 Examine the construction drawings and premises prior to bidding. No allowances will be made for not being knowledgeable of existing conditions.

## STANDARDS

- 1.12 The following standard publications of the latest editions enforced, and supplements thereto shall form a part of these specifications. All electrical work must, as a minimum, be in accordance with these standards.
- 1.12.1 2019 California Electrical Code (CEC), Part 3 Title 24 CCR.
  - 1.12.2 National Fire Protection Association.
  - 1.12.3 Underwriters' Laboratories, Inc. (UL).
  - 1.12.4 Certified Ballast Manufacturers' Association (CBM).
  - 1.12.5 National Electrical Manufacturers' Association (NEMA).
  - 1.12.6 Institution of Electrical & Electronics Engineers (IEEE).
  - 1.12.7 American Society for Testing & Materials (ASTM).
  - 1.12.8 National Board of Fire Underwriters (NBFU).
  - 1.12.9 National Board of Standards (NBS).
  - 1.12.10 American National Standards Institute (ANSI).
  - 1.12.11 Insulated Power Cable Engineers Association (IPECS).
  - 1.12.12 Electrical Testing Laboratories (ETL).
  - 1.12.13 National Electrical Safety Code (NESC).
  - 1.12.14 2019 California Building Code (CBC), Part 2, Title 24 CCR.
  - 1.12.15 2019 California Fire Code (CFC), Part 9, Title 24, CCR.
  - 1.12.16 2016 NFPA 72 with California State Amendments
  - 1.12.17 National Electrical Testing Association (NETA), 2010 or most current

## DEFINITIONS

- 1.13 Concealed: Hidden from sight, as in trenches, chases, hollow construction, or above furred spaces, hung ceilings - acoustical or plastic type, or exposed to view only in tunnels, attics, shafts, crawl spaces, unfinished spaces, or other areas solely for maintenance and repair.
- 1.14 Exposed, Non-Concealed, Unfinished Space: A room or space that is ordinarily accessible only to building maintenance personnel, a room noted on the 'finish schedule' with exposed and unpainted construction for walls, floors, or ceilings or specifically mentioned as 'unfinished'.
- 1.15 Finish Space: Any space ordinarily visible, including exterior areas.

## WORK AND MATERIALS

- 1.16 Unless otherwise specified, all materials must be new and of the best quality. Materials previously incorporated into other projects, salvaged, or refurbished are not considered new. Perform all labor in a thorough and workmanlike manner.
- 1.17 All materials provided under the contract must bear the UL label where normally available. Note that this requirement may be repeated under equipment specifications. In general, such devices as will void the label should be provided in separate enclosures and wired to the labeled unit in proper manner.

#### SHOP DRAWINGS AND SUBMITTALS

- 1.18 Submit shop drawings and all data in accordance with Division 1 of these specifications and as noted below for all equipment provided under this Division.
- 1.19 Shop drawings submittal demonstrate to the Architect that the Contractor understands the design concept. The Contractor demonstrates their understanding by indicating which equipment and material they intend to furnish and install and by detailing the fabrication and installation methods of material and equipment he intends to use. If deviations, discrepancies, or conflicts between submittals and specifications are discovered either prior to or after submittals are processed, notify the Architect immediately.
- 1.20 Manufacturer's data and dimension sheets shall be submitted giving all pertinent physical and engineering data including weights, cross sections and maintenance instructions. Standard items of equipment such as receptacles, switches, plates, etc., which are cataloged items, shall be listed by manufacturer.
- 1.21 Index all submittals and reference them to these specifications. All submittal items shall be assembled and submitted, one for each specification section. (Multiple specification sections may be grouped together in one common submittal binder, as long as each individual section is clearly identified.) Partial or incomplete submittal sections will not be reviewed.

#### EQUIPMENT PURCHASES

- 1.22 Arrange for purchase and delivery of all materials and equipment within 20 days after approval of submittals. All materials and equipment must be ordered in ample quantities for delivery at the proper time. If items are not on the project in time to expedite completion, the Owner may purchase said equipment and materials and deduct the cost from the contract sum.
- 1.23 Provide all materials of similar class or service by one manufacturer.

#### COOPERATIVE WORK

- 1.24 Correct without charge any work requiring alteration due to lack of proper supervision or failure to make proper provision in time. Correct without charge any damage to adjacent work caused by the alteration.

- 1.25 Cooperative work includes: General supervision and responsibility for proper location and size of work related to this Division, but provided under the other sections of these specifications, and installation of sleeves, inserts, and anchor bolts for work under each section in this Division.

#### VERIFICATION OF DIMENSIONS

- 1.26 Scaled and figured dimensions are approximate only. Before proceeding with work, carefully check and verify dimensions, etc., and be responsible for properly fitting equipment and materials together and to the structure in spaces provided.
- 1.27 Drawings are essentially diagrammatic, and many offsets, bends, pull boxes, special fittings, and exact locations are not indicated. Carefully study drawings and premises in order to determine best methods, exact location, routes, building obstructions, etc. and install apparatus and equipment in manner and locations to avoid obstructions, preserve headroom, keep openings and passageways clear, and maintain proper clearances.

#### CLOSING-IN OF UNINSPECTED WORK

- 1.28 Cover no work until inspected, tested, and approved by the Architect. Where work is covered before inspection and test, uncover it and when inspected, tested, and approved, restore all work to original proper condition at no additional cost to Owner.

#### EXCAVATION AND BACKFILL

- 1.29 All excavation and backfill shall be in accordance with Division 1 of these specifications and as noted below.
- 1.30 Perform all necessary excavation, shoring, and backfilling required for the proper laying of all conduits inside the building and premises, and outside as may be necessary.
- 1.31 Excavate all trenches open cut, keep trench banks as nearly vertical as practicable, and sheet and brace trenches where required for stability and safety. Excavate trenches true to line and make bottoms no wider than necessary to provide ample work room. Grade trench bottoms accurately. Machine grade only to the top line of the conduits, doing the remainder by hand. Do not cut any trench near or under footings without first consulting the Architect. All trenches shall be done in accordance with OSHA standards and regulations.
- 1.32 Backfilling shall be done with each layer compacted before another layer is added. No stones or coarse lumps shall be laid directly on a conduit or conduits.
- 1.33 Trenches shall be filled with the specified material. Sod, if any, shall be removed in cut sections and replaced in same manners.

- 1.34 Provide pumps and drainage of all open trenches for purposes of installing electrical duct and wiring.
- 1.35 Perform all backfilling in accordance with the requirements of and under the direction of the Geotechnical Engineer.
- 1.36 Where new underground trenching is required on sites or in any area where existing underground utilities exist, the Contractor shall provide an independent professional utility locating service to locate exact vertical and horizontal locations of all existing utilities. Where existing utilities are found the Contractor shall hand dig those areas to avoid disruption. The Contractor shall be responsible for immediate repairs to existing underground utilities damaged during construction. The Contractor shall repair all existing asphalt, concrete and landscape surfaces damaged or removed during construction to match their original conditions. Where trenching extends through public streets or roadways, the Contractor shall notify underground service alert in addition to the independent locating service 48 hours before start of construction to determine location of existing utilities by calling (800) 422-4133.

#### CONCRETE

- 1.37 Where used for structures to be provided under the contract such as bases, etc., concrete work, and associated reinforcing shall be as specified under Division 3 of these specifications.
- 1.38 See other sections for additional requirements for underground vaults, cable ducts, etc.

#### ACCESSIBILITY

- 1.39 Install all control devices or other specialties requiring reading, adjustment, inspection, repairs, removal, or replacement conveniently and accessibly throughout the finished building.
- 1.40 All required access doors or panels in walls and ceilings are to be furnished and installed as part of the work under this Section. Refer to Division 1 of these specifications and as noted below.
- 1.41 Where located in fire rated assemblies, provide doors which match the rating of the assembly and are approved by the jurisdictional authority.
- 1.42 Refer to 'finish schedule' for types of walls and ceilings in each area and the architectural drawings for rated wall construction.
- 1.43 Coordinate work of the various sections to locate specialties requiring accessibility with others to avoid unnecessary duplication of access doors.

## FLASHING

- 1.44 Flash and counter flash all conduits penetrating roofing membrane as shown on Architectural drawings. All work shall be in accordance with Division 7 of these specifications.

## IDENTIFICATION OF EQUIPMENT

- 1.45 All electrical equipment shall be labeled, tagged, stamped, or otherwise identified in accordance with the following schedules:

### 1.45.1 General:

- 1.45.1.1 In general, the installed laminated nameplates as hereinafter called for shall also clearly indicate its use, areas served, circuit identification, voltage and any other useful data.
- 1.45.1.2 All auxiliary systems, including communications, shall be labeled to indicate function.

### 1.45.2 Lighting and Local Panelboards:

- 1.45.2.1 Panel identification shall be with white and black micarta nameplates. Letters shall be no less than 3/8" high.
- 1.45.2.2 Circuit directory shall be two column typewritten card set under glass or glass equivalent. Each circuit shall be identified by the room number and/or number of unit and other pertinent data as required.

### 1.45.3 Distribution Switchboards and Feeders Sections:

- 1.45.3.1 Identification shall be with 1" x 4" laminated white micarta nameplates with black lettering on each major component, each with name and/or number of unit and other pertinent data as required. Letters shall be no less than 3/8" high.
- 1.45.3.2 Circuit breakers and switches shall be identified by number and name with 3/8" x 1-1/2" laminated micarta nameplates with 3/16" high letters mounted adjacent to or on circuit breaker or switch.

### 1.45.4 Disconnect Switches, Motor Starters and Transformers:

- 1.45.4.1 Identification shall be with white micarta laminated labels and 3/8" high black lettering.

- 1.45.5 All communication system terminal boxes including T.V., telephone/intercom, security, fire alarm, clock, and computer networking shall be provided with white micarta laminated labels and 3/8" high black lettering.

#### CONSTRUCTION FACILITIES

- 1.46 Furnish and maintain from the beginning to the completion all lawful and necessary guards, railings, fences, canopies, lights, warning signs, etc. Take all necessary precautions required by City, State Laws, and OSHA to avoid injury or damage to any persons and property.
- 1.47 Temporary power and lighting for construction purposes shall be provided under this Section. All work shall be in accordance with Division 1 of these specifications.

#### GUARANTEE

- 1.48 Guarantee all material, equipment and workmanship for all sections under this Division in writing to be free from defect of material and workmanship for one year from date of final acceptance, as outlined in the general conditions. Replace without charge any material or equipment proven defective during this period. The guarantee shall include performance of equipment under all site conditions, conditions of load, installing any additional items of control and/or protective devices, as required.

#### PATENTS

- 1.49 Refer to the General Conditions for Contractor's responsibilities regarding patents.

#### PLUMBING (DIVISION 22) / HEATING, VENTILATING, AND AIR CONDITIONING (DIVISION 23) / ELECTRICAL – COORDINATION REQUIREMENTS

- 1.50 All electrical work performed for this project shall conform to the California Electrical Code, to Local Building Codes and in conformance with Division 22, 23, and 26 of these specifications, whether the work is provided under the "Plumbing", "Heating, Ventilating, and Air Conditioning", or the "Electrical" Division of these specifications. Where the Division 22 and/or Division 23 Contractor is required to provide electrical work, he shall arrange for the work to be done by a licensed Division 26 Contractor, using qualified electricians. The Division 22 and/or Division 23 Contractor shall be solely and completely responsible for the correct functioning of all equipment regardless of who provided the electrical work.
- 1.51 The work under Division 22 and/or Division 23 shall include the following:
- 1.51.1 All motors required by mechanical equipment.
- 1.51.2 All starters for mechanical equipment which are not provided under the electrical division as part of a motor control center or otherwise indicated on the electrical drawings.



- 1.51.3 All wiring interior to packaged equipment furnished as an integral part of the equipment.
- 1.51.4 All control **wiring and conduit** for mechanical control systems.
- 1.51.5 All control systems required by mechanical equipment.
- 1.52 The work under Division 26 shall include the following:
  - 1.52.1 All power wiring and conduit; and conduit only for EMS control conductors between each building and the main control panel.
  - 1.52.2 Electrical disconnects as shown on the electrical drawings.
  - 1.52.3 Starters forming part of a motor control center.
- 1.53 All power wiring and conduit to equipment furnished under Division 22 and/or Division 23 shall be provided under Division 26. Control wiring and conduit, whether line voltage or low voltage, shall be provided under the division which furnishes the equipment.
- 1.54 Power wiring shall be defined as all wiring between the panelboard switchboard overcurrent device, motor control center starter or switch, and the safety disconnect switch or control panel serving the equipment. Also, the power wiring between safety disconnect switch and the equipment line terminals.
- 1.55 Control wiring shall be defined as all wiring, either line voltage or low voltage, required for the control and interlocking of equipment, including but not limited to wiring to motor control stations, solenoid valves, pressure switches, limit switches, flow switches, thermostats, humidistats, safety devices, smoke detectors, and other components required for the proper operation of the equipment.
- 1.56 All motor starters which are not part of motor control centers and which are required for equipment furnished under this Division shall be furnished and installed by the Division furnishing the equipment and power wiring connected under Division 26. Motor starters and control devices in motor control centers shall be furnished and installed under Division 26.
- 1.57 Division 26 Contractor shall make all final connections of power wiring to equipment furnished under this Division.
- 1.58 Wiring diagrams complete with all connection details shall be furnished under each respective Section.
- 1.59 Motor starters supplied by Plumbing and/or Heating, Ventilating and Air Conditioning shall be fused combination type minimum NEMA Size 1, and conform to appropriate NEMA standards for the service required. Provide NEMA type 3R/12 gasketed

enclosures in wet locations. Provide all starters with appropriately sized overload protection and heater strips provided in each phase, hand/off auto switches, a minimum of 2 NO and NC auxiliary contacts as required, and an integral disconnecting means. For ½ horsepower motors and below, when control requirements do not dictate the use of a starter, a manual motor starter switch with overload protection in each phase may be provided. Acceptable manufacturers are Allen Bradley, General Electric, Square D, Furnas and Cutler Hammer.

#### EQUIPMENT ROUGH-IN

- 1.60 Rough-in all equipment, fixtures, etc. as designed on the drawings and as specified herein. The drawings indicate only the approximate location of rough-ins. Mounting heights of all switches, receptacles, wall mounted fixtures and such equipment must be coordinated with the Architectural Designs. The Contractor shall obtain all rough-in information before progressing with any work for rough-in connections. Minor changes in the contract drawings shall be anticipated and provided for under this Division of the specifications to comply with rough-in requirements.

#### OWNER FURNISHED AND OTHER EQUIPMENT

- 1.61 Rough-in and make final connections to all Owner furnished equipment shown on the drawings and specified, and all equipment furnished under other sections of the specifications.

#### EQUIPMENT FINAL CONNECTIONS

- 1.62 Provide all final connections for the following:
- 1.62.1 All equipment furnished under this Division.
  - 1.62.2 Electrical equipment furnished under other sections of the specification.
  - 1.62.3 Owner furnished equipment as specified under this Division.

#### INSERTS, ANCHORS, AND MOUNTING SLEEVES

- 1.63 Inserts and anchors must be:
- 1.63.1 Furnished and installed for support of work under this Division.
  - 1.63.2 Mounting of equipment that is of such size as to be free standing and that equipment which cannot conveniently be located on walls, such as motor starters, etc., shall be rigidly supported on a framework of galvanized steel angle of Unistrut or B-line systems with all unfinished edges painted.
  - 1.63.3 Furnish and install all sleeves as required for the installation of all work under all Sections of this Division and for all communication systems including any

communication systems described in this Section which are bid to the General Contractor. Sleeves through floors, roof, and walls shall be as described in "Conduit and Fittings" Section 26 05 33.

#### SEISMIC ANCHORING

- 1.64 All switchgear and other free-standing electrical equipment or enclosures shall be anchored to the floor and braced at the top of the equipment to the structure. The Contractor shall submit drawings signed by the Contractor's registered structural Engineer indicating method of compliance prior to installation.
- 1.65 All sound systems, communication, signal or data networking equipment or enclosures shall be anchored to the structure. The Contractor shall submit drawings signed by the Contractor's registered Structural Engineer indicating method of compliance prior to installation.

#### RUST PROOFING

- 1.66 Rust proofing must be applied to all ferrous metals and shall be in accordance with Section 05500 of these specifications and as noted below.
  - 1.66.1 Hot-dipped galvanized shall be applied and after forming of angle-iron, bolts, anchors, etc.
  - 1.66.2 Hot-dipped galvanized coating shall be applied after fabrication for junction boxes and pull boxes cast in concrete.

#### GENERAL WIRING

- 1.67 Where located adjacent in walls, outlet boxes shall not be placed back to back, nor shall extension rings be used in place of double boxes, all to limit sound transmission between rooms. Provide short horizontal nipple between adjacent outlet boxes, which shall have depth sufficient to maintain wall coverage in rear by masonry wall.
- 1.68 In those instances where outlet boxes, recessed terminal boxes, or recessed equipment enclosures are installed in a fire rated assembly, provide "Flamesafe FSD 1077" fire stopping pads or approved equal, over the outlet or box.
- 1.69 Complete rough-in requirements of all equipment to be wired under the contract are not indicated. Coordinate with respective trades furnishing equipment or with the Architect as the case may be for complete and accurate requirements to result in a neat, workmanlike installation.

#### SEPARATE CONDUIT SYSTEMS

- 1.70 Each electrical and signal system shall be contained in a separate conduit system as shown on the drawings and as specified herein. This includes each power system, each

lighting system, each signal system of whatever nature, telephone, standby system, sound system, control system, fire alarm system, etc.

- 1.71 Further, each item of building equipment must have its own run of power wiring. Control wiring may be included in properly sized conduit for equipment feeders of #6 AWG and smaller, having separate conduit for larger sizes.

#### CLEANUP

- 1.72 In addition to cleanup specified under other sections, thoroughly clean all parts of the equipment. Where exposed parts are to be painted, thoroughly clean off any spattered construction materials and remove all oil and grease spots. Wipe the surface carefully and scrape out all cracks and corners.
- 1.73 Use steel brushes on exposed metal work to carefully remove rust, etc., and leave smooth and clean.
- 1.74 During the progress of the work, keep the premises clean and free of debris.

#### UTILITY SERVICES

#### PAINTING

- 1.75 Paint all unfinished metal as required in accordance with Division 1 of these specifications. (Galvanized and factory painted equipment shall be considered as having a sub-base finish.)
- 1.76 Paint all exposed conduit locations in finished spaces to match the finish on the surfaces they are attached to. Verify all color selections with the Architect prior to painting.

#### GENERAL DEMOLITION REQUIREMENTS

- 1.77 Remove existing work and items which are required to be removed in such manner that minimum damage and disturbance is caused to adjacent and connection work scheduled to remain. Repair or replace existing work schedule.
- 1.78 Include preparation of existing areas to receive new materials and removal of materials and equipment to alter or repair the existing building as indicated and as specified.
- 1.79 Perform demolition exercising proper care to prevent injury to the public, workmen and adjoining property.
- 1.80 Perform the removal, cutting, drilling of existing work with extreme care and use small tools in order not to jeopardize the structural integrity of the building.
- 1.81 Rebuild to existing condition or better, existing work which has to be removed to allow the installation of new work as required.

- 1.82 Remove, protect and reinstall existing items as indicated. Replace materials scheduled for reuse which are damaged by the Contractor to the extent that they cannot be reused, with equal quality material, and installation.
- 1.83 Do not reuse in this project materials and items removed from existing site or building, except with specific written approval by the Architect in each case, unless such removed material or item is specifically indicated or specified to be reused.
- 1.84 Remove materials and equipment indicated to be salvaged for reinstallation and store to prevent damage and reinstall as the work progresses. Do not reuse in this project, other materials and equipment removed from existing site or building, except with specific written approval by the Architect in each case.
- 1.85 Patch areas requiring patching, including damage caused by removing, relocating or adding fixtures and equipment, damages caused by demolition at adjacent materials.
- 1.86 Do not stockpile debris in the existing building, without the approval of the Architect. Remove debris as it accumulates from removal operations to a legal disposal area.
- 1.87 Contractor to assume existing oil filled and dry transformers, oil switches, ballasts, lamps, wooden poles, cross arms, computers, computer monitors, and conductor insulation containing materials considered hazardous. Comply with local, state and federal regulations, laws, and ordinances concerning removal, handling and protection against exposure or environmental pollution. Contractor shall be responsible for removal of the above hazardous materials where encountered. Include all costs for such removal as part of this contract.
- 1.88 All fluorescent, compact fluorescent, high intensity discharge, metal halide, mercury vapor, high and low-pressure sodium, and neon lamps are to be disposed of as required by the California Waste Rule Regulations as described in the California Code of Regulations, Title 22, Division 4.5 and Chapter 23.

#### PROJECT CLOSEOUT

- 1.89 Prior to completion of project, compile a complete equipment maintenance manual for all equipment supplied under sections of this Division, in accordance with Division 1 of these specifications and as described below.
- 1.90 Equipment Lists and Maintenance Manuals:
  - 1.90.1 Prior to completion of job, Contractor shall compile a complete equipment list and maintenance manuals. The equipment list shall include the following items for every piece of material equipment supplied under this Section of the specifications:

- 1.90.1.1 Name, model, and manufacturer.
  - 1.90.1.2 Complete parts drawings and lists.
  - 1.90.1.3 Local supply for parts and replacement and telephone number.
  - 1.90.1.4 All tags, inspection slips, instruction packages, etc., removed from equipment as shipped from the factory, properly identified as to the piece of equipment it was taken from.
- 1.91 Maintenance manuals shall be furnished for each applicable section of the specifications and shall be suitably bound with hard covers and shall include all available manufacturers' operating and maintenance instructions, together with "as-built" drawings to properly operate and maintain the equipment. The equipment lists and maintenance manuals shall be submitted in duplicate to the Architect for approval not less than 10 days prior to the completion of the job. The maintenance manuals shall also include the name, address, and phone numbers of all subcontractors involved in any of the work specified herein. Four copies of the maintenance manuals bound in single volumes shall be provided.

#### RECORD DRAWINGS

- 1.92 The Division 26 Contractor shall maintain record drawings as specified in accordance with Division 1 of these specifications, and as noted below.
- 1.93 Drawings shall show locations of all concealed underground conduit runs, giving the number and size of conduit and wires. Underground ducts shall be shown with cross section elevations and shall be dimensioned in relation to permanent structures to indicate their exact location. Drawing changes shall not be identified only with referencing CORs and RFIs, the drawings shall reflect all of the actual additions or changes made. All as-built drawing information shall be prepared by the contractor in AutoCAD, updating the contract computer files as needed to reflect actual installed conditions for all site plans, lighting, power, communication, networking, audio visual, security or fire alarms systems included in the scope of work for this project.
- 1.94 One set of these record drawings shall be delivered to the Architect. The engineer will review documents for completeness and will not be responsible for editing contractor computer files.

#### CHANGES AND EXTRA WORK

- 1.95 When **changes** in work are requested, the Division 26 Contractor shall provide unit prices for the work involved in accordance with Division 1 of these specifications, and the following:
- 1.95.1 The material Costs shall **not exceed** the latest edition of the "Trade Service" end column "C" price list. The materials prices may be higher only where the

Contractor can produce invoices to substantiate higher material costs. The Contractor shall submit a print out copy of the trade service sheets with the change order to substantiate these values.

- 1.95.2 The labor Costs shall **not exceed** the latest edition of the "NECA Manual of Labor Units" **normal column**.
- 1.96 When **credits** in work are requested, the Division 26 Contractor shall provide unit prices for the work involved in accordance with Division 1 of these specifications, and the following:
- 1.96.1 The Material Costs shall **not be less than 80% of** the latest edition of the "Trade Service" end column price list. The materials prices may be lower only where the Contractor can produce invoices to substantiate lower material costs. Restocking fees may also be included in this amount where applicable.
- 1.96.2 The Labor Costs shall **not be less than 80% of** the latest edition of the "NECA Manual of Labor Units" **normal column**.
- 1.97 Conduit pricing for conduits of all types sized 3" or smaller.
- When changes in the scope of work require the Contractor to estimate conduit Installations, they shall **NOT include labor values (only material cost may be included)** for any of the below items. The labor values for conduit installation represented in the NECA manual are inflated to a point where additional labor for the below items can not be justified.
- 1.97.1 Couplings.
- 1.97.2 Set Screw or Compression Fittings, locknuts, Bushings and washers.
- 1.97.3 Conduit straps and associated screws or nails.
- 1.97.4 LB fittings or other specialty fittings or specialty mounting hardware may be included where needed.
- 1.98 Wire pricing for all types and sizes.
- When changes in the scope of work require the Contractor to estimate wire installations, they shall **NOT include labor values (only material cost may be included)** for any of the below items. The labor values for wire installation represented in the NECA manual are inflated to a point where additional labor for the below items can not be justified.
- 1.98.1 Locknuts, Bushings, tape, wire markers.
- 1.99 When changes in the scope of work require other equipment installations such as lighting fixtures, panelboards, switchboards, wiring devices, communications equipment

etc. the Contractor shall **NOT include labor values (only material cost may be included)** for any of the below items. The labor values for these equipment items represented in the NECA manual are inflated to a point where additional labor for the below items can not be justified.

1.99.1 Associated screws, nails, bolts, anchors or supports.

1.99.2 Locknuts, washers, tape.

1.100 The total labor hours for extra work will be required to be calculated as follows:

1.100.1 Change orders with 1 to 30 total labor hours

General Laborer	10%	of total labor hours
Journeyman	10%	of total labor hours
Foreman	80%	of total labor hours

1.100.2 Change orders with 31 to 100 total labor hours

General Laborer	20%	of total labor hours
Journeyman	40%	of total labor hours
Foreman	40%	of total labor hours

1.100.3 Change orders with over 100 total labor hours

General Laborer	30%	of total labor hours
Journeyman	50%	of total labor hours
Foreman	20%	of total labor hours

1.101 When change orders are issued which allow the work to be completed in the normal sequence of construction, the labor rates shall be based on the most current "Prevailing Wage" – straight time total hourly rate. When change orders require the Contractor to work out of sequence the "Prevailing Wage"– daily overtime hourly rate shall apply. Special condition situations shall be reviewed on an individual basis for alternate hourly rate schedules.

1.102 Costs **will not** be permitted for additional supervision on site or office time for processing any change order other than the 10% overhead allowance as described in Division 1. Cost for special equipment required to install items for an individual change order are permitted and must be individually identified. Lump Sum cost for small tools or any other cost not specifically required for the change order are not permitted.

1.103 Contractor estimates shall be formatted to clearly identify each of the following:

1.103.1 Line item description of each type of material or labor item.

1.103.2 Description of quantity for each item.



1.103.3 Description of (material cost per / quantity).

1.103.4 Description of (labor cost per / quantity).

1.103.5 Description of total labor hour breakdown per Foreman, Journeyman or General Laborer as described above.

#### ELECTRONIC FILES

1.104 The Contractor shall make a **written** request directly to Johnson Consulting Engineers for electronic drawing files. As a part of the written request, please include the following information:

1.104.1 Clearly indicate each drawing sheet needed (i.e., E1.1, E2.1, etc.).

1.104.2 Identify the name, phone number, mailing address and e-mail address of the person to receive the files.

1.104.3 Provide written confirmation and agreement with the requirements described for payment of computer files, as described below.

1.105 Detail or riser diagram sheets, or any other drawings other than floor plans or site plans, **will not be made available to the Contractor.**

1.106 Files will only be provided in the AutoCAD format in which they were created.

1.107 Requests for files will be processed as soon as possible; a minimum of 7 working days should be the normal processing time. The Contractor shall be completely responsible for requesting the files in time for their use.

END OF SECTION

**SECTION 26 05 19**  
**POWER CONDUCTORS**

**PART 1 – GENERAL**

- 1.1 Furnish and install wire and cable for branch circuits and feeders specified herein and as shown on the electrical drawings.
- 1.2 Submittals: Submit manufacturers' data for the following items:
  - 1.2.1 All cables and terminations
- 1.3 **Common submittal mistakes which will result in the submittals being rejected:**
  - 1.3.1 Not including all items listed in the above itemized description.
  - 1.3.2 Including catalog cut sheets which have several items on a page, and not clearly identifying by highlighting, underlining, or clouding the items to be reviewed, or crossing out the items which are not applicable.
  - 1.3.3 Not including actual manufacturer's catalog information of proposed products.
  - 1.3.4 Do not include multiple manufacturers for similar products and do not indicate "or approved equal" statements, or "to be determined later" statements. The products being submitted must be the products installed

**PART 2 – PRODUCTS**

- 2.1 Wire and cable Rated 120 volt to 600 volt.
  - 2.1.1 All wire and cable shall be new, 600 volt insulated copper, of types specified below for each application. All wire and cable shall bear the UL label and shall be brought to the job in unbroken packages. Wire insulation shall be the color as specified herein and shall be type THWN-2. Insulated conductors shall be installed in all exterior exposed raceways. Conductors for branch circuit lighting, receptacle, power and miscellaneous systems shall be a minimum of No. 12 AWG. Increase conductor size to No. 10 AWG for 120 volt circuits greater than 100 feet from the panel to the load and for 277 volt circuits greater than 200 feet from the panel to the load. Circuit home-runs indicated to be larger than No. 12 must be increased the entire length of the circuit, including equipment grounding conductor. Wire sizes No. 14 through No. 10 shall be solid. No. 8 and larger shall be stranded.
  - 2.1.2 Aluminum conductors will be permitted (only where specifically identified on the drawings. See "600 Volt Feeder Schedule") in sizes 2/0 or larger. Conductors shall be listed by Underwriters Laboratories (UL) and suitable for operation at 600 volts or less, at a maximum operating temperature of 90N C ma

ximum in wet or dry locations. Conductors shall be marked "SUN-RES". Aluminum alloy conductors shall be compact stranded conductors of STABILOY® (AA-8030) as manufactured by Alcan Cable or Listed equal. AA-8000 Series aluminum alloy conductor material shall be recognized by The Aluminum Association.

2.1.3 MC type armored cable reference Section 26 05 33.

2.2 Wire and cable for systems below 120 volts.

2.2.1 All low voltage and communications systems cables routed underground shall be provided with a moisture resistant outer jacket, West Penn "Aquaseal" or equal, unless otherwise specified.

### PART 3 - EXECUTION

3.1 Wire and cable shall be pulled into conduits without strain using powdered soapstone, mineralac, or other approved lubricant. In no case shall wire be repulled if same has been pulled out of a conduit run for any purpose. No conductor shall be pulled into conduit until conduit system is complete, including junction boxes, pull boxes, etc.

3.2 All connections of wires shall be made as noted below:

3.2.1 Connections to outlets and switches: Wire formed around binding post of screw.

3.2.2 No. 10 wire and smaller: Circuit wiring connections to lighting fixtures and other hard wired equipment shall be made with pressure type solderless connectors, Buchanan, Scotchlock, Wing Nut, or approved equal. Alternate "WAGO" #773 series or "IDEAL" #32, 33, 34 and 39 series push wire style connectors are also acceptable.

3.3 All wiring shall be continuous without splicing unless where specifically noted on the drawings or where permitted below.

3.3.1 No. 10 wire and smaller above grade: Quantities as needed, connection made with pressure type solderless connectors, Scotchlock or equal.

3.3.2 No. 10 wire and smaller below grade: Quantities as needed, connection made with 'Raychem' long barrel compression terminals with crimping tool and quantity of crimps as recommended by manufacturer, provide 'Raychem' WCSM-S series in-line heat shrink, sealant coated splice kit. Alternate products must be UL listed for direct burial/submersible and rated to (1000V).

3.3.3 No. 8 wire and larger above grade: Quantities only where indicated, 'Raychem' long barrel compression terminals with crimping tool and quantity of crimps as recommended by manufacturer, provide 'Raychem' WCSM-S series in-line heat

shrink, sealant coated splice kit. Alternate products must be UL listed for direct burial/submersible and rated to (1000V).

- 3.3.4 No. 8 wire and larger below grade: Quantities only where indicated, 'Raychem' long barrel compression terminals with crimping tool and quantity of crimps as recommended by manufacturer, provide 'Raychem' WCSM-S series in-line heat shrink, sealant coated splice kit. Alternate products must be UL listed for direct burial/submersible and rated to (1000V).

- 3.4 All wiring throughout shall be color coded as follows:

	<u>480 volt system</u>	<u>208 or 240 volt system</u>
A Phase	Brown	Black
B Phase	Orange	Red
C Phase	Yellow	Blue
Neutral	Grey	White
Ground	Green	Green

- 3.5 Wiring must be color coded throughout its entire length, except feeders may have color coded plastic tape at both ends and any other accessible point.
- 3.6 All control wiring in a circuit shall be color coded, each phase leg having a separate color, and with all segments of the control circuit, whether in apparatus or conduit, utilizing the same color coding.
- 3.7 At all terminations of control wiring, the wiring shall have a numbered T&B or Brady plastic wire marker.
- 3.8 Cables when installed are to be properly trained in junction boxes, etc., and in such a manner as to prevent any forces on the cable which might damage the cable.
- 3.9 All conductors to be installed into a common raceway, shall be pulled into the raceway at the same time.
- 3.10 All conductors shall be installed in such a manner as to not exceed the manufacturers' recommended pulling tension and bending radius. The equipment used for pulling must be specifically designed for the purpose. Motorized vehicles such as pickup trucks, are not acceptable.

END OF SECTION

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## SECTION 26 05 26

### GROUNDING

#### PART 1 – GENERAL

- 1.1 Furnish and install grounding and grounding conductors and electrodes as specified herein and as shown on the drawings.
- 1.2 Submit catalog data for all components.
- 1.3 **Common submittal mistakes which will result in the submittals being rejected:**
  - 1.3.1 Not including all items listed in the above itemized description.
  - 1.3.2 Including catalog cut sheets which have several items on a page, and not clearly identifying by highlighting, underlining or clouding the items to be reviewed, or crossing out the items which are not applicable.
  - 1.3.3 Not including actual manufacturer's catalog information of proposed products.
  - 1.3.4 Do not include multiple manufacturers for similar products and do not indicate "or approved equal" statements, or "to be determined later" statements. The products being submitted must be the products installed.

#### PART 2 – EXECUTION

- 2.1 Grounding
  - 2.1.1 All panelboard cabinets, equipment, enclosures, and complete conduit system shall be grounded securely in accordance with pertinent sections of CEC Article 250. Conductors shall be copper. All electrically operated equipment shall be bonded to the grounded conduit system. All non-current carrying conductive surfaces that are likely to become energized and subject to personal contact shall be grounded by one or more of the methods detailed in CEC Article 250. All ground connections shall have clean contact surfaces. Install all grounding conductors in conduit and make connections readily accessible for inspection.
  - 2.1.2 Provide an insulated equipment grounding conductor in all branch circuit and feeder raceway systems, sized in accordance with CEC 250-1122.
  - 2.1.3 Provide an additional individual insulated grounding conductor for each circuit which contains an isolated ground receptacle or surge suppression receptacle.
  - 2.1.4 Grounding of metal raceways shall be assured by means of provisions of grounding bushings on feeder conduit terminations at the panelboard, and by means of insulated continuous stranded copper grounding wire extended from the ground bus in the panelboard to the conduit grounding bushings.

- 2.1.5 Except for connections which access for periodic testing is required, make grounding connections which are buried or otherwise inaccessible by exothermite type process.
- 2.1.6 The following ohmic values shall be test certified for each item listed. A written report signed and witnessed by the project IOR shall be provided to the engineer. If the ohmic value listed cannot be obtained additional grounding shall be installed to reach the value listed.
  - 2.1.6.1 Service. ....10 ohms.
  - 2.1.6.2 Step down transformers and non-current carrying metal parts  
..... 25 ohms.
  - 2.1.6.3 Manholes, handholes, etc.  
..... 10 ohms.

END OF SECTION

**SECTION 26 05 33**  
**CONDUIT AND FITTINGS**

**PART 1 – GENERAL**

- 1.1 Furnish and install conduit and fittings as shown on the drawings and as specified herein.
- 1.2 Submit Manufacturer's data on the following:
  - 1.2.1 Conduit.
  - 1.2.2 Fittings
  - 1.2.3 Fire stopping Material.
  - 1.2.4 Surface Raceways.
  - 1.2.5 Type MC or MC-PCS cable, provide construction details and UL "E" number.
- 1.3 **Common submittal mistakes which will result in the submittals being rejected:**
  - 1.3.1 Not including all items listed in the above itemized description.
  - 1.3.2 Including catalog cut sheets which have several items on a page, and not clearly identifying by highlighting, underlining or clouding the items to be reviewed, or crossing out the items which are not applicable.
  - 1.3.3 Not including actual manufacturer's catalog information of proposed products.
  - 1.3.4 Do not include multiple manufacturers for similar products and do not indicate "or approved equal" statements, or "to be determined later" statements. The products being submitted must be the products installed.

**PART 2 – PRODUCTS**

- 2.1 Rigid steel conduit, intermediate metal conduit (IMC), electrical metallic tubing (EMT) and flexible metallic conduit shall be steel, hot dipped galvanized after fabrication.
- 2.2 PVC conduit shall be Carlon or approved equal.
- 2.3 Liquid tight flexible metal conduit shall be Anaconda Sealtite type UA or approved equal. Fittings shall be Appleton, Crouse-Hinds, Steel City, T&B, or equivalent.
- 2.4 MC type armored cable, when utilized, shall be provided with the following:
  - 2.4.1 Comply with UL 1479 and CEC 330



- 2.4.2 90°C, copper, THHN conductors.
- 2.4.3 Minimum #12 insulated grounding conductor.
- 2.4.4 Conductors sized No. 10 and smaller shall be solid, No. 8 and larger shall be stranded.
- 2.4.5 Oversized (150%) neutrals or separate neutrals shall be provided.
- 2.4.6 Increase phase conductors to No. 10 AWG for 120 volt circuits greater than 100 feet from panel to load and for 277 volt circuits greater than 200 feet from panel to load. Where required increase conductor sizes for entire length of circuit.
- 2.4.7 Interlocked armored aluminum sheath.
- 2.4.8 AC or BX type armored cable shall not be substituted in lieu of MC type cable.
- 2.4.9 Color code cable according to cable type and configuration.
- 2.4.10 Acceptable manufacturers are AFC and Alflex.
- 2.5 MC-PCS luminary armored cable , when utilized, shall be provided with the following:
  - 2.5.1 Comply with UL 1479 and CEC 330
  - 2.5.2 90°C, copper, THHN conductors.
  - 2.5.3 Minimum #12 insulated grounding conductor.
  - 2.5.4 Lighting phase conductors sized No. 10 and smaller shall be solid, lighting control conductors shall be sized no. 16 solid.
  - 2.5.5 Interlocked armored aluminum sheath.
  - 2.5.6 AC or BX type armored cable shall not be substituted in lieu of MC type cable.
  - 2.5.7 Color code phase cable according to cable type and configuration. color code control conductors purple/gray.
  - 2.5.8 Acceptable manufacturers are AFC and Alflex.
- 2.6 Fire stopping material shall provide an effective seal against fire, heat, smoke and fire gases. Fire stopping material shall be tested to comply with ASTM E 814 and UL 1479. The submittal for this product shall include the UL listed system number and installation requirements for each type of penetration seal required for this project.

- 2.7 Each length of conduit shall be stamped with the name or trademark of the manufacturer and shall bear the UL label.
- 2.8 All plastic conduit shall be rigid, schedule 40, heavy wall PVC. All PVC conduit shall be UL listed. Underground utility company conduits shall comply with local utility co. requirements.
- 2.9 Plastic conduit shall be stored on a flat surface, and protected from the direct rays of the sun.
- 2.10 Where branch circuit or communication raceways cannot be concealed in ceilings or walls and are required to be exposed in interior spaces, provide nonmetallic surface raceway system sized per the manufacturer capacity requirements. A full complement of nonmetallic fittings must be available and matching device boxes and cover plates must be provided. The color of the raceway system, components and boxes shall be (white). Where data networking cabling is to be installed, all raceway fittings shall meet Category 5 radius requirements. Where specific raceway types have been noted on the drawings they shall be as follows:

2.10.1 System 'SR'	Hubbell	WALLTRAK 1 series
	Wiremold	ECLIPSE PN05series
	Panduit	LD5 series
	Hellerman-Tyton	TSR2 series
2.10.2 System 'SR2'	Hubbell	WALTRAK 22
	Wiremold	2300D Series
	Panduit	D2P10
	Hellerman-Tyton	TSR3 series
2.10.3 System 'SR3'	Hubbell	BASETRAK series
	Wiremold	5400 - series
	Panduit	70 series
	Hellerman-Tyton	MCR Infostream" series

Provide with offset boxes, inline boxes may only be used where specifically shown on the drawings.

### PART 3 – FITTINGS

- 3.1 All metallic fittings, including those for EMT, flexible conduit, or malleable iron. Die cast fittings of any other material are not permitted.
- 3.2 Locknuts shall be steel or malleable iron with sharp clean cut threads.
- 3.3 Entrance seals shall be 0.Z. type FSK or equivalent.

- 3.4 Bushings and locknuts: Where conduits enter boxes, panels, cabinets, etc., they shall be rigidly clamped to the box by locknuts on the outside, and a lock nut and plastic bushing on the inside of the box. All conduits shall enter the box squarely.
- 3.5 Furnish and install insulated bushings as per CEC article No. 300 - 4 (F) on all conduits. The use of insulated bushings does not exclude the use of double locknuts to fasten conduit to the box.
- 3.6 Transition from plastic to steel conduits shall be with PVC female threaded adaptors.
- 3.7 Couplings and connectors for rigid steel or IMC conduit must be threaded, or compression type (set screw fittings are not permitted).
- 3.8 Couplings and connectors for EMT shall be compression, watertight. Set screw connectors are not acceptable, except for systems below 120 volts.
- 3.9 MC or MC-PCS type armored cable shall be provided with listed clamp type die cast zinc set screw connectors. Anti-short bushings shall be provided at all cable ends.
- 3.10 Connectors for flexible metal conduit shall be steel or malleable iron with screw provided to clinch the conduit into the adapter body. For sizes up to ¾" a screw-in, "Jake type," fitting may be used.
- 3.11 Install approved expansion fittings, or liquid tight flex conduit with a minimum 6" slack for conduits passing through all expansion and seismic joints.

#### **PART 4 - EXECUTION**

- 4.1 All branch circuits shall be installed concealed in walls or above ceilings or in concrete floor slabs. PVC conduits installed in concrete floor slabs shall transition to PVC coated rigid steel where conduits penetrate above finished grade or finished floor.
- 4.2 Conduit sizes for various numbers and sizes of wire shall be as required by the CEC, but not smaller than ½" for power wiring and ¾" for communications and fire alarm systems unless otherwise noted. Conduit in slab or below grade shall be ¾" minimum trade size, unless otherwise identified.
- 4.3 Conduit size shall be such that the required number and sizes of wires can be easily pulled in and the Contractor shall be responsible for the selection of the conduit sizes to facilitate the ease of pulling. Conduit sizes shown on the drawings are minimum sizes in accordance with appropriate tables in the CEC. If because of bends or elbows a larger conduit size is required, the Contractor shall so furnish without further cost to the Owner.
- 4.4 The Contractor shall be entirely responsible for the proper protection of this work from the other trades on the job. When conduit becomes bent or holes are punched through

same, or outlets moved after being roughed-in, the Contractor shall replace same, without additional cost to the Owner.

4.5 Rigid steel conduit or IMC shall be used as follows:

4.5.1 Exposed exterior locations.

4.5.2 Exposed interior locations below eight feet above floor, except in electrical rooms and closets.

4.5.3 In hazardous or classified areas as required by CEC.

4.6 EMT conduit shall be used for areas as follows:

4.6.1 All interior communications, signal, and data networking systems.

4.6.2 All interior power wiring systems where not required to be in rigid steel, IMC or flexible conduit.

4.7 Flexible conduit shall be used for areas as follows:

4.7.1 To connect motors, transformers, and other equipment subjected to vibration or where specifically detailed on the drawings.

4.7.2 Flexible conduit shall not be used to replace EMT in other locations where the conduit will be exposed.

4.7.3 Flexible metal conduit shall be ferrous. Installation shall be such that considerable slack is realized. The conduit shall contain separate code sized grounding conductor.

4.7.4 Liquid tight flexible conduit shall be used in conformance with CEC in lengths not to exceed 4'. For equipment connections, route the conduit at 90 degrees to the adjacent path for point of connection. The conduit shall contain separate code sized grounding conductor. Use liquid tight flexible conduit for all equipment connections exposed in possible wet, corrosive or oil contaminated areas, e.g., shops and outside areas.

4.8 MC armored cable may be used as follows:

4.8.1 All branch circuit wiring for lighting and power circuits where permitted and installed in compliance with UL 1569 and CEC 330.

4.9 MC-PCS luminary armored cable may be used as follows:

4.9.1 All Lighting branch circuit wiring for lighting circuits where permitted and installed in compliance with UL 1569 and CEC 300-22(c), 330. This cable permits

conductors of control circuits to be placed in a cable with lighting power circuits or class 1 circuits.

4.9.2 It shall not be considered an acceptable option to install lighting control class 1 circuits as an open wire installation.

4.10 MC and MC-PCS armored cable shall **not** be used for the following areas:

4.10.1 Any exterior, underground or buried in concrete circuits.

4.10.2 Any circuits feeding HVAC equipment or pumps or any circuit with 30 AMPs or greater overcurrent protection.

4.10.3 Any exposed interior locations except in electrical, communication or mechanical equipment rooms.

4.10.4 Any exposed interior damp/wet locations, kitchens, science classrooms, shop areas, or concealed in science classroom casework, unless provided with approved PVC jacket.

4.10.5 Any hazardous rated area.

4.11 Plastic conduit shall be used for all exterior underground, in slab, and below slab on grade conduit installations. Install bell ends at all conduit terminations in manholes and pull boxes. Where plastic conduit transitions from below grade to above grade, no plastic conduit shall extend above finished exterior grade, or above interior finished floor level.

4.12 Plastic conduit joints shall be made up in accordance with the manufacturer's recommendations for the particular conduit and coupling selected. Conduit joint couplings shall be made watertight. Plastic conduit joints shall be made up by brushing a plastic solvent cement on the inside of a plastic fitting and on the outside of the conduit ends. The conduit and fitting shall then be slipped together with a quick one-quarter turn twist to set the joint tightly.

4.13 All underground conduit depths shall be as detailed on the drawings or a minimum of 30" below finished grade (when not specifically detailed otherwise), for all exterior underground conduits. Where concrete slurry or concrete encasement is provided, include "Red" color dye in mixture.

4.14 All underground conduits for power systems (600v and higher), shall be concrete encased and a minimum of 48" below grade or as detailed on the drawings. Where concrete slurry or concrete encasement is provided, include "Red" color dye in mixture.

4.15 Conduit shall be continuous from outlet to outlet, cabinet or junction box, and shall be so arranged that wire may be pulled in with the minimum practical number of junction boxes.

- 4.16 All conduits shall be concealed wherever possible. All conduit runs may be exposed in mechanical equipment rooms, electrical equipment rooms, electrical closets, and in existing or unfinished spaces. No conduit shall be run exposed in finished areas without the specific approval of the Architect.
- 4.17 All raceways which are not buried or embedded in concrete shall be supported by straps, clamps, or hangers to provide a rigid installation. Exposed conduit shall be run in straight lines at right angles to or parallel with walls, beams, or columns. In no case shall conduit be supported or fastened to other pipes or installed to prevent the ready removal of other trades piping. Wire shall not be used to support conduit.
- 4.18 It shall be the responsibility of the Contractor to consult the other trades before installing conduit and boxes. Any conflict between the location of conduit and boxes, piping, duct work, or structural steel supports, shall be adjusted before installation. In general, large pipe mains, waste, drain, and steam lines shall be given priority.
- 4.19 Conduits above lay-in grid type ceilings shall be installed in such a manner that they do not interfere with the "lift-out" feature of the ceiling system. Conduit runs shall be installed to maintain the following minimum spacing wherever practical.
- 4.19.1 Water and waste piping not less than 3".
- 4.19.2 Steam and steam condensate lines not less than 12".
- 4.19.3 Radiation and reheat lines not less than 6".
- 4.20 Provide all necessary sleeves and chases required where conduits pass through floors or walls as part of the work of this section. Core drilling will only be permitted where approved by the Architect.
- 4.21 All empty conduits and surface mounted raceways shall be provided with a ¼" polypropylene plastic pull cord and threaded plastic or metal plugs over the ends. Fasten plastic "Dymo" tape label to exposed spare conduit to identify "power" or "communication" system, and to where it goes.
- 4.22 The ends of all conduits shall be securely plugged, and all boxes temporarily covered to prevent foreign material from entering the conduits during construction. All conduit shall be thoroughly swabbed out with a dry swab to remove moisture and debris before conductors are drawn into place.
- 4.23 Bending: Changes in direction shall be made by bends in the conduit. These shall be made smooth and even without flattening the pipe or flaking the finish. Bends shall be of as long a radius as possible, and in no case smaller than CEC requirements.
- 4.23.1 For power conduits for conductors (600v and below), provide minimum 36" radius (vertical) and 72" radius (horizontal) bends.

- 4.23.2 For power conduits for conductors (greater than 600v), provide minimum 72" radius (vertical) and 72" radius (horizontal) bends.
- 4.24 Supports: Conduit shall be supported at intervals as required by the California Electrical Code. Where conduits are run individually, they shall be supported by approved conduit straps or beam clamps. Straps shall be secured by means of toggle bolts on hollow masonry, machine screws or bolts on metal surfaces, and wood screws on wood construction. [No perforated straps or wire hangers of any kind will be permitted. Where individual conduits are routed, or above ceilings, they shall be supported by hanger rods and hangers.] Conduits installed exposed in damp locations shall be provided with clamp backs under each conduit clamp, to prevent accumulation of moisture around the conduits.
- 4.25 Where a number of conduits are to be run exposed and parallel, one with another, they shall be grouped and supported by trapeze hangers. Hanger rods shall be fastened to structural steel members with suitable beam clamps or to concrete inserts set flush with surface. A reinforced rod shall be installed through the opening provided in the concrete inserts. Beam clamps shall be suitable for structural members and conditions. Rods shall be galvanized steel 3/8" diameter minimum. Each conduit shall be clamped to the trapeze hanger with conduit clamps.
- 4.26 All concrete inserts and pipe clamps shall be galvanized. All steel bolts, nuts, washers, and screws shall be galvanized or cadmium plated. Individual hangers, trapeze hangers and rods shall be prime-coated.
- 4.27 Openings through fire rated floors/walls and/or smoke walls through which conduits pass shall be sealed by Fire stopping material to comply with Division 1 to seal off flame, heat, smoke and fire gases. Sleeves shall be provided for power or communication system cables which are not installed in conduits, and shall be sealed inside and out to comply with manufacturers UL system design details. Where multiple conduits and/or cable tray systems pass thru fire-rated walls at one location, the Contractor shall submit copies of the manufacturers UL system design details proposed for use on this project. All Fire stopping material shall have an hourly fire-rating equal to or higher than the fire rating of the floor or wall through which the conduit, cables, or cable trays pass.
- 4.28 Provide cap or other sealing type fitting on all spare conduits. Conduits stubbed into buildings from underground where cable only extends to equipment, the conduit/cable end shall be sealed to prevent moisture from entering the room or space.
- 4.29 All conduits which are part of a paralleled feeder or branch circuit shall be installed underground.
- 4.30 All conduits which are required as a part of systems specified in Divisions 27 or 28, or any other low voltage communication systems, shall be furnished and installed by the Division 26 Contractor.

- 4.30.1 The Contractor shall coordinate all conduit requirements with each system supplier prior to bid to determine special conduit system requirements.
- 4.30.2 The Contractor shall provide a pull rope in all conduits for these systems.
- 4.30.3 The Contractor shall provide conduit sleeves for all open cable installations thru rated walls or block walls. Provide conduit from each building main termination cabinet or backboard to the nearest accessible ceiling for access into all electrical or communications rooms.
- 4.31 In addition to the above requirements, the following requirements shall apply to all data networking conduits:
  - 4.31.1 Flexible metal conduit may only be used where required at building seismic and/or expansion joints.
  - 4.31.2 All underground conduits shall be provided with minimum 24" radius elbows (vertical) and 60" (horizontal).
  - 4.31.3 No length of conduit above grade shall be installed to exceed 150 feet between pull boxes, or points of connection, unless where specifically detailed on the drawings.
  - 4.31.4 No length of conduit shall be installed to exceed two 90 degree bends between pull boxes, or points of connection, unless where specifically detailed on the drawings.
- 4.32 Where surface raceways are installed in interior spaces, the Contractor shall take care to route in straight lines at right angles to or parallel with walls, beams, or columns. All raceways and device boxes shall be securely screwed to the finish surface with zinc screw "Auger" anchors Stk #ZSA1K by Gray Bar Electric or equal. Tape adhesive application will not be permitted.
- 4.33 The Contractor who installs surface raceway systems shall provide and install complete with wire retention clips, one for every (8) vertical feet or (5) horizontal feet or portion thereof. This Contractor shall also provide each raceway channel with pull strings.
- 4.34 It shall be the responsibility of the Contractor installing the raceway to coordinate the installation of raceway device plates and inserts with the communications or data contractors.
- 4.35 MC or MC-PCS cable shall be cut using a specific metallic sheath armor stripping tool. The use of hacksaws, dikes or any other tools not specifically designed to remove the armor sheath will not be permitted.



- 4.36 MC or MC-PCS cables installed in attic spaces or above lay-in ceilings shall be installed to be protected from physical damage. The cable shall be mounted along the sides or bottom of joists, rafters or studs.
- 4.37 Support wires used for supporting ceilings, lighting fixtures or other equipment items shall **not** be used to support MC or MC-PCS cables. Conduits, duct work, piping or any other equipment shall not be used to support or mount MC cables.
- 4.38 MC or MC-PCS cable supports, fasteners and clips shall be designed specifically for use with MC cables. Standard conduit supports, fasteners and clips, nails or other items are not permitted for installing MC cables.

END OF SECTION

**SECTION 26 05 34**  
**OUTLET AND JUNCTION BOXES**

**PART 1 – GENERAL**

- 1.1 Furnish and install electrical wiring boxes as specified and as shown on the electrical drawings.
- 1.2 Submit manufacturer's data for all items.
- 1.3 **Common submittal mistakes which will result in the submittals being rejected:**
  - 1.3.1 Not including all items listed in the above itemized description.
  - 1.3.2 Including catalog cut sheets which have several items on a page, and not clearly identifying by highlighting, underlining or clouding the items to be reviewed, or crossing out the items which are not applicable.
  - 1.3.3 Not including actual manufacturer's catalog information of proposed products.
  - 1.3.4 Do not include multiple manufacturers for similar products and do not indicate "or approved equal" statements, or "to be determined later" statements. The products being submitted must be the products installed.

**PART 2 – PRODUCTS**

- 2.1 Boxes shall be as manufactured by Steel City, Appleton, Raco, or approved equal.
- 2.2 All boxes must conform to the provisions of Article 370 of the CEC. All boxes shall be of the proper size to accommodate the quantity of conductors enclosed in the box. Minimum box size shall be 4" square x 1-½" deep.
- 2.3 Boxes generally shall be hot dipped galvanized steel with knockouts. Boxes on exterior surfaces or in damp locations shall be corrosion resistant, cast ferrous and shall have threaded hubs for rigid conduit and neoprene gaskets for their covers. Boxes shall be Appleton Type FS, Crouse-Hinds, or the approved equal. Conduit bodies shall be corrosion resistant, cast malleable iron. Conduit bodies shall have threaded hubs for rigid conduit and neoprene gaskets for their covers. Conduit bodies shall be Appleton Unilets, Crouse-Hinds, or the approved equal. Where recessed, boxes shall have square cut corners.
- 2.4 Deep boxes shall be used in wall covered by wainscot or paneling and in walls or glazed tile, brick, or other masonry which will not be covered with plaster. Through the wall type boxes shall not be used unless specifically called for. All boxes shall be nongangable. Boxes in concrete shall be of a type to allow the placing of conduit

without displacing the reinforcing bars. All lighting fixture outlet boxes shall be equipped with the proper fittings to support and attach a light fixture.

- 2.5 All light, switch, receptacle, fire alarm devices and similar outlets shall be provided with approved boxes, suitable for their function. Back boxes shall be furnished and installed as required for the equipment and/or systems under this contract.
- 2.6 Pull and junction boxes shall be code gauge boxes with screw covers. Boxes shall be rigid under torsional and deflecting forces and shall be provided with angle from framing where required. Boxes shall be 4" square with a blank cover in unfinished areas and with a plaster ring and blank cover in finished areas. Covers for flush mounted oversize boxes shall extend  $\frac{3}{4}$ " past boxes all around. Covers for 4" square boxes shall extend  $\frac{1}{4}$ " past box all around.
- 2.7 All terminal cabinets and junction boxes or equipment back boxes which are required as a part of systems specified in Divisions 27 or 28, or any other low voltage communication systems, shall be furnished and installed by the Division 26 Contractor.
  - 2.7.1 The Division 26 Contractor shall coordinate all box requirements with each system supplier prior to bid to determine special cabinet or back box requirements. The Contractor shall also provide stainless steel blank cover plates for all low voltage systems installed for future equipment.
  - 2.7.2 The Contractor shall provide all plywood backboards indicated on walls or inside equipment enclosures. All backboards shall be a minimum of  $\frac{3}{4}$ " thick fire rated type plywood.
  - 2.7.3 The Contractor shall coordinate exact rough in locations and requirements with each system supplier.
- 2.8 In addition to the above requirements, boxes for data networking wiring and equipment shall comply with the following:
  - 2.8.1 All boxes shall be a minimum of 4-11/16" square x 2-1/8" deep.
  - 2.8.2 Where pull boxes are required on individual conduits 1- $\frac{1}{4}$ " or smaller, provide 4-11/16" square x 2-1/8" deep boxes. Where pull boxes are required on conduits larger than 1- $\frac{1}{4}$ " for straight pull through, provide eight times the conduit trade size for box length. Where pull boxes are required on conduits larger than 1- $\frac{1}{4}$ " for an angle or a U-pull through installation, provide a minimum distance of six times the conduit trade size between the entering and exiting conduit run for each cable.
- 2.9 Recessed boxes installed in fire rated floors/walls and /or smoke walls shall be sealed by Fire stopping material to comply with Division 1 to seal off flame, heat, smoke and fire gases. The Contractor shall submit copies of the manufacturers UL system design details pr

oposed for use on this project. All Fire stopping material shall have an hourly fire-rating equal to or higher than the fire rating of the floor or wall through which the conduit, cables, or cable trays pass.

### **PART 3 – EXECUTION**

- 3.1 Boxes shall be installed where required to pull cable or wire, but in finished areas only by approval of the Architect. Boxes shall be rigidly attached to the structure, independent of any conduit support. Boxes shall have their covers accessible. Covers shall be fastened to boxes with machine screws to ensure continuous contact all around. Covers for surface mounted boxes shall line up evenly with the edges of the boxes.
- 3.2 Outlets are only approximately located on the plans and great care must be used in the actual location of the outlets by consulting the various detailed drawings and specifications. Outlets shall be flush with finished wall or ceiling, boxes installed symmetrically on such trim or fixture. Refer to drawings for location and orientation of all outlet boxes.
- 3.3 Furnish and install all plaster rings as may be required. Plaster rings shall be installed on all boxes where the boxes are recessed. Plaster rings shall be of a depth to reach the finished surface. Where required, extension rings shall be installed so that the plaster ring is flush with the finished surface.
- 3.4 All cabinets and boxes shall be secured by means of toggle bolts on hollow masonry; expansion shields and machine screws or standard precast inserts on concrete or solid masonry; machine screws or bolts on metal surfaces and wood screws on wood construction. All wall and ceiling mounted outlet boxes shall be supported by bar supports extending from the studs or channels on either side of the box. Boxes mounted on drywall or plaster shall be secured to wall studs or adequate internal structure.
- 3.5 Boxes with unused punched-out openings shall have the openings filled with factory-made knockout seals.
- 3.6 Where standby power and normal power are to be located in the same outlet box or 480V in a switch box, install partition barriers to separate the various systems.
- 3.7 All device boxes and junction boxes for fire alarm system shall be painted red and shall be 4-11/16" square by 2-1/8" deep. No exceptions.

END OF SECTION

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**SECTION 26 27 26**  
**SWITCHES AND RECEPTACLES**

**PART 1 – GENERAL**

- 1.1 Furnish and install all wiring devices as shown on drawings and as herein specified. Unless otherwise noted, device and plate numbers shown are Hubbell and shall be considered the minimum standard acceptable. Other acceptable manufacturers are Pass and Seymour, Leviton, General Electric and Bryant.
- 1.2 Submit manufacturers' data on all items.
- 1.3 **Common submittal mistakes which will result in the submittals being rejected:**
- 1.3.1 Not correctly indicating ampacity rating of proposed devices.
- 1.3.2 Not including all items listed in the above itemized description.
- 1.3.3 Including catalog cut sheets which have several items on a page, and not clearly identifying by highlighting, underlining or clouding the items to be reviewed, or crossing out the items which are not applicable.
- 1.3.4 Not including actual manufacturer's catalog information of proposed products.
- 1.3.5 Do not include multiple manufacturers for similar products and do not indicate "or approved equal" statements or "to be determined later" statements. The products being submitted must be the products installed.

**PART 2 – PRODUCTS**

- 2.1 All switches shall be of the quiet mechanical type, Specification Grade, 20 amp, 120/277 volt AC as follows:
- |             | <u>HUBBELL</u> | <u>LEVITON</u> | <u>PASS &amp; SEYMOUR</u> |
|-------------|----------------|----------------|---------------------------|
| Single Pole | CS120          | CS1202         | CS20AC1                   |
| Two Pole    | CS1222         | CS2202         | CSB20AC2                  |
| Three-way   | CS320          | CS3202         | CS20AC3                   |
| Key Switch  | HBL1221L       | 1221-2L        | PS20AC1-L                 |
- 2.2 All switches shall have the "on" and the "off" position indicated on the handle. If switches of higher ampere ratings are required, they shall be of similar type and quality as those shown above. Groups of switches shown at one location shall be installed under a single plate up to a maximum of six where more than six switches are shown coordinate arrangement with the Architect.
- 2.3 Dimmer switches for incandescent lamp loads shall be square-law type, slide control dimmer with OFF position, Lutron or Hubbell "Nova-T" Series NT-600 (0-500 watt load), NT-1000 (501-900 watt load), NT-1500 (901-1500 watt load), or equal (no known equal).

- 2.4 All convenience receptacles and special outlets throughout shall be grounding type. Convenience receptacles shall be side wired, parallel slot, two pole, three wire, 20 amp as follows:

	<u>HUBBELL</u>	<u>LEVITON</u>	<u>PASS &amp; SEYMOUR</u>
Duplex	5352	5362	PS5362
GFCI	GFR5362	7899	2097
Isolated Ground	IG5362	5362IG	IG6300
Tamper Proof		8300SG	TR63H

- 2.5 All safety or tamper proof receptacles shall have no exposed external current carrying metal parts and shall have integral wiring leads suitable for two or three wire installations.
- 2.6 Special receptacles shall be as noted on the drawings.
- 2.7 Weatherproof plates shall be designed to meet CEC Article 410-57, wet location listed with cover "open." Where weatherproof receptacles have been identified to be provided with locking covers, the cover shall be as manufactured by Pass & Seymour #4600-8 or Cole Lighting 310 Series. Rough-in requirements vary between manufacturers. Contractor to field verify requirements prior to installation.
- 2.8 All plates throughout shall be stainless steel. Where wiring devices are installed in concrete block walls, provide oversized 3-1/2" x 5" coverplates.
- 2.9 All devices shall be white unless otherwise noted or a special purpose outlet.
- 2.10 Unless where specifically detailed on the drawings, floor boxes shall be PVC suitable for concrete poured floors of minimum 3-1/2" depth, with a modular design to gang two or three sections together.
- 2.10.1 Carlon #E976 series or approved equal
- 2.10.2 Provide brass cover with brass carpet flange unless otherwise detailed.

### **PART 3 – EXECUTION**

- 3.1 Switches for room lighting shall be located no more than 12" center line from door jamb at plus 48" center line above finished floor or +46" to top of devices where located over casework, reference CBC Figure 11B-5D.
- 3.2 All receptacles shall be mounted at plus 18" to center line above finished floor unless noted or shown otherwise. All receptacles shall be installed with the ground pin up, at the top of the receptacle to comply with IEEE 602-1986.
- 3.3 Furnish and install wall plates for all wiring devices, and outlet boxes, including special outlets, sound, communication, signal, and telephone outlets, etc. as required. All cover plates shall be appropriate for type of device.

END OF SECTION

## SECTION 26 28 16

### DISCONNECTS

#### PART 1 – GENERAL

- 1.1 Furnish and install all disconnect switches as shown on the drawings and as required by the CEC.
- 1.2 Submit manufacturers' data for all disconnects and fuses.
  - 1.2.1 Disconnects
  - 1.2.2 Fuses
- 1.3 **Common submittal mistakes which will result in the submittals being rejected:**
  - 1.3.1 Not including all items listed in the above itemized description.
  - 1.3.2 Including catalog cut sheets which have several items on a page, and not clearly identifying by highlighting, underlining or clouding the items to be reviewed, or crossing out the items which are not applicable.
  - 1.3.3 Not including actual manufacturer's catalog information of proposed products.
  - 1.3.4 Do not include multiple manufacturers for similar products and do not indicate "or approved equal" statements, or "to be determined later" statements. The products being submitted must be the products installed.

#### PART 2 – PRODUCTS

- 2.1 Acceptable manufacturers shall be Square D, Cutler Hammer, Siemens or General Electric.
- 2.2 Equipment manufactured by any other manufacturers not specifically listed in Section 2.1 are not considered equal, or approved for use on this project.
- 2.3 All switches shall be heavy-duty type, externally operated, quick-make, quick-break, rated 600 volts or 240 volts as required, with the number of poles and ampacity as noted. All switches for motors shall be HP rated. Switches shall have NEMA-Type 1 enclosures, except switches located where exposed to outdoor conditions shall have NEMA Type 3R enclosure. Switches generally shall be fused except where noted to be non-fused on the drawings.
- 2.4 Where fuses are indicated, fuses shall be Bussman or Littlefuse (no known equal). Fuses shall be current limiting type with time delay characteristics to suit the equipment served.



### **PART 3 – EXECUTION**

- 3.1 Mount all switches to structure or U-channel support. U-channel supports shall be cleaned and painted to prevent rust.
- 3.2 Switches shall be accessible with proper clearances in front per CEC 110-16.
- 3.3 All lugs shall be torque tested in the presence of the inspector of record.
- 3.4 Arc Flash and Shock Hazard
  - 3.4.1 The contractor is to provide, and submit to the engineer for approval, incident energy level calculations as determined using the methodologies described in NFPA 70E or IEEE standard 1584-2002.
  - 3.4.2 A warning label, as specified in the above standard, shall be placed on each switchboard, panelboard, and safety switch indicating the incident energy levels on the equipment to warn qualified personnel in accordance with NFPA 70E, section 110.16 Labels shall be laminated white micarta with black lettering on each. Letters shall be no less than 3/8" high.
  - 3.4.3 The incident level calculations for each piece of equipment shall be given to the owner and maintained on file by the maintenance department.
  - 3.4.4 The design goal is to minimize the incident energy to which a maintenance employee may be exposed and in no case more than 8 cal./cm<sup>2</sup>.

END OF SECTION

**SECTION 26 33 23**  
**EMERGENCY LIGHTING EQUIPMENT**

**PART 1 – GENERAL**

- 1.1 Install an uninterruptible emergency lighting Inverter System and Emergency Power Control Relays to provide a reliable source of emergency power, designed to operate during periods of utility line deficiencies without any interruption in power supplied to the connected load. The system shall provide and be capable of powering any combination of electronic, power factor corrected, fluorescent, LED, incandescent or HID lighting. Other connected loads shall include but not be limited to building management systems, motors, security systems and other critical voltage or frequency-sensitive electronic loads. The system shall operate from 0-100% loading and be rated to deliver full KVA rated output at unity power factor for a minimum of 90 minutes. Upon return to normal AC utility line power, the system shall recharge the batteries without any interruption of power supplied to the load.
- 1.1 Submit manufacturer's data for each type including the following:
  - 1.1.1 catalog data
  - 1.1.2 warranty documentation.
- 1.2 **Common submittal mistakes which will result in the submittal being rejected:**
  - 1.2.1 Not including information for each type.
  - 1.2.2 Not including all items listed in the above itemized description.
  - 1.2.3 Including catalog cut sheets which have several items on a page, and not clearly identifying by highlighting, underlining or clouding the items to be reviewed, or crossing out the items which are not applicable.
  - 1.2.4 Not including actual manufacturer's catalog information of proposed products.
  - 1.2.5 Do not include multiple manufacturers for similar products and do not indicate "or approved equal" statements, or "to be determined later" statements. The products being submitted must be the products installed.

**PART 2 - PRODUCTS**

- 2.1 The Central Inverter System specified herein shall be:
  - 2.1.1 Myers Power Products Illuminator "CIII" series.
  - 2.1.2 **Alternate manufacturers shall comply with these specifications and shall not exceed the physical dimensions and weights indicated on the drawing schedule. Maximum size shall be 44" wide x 72" high x 31" high 1460 lbs.**

**Electronics Module and (2) 48" wide x 72" high x 31" high 1400 lbs. battery cabinets.**

- 2.1.3 All substitutions or alternates to those indicated shall be submitted for approval (7) days prior to the project bid date. Approvals when accepted will be issued in the form of an addendum. No consideration for substitutions will be provided after the award of the contract.**
- 2.1.4 The substitution request must include a statement indicating the difference in price of both the specified and alternate product, both contractor and list price. The substitution request must include a comparison of the features and capabilities between the specified and proposed systems, software and all components and warranty comparison.**
- 2.1.5 Equipment as manufactured by Digital Signal Power Manufacturer (DSPM) has been reviewed and is not an approved alternate for this project.**
- 2.2 System operation shall be fully automatic. The charging system will maintain the batteries at full capacity at all times. On-board microprocessors will continuously monitor charger settings and the system's overall readiness. Diagnostic circuitry shall include a software-controlled charger, continuous monitoring of operating parameters, and programmable system testing capabilities. Individual alarms and system logs shall be provided. All alarms and logs shall be automatically recorded and readily displayed via the User Interface Display (UID). The system shall also include one RS232 serial port for remote communications.
- 2.3 Automatic overload and short circuit protection in normal and emergency mode shall consist of 150% momentary surge capability, 120% overload for 5 minutes, and 110% overload for 10 minutes. Protection shall also include a low battery voltage disconnect, AC input circuit breaker, a DC input breaker or Fuse, and an AC output fuse. A digitally generated sinusoidal output waveform (PWM) with less than 5% total harmonic distortion at rated linear load shall be provided to the connected load.
- 2.4 Available input voltage shall be as indicated on the drawings, with a frequency of 60Hz. The AIC rating shall be a minimum of 42,000 RMS symmetrical amperes.
- 2.5 Available output voltage shall be as indicated on the drawings, with a frequency of 60Hz + 0.05Hz.
- 2.6 The user interface display (UID) shall include an array of LED's, a 2-line, 40-character LCD display, and a keypad for system input. The UID shall be menu-driven and display individual system parameters using a numbered code (Hot Key). The LED array shall indicate, by color code, the following status modes:
  - 2.6.1 AC output presence (green)
  - 2.6.2 System ready (green)

- 2.6.3 Battery charging (red)
- 2.6.4 Inverter “ON” (amber)
- 2.6.5 Alarm functions (red)
- 2.7 To ensure only authorized personnel have system access, a multi-level password shall be required to change all functions and operating parameters. A continuous scrolling display of the following metered functions shall be provided:
  - 2.7.1 AC input voltage, AC output voltage, AC output amps
  - 2.7.2 Battery voltage, Battery charging amps, Battery discharge amps
  - 2.7.3 Output volt-amps (VA), Output power (watts)
  - 2.7.4 Ambient temperature
  - 2.7.5 Last inverter run time, Total inverter run time, System run time, Date Time.
- 2.8 Audible and visual alarms shall be provided, with automatic logging of the twenty-five most recent events. An alarm acknowledgment feature shall be provided, which will allow the user to silence only the current audible alarm without silencing other alarms or clearing the alarm condition until the fault has been addressed. An alarm shall be sounded if any of the following operating conditions occur:
  - 2.8.1 Low battery voltage, Near low battery voltage, High battery voltage
  - 2.8.2 High AC input voltage, High AC output voltage, Low AC output voltage Output, overload (VA), Low remaining run time
  - 2.8.3 High ambient temperature
  - 2.8.4 Tripped circuit breaker
- 2.9 Manual and automatic test modes shall be provided.
  - 2.9.1 Manual user-initiated system test at any time.
  - 2.9.2 Automatic monthly and annual self-diagnostic tests.
  - 2.9.3 Automatic recording of the last twenty events in a Test Results log.
- 2.10 A three-step float charger shall be software controlled and temperatures compensated and charge the batteries continuously while in normal “standby” condition (non-emergency mode). Following a power failure, the constant current charger mode shall be initiated until battery voltage reaches the equalize stage. Equalize stage shall be maintained until the charging current drops to .5 amps, or 0.3% of the battery amp/hour rating. Battery voltage shall then enter the float stage.

- 2.11 Batteries shall be designed to provide a minimum 1.5 hours rated output voltage to the connected load in emergency mode without dropping below 87.5% of nominal battery voltage.
  - 2.11.1 The batteries shall be encased in an enclosure that permits easy maintenance without requiring removal.
  - 2.11.2 Sealed Lead Calcium: Maintenance Free Construction requires no addition of water over its useful. Life expectancy is **20-years, 1 year full 19 years prorated** at 77F (25C) ambient temperature.
- 2.12 The following optional factory-installed equipment shall be provided:
  - 2.12.1 Normally-On Output Circuit Breaker Options:
    - 2.12.1.1 A maximum of fourteen monitored positions are available. Single pole 120V and 277V breakers occupy one position each, while double pole 240V breakers occupy two positions. Reference drawings for required number of output breakers required.
  - 2.12.2 Provide Universal cabinet locks for all electronic and battery cabinets.
  - 2.12.3 Provide using the system's IP interface, an operating status reports is transmitted over a customer-supplied dedicated data IP connection to up to six locations. Phone numbers can be programmed locally using the unit keypad or computer terminal, or remotely via a modem. The automatically receives a unit status report following monthly and annual tests, or when an alarm condition is detected. Status reports include readings on key operating parameters, as well as complete alarm and inverter log printouts, in uncoded, user-friendly descriptions.
  - 2.12.4 Provide a factory-installed, internally mounted two-position "make before break" switch. Compatible with all input/output combinations and any combination or quantity of output circuit breakers. Allows connecting the utility power supply to the load without placing the inverter in emergency mode.
- 2.13 Maintenance, Service and Enhanced Warranty Plans. The following shall be provided to assure initial and long-term viability of the system through additional maintenance and service plans and/or through enhancements to the standard two-year electronics limited warranty.
  - 2.13.1 Factory Start-Up shall be supplied as a service to the installing contractor. The Factory Start-Up process shall verify correct installation and operation of the inverter system. Trained, factory authorized technicians shall administer an on-site, point-by-point check of the system to include:
    - 2.13.1.1 Internal electrical connections

- 2.13.1.2 AC input and Battery connections
  - 2.13.1.3 System operating voltages
  - 2.13.1.4 System operating parameters
  - 2.13.1.5 Initial system “power-up
  - 2.13.1.6 Battery discharge test
  - 2.13.1.7 Correction of existing deficiencies
  - 2.13.1.8 Final testing, calibration and recording
  - 2.13.1.9 Training of available operating personnel
- 2.13.2 A Monitoring Program shall provide for the continuous monitoring of the inverter system by the Factory Technical Support Group. All monthly and annual system tests shall be reviewed and analyzed for early warning signs of system malfunction. Any failures shall be automatically relayed to the service department where corrective action can be recommended to the owner/operator. For activation, a user IP interface must be available.
- 2.13.3 Provide a **minimum 2-year** factory start up and training program.
- 2.13.4 In addition to the factory start up and training program. Provide a Preventive Maintenance Plan (PMP) - The Preventive Maintenance Plan shall provide system coverage for **MINIMUM OF 5 YEARS Bi-Annual**. PMP warranty service excludes the batteries, which are covered under a separate warranty plan.
- 2.14 The system shall be contained in a code gauge, steel NEMA 1 enclosure, finished in a scratch resistant, powder coat finish, with a key lock, conduit knockouts at the top and sides, and front opening doors. Enclosures shall be designed to allow stacking to minimize the overall system’s footprint. All components shall be front accessible and incorporate a modular design and a quick disconnect means to facilitate servicing.
- 2.15 The Module has a full 5-year replacement warranty.
- 2.16 Provide (1) 80amp 3 pole normally on output circuit breaker.
- 2.17 Provide Category III/ Site Class D seismic bracing.
- 2.18 Provide battery temperature monitor.

### **PART 3 - EXECUTION**

- 3.1 Input and output conductors shall be enclosed in separate conduits. All load side wiring shall be sized as required for voltage drop conditions to assure proper operation of connected loads.
- 3.2 All free-standing electrical equipment or enclosures shall be anchored to the floor and braced at the top of the equipment to the structure. Where details have not been provided on the drawings, anchorage shall comply with CBC Section 1632A and Table 16-A0. The Contractor shall submit drawings signed by the Contractor's registered structural Engineer indicating method of compliance prior installation.
- 3.3 The system shall allow connection of both "normally on" and "normally off" (optional) loads. Connected loads shall receive utility power during normal operation, and 'no break" system inverter power during utility interruptions.
- 3.4 In emergency mode, the inverter system shall supply true digitally generated AC sinusoidal output. Refer to plans for type and location of loads served by the system.
- 3.5 Provide (1) on site owners training by factory representative minimum 4 hours.

END OF SECTION

## **SECTION 26 90 90**

### **ELECTRICAL CLOSEOUT**

#### **PART 1 – GENERAL**

- 1.1 Upon completion of the electrical work, the entire installation shall be tested by the Contractor, and demonstrated to be operating satisfactorily to the Architect, Engineer, Inspector and Owner.
- 1.2 All testing and corrections shall be made prior to demonstration of operation to the Architect, Engineer, Inspector and Owner.
- 1.3 In addition to the demonstration of operation, the Contractor is also required to review the content and quality of instructions provided on items demonstrated with the Architect, Engineer, Inspector and Owner.

#### **PART 2 – EXECUTION**

- 2.1 Wiring shall be tested for continuity, short circuits and/or accidental grounds. All systems shall be entirely free from “grounds,” “short circuits,” and any or all defects.
- 2.2 Motors shall be operating in proper rotations, and control devices functioning properly. Check all motor controllers to determine that properly sized overload devices are installed, and all other electrical equipment for proper operation.
- 2.3 Tests and adjustments shall be made prior to acceptance of the electrical installation by the Architect, and a certificate of inspection and acceptance of the electrical installation by local inspection authorities shall be provided.
- 2.4 All equipment or wiring provided which tests prove to be defective or operating improperly shall be corrected or replaced promptly, at no additional cost to the Owner.
- 2.5 Test all motor and feeder circuits with a “megger” tester to determine that insulation values conform to Section 110-20, California Electrical Code (CED). Test reports must be submitted and approved by the engineer before final acceptance.
- 2.6 Test all grounding electrode connections to assure a resistance of no more than 10 ohms is achieved. Augment grounding until the ohmic value stated above is achieved. Provide certified test results to the Architect, Engineer and Inspector.

END OF SECTION



**SECTION 27 01 00**  
**COMMUNICATIONS GENERAL PROVISIONS**

**PART 1 - SUMMARY**

- 1.1 This Division of the specifications outlines the provisions of the contract work to be performed as a sub contract under the Division 26 scope of work. Reference the Division 26 Electrical General Provisions for scope of work and general requirements.
- 1.2 In addition, work in this Division is governed by the provisions of the bidding requirements, contract forms, general conditions and all sections under Division 1 requirements.

END OF SECTION

**SECTION 27 10 00**  
**VOICE / DATA/ IP INFRASTRUCTURE**

**PART 1 – GENERAL**

- 1.1 Include all labor, equipment and materials necessary for providing a complete networking infrastructure system as described herein and/or as indicated on the drawings.
- 1.2 Related specification sections:
  - 1.2.1 Section 26 01 00 – General Provisions
  - 1.2.2 Section 26 05 19 – Conductors
  - 1.2.3 Section 26 05 33 – Conduit and Fittings
  - 1.2.4 Section 26 05 34 – Outlet and Junction Boxes
- 1.3 Approved minimum Product and Contractor Extended Warranty Certifications;
  - 1.3.1 All components shall be manufactured by one of approved manufacturers, the installing Contractor must have the accompanying certification from the product manufacturer(s) for installation of an “Extended Warranted System” as required by each manufacturer and as indicated in these specifications.
    - 1.3.1.1 Specified system warranties are to be established between the component and cable manufacturers and the District, warranties between the cable manufacturer only or installing Contractor and the District are not considered equal.
    - 1.3.1.2 Warranty shall be a full “Performance Warranty” installed by a “Certified Contractor” as specified by one of the approved manufacturers. A “Component Warranty” will not be considered equal. All components, labor, and “Performance Criteria” shall be warranted by one of the approved manufacturers.
- 1.4 Acceptable manufacturers are:
  - 1.4.1 **LEVITON / BERK-TEK**
    - 1.4.1.1 Installing Contractor must be LEVITON Network Solutions Premier certified to install this system.
    - 1.4.1.2 Warranty provision and training must be for the Leviton/Berk-Tek – Limited Lifetime Premium Performance Warranty program.
  - 1.4.2 **COMMSCOPE**

1.4.2.1 Commscope's Training and Warranty programs encompass the brand names known as AMP Netconnect, Systimax, ADC/Krone and Uniprise.

1.4.2.2 Installing Contractor must be PartnerPro certified to install any of the systems under the Commscope Family of brand names. Alternate certifications that apply as well are AMP ND&I Premier Certification for products installed with the AMP Netconnect brand name. ADC Krone TrueNet Premium for products installed with the ADC Krone brand name and Systimax Premier Certification for products installed with the Systimax brand name.

1.4.2.3 Warranty provision and training must be for the Commscope (AMP Netconnect, Uniprise and Systimax) – 25-Year Premium Performance Warranty program.

**1.4.3 ORTRONICS (Legrand) /Superior Essex**

1.4.3.1 Installing Contractor must be CIP-ESP or IP certified to install this system.

1.4.3.2 Warranty provision and training must be for the nCompass – Lifetime Premium Performance program.

**1.4.4 Panduit/General Cable**

1.4.4.1 Installing Contractor must be PanGen certified to install this system.

1.4.4.2 Warranty provision and training must be for the PanGen Certification Plus – 25-Year Siemon Premium Performance program.

**1.4.5 Siemon**

1.4.5.1 Installing Contractor must be Siemon Certified Installers (CI) certified to install this system.

1.4.5.2 Warranty provision and training must be for the Premium 6 Certification – 20-Year Premium Performance program.

1.4.6 Warranty shall be to the District, for the period as defined by the Network Infrastructure System selected for installation, after District acceptance and sign-off of the completed system. The Contractor must provide documentation from one of the approved manufacturers, as indicated in Section 1.3, indicating their qualifications for installation of this system in compliance with the manufacturer/s warranty period requirements as warranted Contractor.

- 1.4.7 Equipment qualifications: It is the intent of these specifications that each bidder provides all hardware, components and installation services that are necessary to ensure a fully operational wiring system including warranties, as shown in the EIA/TIA Category-6 guidelines.
- 1.4.8 All components, parts, infrastructure, patch cables, termination panels and cables must be classified by the manufacturer or manufacturers as a part of the "Extended Warranty" program. Contractor may not mix in components from other certified programs or materials that are not considered part of the "Lifetime" warranty.
- 1.4.9 Systems or components as manufactured by any other manufacturer which, are not specifically listed in 1.3 are **not** approved for use on this project.
- 1.5 **Installing Contractor qualifications:** Firms and their personnel must be regularly engaged in the installation of data networking cabling and equipment for systems of similar type and scope. The Contractor must have a full-service office able to respond to emergency callouts during the warranty period. The Contractor must also provide complete installation of all wiring and devices or equipment. **Subcontractors with Electrical Contractors or other warranted or non-warranted Contractors for supervised installation of any part of this system are not approved.**
  - 1.5.1 The successful Contractor shall be a California licensed C7 or C10 Premise Wiring Contractor as defined in this specification.
  - 1.5.2 All work shall be performed under the supervision of a company accredited and trained by the Manufacturer of the components and cable and such accreditation must be presented with the bid submittal. All personnel performing work on this project must have successfully completed the manufacturer's training courses to completely comply with the extended warranty requirements prior to performance of any work on this project. Accreditation will consist of individual employee certifications issued by the manufacturer or manufacturers.
  - 1.5.3 All personnel engaged in the testing of premises fiber optic and copper UTP cable systems must have successfully completed the test equipment manufacturer's training courses. Certification of such training must be presented with the bid submittal. Cut sheets of the test equipment to be utilized shall be provided with Phase I project material submittals.
  - 1.5.4 This project shall employ Category-6 and Augmented Category-6 cabling. The Contractor shall install the related components in relation to the performance requirements for the type of cable installed.

- 1.5.5 If Contractor routes cable and/or associated pathways in another route than indicated on the drawings, they shall maintain all maximum cable installation distances as required by the manufacturer's distance limitations.
- 1.6 In order to ensure project cohesion, a single point of contact is required to provide a "TURNKEY" solution. The work covered under this section of the specification consists of furnishing all: labor, cabling, equipment, supplies, materials, and training.
- 1.7 The drawings indicate a schematic routing of cables above-ceiling cable prior to bid. Where cables penetrate through walls a conduit sleeve shall be provided. Where cables pass through fire rated walls, the conduit sleeve shall be sealed to maintain the rating of wall assembly.
- 1.8 Unless otherwise noted in the project drawings or these specifications, the Division 26 Contractor shall provide the installation of all conduits, outlet and junction boxes, trenching and pull box installation.
- 1.9 General Submittal Requirements
- 1.9.1 **Phase I Submittal** shall be made in electronic format within (20) working days after the award of the contract by the District. This submittal shall include the following:
- 1.9.1.1 Complete Bill of Materials in Excel Spreadsheet format with bills of quantities, including all materials, components, devices, and equipment required for the work. The bills of quantities shall be tabulated respective of each and every system as specified, and shall contain the following information for each Section listed:
- 1.9.1.2 Description and quantity of each product.
- 1.9.1.3 Manufacturer's Name and Model Number.
- 1.9.1.4 Manufacturer's Specification Sheet or Cut Sheet.
- 1.9.1.5 Specification Item Number reference for each required product or if not shown in the specification, Drawing Detail Number being referenced (i.e. Spec 2710000 Item 2.1 or DWG E4.15/#1).
- 1.9.1.6 Include with submittals all warranty information and a description of support and maintenance services to be provided. Also include all licenses and maintenance agreements required for continued operation of the equipment.
- 1.9.2 Common submittal mistakes which will result in submittals being rejected:

- 1.9.2.1 Not including the qualifications of the installing Contractor Company and Contractor's Staff.
- 1.9.2.2 Not including all items listed in the above itemized description.
- 1.9.2.3 Including catalog cut sheets which have several items on a page, and not clearly identifying by highlights, underlining or clouding the items to be reviewed (provided for the project) or crossing out the items which are not applicable.
- 1.9.2.4 Not including actual manufacturer's cut sheets or catalog information of proposed products.
- 1.9.2.5 Do not include multiple manufacturers for similar products and do not indicate "or approved equal" statements, or "to be determined later" statements. The products being submitted must be the products installed.

## **PART 2 – PRODUCTS**

### **IDF Location Requirements**

- 2.1 The Intermediate Distribution Frame (IDF) Room is existing, The Contractor shall include the following items at this location:

### **Copper Patch Cords**

- 2.2 Copper patch cords shall be furnished and installed by the Contractor.
- 2.3 Provide Category-6 (Patch Panel End) patch cords with pre-molded boot, provide quantity equal to:
  - 2.3.1 Provide 100% of the total Category-6 cable ports provided on the patch panels.
  - 2.3.2 All patch cords to be installed by Contractor. Provide 100% of total copper patch cords required to be (4) feet in length.
- 2.4 Provide Category-6 (Workstation End) patch cords with pre-molded boot provide quantity equal to:
  - 2.4.1 Provide 100% of the total Category-6 cable ports provided on the patch panels.
  - 2.4.2 All patch cords to be installed by Contractor. Provide 100% of total copper patch cords required to be (10) feet in length, unless otherwise noted.

- 2.4.3 Patch cords installed at WAP (Wireless Access Point) locations IP Camera and IP Intercom locations shall be (2) feet in length.
- 2.5 Requirements for all copper patch cords furnished:
  - 2.5.1 Color of patch cords shall be determined by the color code shown in detail drawings.
  - 2.5.2 Patch cords shall as manufactured by Leviton, Commscope, Panduit, Ortronics or Siemon based on the network infrastructure system furnished by the Contractor.
  - 2.5.3 Patch cords furnished must be in compliance with the manufacturer's "Channel" warranty requirements. Patch cords not warranted through the selected manufacturer Channel warranty program will not be approved for use with the network infrastructure.
  - 2.5.4 Provide all other items as detailed on the drawings.

#### **Category-6 Station Cable**

- 2.6 Contractor shall provide Category-6 UTP cable to each Data, Voice, IP Page, Audio-Visual Data Connection, IP Camera or any other location as indicated on the drawings and specifications. Provide quantity of cables as indicated on the drawings at each location.
- 2.7 Provide one Category-6, 4-pair unshielded twisted pair (UTP) cable from the nearest MDF or IDF location to each RJ45 data outlet port indicated on the drawings. Dual port outlets will require two such cables. Four port outlets will require four cables. Refer to the drawing details for jacket color requirements for each type of connection. Color of cable jacket for each type of connection shall be determined by the drawing details. Confirm color of cable jacket prior to ordering with the District IT Director. Contractor shall be responsible for providing the correct jacket color per the drawings per District Standards.
- 2.8 Unless otherwise shown in drawing details, the color of the Category 6 UTP cables shall be blue, shall be copper wire, individually insulated and color coded.
- 2.9 The cable shall be UL or ETL rated and UL verified in compliance Category-6 EIA/TIA standards. Approved cables for Network Infrastructure System:
 

Commscope (Systimax)	–	GigaSpeed XL – 1071E Series
Commscope (AMP Netscope)	–	TE620R
Commscope (Uniprise/Krone)	–	UltraMedia 75N4

- |  |                |   |                               |
|--|----------------|---|-------------------------------|
|  | Superior Essex | – | NextGain Cat 6eX - #54-246-xA |
|  | Berk-Tek       | – | LANMARK 2000 – 10167477       |
|  | General Cable  | – | GigaSpeed 6500 71339XX–       |
|  | Siemon         | – | 9C6R4-E4-XX-RBA               |
- 2.10 On projects requiring plenum rated cabling, provide the plenum jacketed version of the type of cable shown in the specifications. Refer to the contract drawing for areas requiring plenum rated cabling.
- 2.11 Where data cables are indicated to run underground, Contractor shall use a Category-6 OSP-rated cable. Approved cables for Network Infrastructure System:
- 2.12 Manufacturer names and part numbers are shown as a point of reference and do not specifically designate required packaging or color for the cable. Contractor shall verify colors and packaging options shall be determined by Contractor preferences.
- 2.13 Where data cables are indicated to run underground, Contractor shall use an Augmented Category-6 OSP-rated cable. Approved cables for Network Infrastructure System:
- |  |           |   |                        |
|--|-----------|---|------------------------|
|  | Commscope | – | Category-6A OSP –1592A |
|--|-----------|---|------------------------|
- 2.14 Superior Essex, General Cable and Siemon do not offer an OSP Rated Augmented Cat-6 product. Contractor shall provide the Commscope/Systimax OSP shielded cable for a Siemon or Levitor Network infrastructure solution. Contractor shall provide shielded termination products for all drop locations and terminations panels and shall ground all products per manufacturer’s instructions and warranty requirements.
- 2.15 Commscope Brand Names (Systimax, AMP NetConnect, Uniprise and Krone) – Cabling installed for Outside Plant applications is available in shielded type construction only for these structured cabling systems. Contractor shall provide shielded termination products for all drop locations and termination panels and shall ground all products per manufacturer’s instructions and warranty requirements.

### Category-6 Outlets

- 2.16 Unshielded twisted pair Category-6 outlets shall be an RJ45 Enhanced performance type 8-position / 8 conductor modular jacks, and shall comply with Category-6 performance requirements. Provide single port, dual port, four port or quantity as indicated on the floor plans at each outlet location. All outlets shall be wired in an EIA/TIA 568B configuration.



- 2.17 Provide Category-6 inserts, wired for EIA 568B. Provide installation kits for all locations furnished with Category-6 UTP cabling.
- 2.18 Refer to the detail drawings for color of the Category-6 outlets required. Contractor shall be responsible for confirming all color requirements prior to ordering.
- 2.19 Provide the following Category-6 UTP data connector per Network infrastructure warranty requirements:
  - 2.19.1 Leviton eXtreme Cat6+ Quick Port Series 61110-R
  - 2.19.2 Systimax (Commscope) GigaSpeed XL Series MGS400
  - 2.19.3 AMP NetConnect (Commscope) SL 110 Series 1-1375055
  - 2.19.4 Uniprise (Commscope) UNJ 600 Series UNJ600
  - 2.19.5 Ortronics Clarity 6 Tracjack Series OR-TJ600
  - 2.19.6 Panduit MiniCom TX6 Plus Series CJ688TG
  - 2.19.7 Siemon MAX-6 Series MX6-F
- 2.20 For outlet locations cabled with OSP-rated Augmented Category-6 wire, , wired for EIA 568B. Provide shielded installation kits for all locations furnished with OSP-rated Augmented Category-6 UTP cabling. Cable connections must be grounded at the patch panel location.
- 2.21 Refer to the detail drawings for color of the Category-6 outlets required. Contractor shall be responsible for confirming all color requirements prior to ordering.

#### **Outlet Faceplates**

- 2.22 Provide a two-port faceplate for all one and two part outle locations. Provide blanks for all unused openings.
- 2.23 All faceplates and surface mount outlet boxes shall be furnished with label windows. All labeling shall be installed within the label window.
- 2.24 Confirm color of all faceplates prior to ordering. All data outlet faceplates shall have a unique sequential identification number applied to faceplate. Hand written labels are not permitted. All color schemes shall be approved by the customer prior to installation.
- 2.25 Colored inserts are required for this project. Refer to the detail drawings for the exact color scheme to be provided. Inserts submitted that do not follow the color and

identification requirements will be rejected. Inserts installed that do not follow the color coding as shown in the detail drawings will be replaced at the Contractor's expense.

2.26 All labels will be installed under label window. Labels adhered to the surface of the faceplate will not be accepted. Contractor must provide clear laminating type of cover material over the surface mounted labels where used.

2.27 Reference the drawings for special outlet configurations or plate requirements.

### **PART 3 – INSTALLATION**

3.1 Pull strings shall be provided with all cable runs including but not limited to: conduit stub ups, conduit sleeves, cable trays, open wiring routes, innerduct and point-to-point conduits. Pull strings shall be free from cable bundles in open wiring routes. Pull strings shall not be substituted for pull ropes for the exterior site conduits.

3.2 Velcro cable management straps are required on all Category-6 cable bundles, the last 20 feet or upon entry into equipment closet, a maximum of 12" apart. Cable bundles shall also be routed through cable managements or "D" rings in the equipment closet.

3.3 Data Contractor shall supply protective bushings or slide on rings at the ends of all exposed conduits used for data system cabling. This is to include all conduits installed for any future data cabling requirements. Contractor shall submit planned protection bushings prior to installation of cabling for approval.

3.4 Velcro cable management straps are required on the cabling in the rear section of the vertical managers in the equipment racks. Straps shall be a maximum of 12" apart. At a minimum, Velcro straps shall be provided at each point the cables are routed to the patch panels from the main bundle.

3.5 Labeling

3.5.1 Each cable run shall be permanently labeled at each end with a unique sequential number which corresponds to a similar number provided for each data outlet and patch panel point. A printed label shall be placed at each of the following locations:

3.5.1.1 On the cable at the rear of the patch panel or termination block. Requires the use of a self-laminating wrap around label. Brady Label self-laminating 1.2" by 1.5" wrap around label Part #29689 (NO ACCEPTABLE EQUAL).

3.5.1.2 On each cable in the j-box behind the faceplate location. Requires the use of a self-laminating wrap around label. Brady Label self-laminating 1.2" by 1.5" wrap around label Part #29689 (NO ACCEPTABLE EQUAL).

- 3.5.1.3 On the cable at the terminal strip prior to termination point. Requires the use of a self-laminating wrap around label. Brady Label self-laminating 1.2" by 1.5" wrap around label Part #29689 (NO ACCEPTABLE EQUAL).
- 3.5.1.4 On the face of the patch panel, provide a ¾" by ¾" label with a letter or number identifying the patch panel designation. For special purpose data connections such as WAP, Audio-Visual, IP Page and IP Camera ports, the label shall be designated with colored label icon or marker.
- 3.5.1.5 On the face of the faceplate in the label holder window. The label shall be clearly defined with a minimum #10 font size.
- 3.5.2 Handwritten labels are not permitted. Where cable ID includes room number identification, the Contractor shall obtain written verification of final room numbers prior to beginning labeling (numbers on plans do not always match final room numbers). Cable pulling cross reference lists will not be accepted with final documentation.
- 3.5.3 Each patch panel port shall be identified with a unique sequential labeling scheme. Port identification labeling pattern shall be consistent throughout the project.
- 3.5.4 All faceplates shall be identified with permanent printed labels. Labels must not be subject to removal by incidental contact. Contractor shall be responsible for replacing defective labeling for a period of one year from date of final sign-off of project.
- 3.5.5 Refer to detail drawings for additional labeling requirements.
- 3.6 Where open wiring cables are run through the ceiling space (only permitted where specifically noted on the drawings), the wire shall be bundled together and supported above the ceiling.
- 3.7 All cables must be fastened to the building structure via "j-hooks" or an approved Category 6 suspension system, and not directly in contact with ceiling system. For "j-hooks" maximum fill capacity is as follows: 1-5/16" hooks – 35 cables; 2" hooks – 60 cables; 4" hooks – 120 cables. For quantities beyond 120 cables, use a sling support system such as "Erico Cable Cat" or equal. Maximum fill capacity 200 cables. D-rings, "Caddy #WMX cable hangar", "Caddy Bridle Rings", drive rings or any other type of wire ring support is not allowed.
- 3.8 Where cables pass through a fire-resistant portion of the structure, conduit sleeves shall be provided to maintain the rating of wall penetrated. Sealing of all penetrations with an approved fire barrier is required. Conduits and sleeves must remain accessible for future use. Permanent sealants may not be used to seal sleeves and conduits.

- 3.8.1 The 27 10 00 Contractor shall be responsible for fire-stopping all unused conduit sleeves in the ceiling or through rated walls. The Electrical Contractor shall be responsible for fire-stopping around the conduit or sleeve, unless the sleeve is installed by the 27 10 00 Contractor, in which case, the 27 10 00 Contractor shall be responsible for all fire-stopping requirements.
- 3.8.2 Expanding foam is not an acceptable sealant for any conduit opening. Contractor shall be responsible for complete replacement of the conduit and cabling in any conduit filled with expanding foam used as a sealant.
- 3.9 Fiber optic feed cables connecting to equipment racks from the MDF Room or from an adjacent IDF location, shall be installed with not less than a 20-foot service loop between the rack and mounted on the backboard. See drawings for fiber optic service loop requirements.
- 3.10 Provide 6 inches of cable slack at computer data system outlets inside conduit box.
- 3.11 In an accessible ceiling area, provide a 10-foot (stored in a Figure-8 configuration) service loop above the all data/voice outlet locations. Service loop must be securely tied up off of ceiling tiles or ceiling surface and supported at two opposite points. Neatly coil cable without exceeding minimum bend radius limitations. Do not provide length in excess of 15 feet, as it may cause improper test results and errors.
- 3.12 The minimum bending radius for all cables and the maximum pulling tension shall not exceed manufacturer's recommendations.
- 3.13 Cables installed in manholes and pullboxes shall be supported with Velcro ties or loosely fitted UV rated tie wraps, on wall mounted cable support racks. The cables shall be clearly labeled in the manhole or pullbox.
- 3.14 Provide a full 360-degree loop of slack cable around manhole and pullbox interiors. Cables entering handholes from the bottom, shall not be allowed to touch the bottom of the cover when closed and shall not be pinched or crushed in any way.
- 3.15 Cable pulling shall use a split mesh grip over the cable jacket. Connection directly to optical fibers and copper wire conductors shall not occur.
- 3.16 When pulled through conduits, cable pulling lubricants shall be continuously applied to all cables and be specifically approved by the manufacturer.
- 3.17 Where cables are pulled through or pulled from a center run, pull without splices or terminations, lead out the cables at all manholes, pullboxes, and conduits, taking care to feed them in again by hand for the next run.
- 3.18 For each cable pull where a cable direction change is required, flexible feed-in tubes, pullout devices, multi-segmented sheaves, etc., shall be used to ensure proper cable

pulling tension and side wall pressures. Cables shall not be pulled directly around a short right-angle bend. Any device or surface the cable comes in contact with when under pull-in tension shall have a minimum radius 50% greater than the final specified minimum installed cable bending radius. The maximum possible size radius sheaves and feed-in tubes, usable in the available working space shall be provided in all situations, to ensure the minimum possible cable sidewall pulling pressure. Do not use devices with multi-segment "roller" type sheaves.

- 3.19 Cable lengths over 250 feet shall be machine pulled, not hand pulled. Cables shall be pulled in a continuous, smooth operation without jerking or stop-start motion after initiation of pull. Maximum cable pulling speed shall be less than 50 feet per minute. Minimum pulling speed shall be greater than 15 feet per minute.
- 3.20 A pull string shall be placed with all UTP and paging station cables at the time of installation. Conduit runs and surface raceway for station cabling shall be furnished with a minimum 2-Ply spiral wrap style, pull string rated for 240 ft/lbs. pulling strength, such as manufactured by Greelee #431 or approved equal. Includes all conduit stubs and cables routed through open ceiling and cable trays. Pull strings shall be tied off in the junction box and in the ceiling. Provision for the installation of the pulls string shall apply to all empty and spare conduits as well. Single ply type pull string will not be accepted as a substitute for the 2-ply pull string.
- 3.21 A measuring pull tape shall be placed with all feed cables at the time of installation. Indoor riser and outdoor conduit runs between buildings designated for feed cabling, in excess of 150 feet shall be provided with a minimum ½" polyaramid style, measuring true tape pull string annotated with footage increments rated for 2500 ft/lbs. pulling strength, such as manufactured by Greenlee #39245 or approved equal. Conduit runs less than 150 feet shall be furnished with a ¼" polyaramid style, measuring true tape pull string annotated with footage increments rated for 1250 ft/lbs. pulling strength, such as manufactured by Greenlee #39243 or approved equal. Provision for the installation of the measuring pull tape shall apply to all empty and spare conduits as well. Standard twine style pull strings and standard nylon or polypropylene style pull ropes will not be accepted as a substitute for the polyaramid measuring tape pull string.
- 3.22 When pulling cable through conduit, cables shall be pulled straight into or out of the raceway without bends at the raceway entrance or exit. Pull in cable from the end having the sharpest bend (i.e., bend shall be closest to the reel). Keep pulling tension to minimum by liberal use of lubricant, hand turning of reel, and slack feeding of cable into duct entrance. Employ not less than one man at reel and one at manhole or pullbox during this operation. Cables shall be pulled directly from cable reels.
- 3.23 All cables shall be new and extend continuous from each MDF or IDF backboard or rack to all outlet locations.

- 3.24 Where cables are not installed in a conduit or other raceway system, they shall not be routed parallel with other line voltage equipment or wiring (120 volt and above) with 36" or within 12" of line voltage equipment or wiring where crossing.
- 3.25 Where OSP-Rated UTP cables or OSP-Rated fiber optic cables are routed exposed through ceiling for more than 50'-0", Contractor shall install the cable in innerduct or EMT conduit in the ceiling. Innerduct installed in the accessible ceiling space shall be a minimum of riser rated and minimum of 1" in diameter. Innerduct shall be supported minimum of every 3-feet to the structural members.

## TESTING

- 3.26 All Category-6 cables shall be point to point (link) tested after installation/termination and verified to operate at minimum 1000Mbps. Performance of installed cables shall satisfy all current addendums to the EIA/TIA 568A standard for Category-6 wiring. In addition, testing shall satisfy all proposed amendments to the existing ISO/IEC requirements. The wiring shall support all specified communication protocols. Testing shall support the Category-6 requirements by the EIA/TIA.
- 3.27 Upon completion of testing cable links for both copper and fiber optic cabling, the Contractor shall supply a copy of the original database files downloaded from the tester in original format on a USB Flash Drive. Contractor shall provide with the testing database files, an original copy of the tester's manufacturer software program (included in original cost) for record management and archiving, in a Windows format (i.e., Fluke Linkware software program).
  - 3.27.1 The manufacturer's software program will be used by the Project Engineer to review all test results, and then turned over to the District to keep as their record copy with the final approved test results. Provide (3) copies of tests on USB Flash Drives. Do not submit test results for review in Excel or PDF file formats, as the submittal will be rejected and not reviewed.
- 3.28 Contractor will repair or replace cable runs or connecting hardware that do not meet specified criteria.
- 3.29 Final As-Built Drawing Submittals – Provide (1) hard bound copy of "E-size" As-Built drawings and (3) copies on USB Flash Drive in AutoCad (2014 or newer version) format. A Hand marked-up copy of the original construction drawings will not be accepted as the final As-Built drawing submittal. Final As-Built drawings shall include copies of the floor plan drawings of each building, detailed elevations of each MDF or IDF locating all equipment, quantities outlets and speaker locations, locations of all sleeves and identification of all final cable routes. In addition, the drawings shall include all outlet locations with cable identification numbers.

END OF SECTION







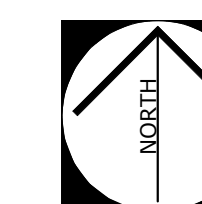
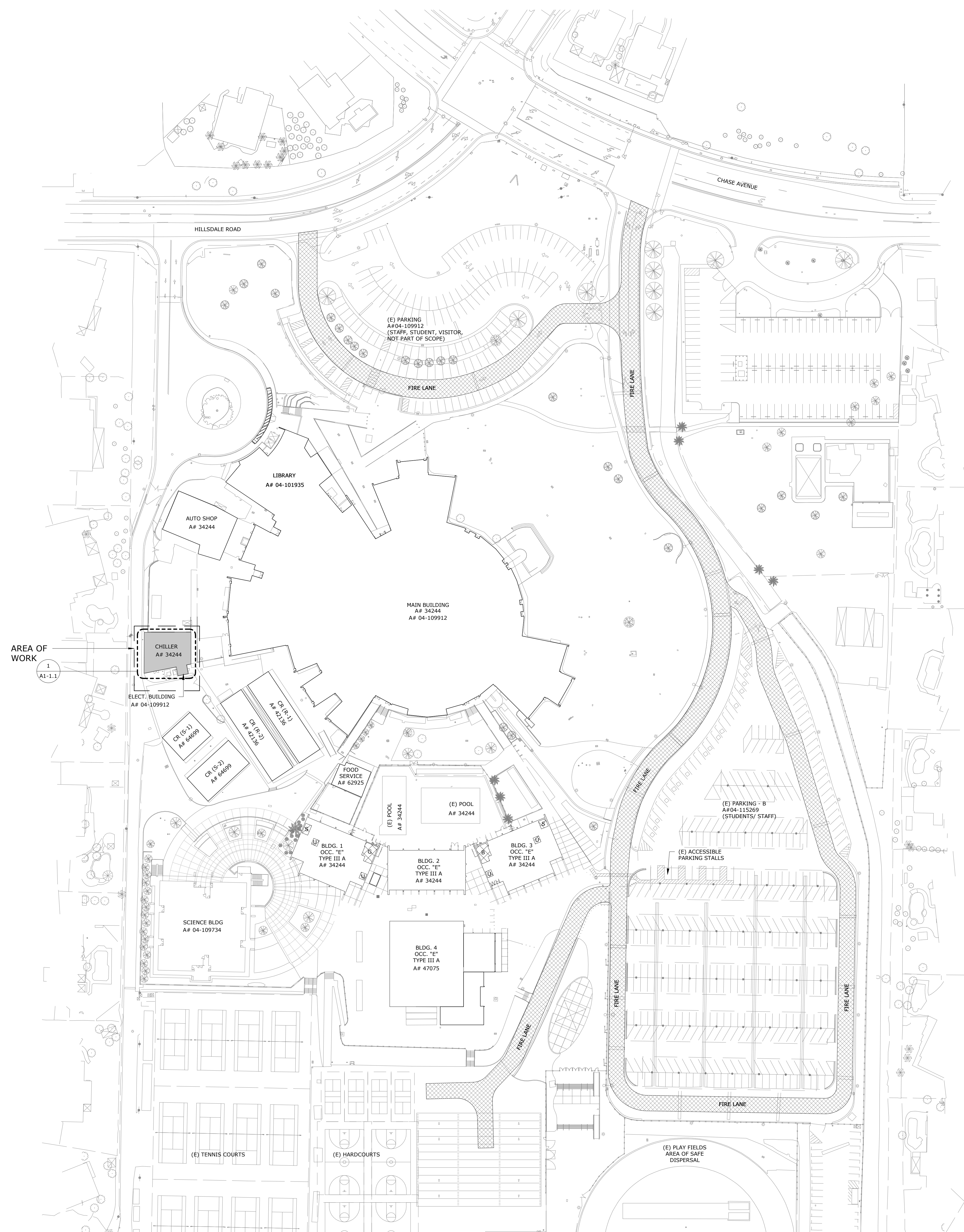
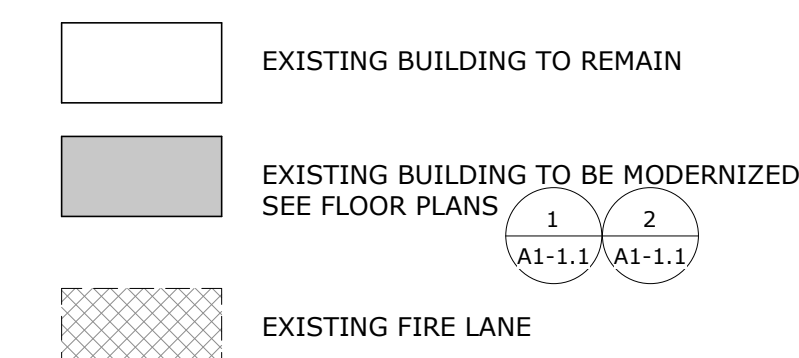


RUHNAU  
CLARKE  
ARCHITECTS

## GENERAL NOTES

1. VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION

LEGEND SITE PLAN - MOD.



OVERALL SITE PLAN	SCALE: 1" = 60'-0"
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**VALHALLA HIGH SCHOOL BATTERY  
REPLACEMENT**  
VALHALLA HIGH SCHOOL  
1725 HILLSDALE ROAD, EL CAJON, CA 92019  
GROSSMONT UNION HIGH SCHOOL DISTRICT

## OVERALL SITE PLAN

## AS-2.0

/ALHALLA HIGH SCHOOL BATTERY REPLACEMENT: DSA SUBMITTAL MAY 20, 2021





AGENCY APPROVAL  
DATE: 02-24-2024 120235

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ARCHITECTS

CONSULTANT BRANDING

### DEMOLITION GENERAL NOTES

- AT LOCATIONS WHERE ANY ITEM IS TO BE REMOVED, PATCH AND REPAIR ALL SURFACES AS NEEDED TO MATCH EXISTING ADJACENT MATERIALS AND FINISHES, UNLESS NOTED OTHERWISE.
- VERIFY WITH ARCHITECT BEFORE ALTERING OR REMOVING ANY STRUCTURAL ITEMS INCLUDING BUT NOT LIMITED TO HOLD DOWNS, SHEAR WALLS, BEARING WALLS UNLESS IDENTIFIED ON THE DRAWINGS AND APPROPRIATE DETAILS ARE APPROVED BY THE DIVISION OF STATE ARCHITECT.
- RESTORE ALL SURROUNDING AREAS AFFECTED BY THE WORK.
- PROTECT ITEMS TO REMAIN.
- CONTRACTOR TO VERIFY EXISTING FOOTINGS, IF PLUMBING OR CONDUIT ROUTING BELOW THE EXISTING FOOTING IS REQUIRED SEE STRUCTURAL.

### LEGEND DEMO. FLOOR PLAN

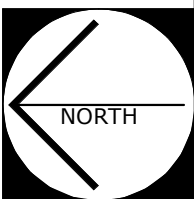
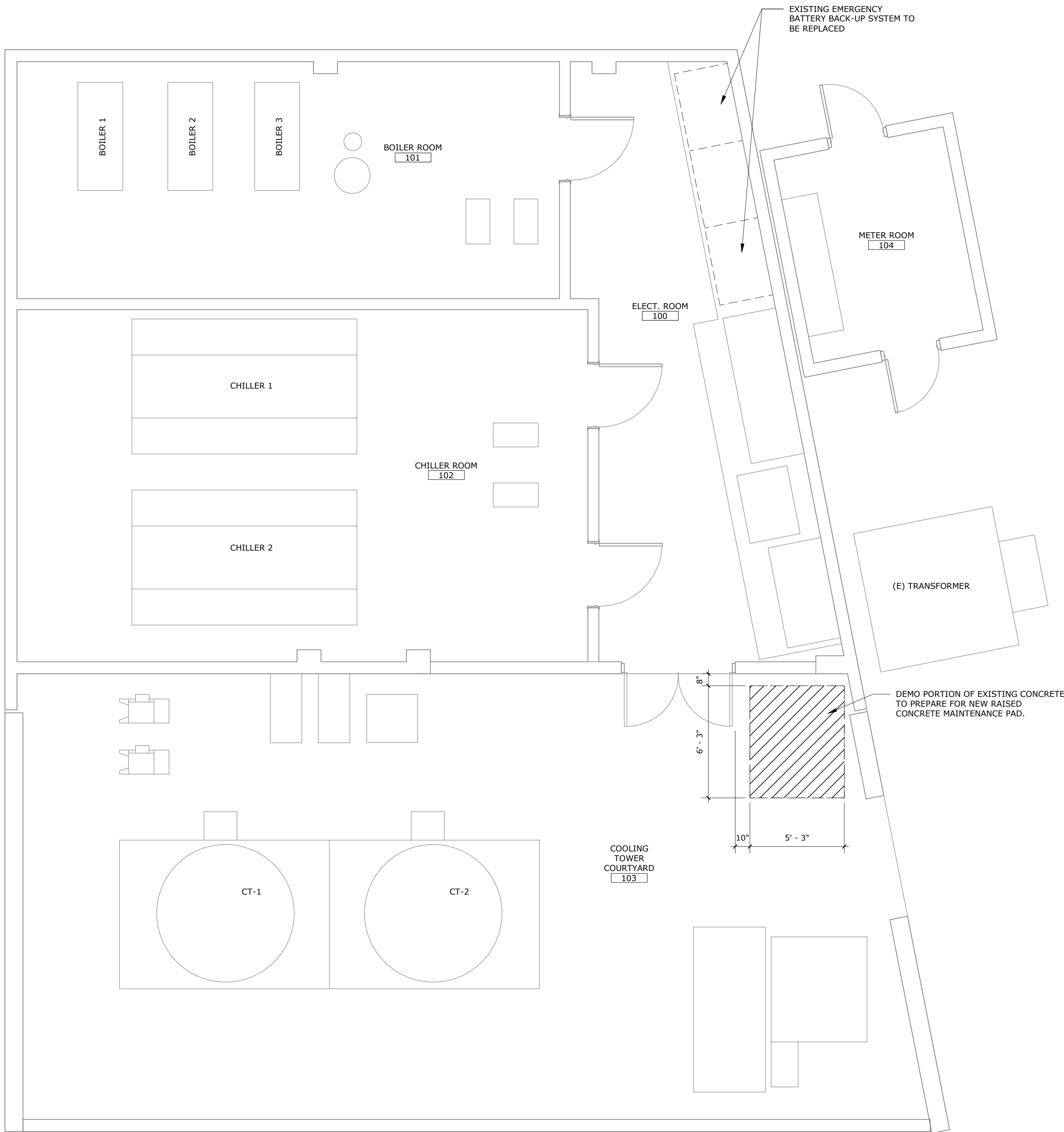
- EXISTING WALL TO REMAIN
- ITEM TO BE REMOVED
- EXISTING CONCRETE SLAB TO BE DEMOLISHED AS REQUIRED
- EXISTING FIXTURE / EQUIPMENT TO BE DEMOLISHED

### GENERAL NOTES

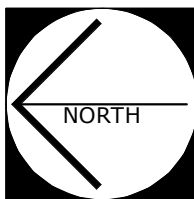
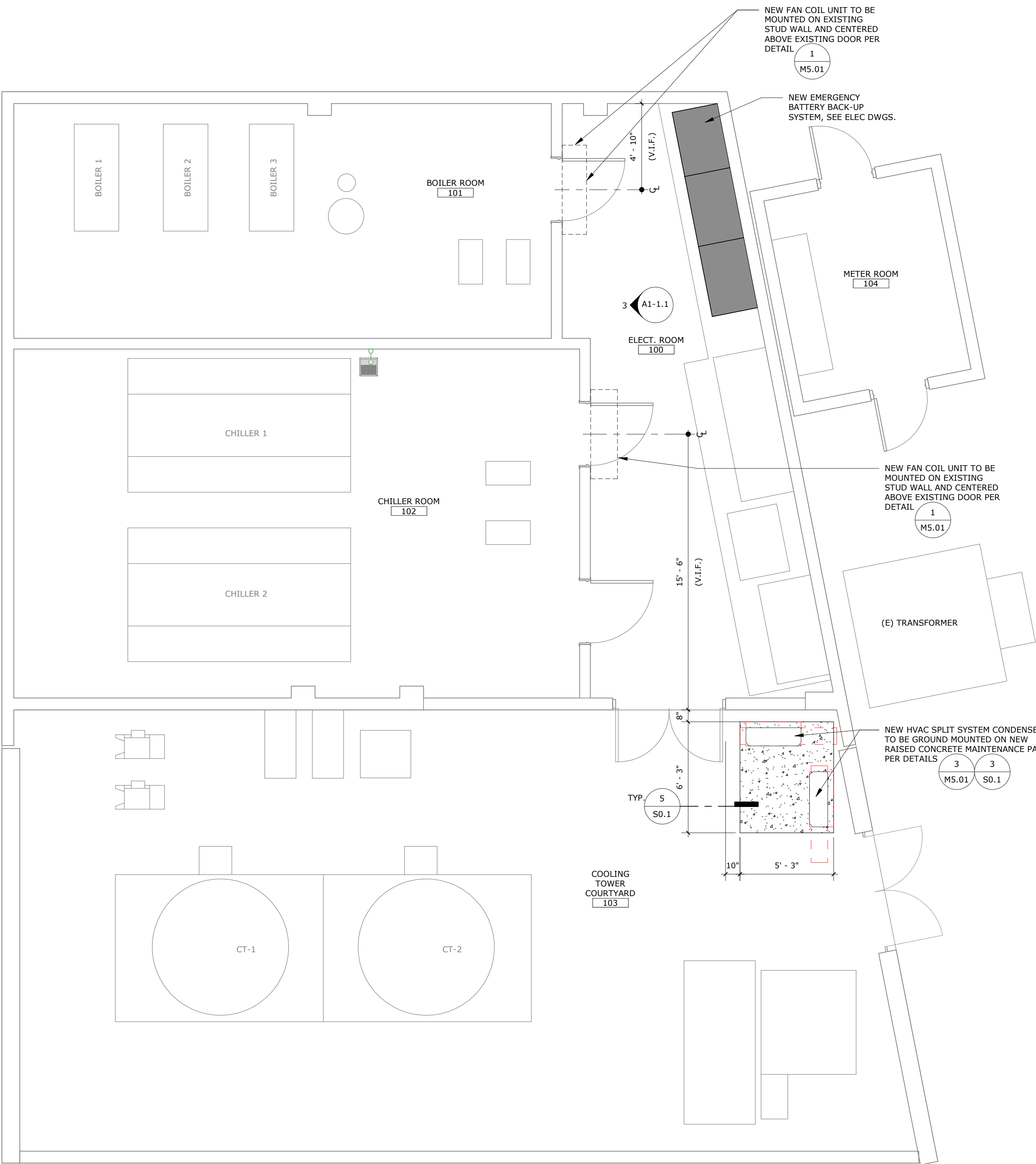
- VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION.
- ALL DIMENSIONS ARE TO FACE OF STUD, CENTERLINE OF COLUMN OR EDGE OF SLAB, U.N.O.
- PROVIDE STUD BRACING AND SUPPORT FOR NEW FAN COIL UNIT PER DETAIL 1 MS.01

### LEGEND MOD. FLOOR PLAN

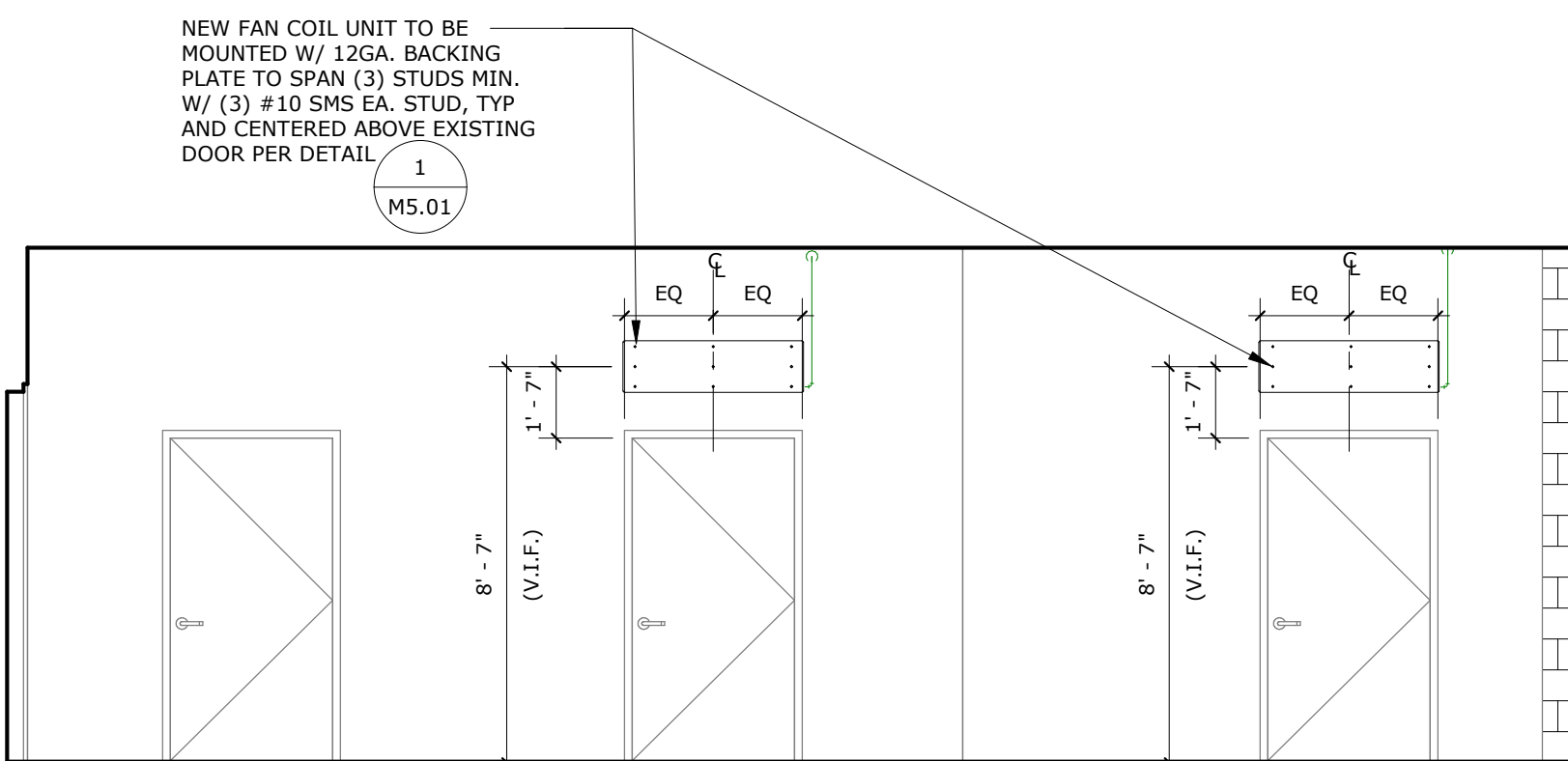
- EXISTING WALL TO REMAIN
- NEW CONCRETE MAINTENANCE PAD SEE STRUCTURAL DETAIL 5 S0.1
- NEW ELECTRICAL EQUIPMENT SEE ELECTRICAL DRAWING 1 EL.1
- NEW FAN COIL UNIT SEE MECHANICAL DRAWING 1 M2.01



DEMO FLOOR PLAN 2



MOD FLOOR PLAN 1



ELECT. ROOM 100 INTERIOR ELEVATION 3

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VALHALLA HIGH SCHOOL BATTERY REPLACEMENT

VALHALLA HIGH SCHOOL  
1725 HILLSDALE ROAD, EL CAJON, CA 92019  
GROSSMONT UNION HIGH SCHOOL DISTRICT

DEMO & MOD FLOOR  
PLANS & INT.ELEV.

A1-1.1

VALHALLA HIGH SCHOOL BATTERY REPLACEMENT: DSA SUBMITTAL MAY 20, 2021



ADD'L. ALT. ACI INSTITUTE ASSOCIATION	ADDITIONAL ALTERNATE AMERICAN CONCRETE
ASTM TESTING AND MATERIALS	AMERICAN SOCIETY FOR
AWS A-B. ARCH. ®	AMERICAN WELDING SOCIETY ANCHOR BOLT(S) ARCHITECT/ARCHITECTURAL AT
BTWN. BOT. OR BOT. BLDG.	BETWEEN BOTTOM BUILDING
CBC CIP C-IP PENETRATION WELD ® COL. CL. CONC. COND. CONN. CONSTR. CONTD CONT. CONTR.	CALIFORNIA BUILDING CODE CAST IN PLACE COMPLETE JOINT CENTER LINE CLEAR COLUMN CONCRETE CONDITION CONNECTION CONSTRUCTION CONTINUED CONTINUOUS CONTRACTOR
DL DEMO. DTL. OR DET. DIA. DIM. DIBL DWL. DWG.	DEAD LOAD DEMOLISH DETAIL DIAGONAL DIAMETER DIMENSION DOUBLE DOWEL DRAWING
EA. E.F. E.S. E.W. ELEC. ELEV. EMBED. ENG. EQ. EQUIP. EXCAV. EXT. (X)	EACH EACH FACE EACH SIDE EACH WAY ELECTRICAL ELEVATION EMBEDMENT ENGINEER EQUAL EQUIPMENT EXCAVATION EXISTING EXTERIOR
F.O.C. F.O.S. SLAB F.S. FIN. F.F. FLR. FTG. FNDN.	FACE OF CONCRETE FACE OF STUD OR FACE OF FAR SIDE FINISH FINISHED FLOOR FLOOR FOOTING FOUNDATION
GALV. GA. GR.	GALVANIZE GAUGE GRADE
HGR. HDR. HT. HSS SECTION HORIZ.	HANGER HEADER HEIGHT HOLLOW STRUCTURAL HORIZONTAL
INFO. I.D. INT. IBC CODE ICC COUNCIL INV.	INFORMATION INSIDE DIAMETER INTERIOR INTERNATIONAL BUILDING INTERNATIONAL CODE INVERT
KSI	KIPS PER SQUARE INCH
LDGR. LT. WT. OR LW LL LLH LLV LO-HY	LEDGER LIGHT WEIGHT LINE LOAD LONG LENGTH LONG LEG HORIZONTAL LONG LEG VERTICAL LOW HYDROGEN
M.B. MFR. MATL. MAX. MECH. MTL. MIN. MISC. MU	MACHINE BOLT(S) MANUFACTURER MATERIAL MAXIMUM MECHANICAL METAL MINIMUM MISCELLANEOUS MECHANICAL UNIT
N.F. NSA (N) (N) NTS. NO. OR #	NEAR FACE NEAR SIDE NELSON STUD ANCHOR NEW NOT IN CONTRACT NOT TO SCALE NUMBER
O.C. OPNG. OPP. O.H. O.D.	ON CENTER OPENING OPPOSITE OPPOSITE HAND OUTSIDE DIAMETER
PCF PSF PSI PL	POUNDS PER CUBIC FOOT POUNDS PER SQUARE FOOT POUNDS PER SQUARE INCH PROPERTY LINE
RAD. REF. REINF. REQ'D REQMT.	RADIUS REFERENCE REINFORCING REQUIRED REQUIREMENT
SCHED. SEC. SHT SMS SIMP. SPCG. SPECES. STGR. S.S. STD. STL. STIFF. STRUCT. SYM.	SCHEDULE SECTION SHEET SHEET METAL SCREWS SIMILAR SIMPSON SPACING SPECIFICATION SQUARE STAGGER STAINLESS STEEL STANDARD STEEL STIFFENER STRUCTURAL SYMMETRICAL
THK. K OR KIP THRU T&B T.O.F.O. TYP.	THICK 1,000 POUNDS THROUGH TOP OF BOTTOM TOP OF FOOTING TYPICAL
U.N.O.	UNLESS NOTED OTHERWISE
VIF VERT.	VERIFY IN FIELD VERTICAL
WT. W/ W/O	WEIGHT WITH WITHOUT

THESE STRUCTURAL DRAWINGS AND SPECIFICATIONS, INCLUDING ANY ADDENDA (COLLECTIVELY "THE PLANS") INCORPORATE ALL LEGAL AND INDUSTRY REQUIREMENTS AND STANDARDS INCLUDING WITHOUT LIMITATION THE FOLLOWING:

- THE CALIFORNIA CODE OF REGULATIONS, TITLE 24, PART 1 (CALIFORNIA ADMINISTRATIVE CODE), 2019 EDITION.
  - THE CALIFORNIA CODE OF REGULATIONS, TITLE 24, PART 2 (CALIFORNIA BUILDING CODE), 2019 EDITION.
  - OTHER REGULATING AGENCIES WHICH MAY HAVE AUTHORITY OVER ANY PORTION OF THE WORK, INCLUDING THE STATE OF CALIFORNIA DIVISION OF INDUSTRIAL RELATIONS AND THOSE CODES AND STANDARDS LISTED IN THESE NOTES AND SPECIFICATIONS.
  - THE FUNCTIONALITY STANDARDS SET FORTH IN TITLE 7 OF THE CALIFORNIA CIVIL CODE (THE "RIGHT TO REPAIR ACT").
  - THE MANUFACTURER'S REQUIREMENTS OR RECOMMENDATIONS FOR ANY INCORPORATED PRODUCTS.
  - THE MOST CURRENT APPROVED ISSUES OF ANY NOTED SPECIFICATIONS, CODES AND STANDARDS, INCLUDING SUPPLEMENTS, UNLESS NOTED OTHERWISE.
2. THE PLANS REPRESENT ONLY THE FINISHED STRUCTURE, AND THEY ARE NOT INTENDED TO INDICATE OR REQUIRE ANY CONSTRUCTION MEANS, METHODS, TECHNIQUES, OR REQUIREMENTS. IN PARTICULAR AND WITHOUT LIMITATION, THE CONTRACTOR SHALL BE FULLY AND SOLELY RESPONSIBLE FOR ANY AND ALL EXCAVATION, DEMOLITION, SHORING AND ERECTION PROCEDURES AND FOR ANY AND ALL SAFETY PROGRAMS AND PRECAUTIONS.
3. IN USING THE PLANS FOR BIDDING OR CONSTRUCTION PURPOSES, THE CONTRACTOR SHALL REVIEW ALL OF THE PROJECT'S CONSTRUCTION DOCUMENTS AS A WHOLE IN ORDER TO IDENTIFY ALL REQUIREMENTS THAT DIRECTLY OR INDIRECTLY AFFECT ITS PORTION OF THE STRUCTURAL WORK, EVEN IF SUCH REQUIREMENTS ARE IN SECTIONS DESIGNATED AS APPLICABLE TO OTHER TRADES. IN CASE OF CONFLICTS, THE CONTRACTOR SHALL EITHER OBTAIN DIRECTION FROM AN APPROPRIATE OWNER REPRESENTATIVE OR OTHERWISE ACCEPT THE MORE STRINGENT REQUIREMENT.
4. IN INTERPRETING THE PLANS, THE FOLLOWING GENERAL RULES APPLY:
  - WRITTEN DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALED DRAWINGS.
  - SPECIFIC NOTES AND DETAILS SHALL TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS.
  - WORK NOT PARTICULARLY SHOWN OR SPECIFIED SHALL BE THE SAME AS SIMILAR PARTS THAT ARE SHOWN OR SPECIFIED.
  - SCALED DIMENSIONS AND GRAPHICALLY SHOWN LOCATIONS ARE TO BE CONSIDERED ONLY APPROXIMATE.
5. IN IMPLEMENTING THE PLANS, THE FOLLOWING GENERAL RULES APPLY:
  - BECAUSE THE PLANS ARE INTENDED TO SET FORTH THE REQUIREMENTS FOR CONSTRUCTION IN ONLY AN INDUSTRY-STANDARD LEVEL OF QUALITY AND PRECISION, THERE WILL BE NECESSARY TO ANTICIPATE AND CORRECT FOR APPROPRIATE REQUESTS FOR CLARIFICATION AND INFORMATION. ERRORS AND OMISSIONS ARE TO BE EXPECTED AND ANTICIPATED; AND THE CONTRACTOR IS RESPONSIBLE TO CATCH AND CORRECT ANY SUCH ERRORS OR OMISSIONS AND TO BRING THESE ERRORS AND OMISSIONS TO THE ATTENTION OF AN APPROPRIATE OWNER REPRESENTATIVE IN A TIMELY MANNER AND ASSUMES THE RISK OF THE CONSEQUENCES OF FAILING TO DO SO BEFORE BIDDING OR OTHERWISE PROCEEDING WITH CONSTRUCTION.
  - THE CONTRACTOR SHALL REVIEW AND VERIFY ALL DIMENSIONS PRIOR TO STARTING CONSTRUCTION, AND NOTIFY THE ARCHITECT IMMEDIATELY OF ANY DISCREPANCIES OR INCONSISTENCIES.
6. SUBMITTALS WILL BE REVIEWED BY THE STRUCTURAL ENGINEER, IF AT ALL, ONLY PURSUANT TO THE INDUSTRY-STANDARD PROTOCOL SET FORTH IN AIA DOCUMENT A201, AND IN NO EVENT WILL THE SUBMITTAL REVIEW PROCESS RELIEVE OR LESSEN THE SUBMITTING CONTRACTOR'S RESPONSIBILITY FOR AN INAPPROPRIATE SUBMITTAL.
7. IN NO EVENT WILL ANY SITE VISITS BY THE STRUCTURAL ENGINEER CONSTITUTE CONSTRUCTION MEANS AND METHODS OR CONSTRUCTION SAFETY, AND ALL SUCH MATTERS SHALL REMAIN THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
8. COPIES OF THE PLANS PROVIDED IN ANY ELECTRONIC FORM ARE SUBJECT TO THE SAME PROVISIONS AS THE OTHER INSTRUMENTS OF SERVICE PREPARED BY OR ON BEHALF OF STRUCTURAL ENGINEER FOR THE PROJECT, INCLUDING WITHOUT LIMITATION THE ENGINEER'S STANDARD TERMS AND CONDITIONS OF SERVICES, RIGHTS, INCLUDING COPYRIGHTS. A RECIPIENT IS GRANTED AT MOST A TRANSFERABLE NONEXCLUSIVE LICENSE TO REUSE THE PLANS SOLELY FOR PROJECT PROPOSALS. THE ENGINEER IS AUTHORIZED TO USE OR TO ALLOW THE USE OF ALL OR ANY PORTION OF THESE PLANS FOR ANY OTHER PURPOSE, AND ANY USE FOR ANY OTHER PURPOSE WOULD CONSTITUTE ACTIONABLE INFRINGEMENT. THE STRUCTURAL ENGINEER PROVIDES DOCUMENTS IN ELECTRONIC FORM ONLY IN ITS STANDARD FORMATS AND CONVENTIONS AND WITH NO GUARANTEE OF COMPATIBILITY WITH ANY RECIPIENT'S SOFTWARE OR HARDWARE, AND ANY USE WITH OR CONVERSION TO OTHER FORMATS OR CONVENTIONS, OR THE USE WITH ANY PARTICULAR SOFTWARE OR HARDWARE, IS AT THE RECIPIENT'S SOLE RISK.

1. WIND LOADS

RISK CATEGORY: III  
EXPOSURE CATEGORY: C  
BASIC DESIGN WIND SPEED (3-SECOND GUST),  $V = 103$  MPH  
ALLOWABLE STRESS DESIGN WIND SPEED,  $V_{ASD} = 80$  MPH  
VELOCITY PRESSURE EXPOSURE COEFFICIENT,  $K_z = 0.85$  (0-15 FT)  
TOPOGRAPHIC FACTOR,  $K_{zt} = 1.0$   
WIND DIRECTIONALITY FACTOR,  $K_d = 0.85$   
GROUND ELEVATION FACTOR,  $K_e = 1.00$   
GUST EFFECT FACTOR,  $G = 0.85$

A. EQUIPMENT (ASCE 7-16, CH. 29)

$q_z = 0.00256 K_z K_{zt} K_d K_e V^2 = 19.6$  PSF

$P = q_z G C_p A_f$

FORCE COEFFICIENT,  $C_f =$  [FIG. 29.4-1 THRU 29.4-4]

1. EARTHQUAKE LOADS

SEISMIC DESIGN CRITERIA

$S_S = 0.742$   
 $S_1 = 0.274$   
SITE CLASS: D  
 $F_A = 1.206$   
 $F_v = 2.1$   
 $S_{DS} = 0.597$   
 $S_{D1} = 0.383$   
RISK CATEGORY: III  
SEISMIC DESIGN CATEGORY: D

SEISMIC DESIGN REQUIREMENTS

SEISMIC HORIZONTAL FORCE  
FOR EQUIPMENT

$$F_p = \frac{0.4(A_F)(S_{DS})(W)}{R_p} (1 + 2(Z/h))$$

DESIGN HORIZONTAL FORCE FOR TANKS  $V = C_s W$   
WHERE  
 $C_s = S_{DS}/(R/4)$   
BUT SHALL NOT BE LESS THAN  $0.3(S_{DS})(W_0)/(W_0)$   
BUT NEED NOT EXCEED  $1.6(S_{DS})(W_0)/(W_0)$

WHERE:  
 $q_p = 1.0$   
 $R_p = 2.5$   
 $V_p = 1.0$   
 $Z/h = 0$   
 $W_0 = 2.0$

1. DIMENSIONS SHALL BE DEFINED TO INCLUDE BOTH HORIZONTAL DIMENSIONS AND VERTICAL DIMENSIONS (ELEVATIONS).
2. WRITTEN DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALED DRAWINGS.
3. SEE ARCHITECTURAL DRAWINGS FOR DIMENSIONS NOT NOTED ON STRUCTURAL DRAWINGS.
4. THE CONTRACTOR SHALL REVIEW AND VERIFY ALL DIMENSIONS PRIOR TO STARTING CONSTRUCTION. THE ARCHITECT SHALL BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES OR INCONSISTENCIES.

ACCEPTABLE EQUIVALENT MANUFACTURERS OF POST-INSTALLED EXPANSION ANCHORS AND SCREWS ANCHORS SHALL BE HILTI INC., SIMPSON STRONG-TIE COMPANY INC., OR DEWALT, U.S.A.

2. TESTS FOR POST-INSTALLED ANCHORS IN HARDENED CONCRETE SHALL CONFORM TO TITLE 24, PART 2, CHAPTER 19A, SECTION 1910A.5.

3. POST-INSTALLED ANCHOR INSTALLATION SHALL BE INSPECTED BY A SPECIAL INSPECTOR SPECIFICALLY APPROVED BY THE ENFORCEMENT AGENCY FOR THAT PURPOSE.

4. POST-INSTALLED ANCHOR TESTING SHALL BE DONE IN THE PRESENCE OF THE PROJECT INSPECTOR.

5. TEST QUANTITY OF POST-INSTALLED ANCHORS AS NOTED BELOW:

<u>APPLICATION</u>	<u>QUANTITY</u>
NON-STRUCTURAL (EQUIP. ANCHORAGE, ETC.)	50% OF BOLTS
IF ANY ANCHOR FAILS TESTING, TEST ALL ANCHORS OF THE SAME CATEGORY NOT PREVIOUSLY TESTED UNTIL TWENTY (20) CONSECUTIVE ANCHORS PASS, THEN RESUME INITIAL TESTING FREQUENCY.	
7. TORQUE TESTING SHALL BE APPLIED BY CALIBRATED WRENCH. (WHERE INDICATED) SHALL BE APPLIED BY HYDRAULIC JACK OR CALIBRATED SPRING LOADING DEVICE.	
8. THE FOLLOWING CRITERIA SHALL APPLY FOR THE ACCEPTANCE OF INSTALLED POST-INSTALLED ANCHORS:	
A. TORQUE WRENCH METHOD: THE APPLICABLE TEST TORQUE MUST BE ATTAINED WITHIN ONE-HALF (½) TURN OF THE NUT. SLEEVE ANCHORS ¾ INCH DIAMETER OR LESS MUST ATTAIN THE SPECIFIED TEST TORQUE WITHIN ONE-QUARTER (¼) TURN OF THE NUT, AND THREADED ANCHORS MUST ATTAIN THE SPECIFIED TEST TORQUE WITHIN ONE-QUARTER (¼) TURN OF THE SCREW AFTER INITIAL SEATING OF THE SCREW HEAD.	
B. HYDRAULIC RAM METHOD: (FOR TENSION TESTING WHERE INDICATED) ANCHORS SHALL MAINTAIN THE TENSION TEST LOAD FOR A MINIMUM OF 15 SECONDS AND SHALL EXHIBIT NO DISCERNABLE MOVEMENT DURING THE TENSION TEST. (AN EXAMPLE OF DISCERNABLE MOVEMENT WOULD BE LOOSENING OF THE WASHER UNDER THE NUT).	
8. TEST LOADS (1)(2)(3)	

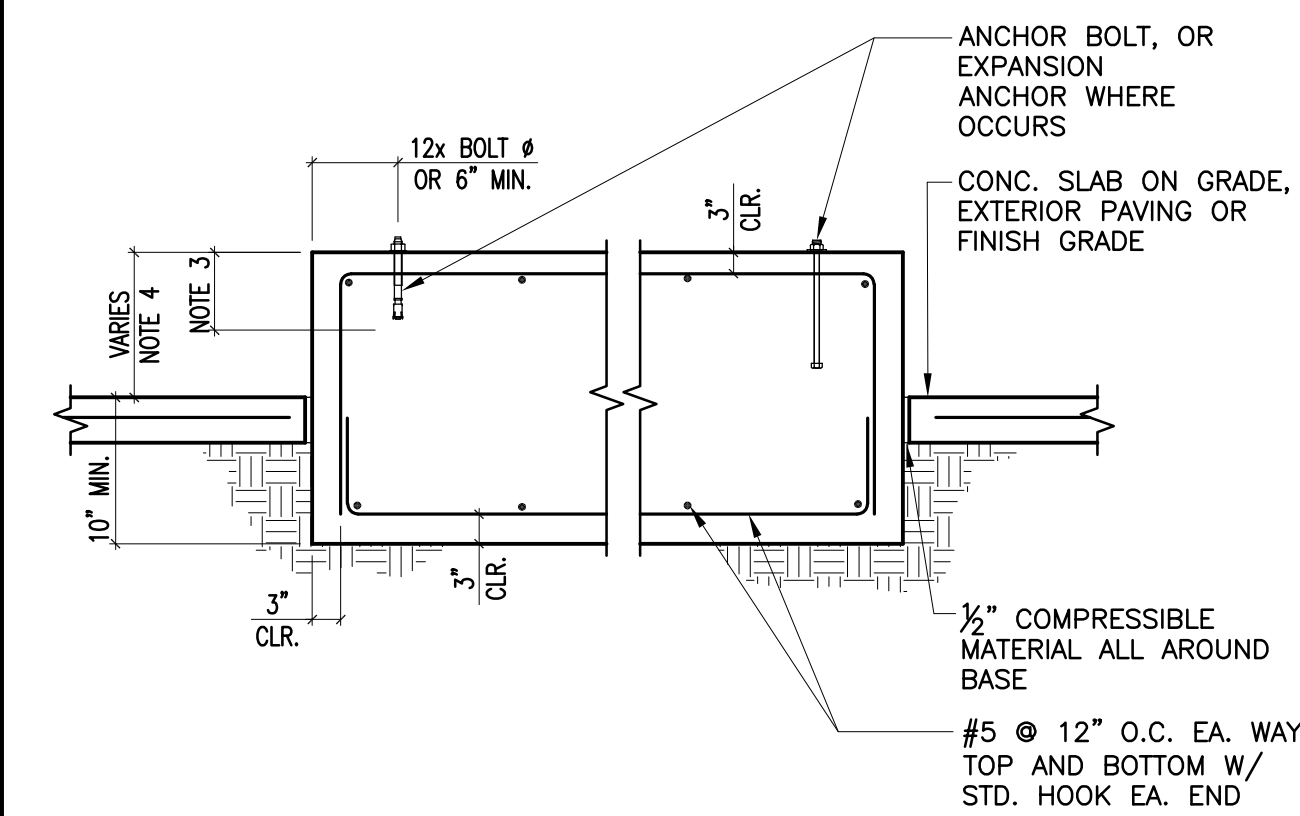
TORQUE TEST VALUES — EXPANSION ANCHORS NORMAL WEIGHT CONCRETE		
ANCHOR DIAMETER (INCH)	ANCHOR DEPTH (INCHES)	TORQUE (FT-LBF)
3/8	2	25
	2	40
1/2	3 1/4	40
	3 3/8	60
5/8	4	60
	3 3/4	110
3/4	4 3/4	110

- (1) TEST VALUES ARE BASED ON Kwik Bolt T22 (KB-T22) EXPANSION ANCHORS BY HILTI, INC. (ICC EVALUATION REPORT NUMBER ESR-4266).
- (2) TEST VALUES ARE BASED ON CARBON STEEL ANCHORS.
- (3) VERIFY TORQUE VALUES WITH MANUFACTURER FOR SIMPSON STRONG-BOLT 2 (ICC ESR-3037) OR DEWALT POWER-STUD+SD2 (ICC ESR-2502)

ALL PORTIONS OF WORK PERTAINING TO CONCRETE CONSTRUCTION SHALL CONFORM TO TITLE 24, PART 2, CHAPTER 19A.

CONCRETE MIXES SHALL BE DESIGNED BY A QUALIFIED TESTING LABORATORY. MIX DESIGNS SHALL CONFORM TO ACI 318, SEC. 26.4, CBC SEC.1903A AND 1904A. MIX DESIGNS SHALL INCORPORATE THE FOLLOWING CRITERIA:

- \* MINIMUM OF 5 SACKS OF CEMENT PER CUBIC YARD OF CONCRETE. MAXIMUM OF 7 SACKS OF CEMENT PER YARD OF CONCRETE.
- \* MAXIMUM WATER/CEMENT RATIO (BY WEIGHT) OF CONCRETE IN CONTACT WITH SOIL SHALL BE 0.45.
- \* MAXIMUM SLUMP SHALL NOT EXCEED  $4" \pm 1"$ . SLUMP LIMITATIONS NOTED SHALL APPLY TO CONCRETE MIX PRIOR TO THE ADDITION OF ANY WATER-REDUCING ADMIXTURES OR SUPER-PLASTICIZERS. MAXIMUM SLUMP MAY BE INCREASED TO  $5 +/ - 1"$  FOR MIX INCLUDING WATER-REDUCING ADMIXTURES OR SUPER-PLASTICIZERS.
- \* CALCIUM CHLORIDE OR ADMIXTURES CONTAINING CHLORIDE(S) SHALL NOT BE USED.
- \* PORTLAND CEMENT SHALL CONFORM TO ASTM C-150, TYPE II. CEMENT USED FOR CONCRETE IN CONTACT WITH SOIL SHALL CONFORM TO ASTM C-150, TYPE V.
- \* AGGREGATE FOR NORMALWEIGHT CONCRETE SHALL CONFORM TO ASTM C-33. COMBINED AGGREGATE GRADATION OF  $\frac{3}{8}"$  MAXIMUM (PEA GRAVEL) SHALL NOT BE USED.
- \* READY MIXED CONCRETE SHALL CONFORM TO ASTM C-94.
- \* PLACEMENT OF CONCRETE SHALL CONFORM TO ACI 304. CLEAN AND ROUGHEN TO  $\frac{1}{4}"$  AMPLITUDE ALL CONCRETE SURFACES AGAINST WHICH CONCRETE IS TO BE PLACED.
- \* ALL REINFORCING BARS, ANCHOR BOLTS AND OTHER CONCRETE INSERTS SHALL BE SECURED IN POSITION PRIOR TO PLACING CONCRETE.
- \* IF APPROVED BY DIVISION OF THE STATE ARCHITECT, BATCH PLANT INSPECTION MAY BE REDUCED TO PERIODIC SUBJECT TO THE REQUIREMENTS OF CBC SEC. 1705A.3.3.1.

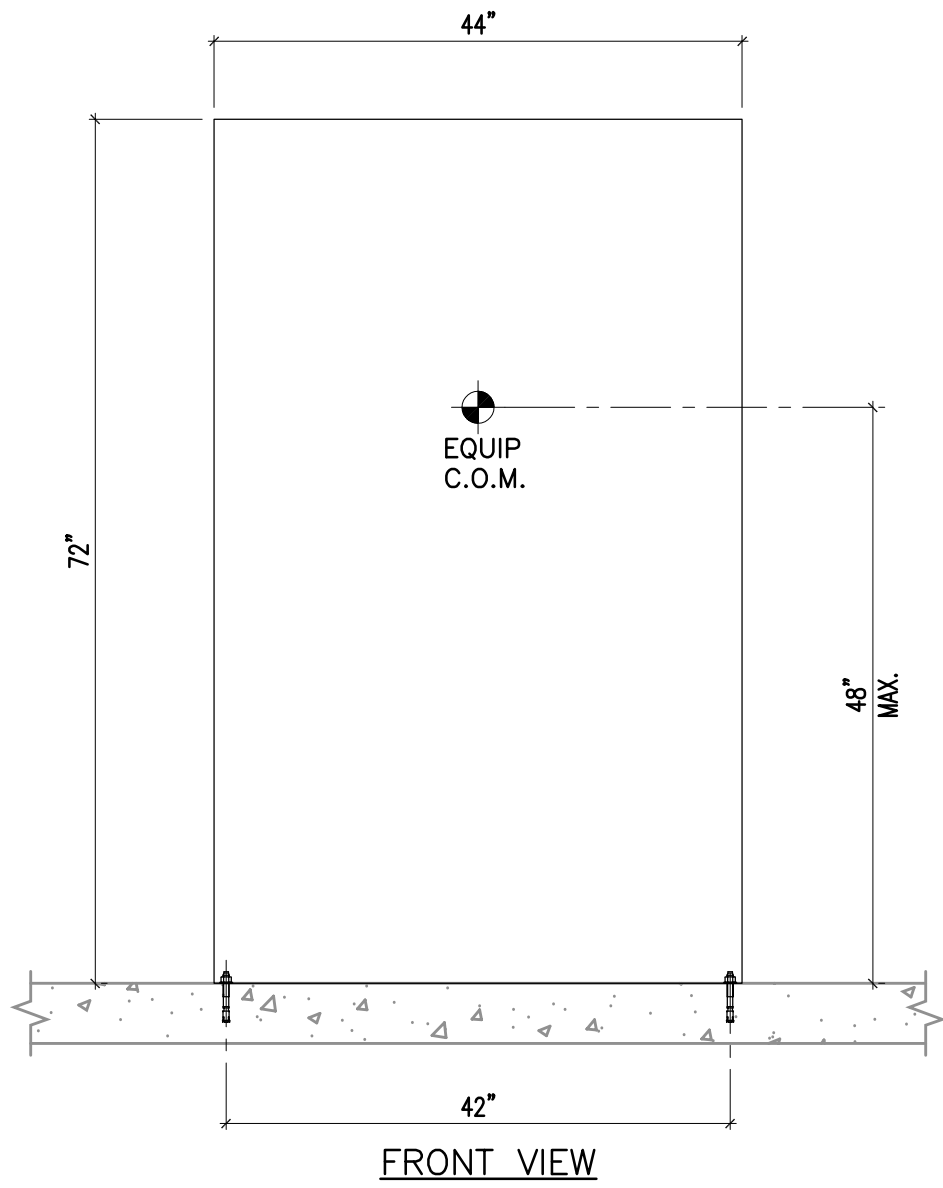


NOTES:  
SEE MECHANICAL AND ELECTRICAL DRAWINGS FOR THE FOLLOWING:  
1. LOCATION AND DIMENSIONS OF BASES..  
2. CURB HEIGHT, 4" MIN.  
3. CONCRETE SHALL BE NORMAL WEIGHT (145 PCF) AND ATTAIN A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3000 PSI.

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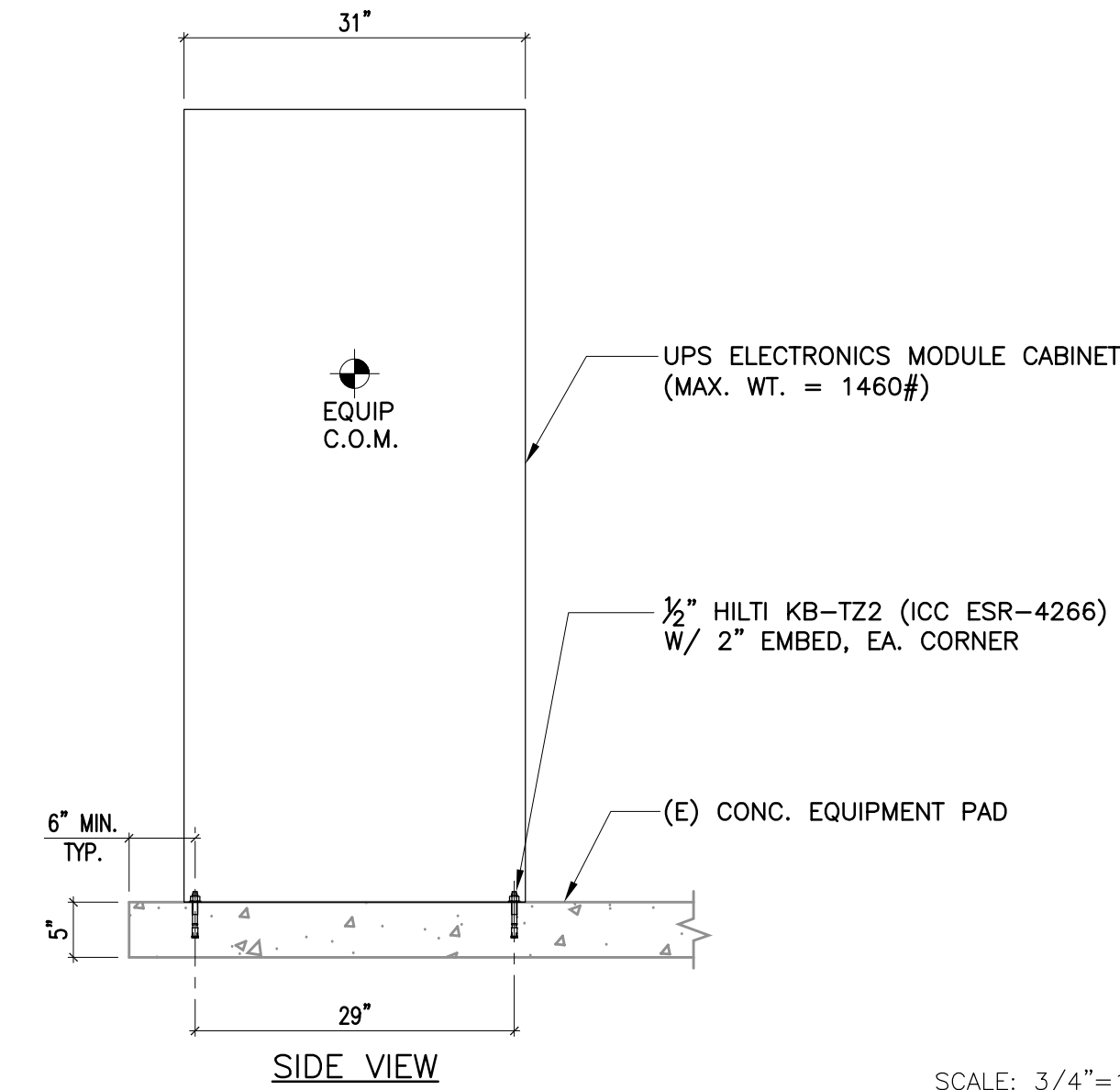
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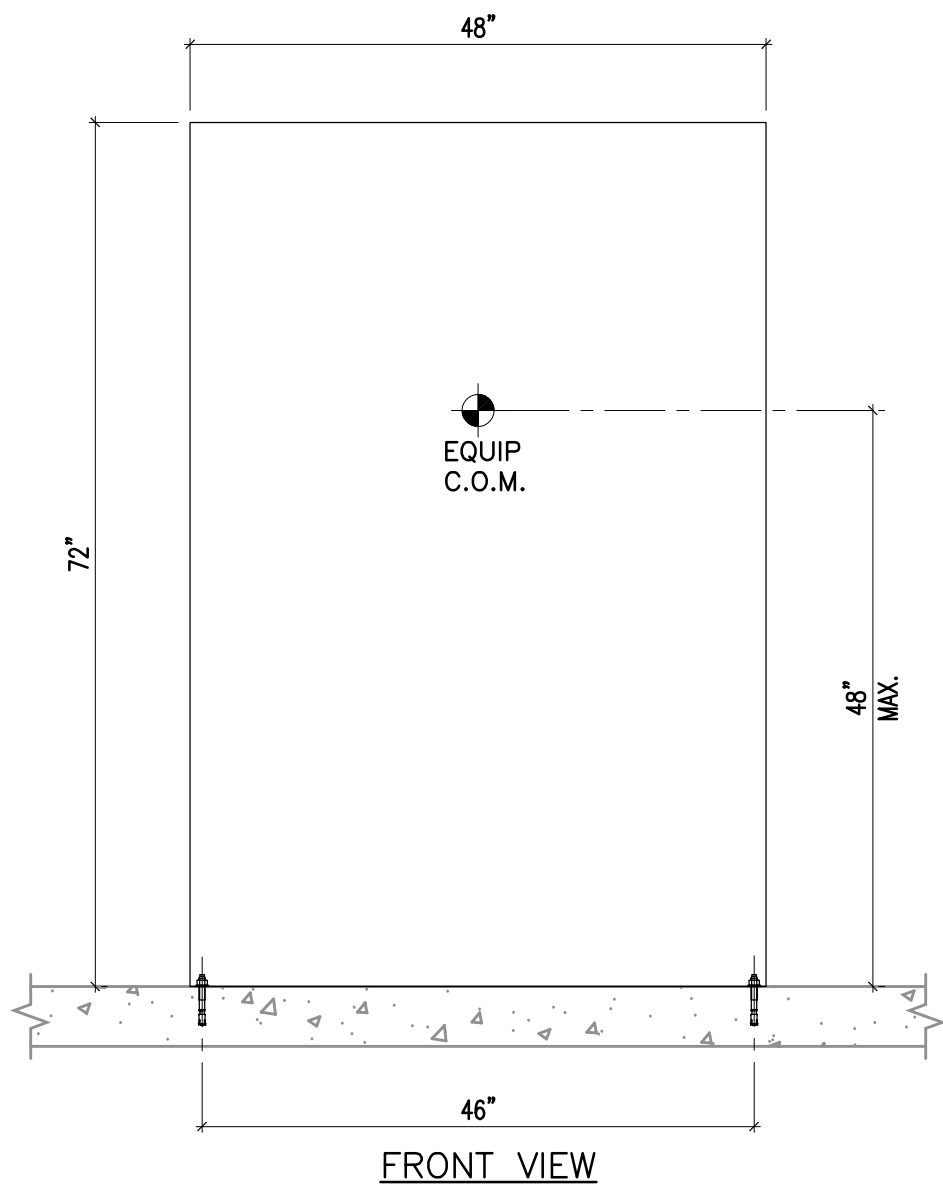


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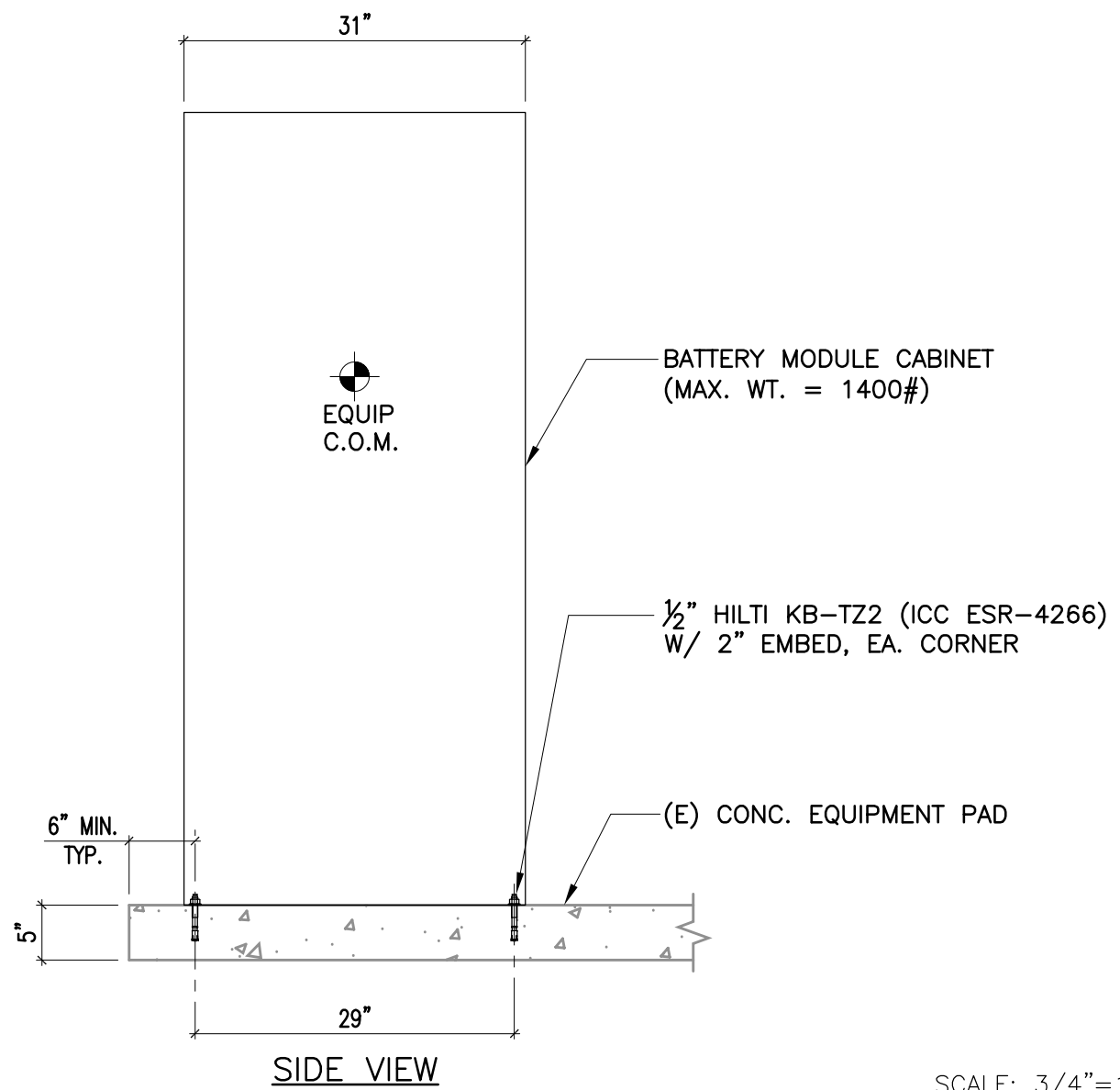


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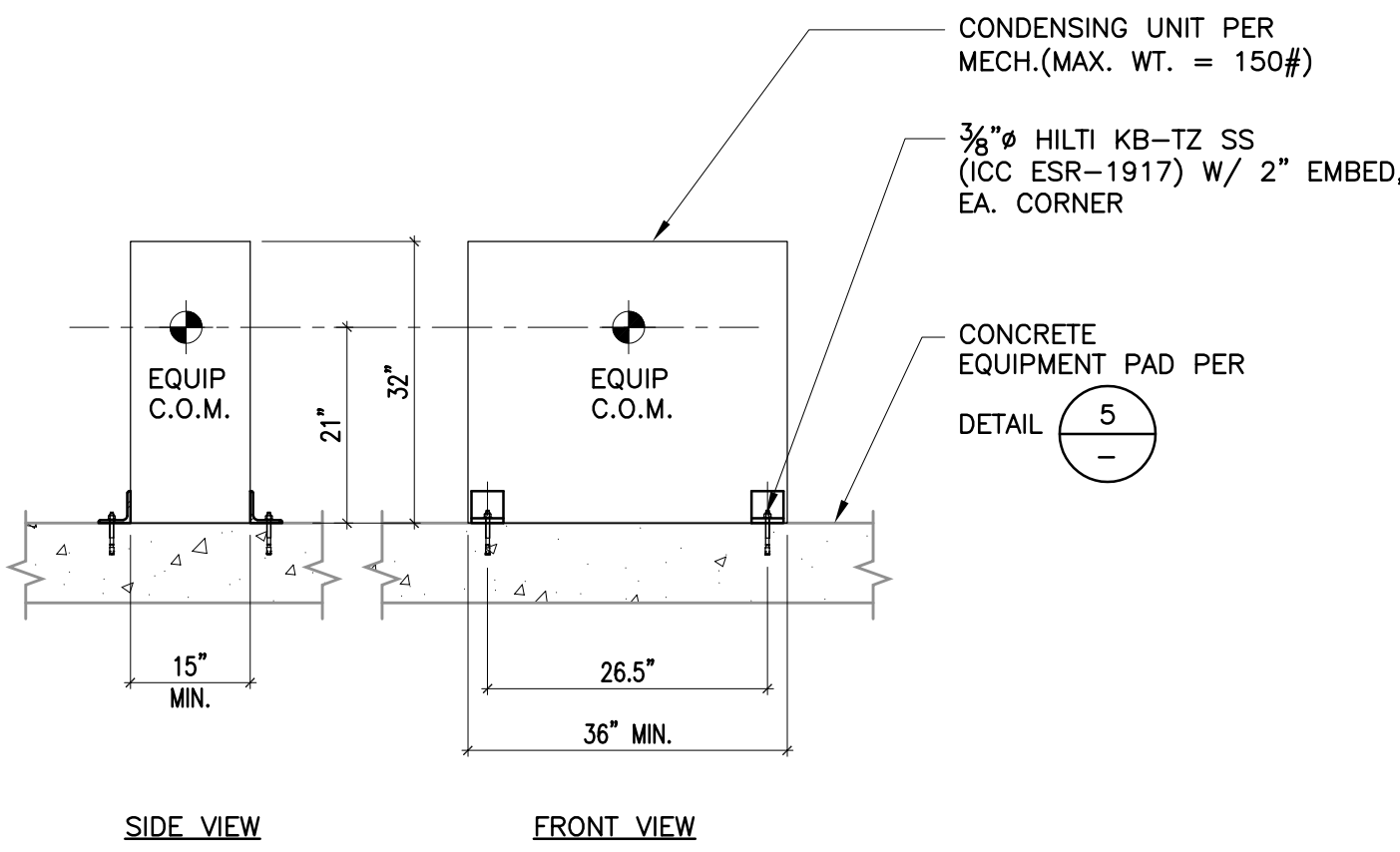
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## 2



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## 2



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## 3



MECHANICAL LEGEND					
SYMBOL	ABBREV	DESCRIPTION	SYMBOL	ABBREV	DESCRIPTION
		REMOVE EXISTING EQUIPMENT OR PIPING SHOWN DASHED		CD	DUCT TRANSITION
	POC	POINT OF CONNECTION		RR	RETURN REGISTER
	POD	POINT OF DISCONNECT		ER	EXHAUST REGISTER
		COORDINATE WITH ELECTRICAL		T'STAT	THERMOSTAT OR TEMPERATURE SENSOR (NUMBER INDICATES EQUIPMENT ZONE SERVED)
	HHWS	HEATING HOT WATER SUPPLY		H'STAT	HUMIDISTAT
	HHWR	HEATING HOT WATER RETURN		SENSOR	OCCUPANCY SENSOR
	CHW	CHILLED WATER		SWITCH	CONTROL SWITCH
	CHWR	CHILLED WATER RETURN		CFM	CARBON DIOXIDE SENSOR
	CHWS	CHILLED WATER SUPPLY			CUBIC FEET PER MINUTE
	CD	CONDENSATE DRAIN (A.C.)			SYMBOL SEE EQUIPMENT SCHEDULE
	CWR	CONDENSER WATER RETURN		AD/AP	ACCESS DOOR / ACCESS PANEL
	CWS	CONDENSER WATER SUPPLY		AFF	ABOVE FINISHED FLOOR
	D	DRAIN		BDD	BACK DRAFT DAMPER
	ST	STEAM		BOD	BOTTOM OF DUCT
	LPS	LOW PRESSURE STEAM		BOP	BOTTOM OF PIPE (ABOVE FIN. FLR.)
	MPS	MEDIUM PRESSURE STEAM		CD	CEILING DIFFUSER
	HPS	HIGH PRESSURE STEAM		CLG	CEILING
	CR	STEAM CONDENSATE RETURN		CFM	CUBIC FEET PER MINUTE
	RD	REFRIGERANT DISCHARGE		CONC.	CONCRETE
	RL	REFRIGERANT LIQUID		CONT.	CONTINUATION
	RS	REFRIGERANT SUCTION		F	DEGREES FAHRENHEIT
		PIPE DOWN		DIA.	DIAMETER
		PIPE UP		DN.	DOWN
		PIPE RISE (OR DN. FOR DROP)		DWGS.	DRAWINGS
		DIRECTION OF FLOW IN PIPE		DB	DRY BULB
	AV	AIR VENT (VALVE)		DTR	DUCT THRU ROOF
	CHV	CHECK VALVE		(E)	EXISTING
	SD	SUCTION DIFFUSER		EA	EXHAUST AIR
	CV (2W)	CONTROL VALVE (2-WAY)		ER	EXHAUST REGISTER
	CV (3W)	CONTROL VALVE (3-WAY)		EFF.	EFFICIENCY
	FGD	AUTOMATIC FLOW CONTROL DEVICE		ELEV.	ELEVATION
	GV	GATE VALVE		ENT.	ENTERING
		GLOBE/BALL/BUTTERFLY VALVE		EWT	ENTERING WATER TEMPERATURE
		COMBINATION BALANCING & SHUT-OFF VALVE		EXH.	EXHAUST
	FEV	FLOW ELEMENT VENTURI		EXIST.	EXISTING
		VALVE ON RISE OR DROP		FF	FINISHED FLOOR
	STR.	STRAINER		FIN.	FINISH
	CL	CAPPED LINE		FLR.	FLOOR
	DN.	DOWN OR DROP		GPM	GALLONS PER MINUTE
	UP	RISE OR RISER		IN.	INCH
	RV	PRESSURE RELIEF VALVE		IN.	INCH
	PG	PRESSURE GAUGE WITH BALL VALVE		HOA	HAND-OFF-AUTOMATIC
	R	ECCENTRIC REDUCER		HP	HORSEPOWER
	R	CONCENTRIC REDUCER		LD	LINEAR DIFFUSER
	FC	FLEXIBLE CONNECTION (PIPE)		LVG.	LEAVING
	TW	TEST WELL (PETE'S PLUG) - PRESSURE AND/OR TEMPERATURE		LWT	LEAVING WATER TEMPERATURE
	TI	THERMOMETER		MAX.	MAXIMUM
	PA	PIPE ANCHOR		MBH	ONE THOUSAND B.T.U.'s PER HOUR
	U	UNION		MECH.	MECHANICAL
		DUCTWORK (1ST NUMBER INDICATES WIDTH SHOWN), NET INSIDE DIMENSION		MIN.	MINIMUM
	TV	SQUARE ELBOW WITH TURNING VANES		MTD.	MOUNTED
	MTG.	MOUNTING		NC	NORMALLY CLOSED
		RADIUS ELBOW		NO	NORMALLY OPEN
	MVD	MANUAL VOLUME DAMPER		OBD	OPPOSED BLADE DAMPER
	MOD	MOTOR OPERATED DAMPER		OA	OUTSIDE AIR
	BDD	BACKDRAFT DAMPER		PD	PRESSURE DROP
	FD	FIRE DAMPER		PSIG	POUNDS PER SQUARE INCH GAUGE
	SD	DUCT MOUNTED SMOKE DETECTOR		RA	RETURN AIR
	SFD	AUTOMATIC SMOKE AND FIRE DAMPER		REG.	REGISTER
	FLEX	FLEXIBLE CONNECTION (DUCTWORK)		RR	RETURN REGISTER
		LINED DUCTWORK (OR FLENUM)		SA	SUPPLY AIR
		DUCT RISE IN DIRECTION OF FLOW		SF	SQUARE FEET
		DUCT DROP IN DIRECTION OF FLOW		SS	STAINLESS STEEL
		ROUND DUCT UP		ST	STEAM
		ROUND DUCT DOWN		TYP.	TYPICAL
		SUPPLY DUCT UP		UNO	UNLESS NOTED OTHERWISE
		SUPPLY DUCT DOWN		UOS	UNLESS OTHERWISE SPECIFIED
		RETURN AIR DUCT/OUTSIDE AIR DUCT UP		UTR	UP THRU ROOF
		RETURN AIR DUCT/OUTSIDE AIR DUCT DOWN		YAV	VARIABLE AIR VOLUME
		EXHAUST AIR DUCT UP		VFD	VARIABLE FREQUENCY DRIVE
		EXHAUST AIR DUCT DOWN		VTR	VENT THRU ROOF
	WG	WATER GAUGE		WB	WET BULB
	W	WITH		W	WITH

PLAN CHECK NOTES	
<ol style="list-style-type: none"><li>CERTIFICATE OF ACCEPTANCE (MECH-2A AND ENV-2A) AND ALL RELATED ACCEPTANCE DOCUMENTS SHALL BE SUBMITTED TO THE FIELD INSPECTOR DURING CONSTRUCTION. CERTIFICATE OF OCCUPANCY WILL NOT BE ISSUED UNTIL THESE FORMS ARE REVIEWED AND APPROVED.</li><li>ALL PIPING AND DUCT WORK SHALL BE INSULATED CONSISTENT WITH THE REQUIREMENTS OF SECTIONS 118, 123, 124 TITLE 24 ENERGY STANDARDS AND CHAPTER 6 OF CMC.</li><li>ALL HVAC SYSTEMS SHALL MEET THE CONTROL REQUIREMENTS PER SECTION 112 AND 122 E.E.S.</li><li>ALL HVAC EQUIPMENT AND APPLIANCES SHALL MEET THE REQUIREMENTS PER SECTION 111-113, 115, 120-124 TITLE 24 ENERGY STANDARDS.</li><li>PROVIDE SMOKE DETECTORS IN MAIN SUPPLY AIR DUCTS OF AIR MOVING SYSTEMS EXCEEDING 2000 CFM PER SECTION 909.0 CMC.</li></ol>	
TITLE 24 NOTES	
<ol style="list-style-type: none"><li>HVAC SYSTEMS SHALL MEET THE LATEST CONTROL REQUIREMENTS OF SECTIONS 112 &amp; 122 ENERGY EFFICIENCY STANDARDS.</li><li>DOORS AND WINDOWS SHALL MEET MINIMUM INFILTRATION REQUIREMENTS OF SECTION 116 ENERGY EFFICIENCY STANDARDS.</li><li>INSULATION AND FLEXIBLE DUCT SHALL COMPLY WITH STATE FIRE MARSHAL CRITERIA AND SHALL NOT EXCEED FLAME SPREAD OF 25 AND SMOKE DEVELOPED OF 50 PER ASTM-84, NFPA-225, AND U.L. 723.</li><li>ALL WORK SHALL BE IN ACCORDANCE WITH CITY CODES, CALIFORNIA ENERGY CONSERVATION STANDARDS, TITLE - 24, AND ALL OTHER APPLICABLE CODES.</li><li>ALL PIPING AND DUCT WORK SHALL BE INSULATED CONSISTENT WITH THE REQUIREMENTS OF SECTIONS 118, 123, 124 TITLE 24 ENERGY STANDARDS AND CHAPTER 6 OF CALIFORNIA MECHANICAL CODE.</li></ol>	
CA GREEN BUILDING NOTES	
<ol style="list-style-type: none"><li>IN MECHANICALLY VENTILATED BUILDINGS, PROVIDE OCCUPIED AREAS OF BUILDING WITH AIR FILTRATION MEDIA FOR OUTSIDE AND RETURN AIR PRIOR TO OCCUPANCY THAT PROVIDES AT LEAST MERV OF 8 (REF. SECTION 5.504.5.3).</li><li>PROVIDE TESTING AND ADJUSTING OF HVAC SYSTEMS AND CONTROLS PER 5.713.10.4.</li><li>IF THE HVAC SYSTEM IS USED DURING CONSTRUCTION, RETURN AIR FILTERS WITH A MERV 8 RATING SHALL BE USED PER 5.714.4.1.</li><li>INSTALLED HVAC EQUIPMENT SHALL NOT CONTAIN CFC'S OR HALONS PER 5.714.8.1.</li></ol>	
ANCHORAGE NOTES:	
<p><b>MEP COMPONENT ANCHORAGE NOTE</b></p> <p>ALL MECHANICAL, PLUMBING, AND ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER THE DETAILS ON THE OSA APPROVED CONSTRUCTION DOCUMENTS. WHERE NO DETAIL IS INDICATED THE FOLLOWING COMPONENTS SHALL BE ANCHORED OR BRACED TO MEET THE FORCE AND DISPLACEMENT REQUIREMENTS PRESCRIBED IN THE 2016 CBC, SECTIONS 1616A.1.18 THROUGH 1616A.1.26 AND ASCE 7-10 CHAPTER 13, 26 AND 30.</p> <ol style="list-style-type: none"><li>ALL PERMANENT EQUIPMENT AND COMPONENTS.</li><li>TEMPORARY OR MOVABLE EQUIPMENT THAT IS PERMANENTLY ATTACHED (E.G., HAND-WIRED) TO BUILDING UTILITY SERVICES SUCH AS ELECTRICITY, GAS, OR WATER.</li><li>MOVABLE EQUIPMENT THAT IS STATIONED IN ONE PLACE FOR MORE THAN 8 HOURS AND HEAVIER THAN 400 POUNDS IS REQUIRED TO BE ANCHORED WITH TEMPORARY ATTACHMENTS.</li></ol> <p>THE FOLLOWING MECHANICAL AND ELECTRICAL COMPONENTS SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE, BUT THE ATTACHMENT NEED NOT BE DETAILED ON THE PLANS. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK, PIPING, AND CONDUIT.</p> <ol style="list-style-type: none"><li>COMPONENTS WEIGHING LESS THAN 400 POUNDS AND HAVING A CENTER OF MASS LOCATED 4 FEET OR LESS ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT.</li><li>COMPONENTS WEIGHING LESS THAN 20 POUNDS, OR IN THE CASE OF DISTRIBUTED SYSTEMS LESS THAN 5 POUNDS PER FOOT WHICH ARE SUSPENDED FROM A ROOF OR FLOOR OR HUNG FROM A WALL.</li></ol> <p>FOR THOSE ELEMENTS THAT DO NOT REQUIRE DETAILS ON THE APPROVED DRAWINGS, THE INSTALLATION SHALL BE SUBJECT TO THE APPROVAL OF THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE OR STRUCTURAL ENGINEER DELEGATED RESPONSIBILITY AND THE OSA DISTRICT STRUCTURAL ENGINEER. THE PROJECT INSPECTOR WILL VERIFY THAT ALL COMPONENTS AND EQUIPMENT HAVE BEEN ANCHORED IN ACCORDANCE WITH THE ABOVE REQUIREMENTS.</p> <p><b>PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEM BRACING NOTE</b></p> <p>PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEMS SHALL BE BRACED TO COMPLY WITH THE FORCES AND DISPLACEMENTS PRESCRIBED IN ASCE 7-10 SECTION 13.3 AS DEFINED IN ASCE 7-10 SECTION 13.6.5.6, 13.6.7, 13.6.8, AND 2016 CBC SECTIONS 1616A.1.24, 1616A.1.25 AND 1616A.1.26.</p> <p>THE METHOD OF SHOWING BRACING AND ATTACHMENTS TO THE STRUCTURE FOR THE IDENTIFIED DISTRIBUTION SYSTEM ARE AS NOTED BELOW. WHEN BRACING AND ATTACHMENTS ARE BASED ON A PRE-APPROVED INSTALLATION GUIDE (E.G., SMACNA OR OSHPD OPM), COPIES OF THE BRACING SYSTEM INSTALLATION GUIDE OR MANUAL SHALL BE AVAILABLE ON THE JOBSITE PRIOR TO THE START OF AND DURING THE HANGING AND BRACING OF THE DISTRIBUTION SYSTEMS. THE STRUCTURAL ENGINEER OF RECORDS SHALL VERIFY THE ADEQUACY OF THE STRUCTURE TO SUPPORT THE HANGER AND BRACE LOADS.</p> <p>MECHANICAL PIPING (MP), MECHANICAL DUCTS (MD), PLUMBING PIPING (PP), ELECTRICAL DISTRIBUTION SYSTEMS (E)</p> <p>MP ( ) MD ( ) PP ( ) E ( ) - OPTION 1: DETAILED ON THE APPROVED DRAWINGS WITH PROJECT SPECIFIC NOTES AND DETAILS. MP (X) MD (X) PP (X) E (X) - OPTION 2: SHALL COMPLY WITH THE APPLICABLE OSHPD PRE-APPROVED (OPM #) # OPM-0043-13. MP ( ) MD ( ) PP (X) E ( ) - OPTION 3: SHALL COMPLY WITH THE SMACNA SEISMIC RESTRAINT MANUAL, OSHPD EDITION (2009), INCLUDING ANY ADDENDA, FASTENERS AND OTHER ATTACHMENTS NOT SPECIFICALLY IDENTIFIED IN THE SMACNA SEISMIC RESTRAINT MANUAL. OSHPD EDITION, ARE DETAILED ON THE APPROVED DRAWINGS WITH PROJECT SPECIFIC NOTES AND DETAILS. THE DETAILS SHALL ACCOUNT FOR THE APPLICABLE SEISMIC HAZARD LEVEL.</p> <p>AND CONNECTION LEVEL _____ FOR THE PROJECT AND CONDITIONS.</p>	

GENERAL NOTES:	
<ol style="list-style-type: none"><li>THESE DRAWINGS ARE A GENERAL GRAPHIC PRESENTATION OF THE WORK. DUCTWORK, PIPING, AND EQUIPMENT AS SHOWN, ARE SCHEMATIC, FABRICATE AND INSTALL BASED ON ACTUAL FIELD MEASUREMENT. COORDINATE WITH OTHER TRADES. PROVIDE A COMPLETE SET OF SHOP DRAWINGS REFLECTING ACTUAL DIMENSIONS, ACCESS REQUIREMENTS, AND DETAILS BASED UPON THE ACTUAL EQUIPMENT PROCURED. MAINTAIN AN UP TO DATE SET OF AS-BUILT DRAWINGS AT THE JOB SITE.</li><li>THESE DRAWINGS ARE TO BE CONSIDERED NOT FOR CONSTRUCTION UNTIL THEY ARE STAMPED, SIGNED, AND PERMITTED. UNTIL THEN THEY ARE SUBJECT TO CHANGE WITHOUT NOTICE.</li><li>COMPLY WITH CALIFORNIA MECHANICAL CODE (CMC), CALIFORNIA PLUMBING CODE (CPC), AND NATIONAL FIRE PROTECTION AGENCY (NFPA) AND GOVERNING CODES. THERE SHALL BE NO EXCEPTION. REPORT DEFICIENCIES WITHIN THIRTY (30) DAYS UPON AUTHORIZATION TO PROCEED.</li><li>REVIEW ALL DRAWINGS AND SPECIFICATIONS INCLUDING ARCHITECTURAL, STRUCTURAL, CIVIL, MECHANICAL, PLUMBING, AND ELECTRICAL. ANY QUESTIONS SHALL BE BROUGHT UP, IN WRITING, TO THE ATTENTION OF THE ENGINEER BEFORE THE START OF CONSTRUCTION.</li><li>PROVIDE ACCESS AND CLEARANCE FOR MAINTENANCE FOR MECHANICAL EQUIPMENT AND COMPONENTS AS RECOMMENDED BY EQUIPMENT MANUFACTURER AND APPLICABLE CODES.</li><li>HANDLE, STORE AND INSTALL EQUIPMENT PER MANUFACTURER'S INSTRUCTIONS.</li><li>INSTALL VALVES WITH UNIONS OR FLANGES AT EACH PIECE OF EQUIPMENT ARRANGED TO ALLOW SERVICE MAINTENANCE, AND EQUIPMENT REMOVAL WITHOUT SYSTEM SHUT-DOWN.</li><li>BRACE AND SUPPORT PIPES, CONDUIT, AND DUCTWORK IN ACCORDANCE WITH SMACNA GUIDELINES FOR SEISMIC RESTRAINTS OF MECHANICAL AND PLUMBING PIPING SYSTEM. REFERENCE ANCHORAGE NOTES OPM 0043-13 FOR ANCHORAGE.</li><li>REFER TO ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT LOCATION OF DIFFUSERS, REGISTERS, GRILLES, AND ACCESS PANELS.</li><li>ALL DUCT DIMENSIONS, AS SHOWN ON MECHANICAL DRAWINGS ARE CLEAR INSIDE DIMENSIONS.</li><li>INSULATION AND FLEXIBLE DUCT SHALL COMPLY WITH STATE FIRE MARSHAL CRITERIA AND SHALL NOT EXCEED FLAME SPREAD OF 25 AND SMOKE DEVELOPED OF 50 PER ASTM-84, NFPA-223, AND UL 723.</li><li>INSULATE PIPING AND DUCTWORK IN ACCORDANCE WITH THE GOVERNING CODES.</li><li>COMMISSION AND START-UP THE MECHANICAL SYSTEMS TO ASSURE A COMPLETE AND OPERATIONAL HVAC SYSTEM IN ACCORDANCE WITH ASHRAE AND NEBB.</li><li>ALL SQUARE ELBOWS IN DUCTWORK SHALL HAVE DOUBLE THICKNESS TURNING VANES. ALL RADIUS ELBOWS IN DUCTWORK SHALL BE MINIMUM 1.5W (1.5 WIDTH) AND HAVE 3 SPLITTER VANES. PROVIDE MANUAL VOLUME DAMPER AT EACH BRANCH DUCT TAKE-OFF SERVING EACH AIR TERMINAL DEVICE. PROVIDE BALANCING DAMPERS FOR EACH MAIN DUCT TAKE-OFF IN ACCORDANCE WITH SMACNA IN ORDER TO ASSURE A COMPLETELY BALANCED SYSTEM.</li><li>FIRE DAMPER ASSEMBLIES, INCLUDING LOCATION, SLEEVES, AND INSTALLATION PROCEDURES SHALL BE APPROVED BY THE BUILDING INSPECTOR PRIOR TO PROCUREMENT AND INSTALLATION. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATION OF FIRE RATED WALLS AND SMOKE SEPARATIONS.</li><li>COORDINATE WITH ELECTRICAL AND CONTROL CONTRACTORS FOR ALL POWER REQUIREMENTS PRIOR TO BID.</li><li>COORDINATE WITH ELECTRICAL AND CONTROL CONTRACTORS FOR ALL POWER REQUIREMENTS PRIOR TO ORDERING ANY EQUIPMENT.</li><li>UPON INSTALLATION OF ALL EQUIPMENT, DEVICES, VIBRATION ISOLATION, ETC., PROVIDE WRITTEN CONFIRMATION BY EQUIPMENT MANUFACTURER'S REPRESENTATIVES TO ENSURE COMPLIANCE WITH MANUFACTURER'S REQUIREMENTS.</li><li>PROVIDE DETAILS AND SEISMIC CALCULATIONS FOR ALL EQUIPMENT ON VIBRATION ISOLATION. ALL DETAILS SHALL BE STAMPED BY A STRUCTURE ENGINEER FROM VIBRATION ISOLATION MANUFACTURER.</li></ol>	
PROJECT NOTES	
<ol style="list-style-type: none"><li>CONTRACTOR SHALL COORDINATE ARCHITECTURAL, REFLECTED CEILINGS PLANS WITH ALL DISCIPLINES TO VERIFY CLEARANCES BETWEEN HVAC DUCTS, HVAC PIPING, LIGHT FIXTURES, ELECTRICAL DATA CONDUITS, PLUMBING LINES, FIRE PROTECTION LINES, STRUCTURAL MEMBERS, ETC. SPECIAL ATTENTION IS REQUIRED ALONG THE LENGTH OF MAIN MECHANICAL SUPPLY AND RETURN AIR DUCTS WHERE THERE IS LIMITED CLEARANCE FOR PASSAGE OR ROUTING OF UTILITIES.</li><li>THE SPACE FOR DUCT WORK &amp; MECHANICAL EQUIPMENT FOR THIS PROJECT IS LIMITED. COORDINATION WITH OTHER TRADES IS CRITICAL. PROCEED WITH PREPARATION OF SHOP DRAWINGS IMMEDIATELY UPON RECEIVING AN AUTHORIZATION TO PROCEED FOR THE PROJECT. COMPLETE SHOP DRAWINGS PRIOR TO MATERIAL FABRICATION AND INSTALLATION. SHOP DRAWINGS SHALL BE REVIEWED BY COMMISSIONING AGENT PRIOR TO SUBMITTAL.<ol style="list-style-type: none"><li>DUCT, PIPE AND PLUMBING ELEVATIONS.</li><li>DOUBLE LINE DUCTWORK AND PIPING (6" &amp; LARGER).</li><li>ACTUAL SIZE OF PURCHASED EQUIPMENT. PER APPROVED CONTRACTOR'S SHOP DRAWINGS.</li><li>ACCESS PANELS INCLUDING CEILING PANELS.</li><li>ACCESS CLEARANCES FOR EQUIPMENT.</li><li>ACTUAL LOCATIONS OF CEILING DIFFUSERS, REGISTERS, AND RETURN REGISTERS.</li><li>LOCATIONS OF STRUCTURAL MEMBERS SUCH AS BEAMS.</li><li>ACTUAL LOCATIONS OF CONTROL PANELS AND POWER CONNECTIONS TO EQUIPMENT.</li><li>COLOR CODED DUCT AND PIPING BASED ON MATERIAL USED.</li><li>MINIMUM 1/4"=1/4" SCALE DRAWINGS.</li><li>LABEL AND TAG SCHEDULE FOR EQUIPMENT.</li><li>DUCT TRANSITIONS TO CLEAR BEAMS OR TIGHT AREAS.</li><li>ROOM TEMPERATURE SENSOR LOCATIONS.</li><li>POINT OF CONNECTION TO UTILITIES OUTSIDE THE BUILDING.</li><li>SECTIONS OR 3-D DRAWINGS OF CONGESTED AREAS.</li><li>GRID LINES.</li><li>UTILITY PROFILES FOR UNDERGROUND PIPING.</li></ol></li><li>DO NOT COMMENCE WITH ANY INSTALLATION, ORDERING OF ANY EQUIPMENT OR MATERIAL FABRICATION WITHOUT AN APPROVED SHOP DRAWING SUBMITTAL.</li><li>FOR EACH SUBMITTAL, THE CONTRACTOR SHALL PROVIDE A LETTER (ON COMPANY LETTERHEAD) AND SIGNED BY THE PROJECT MANAGER INDICATING THE SUBMITTAL HAS BEEN FULLY IN HOUSE REVIEWED TO ENSURE FULL COMPLIANCE WITH THE CONTRACT DOCUMENTS AND COORDINATION WITH OTHER TRADES. ANY EXCEPTIONS TO THE CONTRACT DOCUMENTS SHALL BE CLEARLY INDICATED ON THIS LETTER. ANY DISCREPANCIES/EXCEPTIONS NOT IDENTIFIED IN WRITING SHALL BE CORRECTED AT THE SOLE EXPENSE OF THE CONTRACTOR AND AT NO EXPENSE TO THE OWNER AND ENGINEER.</li><li>CONDENSATE DRAIN PIPING SHALL BE TYPE L COPPER WITH SOLDERED JOINTS.</li></ol>	



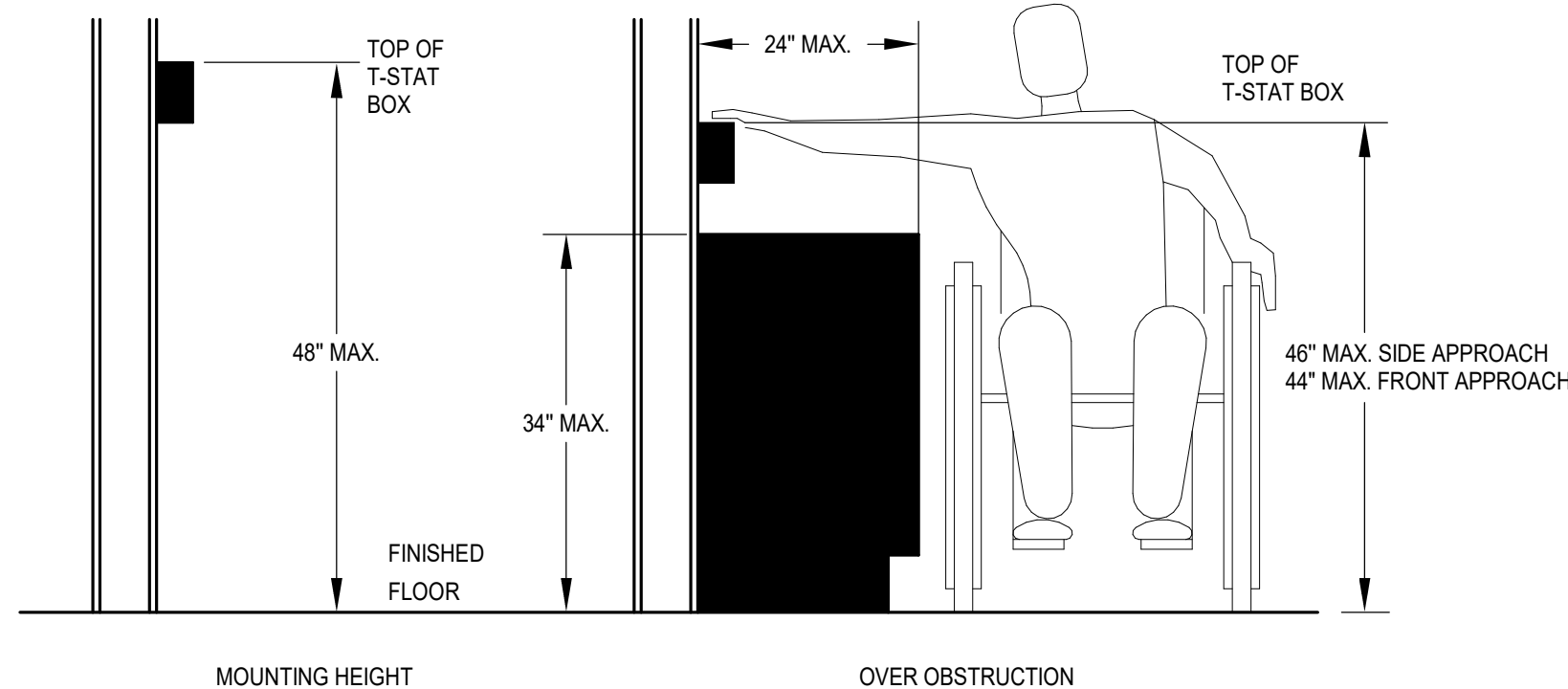
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SPLIT SYSTEM HEAT PUMP & COOLING ONLY SCHEDULE																																		
SYMBOL	DESCRIPTION	SERVES	INDOOR FAN SECTION											SYMBOL	DESCRIPTION	OUTDOOR SECTION										COMBINED CAPACITY							REMARKS	
			INDOOR FAN MOTOR													ELECTRICAL DATA																		
			CFM	E.S.P.	H.P.	DRIVE	V	PH	Hz	MCA	FLA	MOC	TK			MIN. A FT	OPER. WT. LBS.	RLA	MCA	MOC	V	PH	Hz	OPER. WT. LBS.	TOTAL CAP. SENSIBLE MBH	COOLING CAP. MBH	AMB °F	ENT DB °F	ENT WB °F	SEER	AMB °F	HEATING OUTPUT MBH		HSPF
FC 1	CARRIER 40MAQB36B-3	ELECTRICAL ROOM - 100	870	--	--	DIRECT	208	1	60	0.40	--	--	--	50	CU 1	CARRIER 38MAQB36R-3	--	25.0	35.0	208	1	60	175	36.0	27.0	95	80	67	16.0	--	--	--	--	① ② ③
FC 2	CARRIER 40MAQB36B-3	ELECTRICAL ROOM - 100	870	--	--	DIRECT	208	1	60	0.40	--	--	--	50	CU 2	CARRIER 38MAQB36R-3	--	25.0	35.0	208	1	60	175	36.0	27.0	95	80	67	16.0	--	--	--	--	① ② ③
* 100% EQUIPMENT PROCESS LOAD (NO OCCUPANTS) ① CONTROLS CONTRACTOR SHALL PROVIDE AND INSTALL EMS DDC ROOM TEMPERATURE SENSOR FOR MONITORING, TRENDING AND ALARMING. ② FC SHALL BE CONTROLLED BY FC UNIT MANUFACTURER PROVIDE HARD WIRED CONTROLS. LOW VOLTAGE CONTROLS ARE TO BE WIRED AND INSTALLED BY THE CONTROLS CONTRACTOR. ③ FC UNIT POWERED BY CU.																																		



① MOUNTING HEIGHT OVER OBSTRUCTION  
NO SCALE

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VALHALLA HIGH SCHOOL  
1725 HILLSDALE ROAD, EL CAJON, CA 92019  
GROSSMONT UNION HIGH SCHOOL DISTRICT

MECHANICAL LEGEND  
AND GENERAL NOTES

M0.01

VALHALLA HIGH SCHOOL BATTERY REPLACEMENT:





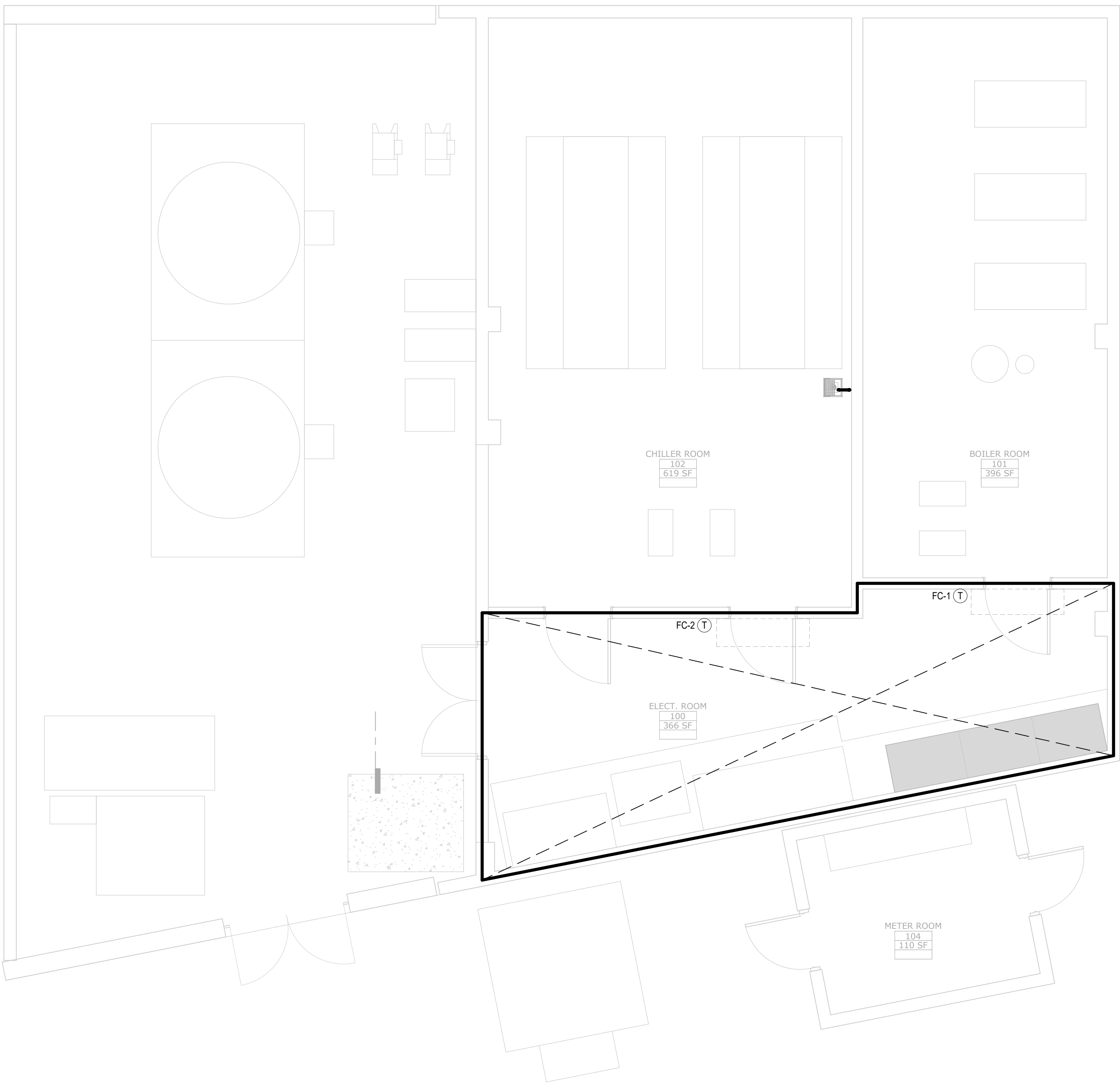
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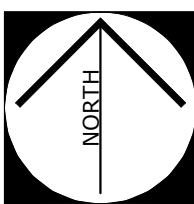
1 MECH ZONING PLAN  
1/4" = 1'-0"

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REPLACEMENT  
VALHALLA HIGH SCHOOL  
1725 HILLSDALE ROAD, EL CAJON, CA 92019  
GROSSMONT UNION HIGH SCHOOL DISTRICT

MECH ZONING PLAN

M1.01

VALHALLA HIGH SCHOOL BATTERY REPLACEMENT:



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DATE: 05-24-2024 05-24-2025



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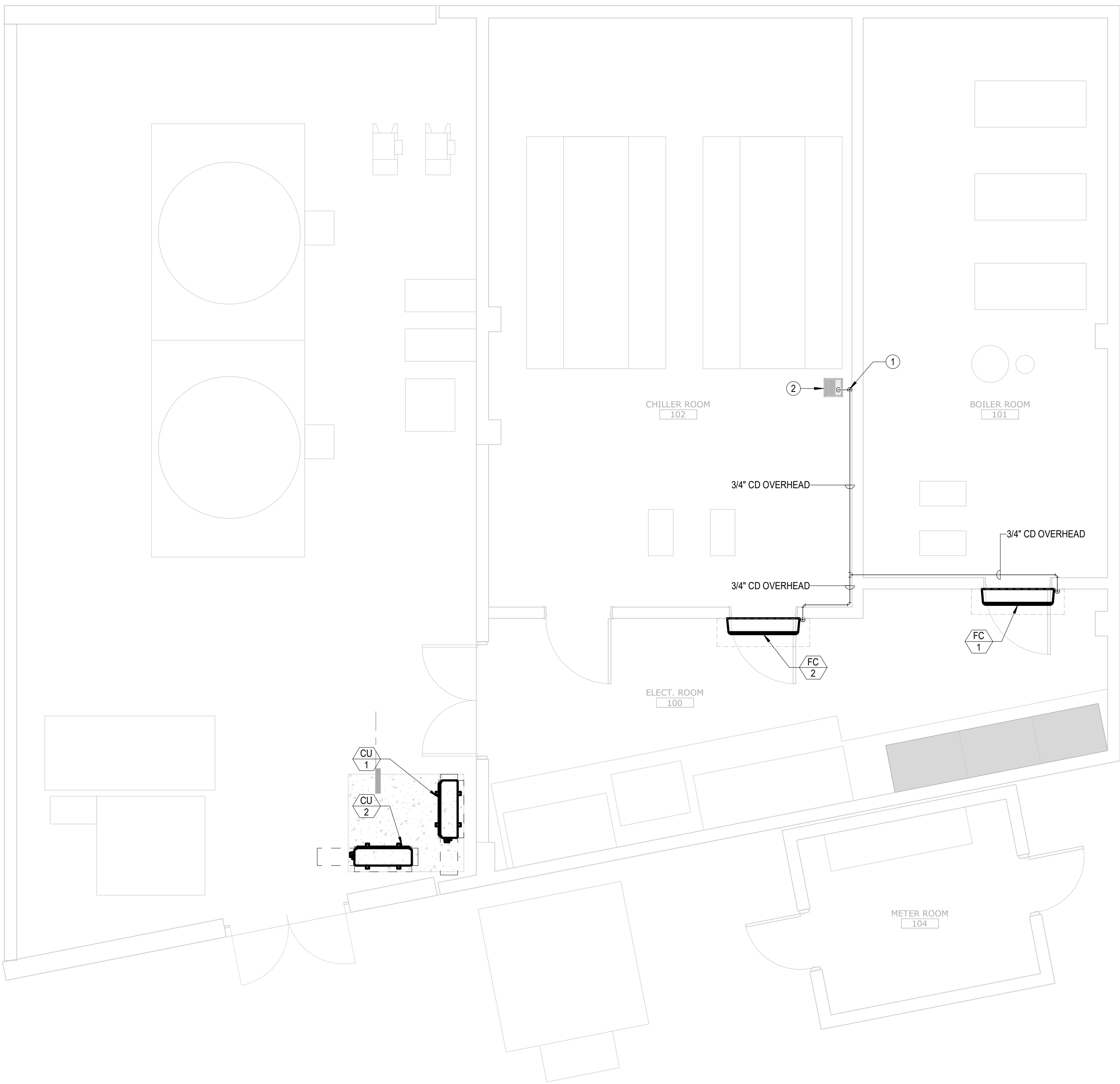
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KEYNOTES

- 1 3/4" CONDENSATE DRAIN DOWN WALL AND DRAIN INDIRECT TO FLOOR SINK.
- 2 EXISTING FLOOR SINK.



1 MECH FLOOR PLAN  
1/4" = 1'-0"

PROJECT No. :5003

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VALHALLA HIGH SCHOOL BATTERY  
REPLACEMENT

VALHALLA HIGH SCHOOL  
1725 HILLSDALE ROAD, EL CAJON, CA 92019  
GROSSMONT UNION HIGH SCHOOL DISTRICT

MECH FLOOR PLAN

M2.01

VALHALLA HIGH SCHOOL BATTERY REPLACEMENT:



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ABBREVIATIONS

A	AMPERE (AMPS)
AC	ALTERNATING CURRENT
AF	AMPS-FRAME (RATING)
AG	AMP INTERRUPTING CURRENT
AM	AMMETER
AS	AMP SWITCH (FUSED SWITCH RATING)
AT	AMPS-TRIP (RATING)
AWG	AMERICAN WIRE GAUGE
BO	BAKE OFFER
BLDG	BUILDING
C	CONDUIT
CB	CIRCUIT BREAKER
CO	CONDUIT ONLY
CT	CURRENT TRANSFORMER
CU	COPPER
CFOI	CONTRACTOR FURNISHED OWNER INSTALLED
CFOI	CONTRACTOR FURNISHED CONTRACTOR INSTALLED
DPST	DOUBLE POLE DOUBLE THROW
DPST	DOUBLE POLE DOUBLE THROWN
DWG	DRAWING
EX	EXISTING
FLA	FULL LOAD AMPS
FVR	FULL VOLTAGE REVERSING
FVNR	FULL VOLTAGE NON-REVERSING
GFI	GROUND FAULT INTERRUPTER
GRD/GND	GROUND
HID	HIGH INTENSITY DISCHARGE
HOA	HAND-OFF-AUTOMATIC
HP	HORSEPOWER
HPS	HIGH PRESSURE SODIUM
HZ	HERTZ
KN	KILOWATT
LCL	LONG CONTINUOUS LOAD
LRA	LOCKED ROTOR AMPS
LTS	LIGHTING
MCC	MOTOR CONTROL CENTER
MCM (KCM)	THOUSAND CIRCULAR MILS
MECH	MECHANICAL
NG	NORMALLY CLOSED
NF	NON-FUSED
NO	NORMALLY OPEN/NUMBER
OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
OFCI	OWNER FURNISHED OWNER INSTALLED
P	POLE
PH	PHASE
POC	POINT OF CONNECTION
PRS	PVC COATED RIGID STEEL (CONDUIT)
PT	POTENTIAL TRANSFORMER
PVC	POLYVINYL CHLORIDE DUCT
SMBD	SWITCHBOARD
TYP	TYPICAL
UG	UNDERGROUND
UON	UNLESS OTHERWISE NOTED
V	VOLT
VA	VOLT-AMPERES
VM	VOLTMETER
VL	VERIFY LOCATION
N	WIRE/WATTS
NP	WEATHER-PROOF (NEMA TYPE 3R)
NT	WATERTIGHT
XP	EXPLOSION PROOF (RATED FOR AREA HAZARD)

ELECTRICAL SYMBOL LEGEND

POWER CONTINUED

	DUPLEX RECEPTACLE, FLOOR MOUNTED
	DUPLEX RECEPTACLE, WALL MOUNTED, +18" A.F.F. (U.O.N.)
	RECEPTACLE, WALL MOUNTED HORIZONTALLY, +18" A.F.F. (U.O.N.)
	FOURPLEX RECEPTACLE, WALL MOUNTED, +18" A.F.F. (U.O.N.)
	RECEPTACLE MOUNTED +6" ABOVE COUNTER BACKSPLASH SEE ARCHITECTURAL PLANS FOR REQUIRED MOUNTING HEIGHT PRIOR TO ROUGH-IN.
	PROVIDE (2) DUPLEX RECEPTACLE CEILING MOUNTED LOCATE ADJACENT TO PROJECTOR. FIELD VERIFY EXACT LOCATION PRIOR TO ROUGH-IN.
	RECEPTACLE WITH (2) USB PORTS MOUNTED +6" ABOVE COUNTER BACKSPLASH. SEE ARCHITECTURAL PLANS FOR REQUIRED MOUNTING HEIGHT PRIOR TO ROUGH-IN. EATON #TR1756.
	SINGLE RECEPTACLE, WALL MOUNTED +18" A.F.F. (U.O.N.)
	SINGLE RECEPTACLE (CLOCK HANGER TYPE) WALL MOUNTED +7'-0" A.F.F. (U.O.N.)
	SWITCH CONTROLLED DUPLEX RECEPTACLE +18" U.O.N.
	CONTROLLED FOURPLEX RECEPTACLE +18" U.O.N. (1) DUPLEX, (1) HALF HOT CONTROLLED DUPLEX. SEE LIGHTING CONTROL DIAGRAMS FOR FURTHER INFO.
	DUPLEX GROUND FAULT INTERRUPTING RECEPTACLE +18" A.F.F. (U.O.N.)
	DUPLEX RECEPTACLE ON EMERGENCY CIRCUIT +18" A.F.F. (U.O.N.)
	DUPLEX RECEPTACLE IN WEATHERPROOF ENCLOSURE +18" A.F.F. (U.O.N.)
	DUPLEX RECEPTACLE IN WEATHERPROOF "LOCKING" ENCLOSURE +18" A.F.F. (U.O.N.) (SEE TYPICAL DETAILS E3 SERIES SHEETS AND SPECIFICATIONS FOR REQUIRED TYPE).
	DUPLEX RECEPTACLE (ORANGE) ISOLATED GROUND WALL MOUNTED +18" A.F.F. (U.O.N.)
	FOURPLEX RECEPTACLE (ORANGE) ISOLATED GROUND WALL MOUNTED +18" A.F.F. (U.O.N.)
	DUPLEX RECEPTACLE SAFETY TYPE / TAMPER PROOF WALL MOUNTED +18" A.F.F. (U.O.N.)
	DUPLEX COMPUTER RECEPTACLE (GREY), WALL MOUNTED +18" A.F.F. (U.O.N.)
	JUNCTION BOX, CEILING OR WALL MOUNTED
	HAND DRYER CONNECTION, SEE ARCHITECTURAL FOR MOUNTING HEIGHT.
	FUSED DISCONNECT SWITCH, WHERE SHOWN NF = NON-FUSED.
	MANUAL MOTOR STARTER +48" A.F.F. OR ON EQUIPMENT (U.O.N.)
	MOTOR CONNECTION, NUMERAL INDICATES HORSEPOWER.
	MECHANICAL EQUIPMENT TAG (SEE MECHANICAL DRAWINGS FOR DESCRIPTION)

	CONDUIT AND WIRE, CONCEALED IN CEILING OR WALL
	CONDUIT AND WIRE, CONCEALED IN OR UNDER FINISHED FLOOR OR UNDER FINISHED GRADE.
	FLEXIBLE CONDUIT CONNECTION
	BRANCH CIRCUIT HOMERUN TO PANEL. SLASHES INDICATE NUMBER OF CONDUCTORS, EQUIPMENT GROUND WIRE NOT INDICATED U.O.N. #12 CONDUCTORS ARE MINIMUM, NO HASH MARKS = MIN (2) #12
	3/4" CONDUIT STUBBED FROM DEVICE TO ABOVE ACCESSIBLE CEILING
	BRANCH CIRCUIT HOMERUN, NUMBER INDICATES INCREASED CONDUCTOR SIZE, CONDUCTORS SHALL REMAIN AS INDICATED FOR SIZE THROUGHOUT THE ENTIRE CIRCUIT.
	PANELBOARD, SURFACE MOUNTED.
	PANELBOARD, RECESSED

GENERAL PROJECT NOTES:

- UNLESS WHERE OTHERWISE NOTED, ALL WORK INDICATED ON THESE DRAWINGS SHALL BE CONSIDERED NEW WORK.
- UNLESS WHERE OTHERWISE NOTED, ALL DIMENSIONS ARE TO BE CENTERLINE OF THE DEVICE.
- "GENERAL NOTES" SHOWN ON AN INDIVIDUAL DRAWING APPLY TO ALL WORK SHOWN ON THAT SHEET. "KEY NOTES" ONLY APPLY TO SPECIFIC ITEMS WHERE ANNOTATED AT SPECIFIC LOCATIONS. SOME KEY NOTES MAY NOT APPLY TO ANY SPECIFIC ITEMS.
- UNLESS SPECIFICALLY SHOWN ON THESE PLANS, NO STRUCTURAL MEMBER SHALL BE CUT, NEITHER DRILLED NOR NOTCHED WITHOUT PRIOR WRITTEN AUTHORIZATION FROM THE STRUCTURAL ENGINEER AND THE DIVISION OF THE STATE ARCHITECT.

GENERAL DEMOLITION NOTES:

- ALL ELECTRICAL EQUIPMENT, EXPOSED RACEWAY AND CONDUIT, OUTLET BOXES AND RINGS, AND DEVICES ARE TO BE REMOVED, EXCEPT WHERE SHOWN TO REMAIN. EXISTING WIRING, WHETHER EXPOSED, IN CONDUIT OR RACEWAY IS TO BE REMOVED TO THE GREATEST EXTENT POSSIBLE.
- THE ELECTRICAL CONTRACTOR IS TO DIRECT THE REMOVAL OF THE ABOVE LISTED WORK.

MEP COMPONENT ANCHORAGE NOTE:

ALL MECHANICAL, PLUMBING, AND ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER THE DETAILS ON THE DSA- APPROVED CONSTRUCTION DOCUMENTS. THE FOLLOWING COMPONENTS SHALL BE ANCHORED OR BRACED TO MEET THE FORCE AND DISPLACEMENT REQUIREMENTS PRESCRIBED IN THE 2019 CBC SECTIONS 1611A.1.15 THROUGH 1611A.1.26 AND ASCE 7-16 CHAPTERS 13, 26, AND 30:

- ALL PERMANENT EQUIPMENT AND COMPONENTS.
- TEMPORARY, MOVABLE OR MOBILE EQUIPMENT THAT IS PERMANENTLY ATTACHED (E.G. HARD WIRED) TO THE BUILDING UTILITY SERVICES SUCH AS ELECTRICITY, GAS OR WATER. "PERMANENTLY ATTACHED" SHALL INCLUDE ALL ELECTRICAL CONNECTIONS EXCEPT PLUGS FOR 110/220 VOLT RECEPTACLES HAVING A FLEXIBLE CABLE.
- TEMPORARY, MOVABLE OR MOBILE EQUIPMENT WHICH IS HEAVIER THAN 400 POUNDS OR HAS A CENTER OF MASS LOCATED 4 FEET OR MORE ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT IS REQUIRED TO BE RESTRAINED IN A MANNER APPROVED BY DSA.

THE FOLLOWING MECHANICAL AND ELECTRICAL COMPONENTS SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE BUT NEED NOT DEMONSTRATE DESIGN COMPLIANCE WITH THE REFERENCES NOTED ABOVE. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK, PIPING, AND CONDUIT. FLEXIBLE CONNECTIONS MUST ALLOW MOVEMENT IN BOTH TRANSVERSE AND LONGITUDINAL DIRECTIONS:

- COMPONENTS WEIGHING LESS THAN 400 POUNDS AND HAVING A CENTER OF MASS LOCATED 4 FEET OR LESS ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT.
- COMPONENTS WEIGHING LESS THAN 20 POUNDS, OR IN THE CASE OF DISTRIBUTED SYSTEMS, LESS THAN 5 POUNDS PER FOOT, WHICH ARE SUSPENDED FROM A ROOF OR FLOOR OR HUNG FROM A WALL.

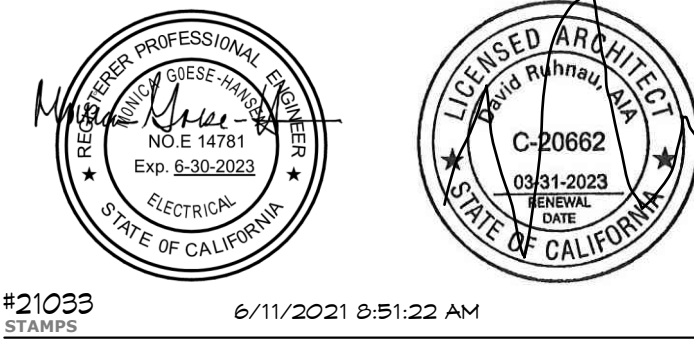
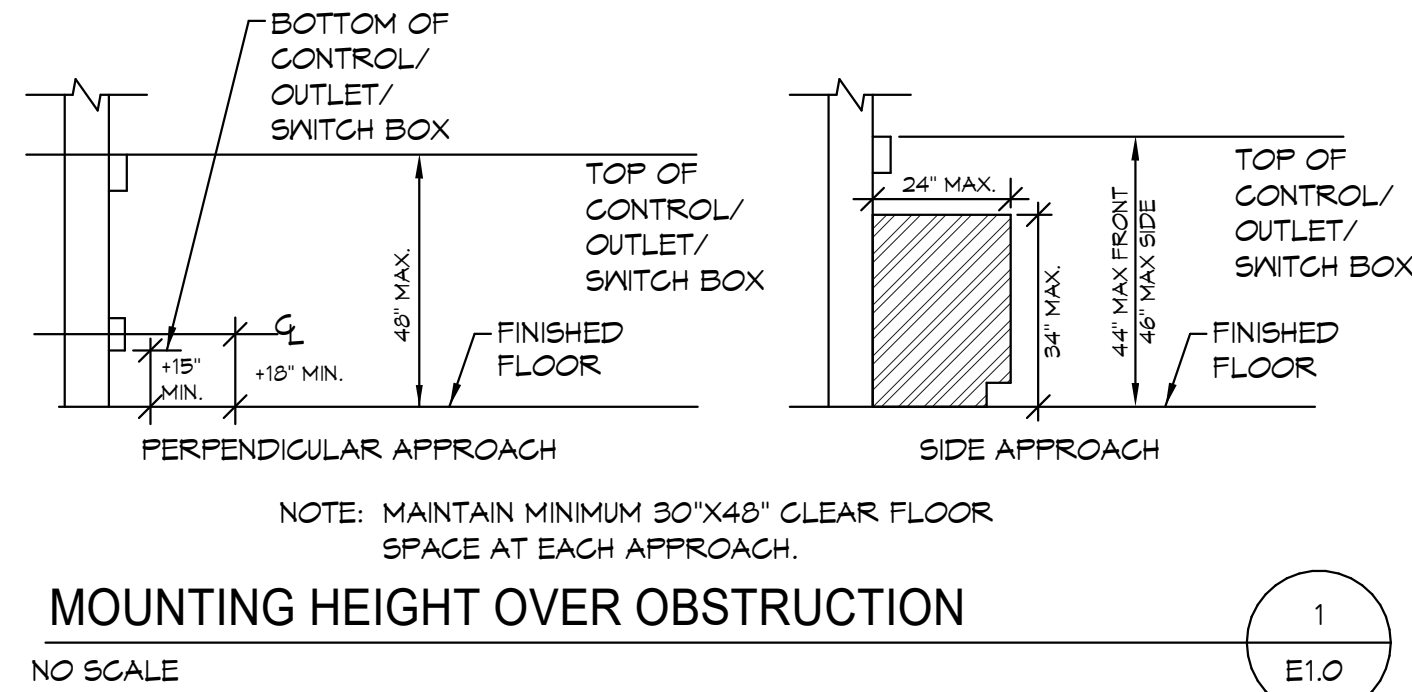
THE ANCHORAGE OF ALL MECHANICAL, ELECTRICAL AND PLUMBING COMPONENTS SHALL BE SUBJECT TO THE APPROVAL OF THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE OR STRUCTURAL ENGINEER DELEGATED RESPONSIBILITY AND ACCEPTANCE BY DSA. THE PROJECT INSPECTOR WILL VERIFY THAT ALL COMPONENTS AND EQUIPMENT HAVE BEEN ANCHORED IN ACCORDANCE WITH THE ABOVE REQUIREMENTS.

PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEM BRACING NOTE

PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEMS SHALL BE BRACED TO COMPLY WITH THE FORCES AND DISPLACEMENTS PRESCRIBED IN ASCE 7-16 SECTION 13.3 AS DEFINED IN ASCE 7-16 SECTIONS 13.6.5, 13.6.6, 13.6.7, 13.6.8; AND 2019 CBC, SECTIONS 1611A.1.24, 1611A.1.25 AND 1611A.1.26.  
THE METHOD OF SHOWING BRACING AND ATTACHMENTS TO THE STRUCTURE FOR THE IDENTIFIED DISTRIBUTION SYSTEM ARE AS NOTED BELOW, WHEN BRACING AND ATTACHMENTS ARE BASED ON A PREAPPROVED INSTALLATION GUIDE (E.G., OSHPD OPM FOR 2019 CBC OR LATER), COPIES OF THE BRACING SYSTEM INSTALLATION GUIDE OR MANUAL SHALL BE AVAILABLE ON THE JOBSITE PRIOR TO THE START OF AND DURING THE HANGING AND BRACING OF THE DISTRIBUTION SYSTEMS. THE STRUCTURAL ENGINEER OF RECORD SHALL VERIFY THE ADEQUACY OF THE STRUCTURE TO SUPPORT THE HANGER AND BRACE LOADS.  
MECHANICAL PIPING (MP), MECHANICAL DUCTS (MD), PLUMBING PIPING (PP), ELECTRICAL DISTRIBUTION SYSTEMS (E):

MP ☐ MD ☐ PP ☐ E ☒ - OPTION 1: DETAILED ON THE APPROVED DRAWINGS WITH PROJECT SPECIFIC NOTES AND DETAILS.

MP ☐ MD ☐ PP ☐ E ☐ - OPTION 2: SHALL COMPLY WITH THE APPLICABLE OSHPD PRE-APPROVED (OPM) # \_\_\_\_\_



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PARTIAL SITE PLAN - ELECTRICAL

SCALE: 1" = 20'-0"  
2

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ISSUE No. DATE DESCRIPTION	REVISION No. DATE DESCRIPTION

RUHNAUCLARKE.COM

3775 TENTH STREET, RIVERSIDE CALIFORNIA 92505(951) 684-4664 / 5751 PALMER WAY, SUITE C, CARLSBAD CALIFORNIA 92008(760) 438-1889

**VALHALLA HIGH SCHOOL BATTERY REPLACEMENT**  
VALHALLA HIGH SCHOOL  
1725 HILLSDALE ROAD, EL CAJON, CA 92019  
GROSSMONT UNION HIGH SCHOOL DISTRICT

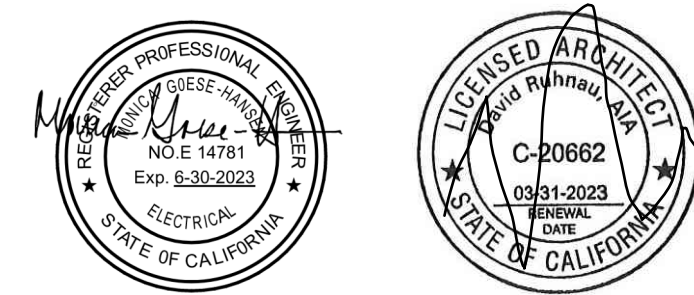
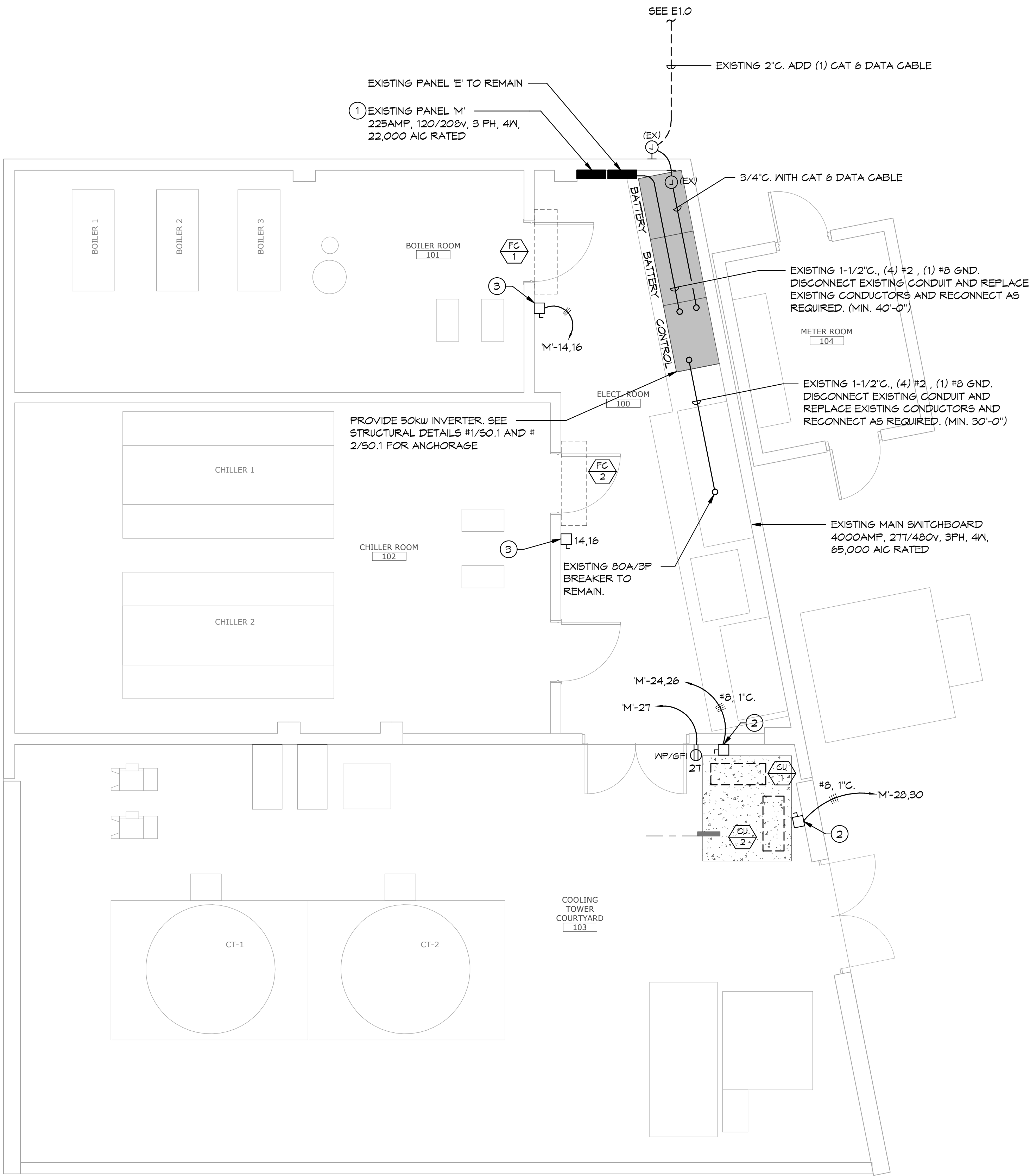
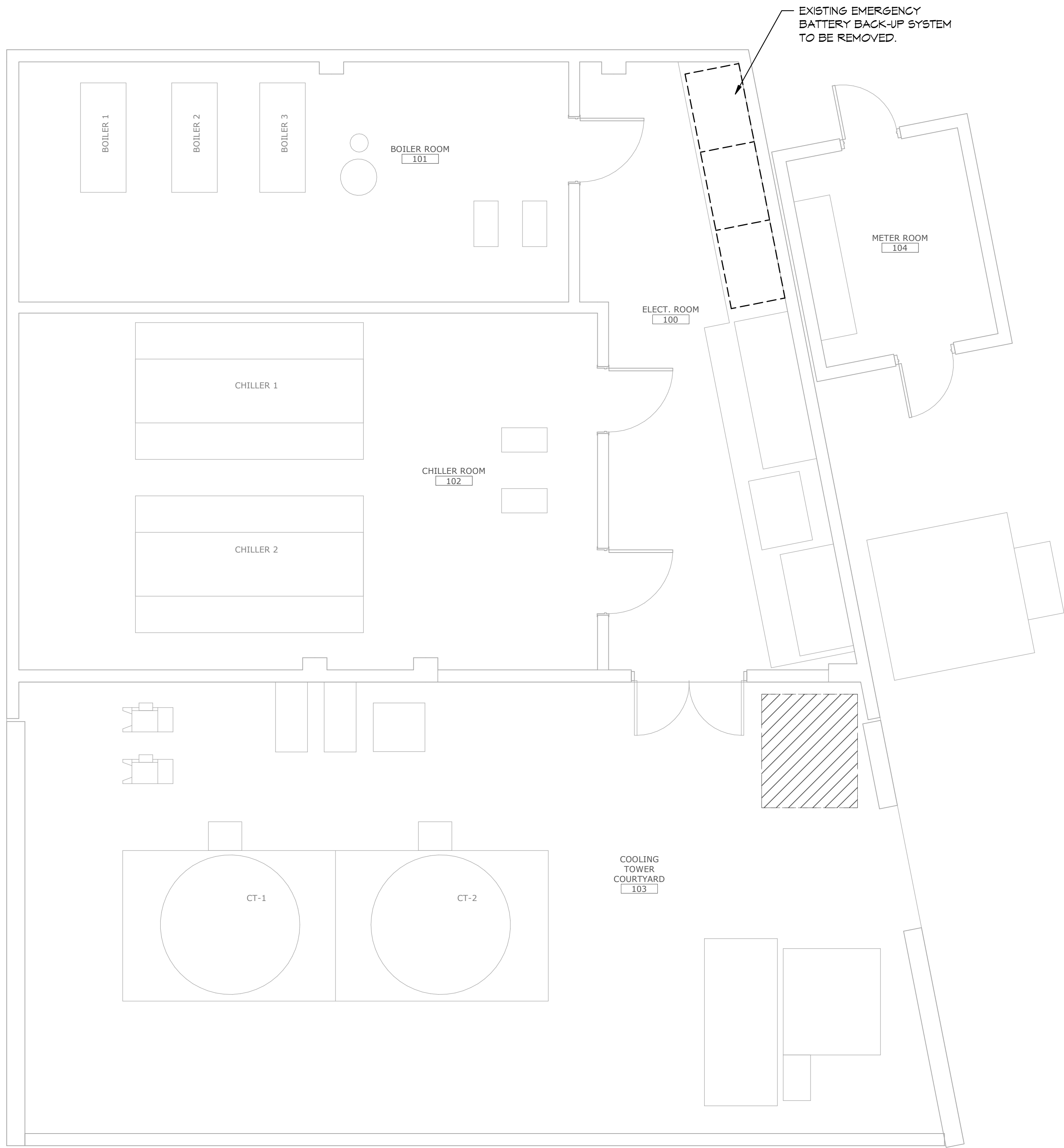
ELECTRICAL SYMBOLS,  
ABBREVIATIONS, AND  
NOTES

E1.0

Project Number

VALHALLA HIGH SCHOOL BATTERY REPLACEMENT:





#21033 6/11/2021 8:51:22 AM AGENCY APPROVAL 12/10/2020 12:25



Power | Lighting | Multimedia Communications | Data Networking

12875 Brookprinter Place, Suite 300 Poway, CA 92064 P 858.679.4030 | F 858.513.0559 www.jce-inc.com

KEY NOTES:

- 1 PROVIDE (1) 20A/1P BREAKER, (2) 40A/2P BREAKERS AND (1) 20A/2P BREAKER IN EXISTING SPACES.
- 2 60A/3P/3R DISCONNECT WITH 35 AMP FUSES.
- 3 30A/2P DISCONNECT WITH 10 AMP FUSES.

MOD FLOOR PLAN - DEMOLITION

SCALE: 1/4" = 1'-0" 2

MOD FLOOR PLAN - POWER

SCALE: 1/4" = 1'-0" 1

PROJECT No. :Project Number 6/11/2021 8:51:22 AM

DRAWN BY:			CHECKED BY:					
ISSUE No.	DATE	DESCRIPTION	REVISION No.	DATE	DESCRIPTION			
ISSUE No.	DATE	DESCRIPTION	REVISION No.	DATE	DESCRIPTION			
ISSUE No.	DATE	DESCRIPTION	REVISION No.	DATE	DESCRIPTION			
ISSUE No.	DATE	DESCRIPTION	REVISION No.	DATE	DESCRIPTION			

RUHNAUCLARKE.COM

3775 TENTH STREET, RIVERSIDE CALIFORNIA 92506(951) 684-4664 / 5751 PALMER WAY, SUITE C, CARLSBAD CALIFORNIA 92010(619) 438-5899

VALHALLA HIGH SCHOOL BATTERY REPLACEMENT

VALHALLA HIGH SCHOOL 1725 HILLSDALE ROAD, EL CAJON, CA 92019 GROSSMONT UNION HIGH SCHOOL DISTRICT

ELECTRICAL FLOOR PLANS

E1.1

Project Number

VALHALLA HIGH SCHOOL BATTERY REPLACEMENT:



**AS-BUILTS**

AS Builts

# VALHALLA HIGH SCHOOL CENTRAL PLANT EQUIPMENT UPGRADE



**GROSSMONT UNION HIGH SCHOOL DISTRICT**  
P.O. BOX 1043  
LA MESA, CALIFORNIA 91944

**PLATT/WHITELAW ARCHITECTS, INC.**  
4054 30TH STREET  
SAN DIEGO, CA 92104  
PH: 619-466-4350 FAX: 619-466-4350

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## PROJECT SCOPE

**BOILER/CHILLER/COOLING TOWER REPLACEMENT:** WORK INCLUDES REPLACEMENT OF EXISTING BOILER, CHILLER AND COOLING TOWER AND ADDITION OF SEPARATION WALL BETWEEN BOILER AND OTHER EQUIPMENT. ALL WORK SHALL BE WITHIN THE EXISTING CENTRAL PLANT STRUCTURE.

## PROJECT DIRECTORY

**CLIENT:**  
GROSSMONT UNION HIGH SCHOOL DISTRICT  
P.O. BOX 1043  
LA MESA, CALIFORNIA 91944  
PH: 619-444-5000

**ARCHITECT:**  
PLATT/WHITELAW ARCHITECTS, INC.  
4054 30TH STREET  
SAN DIEGO, CA 92104  
PH: 619-466-4350  
FX: 619-466-4350  
ALISON M. WHITELAW, FAIA - AOR

**STRUCTURAL ENGINEER:**  
SDSE  
3855 CAMINO DEL RIO NORTH, STE. 110  
SAN DIEGO, CA 92108  
PH: 619-291-2225  
FX: 619-291-4415  
DANIEL P. KORNTVED, PE - EOR

**MECHANICAL/PLUMBING ENGINEER:**  
TURPIN & RATTAN ENGINEERING, INC.  
4719 PALM AVENUE  
LA MESA, CA 91941  
PH: 619-466-6224  
FX: 619-466-6235  
CESAR RODRIGUEZ, PE - EOR

**ELECTRICAL ENGINEER:**  
TURPIN & RATTAN ENGINEERING, INC.  
4719 PALM AVENUE  
LA MESA, CA 91941  
PH: 619-466-6224  
FX: 619-466-6235  
MARIE R. LAKEY, PE - EOR

## VICINITY MAP



## PROJECT ADDRESS

VALHALLA HIGH SCHOOL  
1725 HILLSDALE ROAD  
EL CAJON, CA 92109  
LAT: 32.760724 LONG: -116.92265

## TITLE SHEET

**CENTRAL PLANT EQUIPMENT UPGRADE**

VALHALLA HIGH SCHOOL  
1725 HILLSDALE ROAD  
EL CAJON, CA 92019

PROJECT NO. PHA 006110  
FILE NAME: T-001.DWG  
DATE: 4/14/2017  
DRAWN: -  
CHECKED: -

**T-001**

SHEET NO. 1 OF 1 SHEETS



## ABBREVIATIONS

AT	DSA APPLICATION NUMBER	GRD	GRADE	SG	SQUARE
A#	ANCHOR BOLT	GEN	GENERAL	S.R.	SUPPLY REGISTER
A.C.	ASPHALT CONCRETE	G.M.B.	GYPSUM WALL BOARD	S.S.	SERVICE SINK
A.C.M.P.	ASPHALT COMPOSITION	GSF	GROSS SQUARE FEET	STD	STANDARD
A.C.T.	ACROUSTICAL TILE	GYP. BD.	GYPSUM BOARD	STL	STEEL
ADD.	ADDITIONAL			S.S.T.L.	STAINLESS STEEL
A.F.F.	ABOVE FINISH FLOOR	HARD'R	HARDENER	STRUCT	STRUCTURAL
ALT	ALTERNATE	H.B.	HOSE BIB	SUSP	SUSPENDED
ALUM	ALUMINUM	HD	HEAD	TEL	TELEPHONE
APPL	APPLICATION	HDNR	HARDWARE	THK	THICK
ARCHL	ARCHITECTURAL	HGT	HEIGHT	THRESH	THRESHOLD
ASPH	ASPHALT	H.M.	HOLLOW METAL	T.O.	TOP OF
		HORIZ	HORIZONTAL	T.P.H.	TOILET PAPER HOLDER
		HR	HOUR	TRANS	TRANSVERSE
		HT	HEIGHT	TLT	TOILET
		HN	HARDWOOD	TYP	TYPICAL
BD	BOARD				
BLDG	BUILDING				
B.O.B.	BOTTOM OF BEAM				
BOT	BOTTOM				
BM	BEAM				
B.M.	BENCH MARK				
CLK'G	CAULKING	JAN	JANITOR	V.A.T.	VINYL ASBESTOS TILE
C.B.	CATCH BASIN			V.C.T.	VINYL COMPOSITION TILE
CBC	CALIFORNIA BUILDING CODE	KN	KEYNOTE	VERT	VERTICAL
CEM	CEMENT				
CHNL	CHANNEL	LAM	LAMINATE	W	WITH
C.I.	CAST IRON	LAV	LAVATORY	W.C.	WATER CLOSET
C.I.P.	CAST IN PLACE	L.F.	LINEAR FEET	ND	WOOD, WIDTH
C.J.	CONTROL JOINT	L.L.V.	LONG LEG VERTICAL	N/O	NITROGEN
(C) / GL	CENTER LINE			N/DN	NINDON
CLG	CEILING	MACH	MACHINE	HP	WATERPROOF
CLR	CLEAR	MAS	MASONRY	M.W.F.	WELDED WIRE FABRIC
C.M.U.	CONCRETE MASONRY UNIT	MAT	MATERIAL	M.M.S.	WIRE MESH SCREEN
COL	COLUMN	MAX	MAXIMUM	MS	WOOD SCREW
CONC	CONCRETE	M.B.	MACHINE BOLT		
CONT	CONTINUOUS	MECH	MECHANICAL	(L)	ANGLE
OPT	CARPET	MET	METAL	(I)	CHANNEL
CTR	CENTER	MH	MANHOLE	(#)	FOUND OR NUMBER
CUB	CUBICLE	MIN	MINIMUM	t	PROPERTY LINE
		MFR	MANUFACTURER		
DBL	DOUBLE	M.O.	MASONRY OPENING		
DET	DETAIL	MR.B.	MARKER BOARD		
D.F.	DRINKING FOUNTAIN	MTD	MOUNTED		
D.H.	DOUBLE HUNG				
D.G.	DECOMPOSED GRANITE	N.I.C.	NOT IN CONTRACT		
D.G. FIR	DOUGLAS FIR	NO.	NUMBER		
(#) / DIA	DIAMETER	NOM	NOMINAL		
DMS	DAMAGE	N.T.S.	NOT TO SCALE		
DR	DOOR	(N)	NEW		
DS	DOWNSPOUT				
DNG	DRAINING	O	OVER		
		O.C.	ON CENTER		
E	TACTILE "EXIT" SIGN	OCG	OCCUPANT/OCCUPANCY		
(E)	EXISTING	O.H.	OVERALL HEIGHT		
EA	EACH	O.L.	OCCUPANT LOAD		
E.C.P.	EXTERIOR CEMENT	OPNG	OPENING		
	PLASTER	OPP.	OPPOSITE		
E.J.	EXPANSION JOINT	OPP. H.	OPPOSITE HAND		
EL	ELEVATION				
ELEC	ELECTRICAL	PC	PIECE		
ELEV	ELEVATOR	PERF	PERFORATED		
EQ	EQUAL	PERP.	PERPENDICULAR		
ER	TACTILE	PLAS	PLASTIC		
	"EXIT ROUTE" SIGN	P.H.	PANIC HARDWARE		
ES	EACH SIDE	P.L.	PLASTIC LAMINATE		
EXHST	EXHAUST	PLT	PLATE		
EXP	EXPOSED	PLYND	PLYWOOD		
E.J.	EXPANSION JOINT	P.O.A.	PATH OF TRAVEL		
			(ACCESSIBLE)		
F	FROM	P.S.F.	POUNDS PER SQUARE FOOT		
FB	FIBERGLASS	P.T.	PRESSURE TREATED		
F.D.	FLOOR DRAIN	(R/P.L.	PROPERTY LINE		
F.E.G.	FIRE EXTINGUISHER	P.T.D.	PAPER TOWEL DISPENSER		
	CABINET	Q.T.	QUARRY TILE		
FF	FINISHED FLOOR	QTY	QUANTITY		
F.H.	FIRE HYDRANT				
F.H.G	FIRE HOSE CABINET	RAD	RADIUS		
FIN	FINISH	REIN	REINFORCING		
FLASHG	FLASHING	R.C.P.	REFLECTED CEILING PLAN		
FLOR	FLUORESCENT	R.O.	ROUGH OPENING		
FLR	FLOOR	R.R.	RETURN REGISTER		
FLRH	FLOOR TILE	REG'D	REQUIRED		
F.O.B.	FACE OF BUILDING				
F.O.C.	FACE OF CONCRETE	S.D.	SOAP DISH		
F.O.F.	FACE OF FINISH	S.F.	SQUARE FEET		
F.O.M.	FACE OF MASONRY	SHNR	SHOWER		
F.O.P.	FACE OF POST	SHT	SHEET		
F.O.S.	FACE OF STUD	SHT'G	SHEATHING		
FT	FOOT	SIM	SIMILAR		
FTG	FOOTING	SMS	SHEET METAL SCREW		
FURR'G	FURRING	SNAG	SUPPLEMENTARY NOTIFICATION		
F.V.	FIELD VERIFY		APPLIANCE CIRCUIT		
		SP	SPECIAL		
GA	GAUGE	SPC	SPACE		

## CHANGES TO THE DOCUMENTS

CHANGES TO THE APPROVED DRAWINGS AND SPECIFICATIONS SHALL BE MADE BY AN ADDENDUM OR CONSTRUCTION CHANGE DOCUMENT (CCD) APPROVED BY THE DIVISION OF THE STATE ARCHITECT (DSA), AS REQUIRED BY SECTION 4-338, PART 1, TITLE 24, C.C.R.

## INSPECTOR QUALIFICATION

A "DSA CERTIFIED" PROJECT INSPECTOR EMPLOYED BY THE SCHOOL DISTRICT (OWNER) AND APPROVED BY THE DIVISION OF THE STATE ARCHITECT (DSA) SHALL PROVIDE CONTINUOUS INSPECTION OF THE WORK. THE DUTIES OF THE INSPECTOR ARE DEFINED IN SECTION 4-342, PART 1, TITLE 24, C.C.R. PROJECT INSPECTOR SHALL BE MINIMUM CLASS 3.

## PROJECT GOVERNING CODES

THE CONSTRUCTION OF PROJECT SHALL BE IN CONFORMANCE WITH THE CURRENT ADOPTED EDITIONS OF THE FOLLOWING CODES:

- 2016 BUILDING STANDARDS ADMIN. CODE, PART 1, TITLE 24 C.C.R. (CALIFORNIA CODE OF REGULATIONS)
- 2016 CALIFORNIA BUILDING CODE (CBC), PART 2, TITLE 24 C.C.R.
- 2016 CALIFORNIA ELECTRICAL CODE (CEC), PART 3, TITLE 24 C.C.R.
- 2016 CALIFORNIA MECHANICAL CODE (CMC), PART 4, TITLE 24 C.C.R.
- 2016 CALIFORNIA PLUMBING CODE (CPC), PART 5, TITLE 24 C.C.R.
- 2016 CALIFORNIA ENERGY CODE (CEC), PART 6, TITLE 24 C.C.R.
- 2016 CALIFORNIA FIRE CODE (CFC), PART 9, TITLE 24 C.C.R.
- 2016 CALIFORNIA EXISTING BUILDING CODE, PART 10, TITLE 24 C.C.R.
- 2016 CALIFORNIA REFERENCED STANDARDS, PART 12, TITLE 24 C.C.R.
- 2016 PUBLIC SAFETY, STATE FIRE MARSHAL REGULATIONS TITLE 19 C.C.R.

### PARTIAL LIST OF APPLICABLE STANDARDS

NFPA 12, NATIONAL FIRE ALARM CODE (CA AMENDMENTS) 2016 EDITION (NOTE: SEE ILL STD 111 FOR "VISUAL DEVICES")  
REFERENCE CODE SECTION FOR NFPA STANDARDS- 2016 CBC (SFM) 3504.1

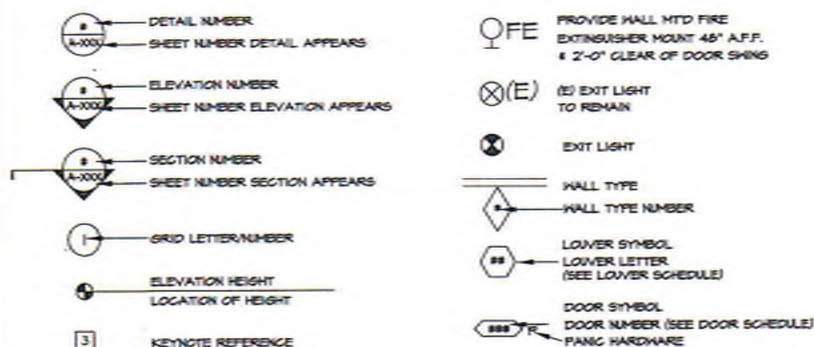
## GENERAL NOTES

- THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS IS THAT ALL THE WORK OF THE ALTERATION, REHABILITATION OR RECONSTRUCTION IS TO BE IN ACCORDANCE WITH TITLE 24, CALIFORNIA CODE OF REGULATIONS. SHOULD ANY EXISTING CONDITIONS SUCH AS DETERIORATION OR NON-COMPLYING CONSTRUCTION BE DISCOVERED WHICH IS NOT COVERED BY THE CONTRACT DOCUMENTS HEREIN THE FINISHED WORK WILL NOT COMPLY WITH TITLE 24, C.C.R. A CONSTRUCTION CHANGE DOCUMENT (CCD), OR A SEPARATE SET OF PLANS AND SPECIFICATIONS, DETAILING AND SPECIFYING THE REQUIRED WORK SHALL BE SUBMITTED TO AND APPROVED BY DSA BEFORE PROCEEDING WITH THE WORK. (SECTION 4-311(4), PART 1, TITLE 24, C.C.R.)
- PENETRATIONS THROUGH STRUCTURAL MEMBERS, FLOOR AND CEILING SLABS AND FIRE-RATED ASSEMBLIES REQUIRE APPROVAL BY THE ARCHITECT AND THE DIVISION OF THE STATE ARCHITECT BEFORE PROCEEDING WITH THE WORK.
- DIMENSIONS ARE SHOWN TO THE FACE OF FRAMING UNLESS OTHERWISE NOTED OR INDICATED (E.G. CLEAR DIMENSIONS OR DIMENSIONS DRAWN TO CENTERLINES.)
- VERIFY DIMENSIONS IN FIELD. DO NOT SCALE DIMENSIONS FROM DRAWINGS.
- INFORMATION SHOWN BY ENGINEERING DISCIPLINE DOCUMENTS IS NOT INTENDED TO DEFINE SCOPE OF WORK OF SUBCONTRACTORS. CONTRACTOR SHALL DETERMINE AND COORDINATE THE SCOPE OF WORK OF SUBCONTRACTORS.
- PROVIDE FIRE SAFETY DURING CONSTRUCTION AND DEMOLITION PER CFC CHAPTER 33.
- INTERIOR FINISHES SHALL COMPLY WITH CBC, CFC AND TITLE 19.
- A DSA ACCEPTED TESTING LABORATORY DIRECTLY EMPLOYED BY THE DISTRICT (OWNER) SHALL CONDUCT ALL THE REQUIRED TESTS AND INSPECTIONS FOR THE PROJECT.
- CONTRACTOR OPERATIONS SHALL NOT BLOCK, HINDER, IMPEDE OR OTHERWISE INHIBIT THE USE OF REQUIRED EXITS AT ANY TIME. CONTRACTOR SHALL MAINTAIN UNOBSTRUCTED ACCESS TO FIRE EXTINGUISHERS, FIRE HYDRANTS, TEMPORARY FIRE PROTECTION FACILITIES, STAIRWAYS AND OTHER ACCESS ROUTES FOR FIRE-FIGHTING EQUIPMENT AND/OR PERSONNEL.

## GREEN BUILDING CODE NOTES

- DIVISION 5.1 - PLANNING AND DESIGN**
- NO MANDATORY REQUIREMENTS APPLY
- DIVISION 5.2 - ENERGY EFFICIENCY**
- SECTION 5.201 - SCOPE: BUILDING MEETS OR EXCEEDS THE REQUIREMENTS OF THE CALIFORNIA BUILDING ENERGY EFFICIENCY STANDARDS
- DIVISION 5.3 - WATER EFFICIENCY AND CONSERVATION**
- NO MANDATORY REQUIREMENTS APPLY
- DIVISION 5.4 - MATERIAL CONSERVATION AND RESOURCE EFFICIENCY**
- SECTION 5.408.1 - CONSTRUCTION WASTE MANAGEMENT: RECYCLE AND/OR SALVAGE FOR REUSE A MINIMUM OF 65% OF THE NON-HAZARDOUS CONSTRUCTION WASTE IN ACCORDANCE WITH SECTION 5.408.1.1, 5.408.1.2 OR 5.408.1.3; OR MEET A LOCAL CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT ORDINANCE, WHICHEVER IS MORE STRINGENT.
- DIVISION 5.5 - ENVIRONMENTAL QUALITY**
- SECTION 5.504.4 - FINISH MATERIAL POLLUTANT CONTROL: FINISH MATERIALS SHALL COMPLY WITH SECTIONS 5.504.4.1 THROUGH 5.504.4.6.
  - SECTION 5.508.1 - OZONE DEPLETION AND GLOBAL WARMING REDUCTIONS: INSTALLATIONS OF HVAC, REFRIGERATION AND FIRE SUPPRESSION EQUIPMENT SHALL COMPLY WITH SECTIONS 5.508.1.1 AND 5.508.1.2.

## SYMBOLS LEGEND



**GROSSMONT UNION HIGH SCHOOL DISTRICT**  
P.O. BOX 1043  
LA MESA, CALIFORNIA 92043

**PLATT/WHITEHAW ARCHITECTS, INC.**  
4034 30TH STREET  
SAN DIEGO, CA 92106-4350 FAX (619) 546-4350

PREPARED FOR THE

UNIVERSITY OF CALIFORNIA  
OFFICE OF RESEARCH SERVICES  
04-165900  
FILE 0714  
AC 04/16/2017  
DATE 04/16/2017

REGISTERED ARCHITECT  
STATE OF CALIFORNIA  
No. 10101  
Exp. 12/31/2018

**GENERAL NOTES, LEGENDS & ABBREVIATIONS**

**CENTRAL PLANT EQUIPMENT UPGRADE**

**VALHALLA HIGH SCHOOL**  
1725 HILLSDALE ROAD  
EL CAJON, CA 92019

PROJECT NO. FNA 1026110

FILE NAME: T-002.dwg

DATE: 4/14/2017 DRAWN: -

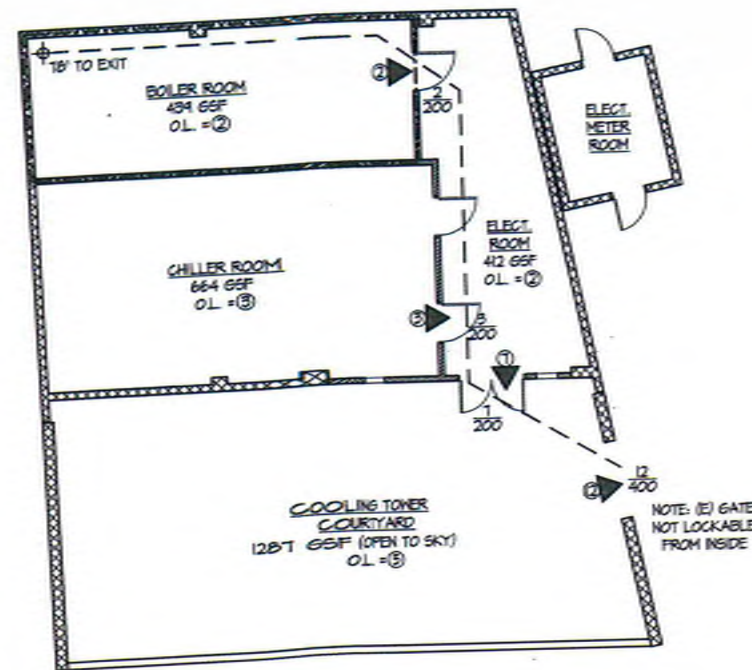
CHECKED: -

**T-002**

SHEET NO. - OF - SHEETS



# 1 EXITING PLAN 1/8" = 1'-0"



ALLOWABLE EXIT WIDTH BASED ON 0.2" EGRESS WIDTH PER OCCUPANT SERVED

## LEGEND

- 1-HR. RATED MALL
- EXIT LOAD
- EXIT DOOR
- X ACTUAL EXIT LOAD
- XXX ALLOWABLE EXIT LOAD
- MOIST REMOTE OCCUPIED POINT WITHIN BUILDING
- MAXIMUM COMMON PATH OF EGRESS

0 4' 8' 16'  
SCALE: 1/8" = 1'-0"

## CODE ANALYSIS

THE EXISTING STRUCTURE WAS APPROVED BY OFFICE OF STATE ARCHITECT (OSA) IN 1971 AND CERTIFIED IN 1975. THE STRUCTURE CONSISTS OF MASONRY EXTERIOR WALLS WITH A WOOD-FRAMED LOW-SLOPE ROOF.

OCCUPANCY CLASSIFICATION: S-1  
CONSTRUCTION TYPE: TYPE V-B  
FIRE SPRINKLERS: NO  
ACTUAL HEIGHT: 15'-0" (1 ALLOWABLE)  
ALLOWABLE HEIGHT: 40'-0"  
ACTUAL STORIES: 1 (1 TO ALLOWABLE)  
ALLOWABLE STORIES: 1  
ACTUAL AREA: 1515 GSF (1 ALLOWABLE)  
ALLOWABLE AREA: 1,000 GSF  
FIRE ALARM: YES

\* COOLING TOWER COURTYARD NOT COUNTED IN ACTUAL AREA (THIS IS AN OUTDOOR SPACE AND IS NOT ENCLOSED)

PER CBC 508.2.5:  
BOILER ROOM IS CONSIDERED INCIDENTAL ACCESSORY AND CONTAINS BOILERS WHERE THE LARGEST PIECE OF EQUIPMENT IS OVER 15 PSI AND 10 HORSEPOWER. TABLE 508.2.5 REQUIRES MINIMUM 1-HR. SEPARATION FROM THE REMAINDER OF THE BUILDING

PER CBC 1016.2.2, EXCEPTION:  
MEANS OF EGRESS ARE NOT PROHIBITED THROUGH ADJOINING OR INTERVENING ROOMS OR SPACES IN GROUP H, S, OR F OCCUPANCY WHERE THE ADJOINING OR INTERVENING ROOMS OR SPACES ARE THE SAME OR LESSER HAZARD OCCUPANCY GROUP.

PER CBC 11B-203.5:  
FLOORS NOT CUSTOMARILY OCCUPIED AND FREQUENTED ONLY BY SERVICE PERSONNEL INCLUDING MACHINERY ROOMS ARE NOT REQUIRED TO BE ON AN ACCESSIBLE PATH OF TRAVEL.

## CODE ANALYSIS & EXITING PLAN

### CENTRAL PLANT EQUIPMENT UPGRADE

VALHALLA HIGH SCHOOL  
1725 HILLSDALE ROAD  
EL CAJON, CA 92019

PROJECT NO. PVA 2008-10  
FILE NAME: T-003 CODE ANALYSIS  
DATE: 4/14/2011  
DRAWN: -  
CHECKED: -

T-003

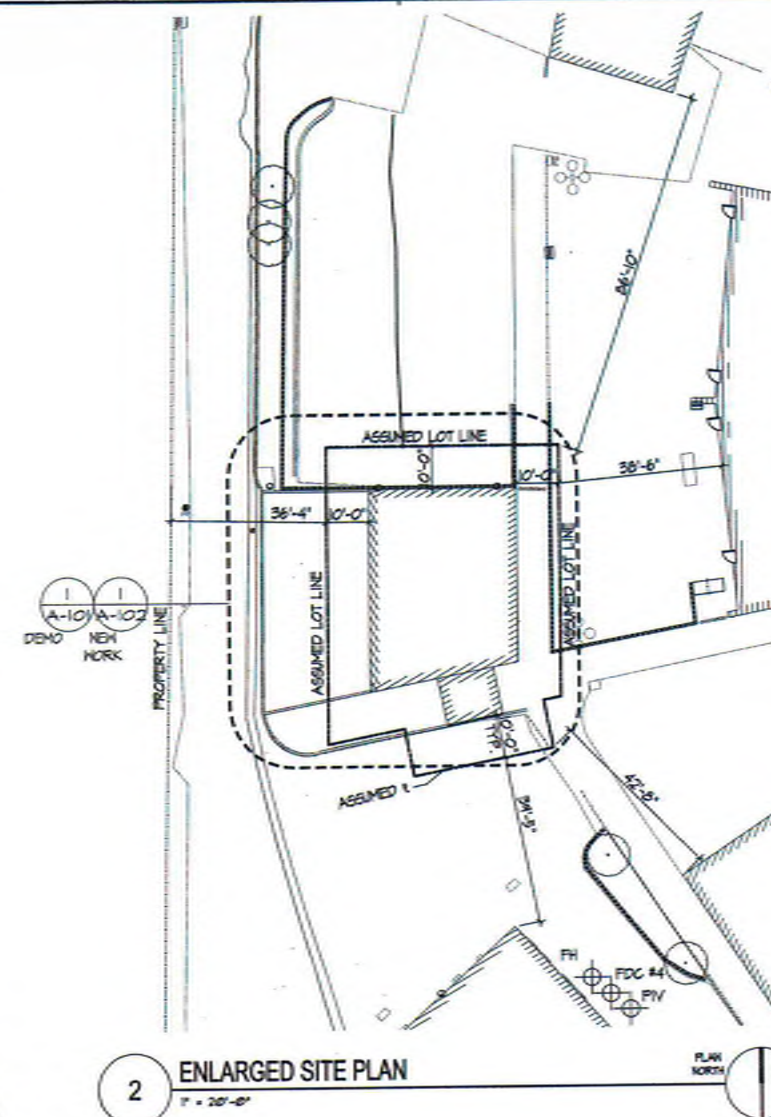
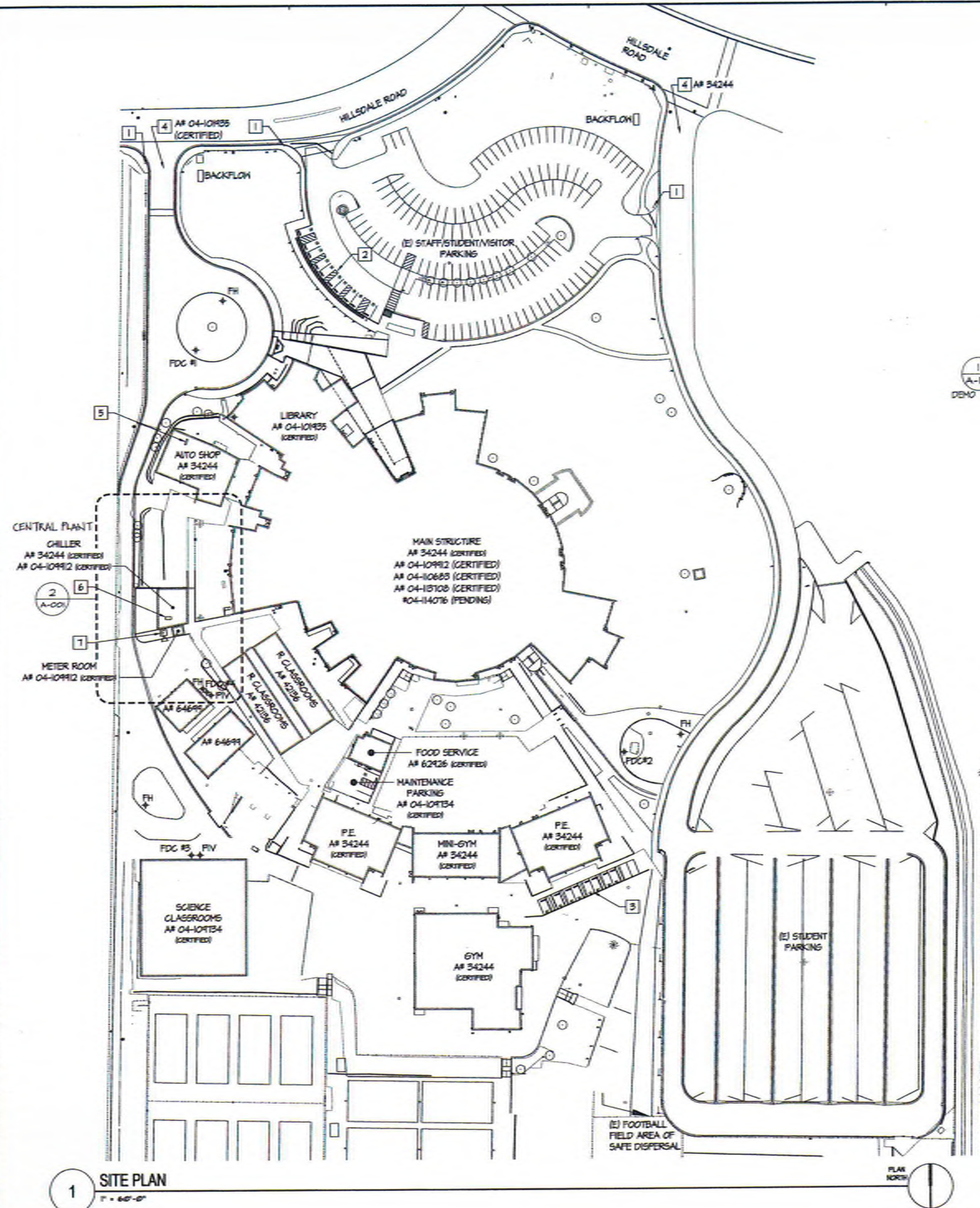
SHEET NO. 1 OF 4 SHEETS

PREPARED FOR THE  
**GROSSMONT UNION HIGH SCHOOL DISTRICT**  
P.O. BOX 1043  
LA MESA, CALIFORNIA  
PREPARED BY  
**PLATT/WHITEHAW ARCHITECTS, INC.**  
4034 BORTH STREET  
SAN DIEGO, CA 92106-4336 FAX (619) 546-4380



UNIVERSITY MICROFILMS  
SERIALS ACQUISITION  
300 N ZEEB RD  
ANN ARBOR MI 48106-1500  
DATE 04/14/2011  
FILE 04/14/2011  
AC 04/14/2011  
DATE 04/14/2011







- | KEYNOTES |   |
|----------|---|
| 1        | (E) TOLL-FREE SIGN<br>(A* 04-109134 - CERTIFIED)              |
| 2        | (E) ACCESSIBLE PARKING<br>(A* 04-109902 - CERTIFIED)          |
| 3        | (E) ACCESSIBLE PARKING<br>(A* 04-109134 - CERTIFIED)          |
| 4        | (E) 20' WIDE FIRE ACCESS                                      |
| 5        | (E) FIRE ALARM CONTROL<br>PANEL (A* 04-109902 -<br>CERTIFIED) |
| 6        | SNAC PANEL  |
| 7        | FIRE ALARM HORN   |

**GROSSMONT UNION HIGH SCHOOL DISTRICT**  
 P.O. BOX 1049  
 LA MESA, CALIFORNIA

**PLATT/WHITE LA W ARCHITECTS, INC.**  
 4034 80TH STREET  
 SAN DIEGO, CA (619) 546-4326 FAX (619) 546-4350

**IDENTIFICATION STAMP**  
DIV. OF THE STATE AND PROTECT  
OFFICE OF REGULATION SERVICES


04-115930

FILE #D-44

AO FILE #100 D-44

DATE 04.7.17

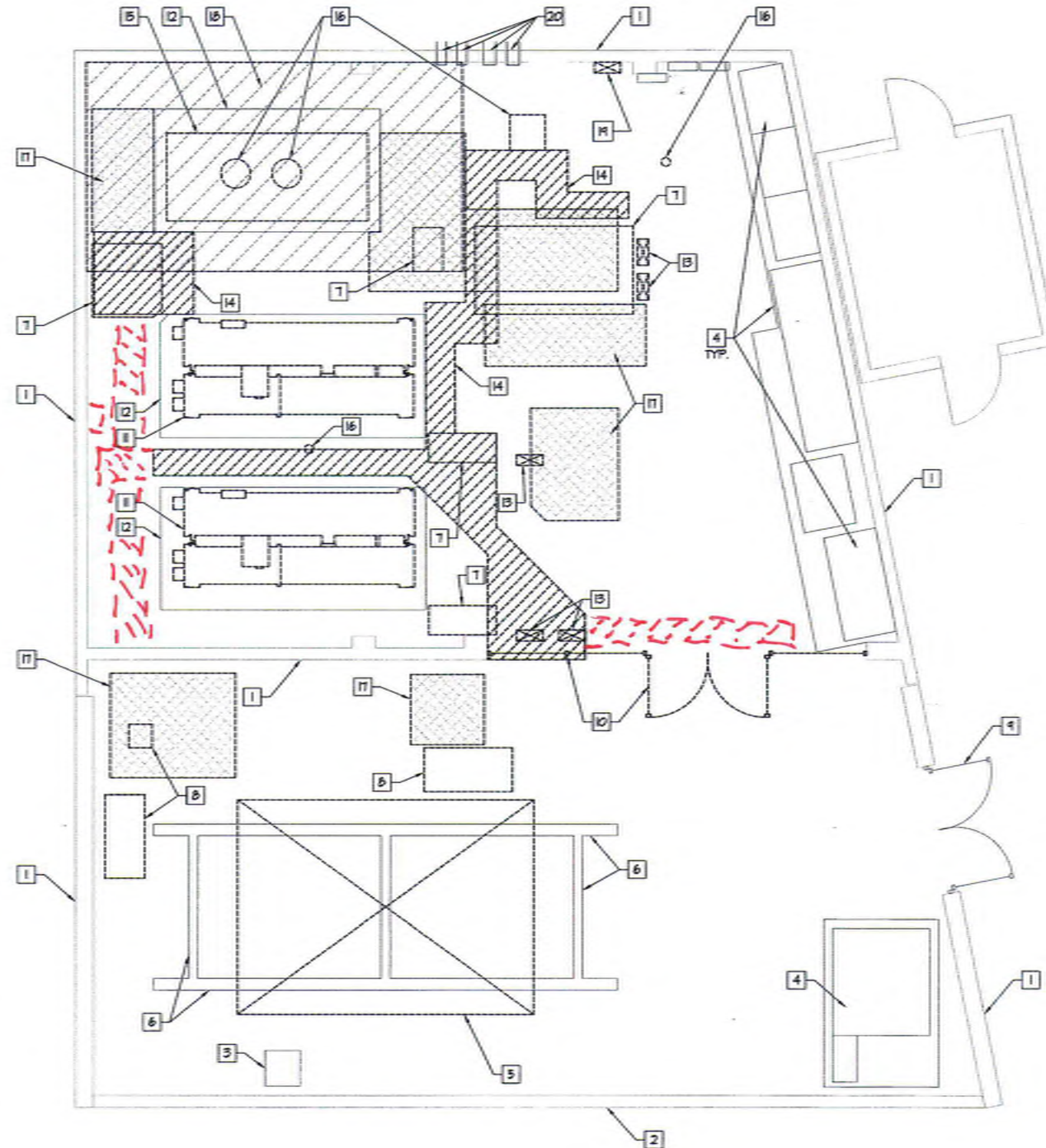


 VALHALLA HIGH SCHOOL  
1725 HILLSDALE ROAD  
EL CAJON, CA 92019

REVISION	DATE

PROJECT NO.	PWA 108614
FILE NAME:	A-001.DWG
DATE:	DRAWN:
4/14/2011	CHECKED:
A-001	
SHEET NO.	OF SHEETS





**1 DEMOLITION PLAN**  
1/4" = 1'-0"

0 2' 4' 8'  
SCALE: 1/4" = 1'-0"

# KEYNOTES

- 1 (E) CMU WALL TO REMAIN
- 2 (E) CEMENT PLASTER WALL TO REMAIN
- 3 (E) GAS MAIN REGULATOR TO REMAIN - PROTECT IN PLACE
- 4 (E) ELECTRICAL EQUIPMENT TO REMAIN - PROTECT IN PLACE
- 5 REMOVE MECHANICAL COOLING TOWER AND ASSOCIATED PIPING, CONDUIT & CONTROLS INCLUDING ALL SUPPORT STEEL
- 6 (E) CONCRETE STEM WALLS/FOUNDATIONS TO REMAIN
- 7 REMOVE MECHANICAL EQUIPMENT, ASSOCIATED PIPING, CONDUIT, CONTROLS AND CONCRETE HOUSEKEEPING PAD - PREPARE (E) SLAB FOR CONCRETE PATCH
- 8 REMOVE ABANDONED CONCRETE HOUSEKEEPING PAD - PREPARE (E) SLAB FOR CONCRETE PATCH
- 9 (E) CHAIN LINK GATE TO REMAIN - PROTECT IN PLACE
- 10 REMOVE CHAIN LINK GATE, FENCE, POSTS AND ALL ASSOCIATED HARDWARE DOWN TO SLAB - PREPARE (E) SLAB, CMU WALLS AND HEADER FOR NEW WORK
- 11 REMOVE MECHANICAL CHILLER EQUIPMENT AND ALL ASSOCIATED PIPING, CONDUITS AND CONTROLS
- 12 (E) CONCRETE HOUSEKEEPING PAD TO REMAIN - REMOVE ALL ANCHORS AND PREPARE TO RECEIVE NEW CHILLER
- 13 REMOVE ELECTRICAL EQUIPMENT AND ALL ASSOCIATED SUPPORTS, CONDUIT AND CONTROLS - SALVAGE EQUIPMENT AND RETURN TO OWNER
- 14 REMOVE PORTION OF (E) CONCRETE SLAB FOR NEW PLUMBING WORK
- 15 REMOVE MECHANICAL BOILER EQUIPMENT AND ALL ASSOCIATED FLUES, PIPING, CONDUITS AND CONTROLS
- 16 REMOVE EQUIPMENT AT (E) THROUGH-ROOF PENETRATION - PREPARE FOR PATCHING
- 17 ROUGHEN/PREPARE (E) CONCRETE SLAB FOR NEW CONCRETE HOUSEKEEPING PAD
- 18 REMOVE GYP. BD. & CEILING INCLUDING BEAM WRAPS AND RETURN TO ROOF DECK - 2X4 STRIPPING TO REMAIN
- 19 REMOVE ELECTRICAL/CONTROLS EQUIPMENT AND ASSOCIATED CONDUIT
- 20 (E) HYDRONIC SYSTEM THRU-WALL CONNECTIONS TO REMAIN

# GENERAL NOTES

1. SEE TECHNICAL HAZARDOUS MATERIAL BUILDING ABATEMENT SPECIFICATIONS (ABATEMENT SPECS) REGARDING REQUIREMENTS FOR TREATMENT OF KNOWN AND SUSPECTED HAZMAT.
2. COORDINATE ITEMS TO BE DEMOLISHED AND REMOVED & REINSTALLED ACROSS ALL DISCIPLINES PRIOR TO COMMENCEMENT OF WORK.
3. KEYNOTES PROVIDE ADDITIONAL INFORMATION AND CLARIFICATION OF THE GENERAL NOTES, BUT DO NOT CALL OUT EVERY ITEM TO BE REMOVED.
4. CONTRACTOR SHALL VISIT SITE PRIOR TO BID TO ESTABLISH FULL SCOPE OF DEMOLITION.
5. REMOVE ALL ANCHORAGE, SUPPORTS AND SIMILAR ITEMS ASSOCIATED WITH ITEMS TO BE REMOVED OR SALVAGED

# DEMO LEGEND

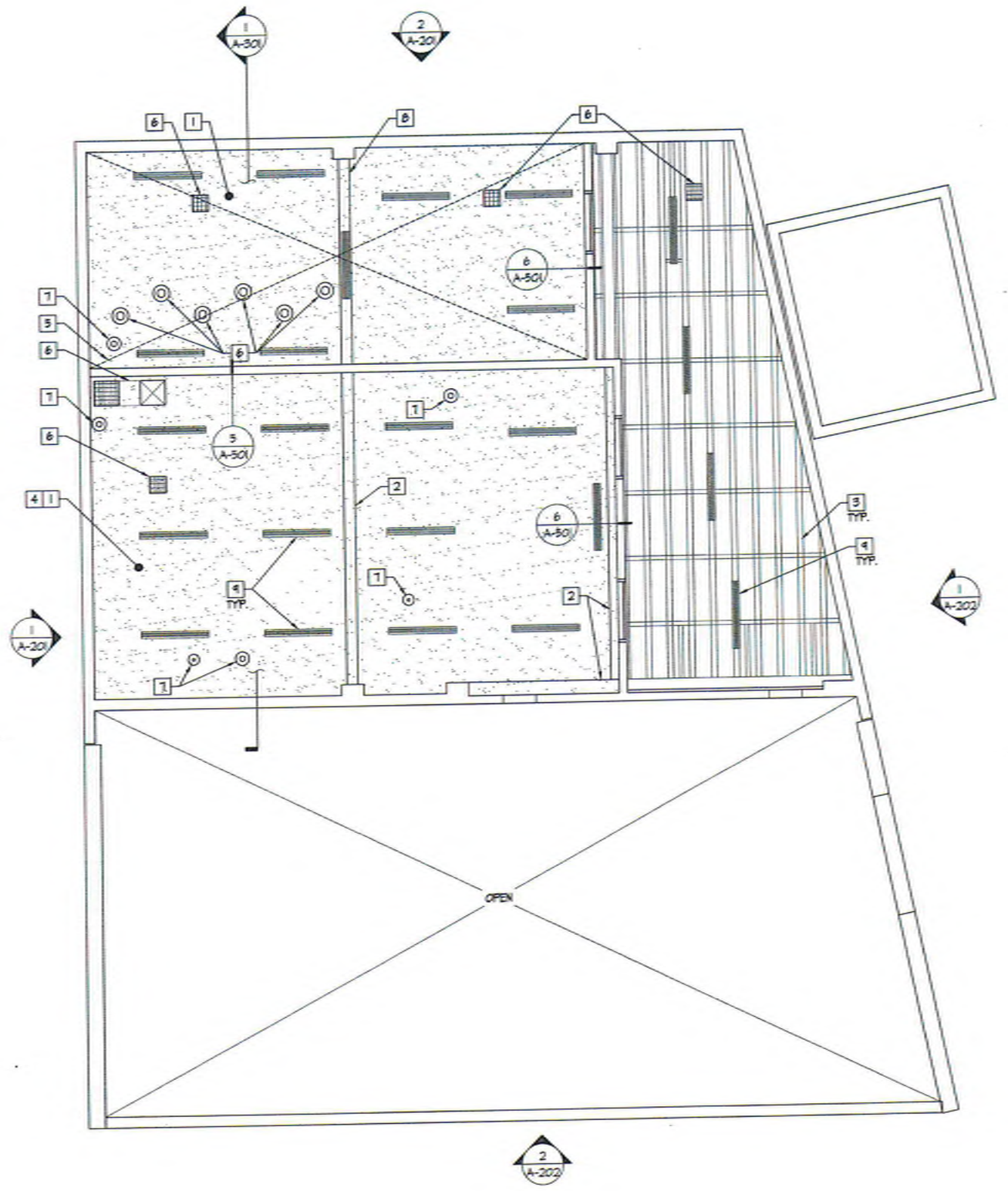
- DEMOLISH (E) GYP. BD. CEILING
- DEMOLISH (E) CONCRETE SLAB
- DEMOLISH (E) CONSTRUCTION
- REMOVE & SALVAGE (E) EQUIPMENT
- ROUGHEN/PREPARE (E) CONCRETE SLAB FOR NEW CONCRETE HOUSEKEEPING PAD

<b>GROSSMONT UNION HIGH SCHOOL DISTRICT</b> P.O. BOX 1043 LA MESA, CALIFORNIA 92043	
<b>PLATT/WHITEHEAD ARCHITECTS, INC.</b> 4034 30TH STREET SAN DIEGO, CA 92108-4328 FAX (619) 548-4380	
PREPARED BY PLATT/WHITEHEAD ARCHITECTS, INC. 04-15580 FILE #014 AC RJ JR DLS DATE 01.27.17	
<b>DEMO PLAN</b> <b>CENTRAL PLANT EQUIPMENT UPGRADE</b> <b>VALHALLA HIGH SCHOOL</b> <b>1725 HILLSDALE ROAD</b> <b>EL CAJON, CA 92019</b>	
PROJECT NO.: PHA 1006110 FILE NAME: A-101.DWG DATE: 4/14/2017 DRAWN: - CHECKED: -	SHEET NO.: - OF - SHEETS <b>A-101</b>










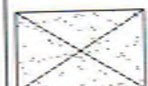
1 REFLECTED CEILING PLAN  
1/4" = 1'-0"



# KEYNOTES

- 1 5/8" TYPE 'X' GYP. BD.
- 2 WRAP (E) BEAM W/ 5/8" TYPE 'X' GYP. BD.
- 3 OPEN TO (E) HOOD FRAMING - PAINT
- 4 PROVIDE R-38 BATT INSULATION BELOW ROOF DECK @ CHILLER ROOM
- 5 AREA OF 1-HR. RATED CEILING PER 2016 CBC, SECTION T22 & LEGEND BELOW
- 6 DUCTED VENTILATION PER 2/A-502 - COORDINATE W/ M-202
- 7 THROUGH-CEILING PENETRATION PER 1/A-502 - COORDINATE W/ M-202
- 8 WRAP (E) BEAM W/ (2) LAYERS 5/8" TYPE 'X' GYP. BD. PER 5/A-501
- 9 LIGHT FIXTURE

## CEILING LEGEND

-  GYP. BD. CEILING
-  GYP. BD. CEILING - 1 HR. RATED PER BELOW

PER CBC, SECTION T22  
(CALCULATED FIRE RESISTANCE)

(2) LAYERS 5/8" TYPE 'X' GYP. BD. = 40 MIN.  
PER LAYER = 80 MIN. TOTAL  
MAX. 60 MIN. (1 HR.) PER CBC, T22.6.1.1  
= 1 HOUR CALCULATED FIRE RESISTANCE

INSTALL: BASE LAYER 5/8" TYPE 'X' GYP. BD.  
APPLIED AT RIGHT ANGLES TO (E) 2X4S FLAT @ 16" O.C. WITH 1-1/4" TYPE S OR TYPE N DRYWALL SCREWS AT 24" O.C. - FACE LAYER 5/8" TYPE 'X' GYP. BD. APPLIED AT RIGHT ANGLES TO (E) 2X4S FLAT @ 16" O.C. THROUGH BASE LAYER WITH 1-1/8" TYPE S OR TYPE N DRYWALL SCREWS AT 12" O.C. AT JOINTS AND INTERMEDIATES - FACE LAYER TYPE G DRYWALL SCREWS PLACED 2" BACK ON EITHER SIDE OF FACE LAYER END JOINTS 12" O.C.

0 2' 4' 8'  
SCALE: 1/4" = 1'-0"

PREPARED FOR THE  
**GROSSMONT UNION HIGH SCHOOL DISTRICT**  
P.O. BOX 1043  
LA MESA, CALIFORNIA

PREPARED BY  
**PLATT/WHITELAW ARCHITECTS, INC.**  
4034 30TH STREET  
SAN DIEGO, CA 92104-4328 FAX (619) 448-4350

PROJECT NO. PWA 1036110  
FILE NAME: CEILING PLANNING  
DATE: 4/14/2017  
DRAWN: -  
CHECKED: -

DATE: 04/15/2017  
FILE: 04-15  
AC: 04-15  
DATE: 04/15/2017

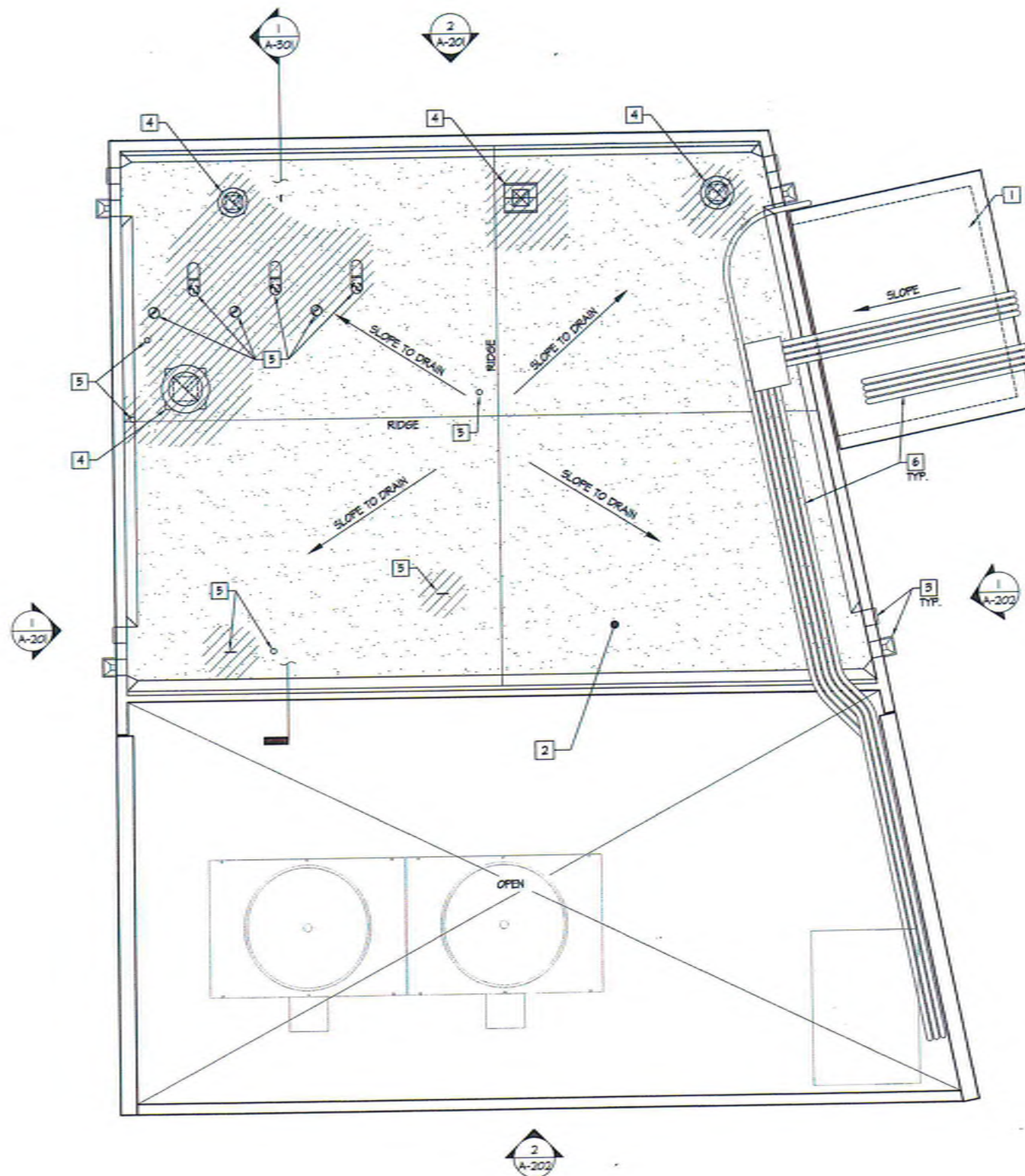
REFLECTED CEILING PLAN  
CENTRAL PLANT EQUIPMENT UPGRADE  
VALHALLA HIGH SCHOOL  
1725 HILLSDALE ROAD  
EL CAJON, CA 92019

**A-103**  
SHEET NO. 1 OF 1 SHEETS



A:\2011-10 Valhalla Central Plant\33 Drawings\Central Plant\Sheet\A-104 Roof Plan.dwg 04/16/2011 07:54

# 1 ROOF PLAN 1/4" = 1'-0"



0 2' 4' 8'  
SCALE: 1/4" = 1'-0"

## LEGEND

/// AREAS OF ROOFING PATCH & REPAIR INCL. ROOF SHEATHING

## KEYNOTES

- 1 (E) METAL ROOFING TO REMAIN
- 2 (E) BUILT-UP ROOFING W/ GRAVEL BALLAST (MIN. CLASS 'B') TO REMAIN - PATCH & REPAIR WHERE IMPACTED BY DEMOLITION AND NEW WORK
- 3 (E) SHEET METAL ROOF DRAIN SCUPPER & DOWNSPOUT AND OVERFLOW SCUPPER TO REMAIN
- 4 CURB-MOUNTED MECHANICAL EQUIPMENT PER 2(A-502 - COORDINATE W/ M-202
- 5 THROUGH-ROOF PIPE PENETRATION PER 1(A-502 - COORDINATE W/ M-202 & P-201 - COMBINE FLASHING BASE WHERE PENETRATIONS ARE LESS THAN 12' APART
- 6 (E) CONDUIT TO REMAIN

## ROOF PLAN

CENTRAL PLANT EQUIPMENT UPGRADE  
VALHALLA HIGH SCHOOL  
1725 HILLSDALE ROAD  
EL CAJON, CA 92019



UNIVERSITY MICROFILMS  
SERIALS ACQUISITION  
300 N ZEEB RD  
ANN ARBOR MI 48106-1500

FILE # 04-155830  
AC PLS  
DATE 04/17/11

PREPARED FOR THE

GROSSMONT UNION HIGH SCHOOL DISTRICT

P.O. BOX 1048  
LA MESA, CALIFORNIA

PREPARED BY

PLATT/WHITE LAW ARCHITECTS, INC.

4034 30TH STREET  
SAN DIEGO, CA 92104-4326 FAX (619) 546-4330

PROJECT NO. PVA 4036410

FILE NAME: A-104 ROOF PLAN.DWG

DATE: 4/14/2011

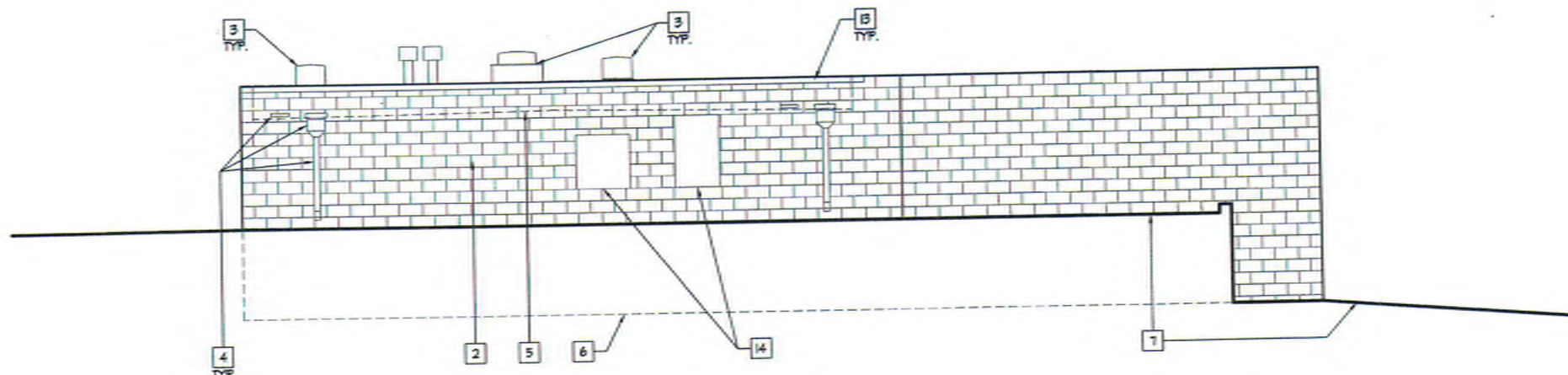
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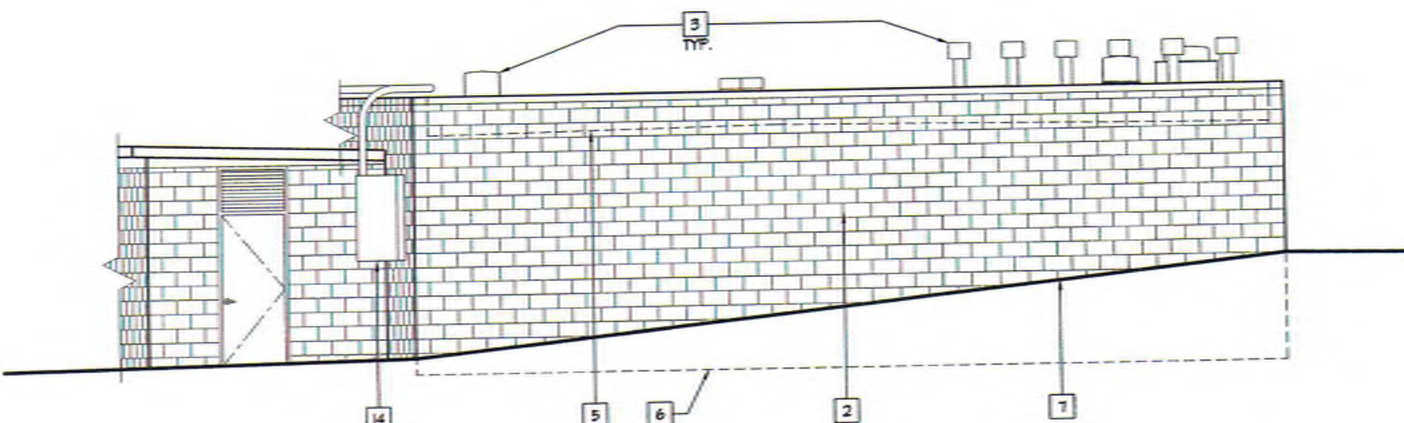
A-104

SHEET NO. 1 OF 1 SHEETS





1 NORTH ELEVATION  
1/4" = 1'-0"



2 EAST ELEVATION  
1/4" = 1'-0"

# KEYNOTES

- 1 NOT USED
- 2 (E) CMU WALL
- 3 ROOF-MOUNTED MECHANICAL EQUIPMENT - SEE U/A-104
- 4 (E) ROOF DRAIN SCUPPER & DOWNSPOUT AND OVERFLOW SCUPPER TO REMAIN
- 5 LINE OF ROOF BEYOND
- 6 LINE OF FLOOR BEYOND
- 7 LINE OF GRADE
- 8 NOT USED
- 9 NOT USED
- 10 NOT USED
- 11 NOT USED
- 12 NOT USED
- 13 (E) SHEET METAL COPING CAP TO REMAIN
- 14 (E) ELECTRICAL EQUIPMENT TO REMAIN

**GROSSMONT UNION HIGH SCHOOL DISTRICT**  
P.O. BOX 9043  
LA MESA, CALIFORNIA

**PLATT/WHITELAW ARCHITECTS, INC.**  
4034 30TH STREET  
SAN DIEGO, CA 92104-4329 FAX (619) 546-4350

PREPARED FOR THE  
GROSSMONT UNION HIGH SCHOOL DISTRICT  
P.O. BOX 9043  
LA MESA, CALIFORNIA

PREPARED BY  
PLATT/WHITELAW ARCHITECTS, INC.  
4034 30TH STREET  
SAN DIEGO, CA 92104-4329 FAX (619) 546-4350

EXTERIOR ELEVATIONS  
CENTRAL PLANT EQUIPMENT UPGRADE  
VALHALLA HIGH SCHOOL  
1725 HILLSDALE ROAD  
EL CAJON, CA 92019

PROJECT NO. PWA 20561.0  
FILE NAME: ELEVATIONS.DWG  
DATE: 4/14/2017  
DRAWN: -  
CHECKED: -

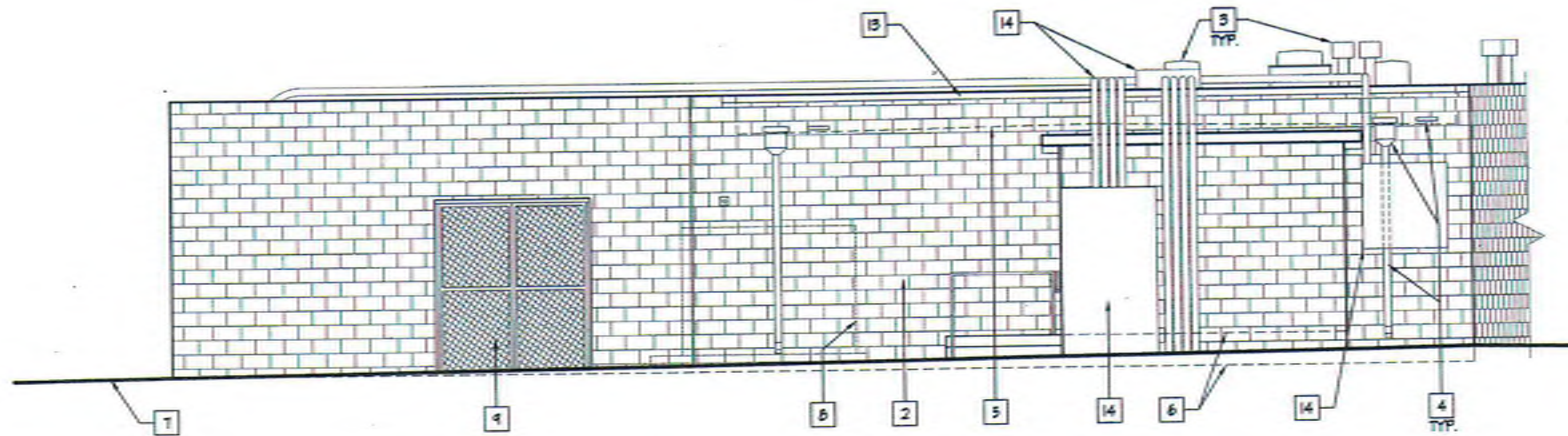
REVISION

DATE

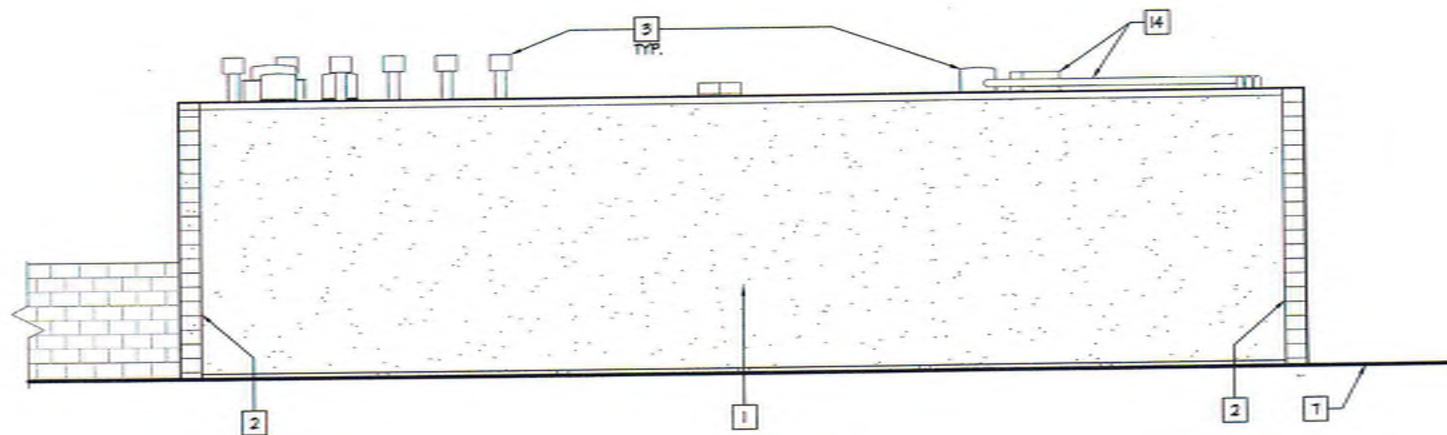
SCALE: 1/4" = 1'-0"

A-201  
SHEET NO. - OF - SHEETS





1 SOUTH ELEVATION  
1/4" = 1'-0"



2 WEST ELEVATION  
1/4" = 1'-0"

# KEYNOTES

- 1 (E) CEMENT PLASTER
- 2 (E) CMU WALL
- 3 ROOF-MOUNTED MECHANICAL EQUIPMENT - SEE U/A-104
- 4 (E) ROOF DRAIN SCUPPER & DOWNPOUT AND OVERFLOW SCUPPER TO REMAIN
- 5 LINE OF ROOF BEYOND
- 6 LINE OF FLOOR BEYOND
- 7 LINE OF GRADE
- 8 (E) TRANSFORMER TO REMAIN - SHOWN DASHED FOR CLARITY
- 9 (E) CHAIN LINK GATE TO REMAIN
- 10 NOT USED
- 11 NOT USED
- 12 NOT USED
- 13 (E) SHEET METAL COPING GAP TO REMAIN
- 14 (E) ELECTRICAL EQUIPMENT TO REMAIN

PREPARED FOR THE  
**GROSSMONT UNION HIGH SCHOOL DISTRICT**  
P.O. BOX 1048  
LA MESA, CALIFORNIA

PREPARED BY  
**PLATT/WHITELAW ARCHITECTS, INC.**  
4084 30TH STREET  
SAN DIEGO, CA 92106-4360 FAX (619) 546-4360

UNIVERSITY OF CALIFORNIA  
OFFICE OF THE ARCHITECT  
04-115030  
FILE #0714  
AC 100  
DATE 04/27/17



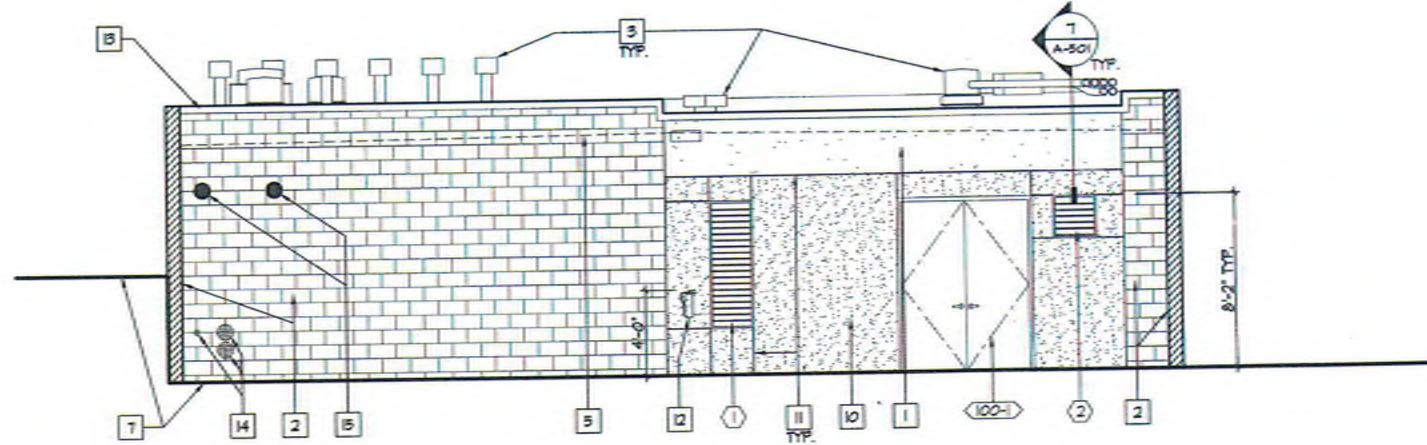
**EXTERIOR ELEVATIONS**  
**CENTRAL PLANT EQUIPMENT UPGRADE**  
**VALHALLA HIGH SCHOOL**  
1725 HILLSDALE ROAD  
EL CAJON, CA 92019

PROJECT NO.	PVA 006610
FILE NAME	A-202 EXTERIOR ELEVATIONS.DWG
DATE	4/14/2017
DRAWN	
CHECKED	
<b>A-202</b>	
SHEET NO. 1 OF 1 SHEETS	

0 2' 4' 8'  
SCALE: 1/4" = 1'-0"



1 COURTYARD ELEVATION  
1/4" = 1'-0"



KEYNOTES

- 1 (E) CEMENT PLASTER
- 2 (E) CMU WALL
- 3 ROOF-MOUNTED MECHANICAL EQUIPMENT - SEE 1/A-104
- 4 NOT USED
- 5 LINE OF ROOF BEYOND
- 6 NOT USED
- 7 LINE OF GRADE
- 8 NOT USED
- 9 NOT USED
- 10 CEMENT PLASTER - SEE WALL TYPE SHEET A-501
- 11 CEMENT PLASTER CONTROL JOINTS
- 12 FIRE EXTINGUISHER
- 13 (E) SHEET METAL COPING CAP TO REMAIN
- 14 PATCH (E) ABANDONED CORES AT CMU WALL W/ CONCRETE
- 15 APPROX. LOCATION OF CORE IN (E) CMU WALL FOR HYDRONIC PIPING PENETRATION

LEGEND

- XXXX-X DOOR - SEE A-601 FOR SCHEDULE  
 (X) LOUVER - SEE A-601 FOR SCHEDULE

0 2' 4' 8'  
 SCALE: 1/4" = 1'-0"

INTERIOR ELEVATION

CENTRAL PLANT EQUIPMENT UPGRADE

VALHALLA HIGH SCHOOL  
 1725 HILLSDALE ROAD  
 EL CAJON, CA 92019



PREPARED FOR THE  
 GROSSMONT UNION HIGH SCHOOL DISTRICT  
 P.O. BOX 1043  
 LA MESA, CALIFORNIA

PLATT/WHITELOW ARCHITECTS, INC.

4094 80TH STREET  
 SAN DIEGO, CA 92126-4326 FAX (619) 549-4350

DATE: 04-15-2017  
 FILE: 04-15-2017

REVISION

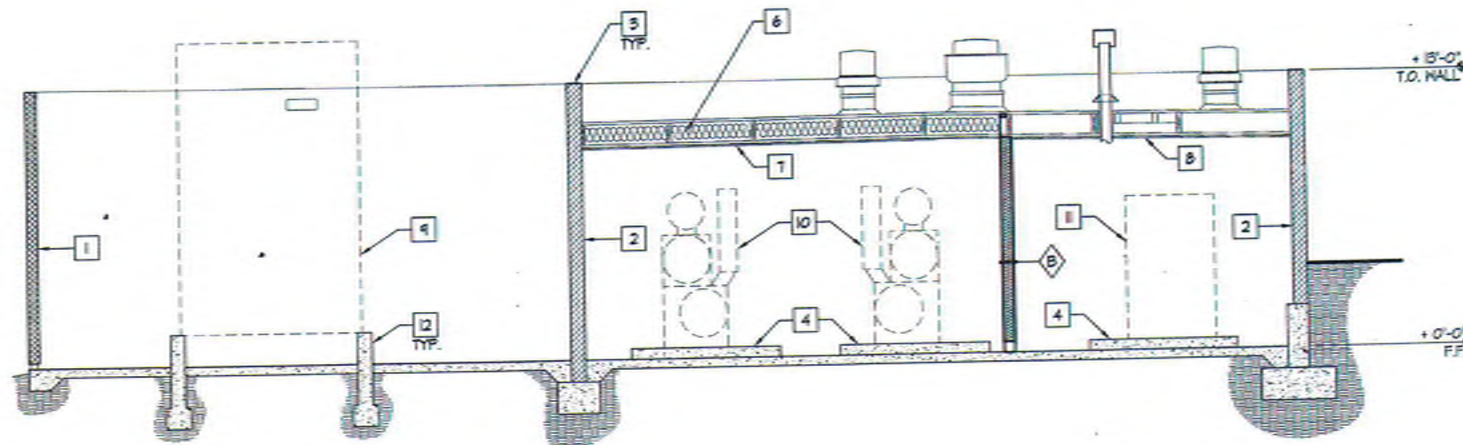
DATE

PROJECT NO. PHA 20561.0  
 FILE NAME: ELEVATIONS  
 DATE: 4/14/2017  
 DRAWN: -  
 CHECKED: -

A-203

SHEET NO. 1 OF 1 SHEETS

1 SECTION  
1/4" = 1'-0"



KEYNOTES	
1	(E) CEMENT PLASTER STUD WALL
2	(E) CMU WALL
3	(E) SHEET METAL COPING CAP TO REMAIN
4	(E) CONCRETE EQUIPMENT PAD
5	CONCRETE EQUIPMENT PAD
6	R-38C BATT INSULATION AT CHILLER ROOM
7	GYP. BD. CEILING - SEE A-103
8	HR. RATED GYP. BD. CEILING - SEE A-103
9	COOLING TOWER
10	CHILLER
11	BOILER
12	(E) COOLING TOWER CONCRETE STEINWALLS/FOUNDATION

LEGEND	
	WALL TYPE - SEE A-501

SECTION	
CENTRAL PLANT EQUIPMENT UPGRADE	
VALHALLA HIGH SCHOOL 1725 HILLSDALE ROAD EL CAJON, CA 92019	

GROSSMONT UNION HIGH SCHOOL DISTRICT	
P.O. BOX 1043 LA MESA, CALIFORNIA	

PLATT/WHITELEW ARCHITECTS, INC.	
4034 30TH STREET SAN DIEGO, CA (619) 548-4326 FAX (619) 548-4350	

REVISION		DATE

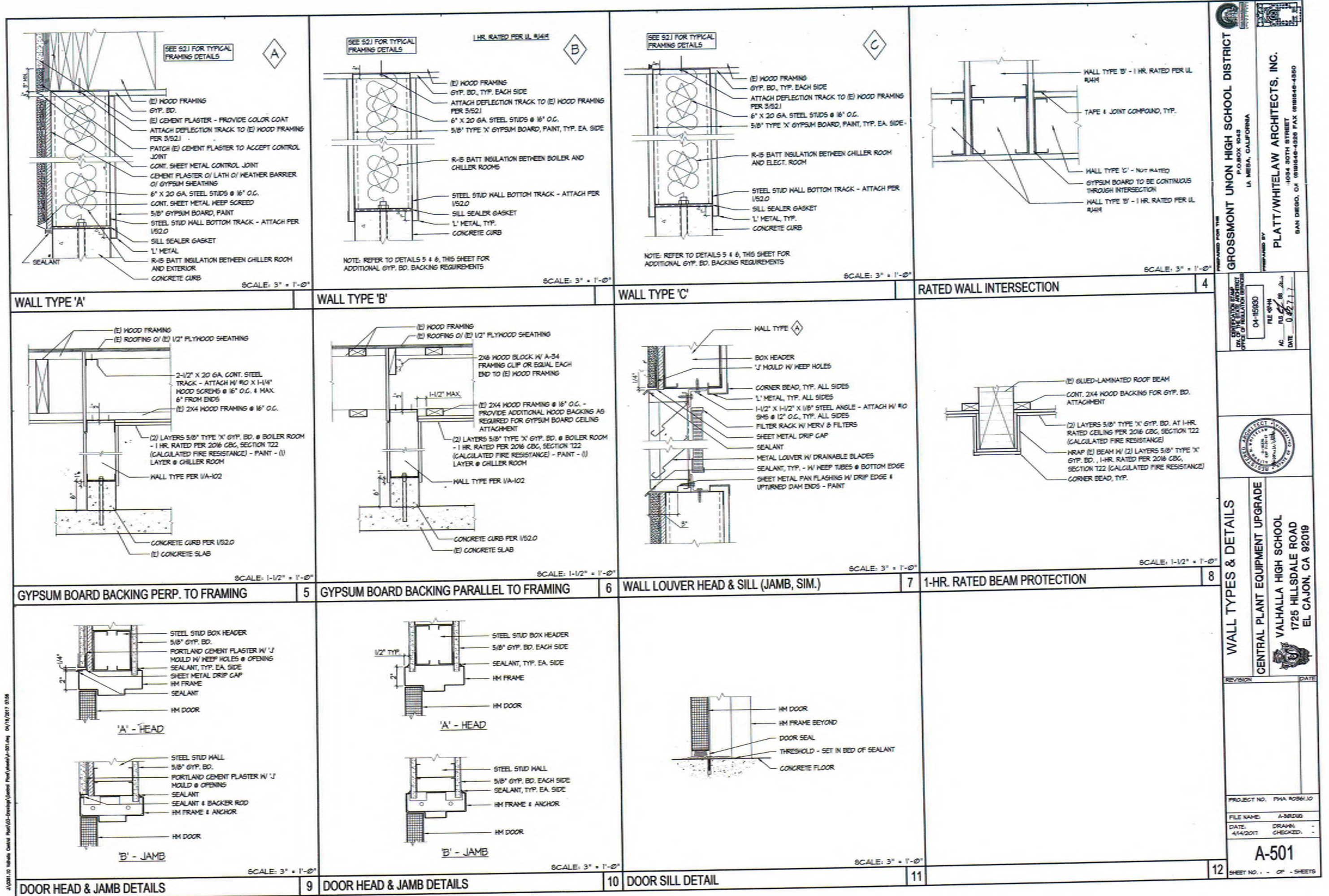
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FILE NAME	A-301.DWG
DATE	4/14/2011
DRAWN	
CHECKED	

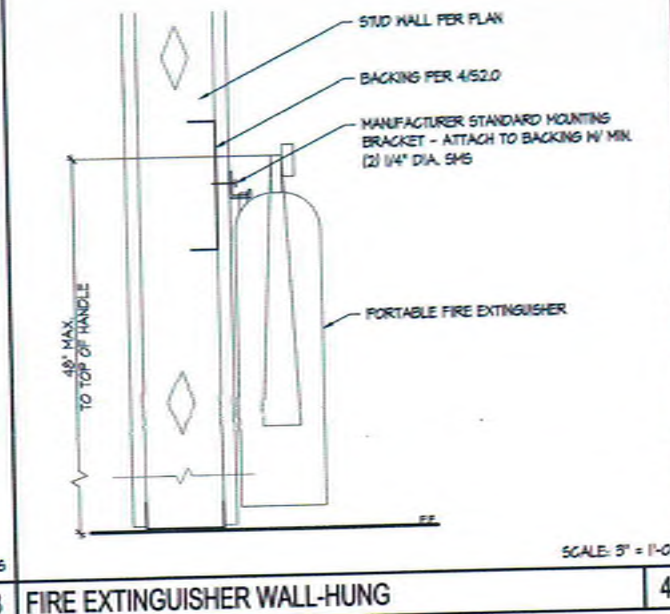
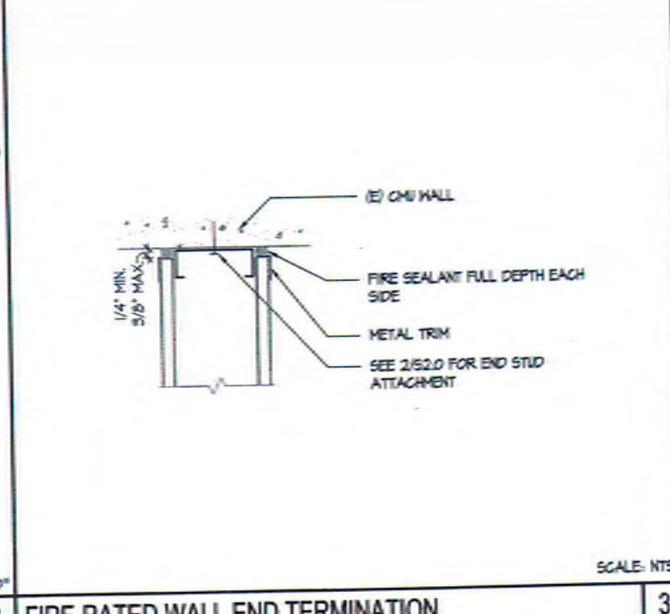
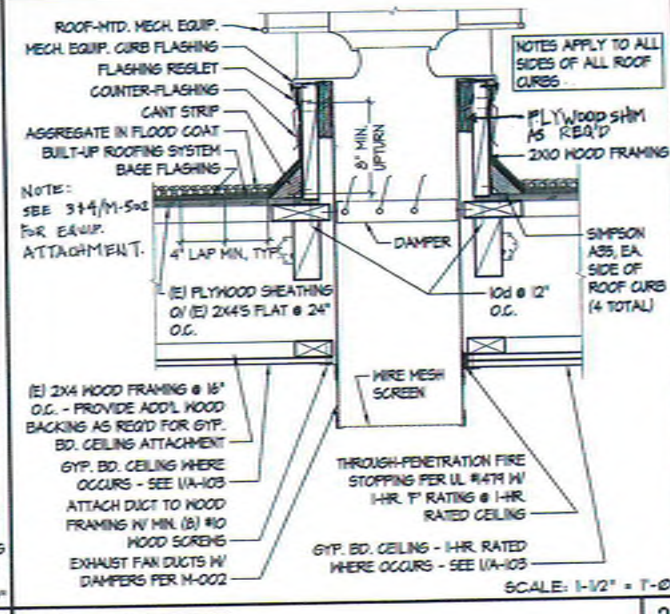
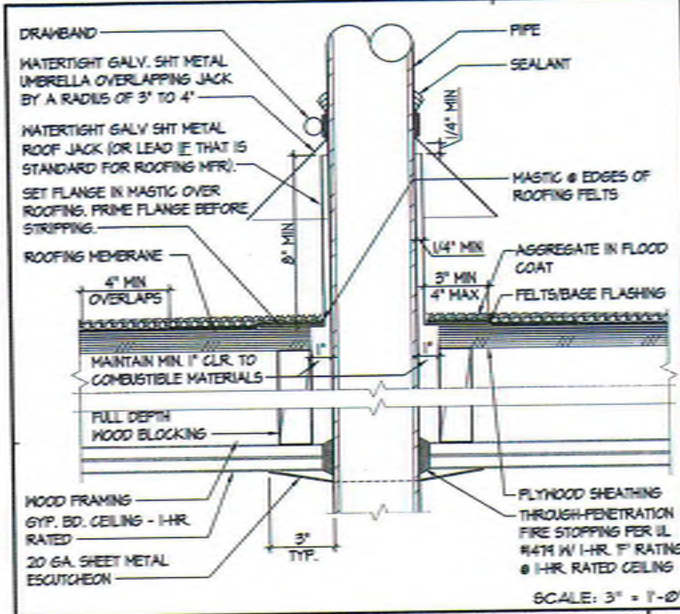
A-301	
SHEET NO. 1 OF 1 SHEETS	

0 2' 4' 6'  
SCALE: 1/4" = 1'-0"







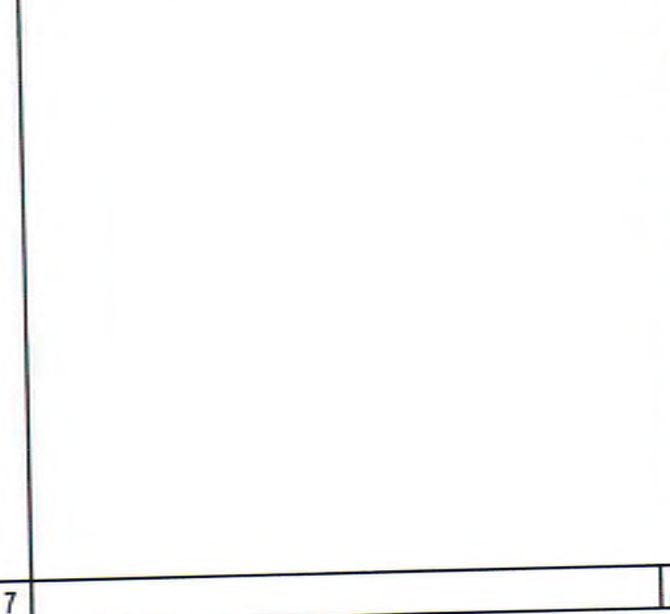
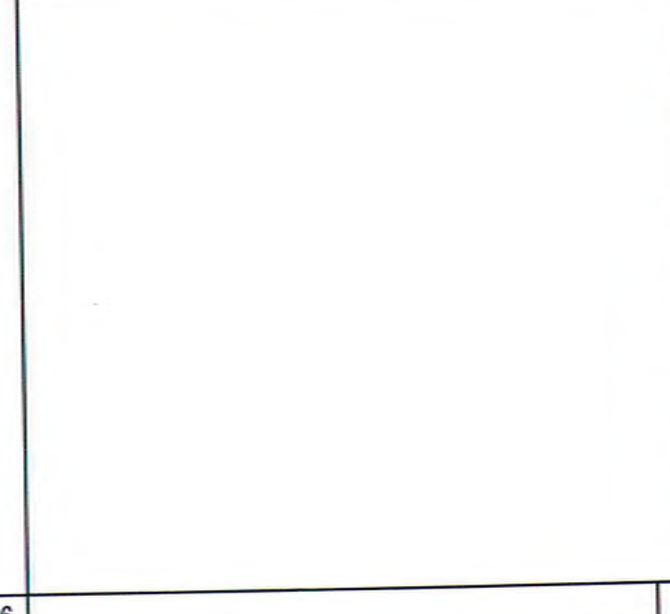
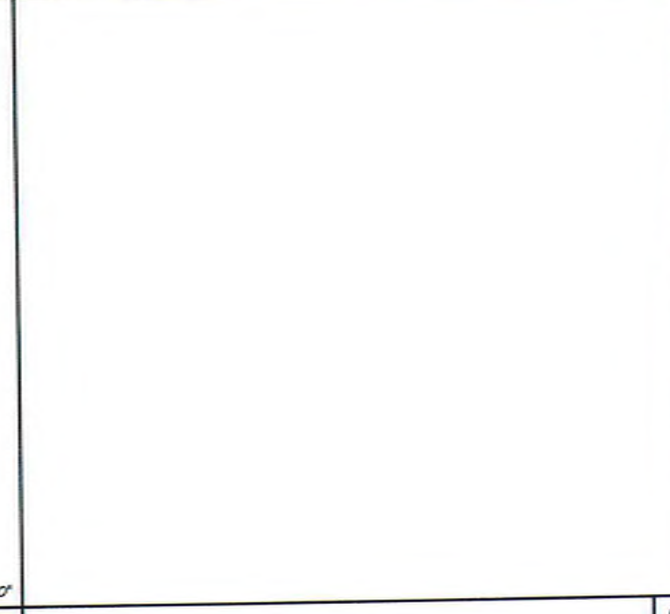
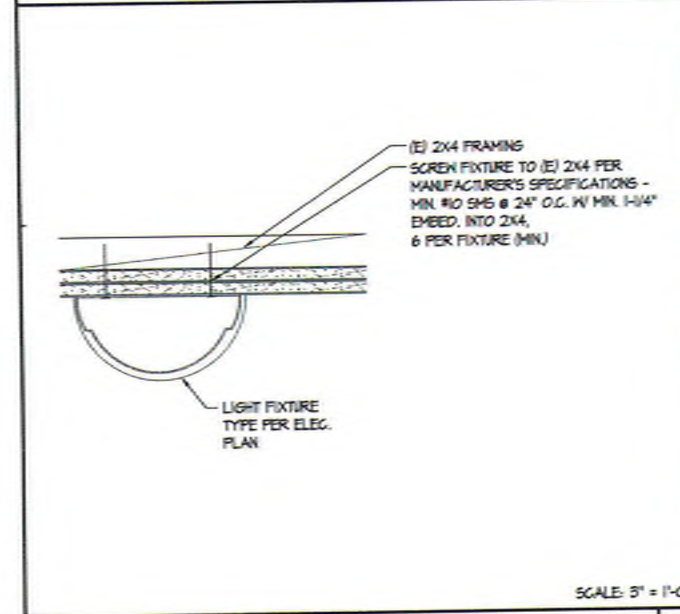


PIPE PENETRATION DETAIL

1 ROOF CURB DETAIL

2 FIRE-RATED WALL END TERMINATION

3 FIRE EXTINGUISHER WALL-HUNG

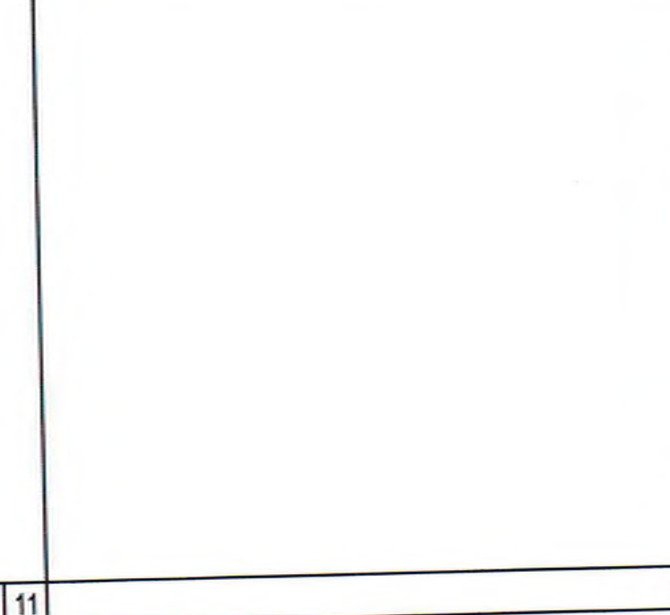
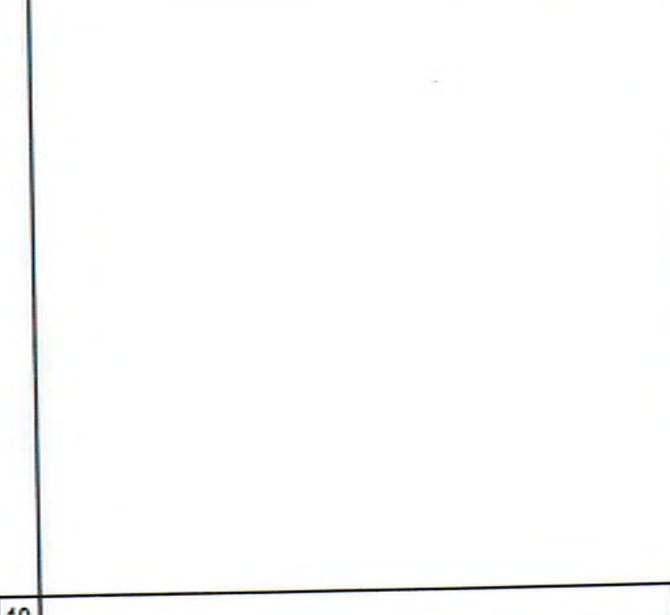
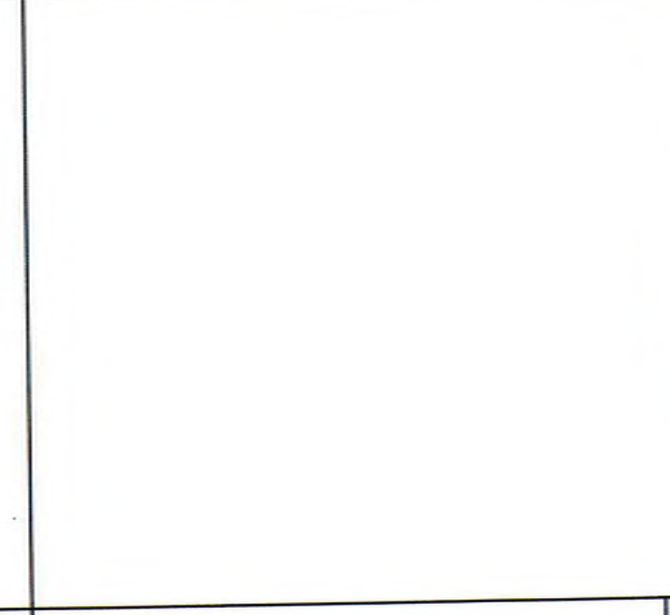
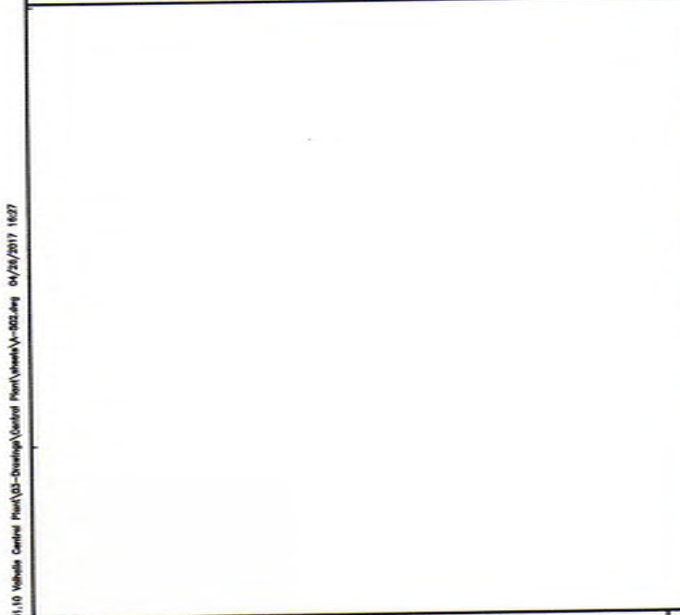


5 SURFACE MOUNTED LIGHT FIXTURE

6

7

8



9

10

11

12

PREPARED FOR THE  
**GROSSMONT UNION HIGH SCHOOL DISTRICT**  
P.O. BOX 1043  
LA MESA, CALIFORNIA

PREPARED BY  
**PLATT/WHITEAW ARCHITECTS, INC.**  
4054 90TH STREET  
SAN DIEGO, CA 92126-4326 FAX (619) 546-4360

EXERCISE OF THE PROFESSION  
DATE 04/15/2017  
AC 04/15/2017  
DATE 04/15/2017

REGISTERED ARCHITECT  
STATE OF CALIFORNIA  
NO. 10000  
EXPIRATION DATE 12/31/2018

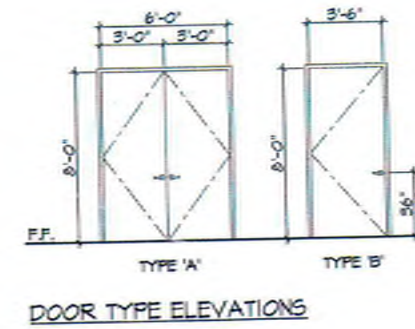
**CENTRAL PLANT EQUIPMENT UPGRADE**  
VALHALLA HIGH SCHOOL  
1725 HILLSDALE ROAD  
EL CAJON, CA 92019

PROJECT NO. FVA 201610  
FILE NAME: A-502.DWG  
DATE: 4/14/2017  
DRAWN: -  
CHECKED: -

**A-502**  
SHEET NO. 1 OF 1 SHEETS

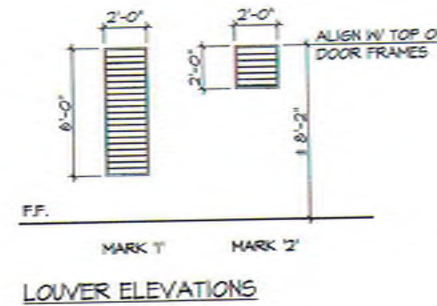


DOOR AND FRAME SCHEDULE													
DOOR						FRAME				FIRE RATING LABEL	HARDWARE	NOTES	
MARK ○	NEW OR EXISTING	TYPE	SIZE			MATL	MATL	DETAIL					
			WD	HGT	THK			HEAD	JAMB		SILL		SET NO
100-1	(N)	A	PR 3'-0"	8'-0"	1-3/4	HM	HM	9A/A-501	9E/A-501	11A/A-501	--	001	--
100-2	(N)	B	3'-6"	8'-0"	1-3/4	HM	HM	10A/A-501	10B/A-501	11A/A-501	--	002	--
100-3	(N)	B	3'-6"	8'-0"	1-3/4	HM	HM	10A/A-501	10B/A-501	11A/A-501	1 HR	003	SELF-CLOSING
100-4	(N)	B	3'-6"	8'-0"	1-3/4	HM	HM	10A/A-501	10B/A-501	11A/A-501	--	002	--



DOOR NOTES:  
1. PAINT ALL DOORS AND FRAMES - COLOR: MATCH FRAZEE #CL230TN "ZODIAC"

LOUVER SCHEDULE							
MARK ○	SIZE		MATL	DETAIL			NOTES
	WIDTH	HEIGHT		HEAD	JAMB	SILL	
1	2'-0"	6'-0"	STL	1/A-501	1/A-501 SIM.	1/A-501	--
2	2'-0"	2'-0"	STL	1/A-501	1/A-501 SIM.	1/A-501	--



LOUVER NOTES:  
1. ALL LOUVERS TO BE FACTORY FINISHED - COLOR: MATCH PAREX #10400 "SNOWBALL"

ROOM FINISH SCHEDULE									
ROOM NAME	FLOOR	BASE	WALLS				CEILING		NOTES
			N	S	E	W	MATL	HEIGHT	
ELECT. ROOM	C	--	P	CMU	CMU	CMU	E	VARIES	--
CHILLER ROOM	C	--	CMU	P	P	CMU	P	VARIES	--
BOILER ROOM	C	--	CMU	P	CMU	P	P	VARIES	--
COOLING TOWER COURTYARD	--	--	--	--	CP	--	--	--	--

#### MATERIALS LEGEND

- C - (E) CONCRETE - CLEAN & SEAL;
- (N) CONCRETE EQUIPMENT PADS - SEAL;
- POLYMER SEALER PER SECTION 030500
- P - GYP. BD., PAINT - COLOR: MATCH DUNNEDWARDS "SWISS COFFEE"
- CMU - CONCRETE MASONRY UNITS - CLEAN & SEAL;
- WATER REPELLENT PER SECTION 071000
- CP - PORTLAND CEMENT FLASTER, PAINT - COLOR: MATCH PAREX #10400 "SNOWBALL"
- E - (E) EXPOSED WOOD STRUCTURE, PAINT - COLOR: MATCH DUNNEDWARDS "SWISS COFFEE"

GROSSMONT UNION HIGH SCHOOL DISTRICT  
P.O. BOX 1043  
LA MESA, CALIFORNIA 91944-0103

PREPARED FOR THE

PLATT/WHITEHEAD ARCHITECTS, INC.  
4034 30TH STREET  
SAN DIEGO, CA 92106-4350 FAX (619) 546-4350

PROJECT NO. PMA 10561.00

FILE NAME: A-601 SCHEDULES.DWG

DATE: 4/14/2011 DRAWN: -

CHECKED: -

**A-601**

SHEET NO. 1 OF 5 SHEETS

SCHEDULES

CENTRAL PLANT EQUIPMENT UPGRADE

VALHALLA HIGH SCHOOL  
1725 HILLSDALE ROAD  
EL CAJON, CA 92019

REVISION

DATE



# GENERAL REQUIREMENTS

- VERIFICATION: VERIFY ALL DIMENSIONS, ELEVATIONS AND SITE CONDITIONS BEFORE STARTING WORK. NOTIFY THE ARCHITECT IMMEDIATELY OF ANY DISCREPANCIES.
- CONFLICTS: NOTES AND DETAILS ON THE DRAWINGS TAKE PRECEDENCE OVER THE GENERAL NOTES AND TYPICAL DETAILS IN CASE OF CONFLICT.
- CODES: ALL MATERIALS AND WORK SHALL CONFORM TO THE REQUIREMENTS OF THE CALIFORNIA CODE OF REGULATIONS, TITLE 24, PART 2, 2016 CALIFORNIA BUILDING CODE (CBC).
- ALTERATION, REHABILITATION OR RECONSTRUCTION: TO BE IN ACCORDANCE WITH THE CBC. SHOULD ANY EXISTING CONDITIONS SUCH AS DETERIORATION OR NON-COMPLYING CONSTRUCTION BE DISCOVERED WHICH IS NOT COVERED BY THE CONTRACT DOCUMENTS WHEREIN THE FINISHED WORK WILL NOT COMPLY WITH THE CBC, A CHANGE ORDER, OR A SEPARATE SET OF PLANS AND SPECIFICATIONS, DETAILING AND SPECIFYING THE REQUIRED WORK SHALL BE SUBMITTED TO AND APPROVED BY DSA BEFORE PROCEEDING WITH THE WORK.
- SUBSTITUTIONS: PROVIDE MANUFACTURER'S ICC REPORTS AND A LIST OF ALL PROPOSED SUBSTITUTIONS TO THE ARCHITECT AND DSA FOR REVIEW AND APPROVAL BEFORE FABRICATION.
- SIMILAR WORK: WHERE CONSTRUCTION DETAILS ARE NOT SHOWN OR NOTED FOR ANY PART OF THE WORK, SUCH DETAILS SHALL BE THE SAME AS FOR SIMILAR WORK SHOWN ON THE DRAWINGS.
- PIPES, DUCTS, SLEEVES, CHASES, ETC.: SHALL NOT BE PLACED IN SLABS, BEAMS, OR WALLS UNLESS SPECIFICALLY SHOWN OR NOTED. NOR SHALL ANY STRUCTURAL MEMBER BE CUT FOR PIPES, DUCTS, ETC., UNLESS SPECIFICALLY SHOWN. OBTAIN PRIOR WRITTEN APPROVAL FOR INSTALLATION OF ANY ADDITIONAL PIPES, DUCTS, ETC.
- EXCAVATIONS: LOCATE AND PROTECT UNDERGROUND OR CONCEALED CONDUIT, PLUMBING OR OTHER UTILITIES WHERE NEW WORK IS BEING PERFORMED.
- CONSTRUCTION LOADS: MATERIALS SHALL BE EVENLY DISTRIBUTED IF PLACED ON FRAMED FLOORS OR ROOFS. LOADS SHALL NOT EXCEED THE ALLOWABLE LOADING FOR THE SUPPORTING MEMBERS AND THEIR CONNECTIONS.
- THE STRUCTURAL DRAWINGS ILLUSTRATE THE NEW STRUCTURAL MEMBERS. REFER TO ARCHITECTURAL, MECHANICAL AND ELECTRICAL DRAWINGS FOR NON-STRUCTURAL ITEMS WHICH REQUIRE SPECIAL PROVISIONS DURING THE CONSTRUCTION OF THE STRUCTURAL MEMBERS.
- REFER TO ARCHITECTURAL PLANS FOR FLOOR DEPRESSIONS, SLOPES, DRAINS, CURBS, PADS, EMBEDDED ITEMS, NON-BEARING PARTITIONS, ETC. REFER TO MECHANICAL AND ELECTRICAL PLANS FOR SLEEVES AND HANGERS FOR PIPES, DUCTS AND EQUIPMENT.
- CONSTRUCTION METHODS AND PROJECT SAFETY: THE CONTRACT DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE AND DO NOT INDICATE METHODS, PROCEDURES OR SEQUENCE OF CONSTRUCTION. THE CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS TO MAINTAIN AND INSURE THE INTEGRITY OF THE STRUCTURE DURING CONSTRUCTION. NEITHER THE OWNER, ARCHITECT NOR ENGINEER WILL ENFORCE SAFETY MEASURES OR REGULATIONS. THE CONTRACTOR SHALL DESIGN, CONSTRUCT AND MAINTAIN ALL SAFETY DEVICES, INCLUDING SHORING AND BRACING, AND BE SOLELY RESPONSIBLE FOR CONFORMING TO ALL LOCAL, STATE AND FEDERAL SAFETY AND HEALTH STANDARDS, LAWS AND REGULATIONS.
- ANY DEVIATION FROM THE APPROVED SET OF STRUCTURAL DRAWINGS SHALL ONLY BE MADE AFTER WRITTEN APPROVAL BY THE STRUCTURAL ENGINEER.
- STRUCTURAL PLANS INDICATE ONLY THE APPROXIMATE LOCATION OF MECHANICAL, ELECTRICAL AND OTHER EQUIPMENT, AS WELL AS THE RELATED AUXILIARY FRAMING NECESSARY TO SUPPORT SUCH EQUIPMENT. THE FINAL POSITIONING OF THESE ITEMS IS DEPENDENT UPON THE EQUIPMENT PROVIDED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WORK BETWEEN SUBCONTRACTORS AND CRAFTS IN THIS REGARD, AND PROVIDING NECESSARY DIMENSIONS IN A TIMELY MANNER TO ALL PARTIES INVOLVED.

## DESIGN CRITERIA

- DEAD LOAD - ROOF:  
5 PLY AND GRAVEL.....7.0 PSF  
RE-ROOF.....4.0 PSF  
PLYWOOD.....1.5 PSF  
2x4 @ 24".....0.7 PSF  
3x12 @ 48".....2.0 PSF  
5/8" GIP (2 LAYERS).....5.8 PSF  
21 PSF
- LIVE LOADS:  
ROOF (BASIC LIVE LOAD).....20 PSF
- LATERAL LOADS:  
A) SEISMIC - SHORT PERIOD  
SPECTRAL RESPONSE..... $S_s = 0.852 g$   
ONE - SECOND PERIOD  
SPECTRAL RESPONSE..... $S_1 = 0.330 g$   
SITE CLASSIFICATION.....0  
ADJUSTED SPECTRAL RESPONSE..... $S_{as} = 0.888 g$   
ADJUSTED SPECTRAL RESPONSE..... $S_{a1} = 0.374 g$   
DESIGN SPECTRAL RESPONSE..... $S_{DS} = 0.659 g$  (2/3  $S_{as}$ )  
DESIGN SPECTRAL RESPONSE..... $S_{D1} = 0.383 g$  (2/3  $S_{a1}$ )  
OCCUPANCY CATEGORY: 2  
SEISMIC DESIGN CATEGORY.....0

# REINFORCED CONCRETE (CBC CHAPTER 1904)

- MATERIALS:  
CEMENT.....ASTM C-150 TYPE II  
AGGREGATE.....ASTM C-33 CRUSHED ROCK  
REINFORCEMENT.....ASTM A-615 GRADE 60 TYPICAL  
REINFORCEMENT.....ASTM A-706 GRADE 60 WELDED  
ANCHOR BOLTS.....ASTM A-36 HOOKED ANCHOR BOLTS  
ANCHOR BOLTS (RODS).....ASTM F-1554 HEADED MACHINE BOLTS, GRADE 36
- CONCRETE STRENGTHS: THE CONCRETE STRENGTHS SHOWN IN THE FOLLOWING TABLE ARE THE MINIMUM COMPRESSIVE STRENGTHS AT 28 DAYS AND THE WATER/CEMENT RATIO IS THE MAXIMUM. THE SPECIFIED SLUMP IS THE MAXIMUM PRIOR TO THE ADDITION OF ADJUTURES. CONCRETE SHALL BE STANDARD WEIGHT CONCRETE (145 PCF).

ITEM OF CONSTRUCTION	STRENGTH (PSI)	SLUMP (IN)	WATER/CEMENT (LB/LB)
FOUNDATIONS.....	3,000	1	0.57
SLABS-IN-GRADE.....	3,000	1	0.57

- CONCRETE SHALL BE PROPORTIONED SUCH THAT 7 DAY STRENGTHS ARE A MINIMUM OF SEVENTY PERCENT OF THE SPECIFIED 28 DAY STRENGTH FOR ANY CONCRETE CONSTRUCTION REQUIRING SHORING, BRACING OR TO RECEIVE CONSTRUCTION LOADS. IN ADDITION, SLABS-ON-GRADE SHALL HAVE A COMPRESSIVE STRENGTH OF AT LEAST 1,800 PSI AT THREE DAYS IF SUBJECT TO CONSTRUCTION TRAFFIC.
- REINFORCEMENT:  
A) SHOP DRAWINGS, FABRICATION AND PLACING: SHALL CONFORM TO ACI 315 AND ACI 318. SHOP DRAWINGS REVIEWED BY THE ARCHITECT BEFORE FABRICATION.  
B) MINIMUM CONCRETE COVER:  
EXPOSED TO EARTH.....2"  
EXPOSED TO WEATHER.....2"  
NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND:  
SLABS, WALLS, JOISTS.....1"  
BEAMS, COLUMNS (TIES, STIRRUPS, SPIRALS) 1-1/2"  
C) CHAIRS, SPACERS AND SAND PLATES: AS REQUIRED TO MAINTAIN CONCRETE COVER.  
D) VERTICAL REINFORCEMENT: SHALL BE DONE TO SUPPORTING MEMBERS WITH THE SAME SIZE AND SPACING OF REINFORCEMENT AS SHOWN IN THE DRAWINGS AND GENERAL NOTES.  
E) HORIZONTAL REINFORCEMENT: ALL BARS ENDING AT THE FACE OF A WALL, COLUMN OR BEAM SHALL EXTEND TO WITHIN 2" OF THE FACE AND HAVE A 90 DEGREE HOOK UNLESS OTHERWISE SHOWN.  
F) SPACING: CLEAR DISTANCE BETWEEN PARALLEL REINFORCEMENT OR PARALLEL REINFORCING BARS BUNDLED IN CONTACT TO ACT AS A UNIT IN A LAYER SHALL NOT BE LESS THAN 1-1/2 TIMES THE NOMINAL DIAMETER OF THE REINFORCEMENT, OR 1-1/3 TIMES MAXIMUM SIZE AGGREGATE, WHICHEVER IS LESS. NOMINAL DIAMETER FOR A UNIT OF BUNDLED BARS SHALL BE THE EQUIVALENT DIAMETER OF THE COMBINED AREAS OF THE BARS BUNDLED.  
G) TACK WELDING, WELDING, HEATING OR CUTTING OF BARS: NOT PERMITTED WORK.  
H) SLAB CORNERS: PROVIDE 2-#4 X 4'-0" AT RE-ENTRANT CORNERS AND EACH CORNER OF RECTANGULAR HOLES IN SLABS. PLACE BARS DIAGONALLY.  
I) SPLICES (LAPS) WORK:  
i) FOR BARS #6 AND SMALLER:  
a) 60 DIAMETERS FOR BOTTOM BARS OF FOOTINGS AND BEAMS, SLABS LESS THAN 12" THICK, COMPOSITE TOPPING, AND SLAB-ON-GRADE REINFORCING.  
b) 75 DIAMETERS FOR ALL OTHER CONDITIONS.  
ii) FOR #7 BARS AND LARGER:  
a) 72 DIAMETERS FOR BOTTOM BARS OF FOOTINGS AND BEAMS, SLABS LESS THAN 12" THICK, AND SLAB-ON-GRADE REINFORCING.  
b) 94 DIAMETERS FOR ALL OTHER CONDITIONS.  
iii) IN NO CASE SHALL LAPS BE LESS THAN 24 INCHES LONG.  
iv) STAGGER CONTINUOUS FOOTING BOTTOM SPLICES AT LEAST 6'-0" FROM SPLICES IN OTHER BOTTOM REINFORCEMENT; STAGGER SPLICES FOR TOP REINFORCEMENT SIMILARLY.  
J) WELDED REINFORCEMENT: ASTM A-706, CERTIFIED WELDERS. WELD PER AWS D1.4.  
i) A706 BAR TO A706 BAR.....E70XX ELECTRODES  
A706 BAR TO A36 OR A992  
STEEL.....E70XX ELECTRODES  
K) ALL REINFORCING BARS SHALL BE DEFORMED BARS UNLESS OTHERWISE NOTED.
- ANCHOR BOLTS, CONEELS AND HOLD-DOWN ANCHORS: SECURELY WELD IN PLACE PRIOR TO FOUNDATION INSPECTION BY THE INSPECTOR OF RECORD AND OBSERVATION BY THE ARCHITECT.
- PIPES, SLEEVES AND DUCTS: NOT TO BE PLACED IN WALLS, BEAMS, SLABS, FOOTINGS OR COLUMNS UNLESS SPECIFICALLY DETAILED.
- CHAMFER: 3/4 INCH ON EXPOSED CORNERS.
- ADMITURES: REVIEWED BY ARCHITECT, NO CALCIUM CHLORIDE.
- CONSTRUCTION JOINTS: HEAVY SANDBLAST (1/4 INCH AMPLITUDE MINIMUM). LOCATION OF JOINTS TO BE REVIEWED BY THE ARCHITECT. WAIT 48 HOURS BETWEEN POURS.
- SLAB-ON-GRADE JOINTS: LOCATION OF ALL CONSTRUCTION, CONTROL AND WEAKENED PLANE JOINTS NOT SPECIFICALLY INDICATED ON THE DRAWINGS SHALL BE REVIEWED BY THE ARCHITECT PRIOR TO THE PLACING OF REINFORCEMENT.
- CONCRETE CURING: SEE SPECIFICATIONS.
- BOLTS IN CONCRETE: MINIMUM EMBEDMENT SHALL BE PER CBC TABLE 1911-A.2, BUT NOT LESS THAN 7-INCHES UNLESS OTHERWISE NOTED.

# SPECIAL INSPECTION/INSPECTOR REQUIREMENTS (CBC 1704A)

- PROJECT INSPECTOR: IN ACCORDANCE WITH TITLE 24, PART 1, SECTIONS 4-353 AND 4-342.
- CERTIFIED SPECIAL INSPECTOR: EMPLOYED BY THE DISTRICT AND APPROVED BY THE ARCHITECT, STRUCTURAL ENGINEER AND DSA.
- REPORTS: PREPARED BY THE SPECIAL INSPECTOR AND SIGNED BY A CIVIL ENGINEER, SUBMITTED TO THE DSA, THE ARCHITECT, AND ENGINEER. ALL DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION; THEN, IF NOT CORRECTED, TO THE ARCHITECT, ENGINEER AND THE DSA (CBC 1704A.1-2).
- THE SPECIAL INSPECTION IS TO BE CONTINUOUS DURING THE PERFORMANCE OF THE WORK UNLESS OTHERWISE SPECIFIED.

## SUMMARY OF STRUCTURAL CONTINUOUS AND PERIODIC SPECIAL INSPECTIONS (SEE DSA - 100)

- RESPONSIBILITY: IT IS THE RESPONSIBILITY OF THE PROJECT INSPECTOR TO INFORM THE SPECIAL INSPECTOR OR INSPECTION AGENCY AT LEAST ONE WORKING DAY PRIOR TO PERFORMING ANY WORK THAT REQUIRES SPECIAL INSPECTION.
- SPECIAL INSPECTIONS:  
A) CONCRETE AND MASONRY ANCHORS: FOR ALL THREADED ROD AND REINFORCING STEEL ANCHORED WITH EPOXY ADHESIVE IN CONCRETE OR MASONRY; FOR ALL EXPANSION ANCHORS IN CONCRETE OR MASONRY. INSPECTION/TESTING SHALL BE IN CONFORMANCE WITH THE ANCHOR MANUFACTURER'S ICC REPORT AND SHALL INCLUDE AS A MINIMUM VERIFICATION OF HOLE DEPTH AND DIAMETER, CLEAN OUT, ALL MATERIALS, INSTALLATION TORQUE AND PROOF LOAD TESTS.

## SPECIAL STRUCTURAL OBSERVATIONS BY ENGINEER (CBC 1710A)

- NOTIFICATION: 48 HOURS BEFORE OBSERVATION. DELINQUENT NOTIFICATION MAY REQUIRE DEMOLITION OF COVERING MATERIALS TO FACILITATE OBSERVATION.
- OBSERVATIONS BY ENGINEER:  
A) REINFORCEMENT BEFORE CONCRETE PLACEMENT.  
B) FIELD WELDED CONNECTIONS.  
C) COMPLETION OF ROUGH FRAMING.

## POWDER DRIVEN (LOW VELOCITY) FASTENERS/ SHOT PINS

- THE USE OF POWDER DRIVEN FASTENERS FOR TENSION LOADS IS LIMITED TO SUPPORT OF MINOR LOADS, SUCH AS ACUSTICAL CEILINGS, DUCTWORK, CONDUIT, ETC.
- POWDER DRIVEN FASTENERS SHALL NOT BE USED IN CURBS.
- ALLOWABLE TENSION LOADS SHALL BE LIMITED TO 100 POUNDS, OR 80% OF THE ICC APPROVED VALUES, WHICHEVER IS LESS.
- QUALIFICATION FOR USE OF ALL POWER ACTIVATED TOOLS SHALL MEET ANSI A10-3 STANDARD AS REQUIRED BY THE MANUFACTURER AND SHALL MEET OSHA REQUIREMENTS.
- THE OPERATOR, TOOL, AND FASTENERS SHALL BE PREQUALIFIED BY THE PROJECT INSPECTOR. HE SHALL OBSERVE THE TESTING OF THE FIRST TEN FASTENER INSTALLATIONS. A "PULL OUT" TEST LOAD OF 200 POUNDS SHALL BE APPLIED TO THE PIN IN SUCH A MANNER AS NOT TO RESIST THE SPALLING TENDENCY OF THE CONCRETE SURROUNDING THE PIN. THEREAFTER RANDOM TESTS, UNDER THE PROJECT INSPECTOR'S SUPERVISION, SHALL BE MADE OF APPROXIMATELY ONE IN TEN PINS. IF ANY PIN FAILS TESTING, TEST ALL PINS OF THE SAME CATEGORY NOT PREVIOUSLY TESTED UNTIL TWENTY CONSECUTIVE PINS PASS, THEN RESUME INITIAL TESTING FREQUENCY.
- FASTENERS SHALL HAVE ICC ER APPROVAL FOR THE TYPE OF CONCRETE INTO WHICH THE FASTENERS ARE INSTALLED.
- WHEN INSTALLING POWDER DRIVEN PINS, USE CARE AND CAUTION TO AVOID CUTTING OR DAMAGING REINFORCING BARS. MAINTAIN A MINIMUM OF ONE INCH CLEARANCE BETWEEN THE REINFORCING BAR AND THE PIN.

## CONCRETE SCREW ANCHORS

- THE USE OF SCREW ANCHORS SHALL BE LIMITED TO LOCATIONS SPECIFIED ON THE APPROVED CONTRACT DRAWINGS.
- THE ANCHORS MUST BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS PUBLISHED INSTALLATION INSTRUCTIONS AND A VALID ICC-ES EVALUATION REPORT. IN CASE OF CONFLICT THE REPORT GOVERNS. SEE [ICC ESR-3027 FOR HELTI KHEK HUS-EZ SCREW ANCHORS][ICC ESR-2713 FOR SIMPSON TITEN HD SCREW ANCHORS].
- MATERIALS:  
CARBON STEEL ANCHORS.....1/2"ZINC COATING PER ICC ESR REPORT  
W/HEX WASHER HEAD  
CONCRETE (MIN)..... $F'c = 3,000$  PSI (STONE AGGREGATE)
- INSTALLATION:  
A) CARBIDE-TIPPED DRILL BITS COMPLYING WITH ANSI B212.15-1994. DRILL BIT SIZE IS ANCHOR DIAMETER.  
B) HOLES CLEANED OF DUST AND DEBRIS. HOLE DEPTH AS REQUIRED PER ICC ESR REPORT.  
C) MINIMUM HOLE DIAMETER IN THE FUTURE OR FASTENED PART SHALL BE THE ANCHOR DIAMETER + 1/8".

## 5) SETTING DETAILS:

HELTI KHEK HUS-EZ & HUS-EZ T (ESR-3027)**					
INSTALLATION ITEMS	UNITS	ANCHOR DIAMETER (IN)			
		1/4	3/8	1/2	5/8
MIN NOMINAL EMBED	IN	1-5/8	2-1/2	3	3-5/4
MIN EDGE DIST (MIN)	IN	2	2.92	3-5/4	4.41
MIN SPACING (MIN)	IN	3	3	3	4
MIN CONC THICKNESS	IN	3-1/4	4	4-3/4	5
MAX INSTALL TORQUE	FT-LB	18	40	45	115

SIMPSON TITEN HD SCREW ANCHOR (ESR-2713)**							
INSTALLATION ITEMS	UNITS	ANCHOR DIAMETER (IN)					
		3/8	1/2	5/8	3/4	3/8 ROD W/HEX	1/2 W/HEX
MIN NOMINAL EMBED	IN	5-1/4	4	5-1/2	6-1/4	2-1/2	2-1/2
MIN EDGE DIST (MIN)	IN	3-5/8	4-1/2	6-3/8	7-5/16	2-11/16	2-11/16
MIN SPACING (MIN)	IN	3	3	3	3	3	3
MIN CONC THICKNESS	IN	5	6-1/4	6-1/2	10	4	4-1/4
MAX INSTALL TORQUE	FT-LB	50	65	100	150	50	50

\*\* A CLOSER SPACING OR EDGE DISTANCE, MAY BE ALLOWED WHERE SPECIFICALLY DETAILED ON THE CONTRACT DOCUMENTS OR IN ACCORDANCE WITH THE EVALUATION REPORT AS APPROVED BY THE STRUCTURAL ENGINEER.

- TEST LOADS AND FREQUENCY: REQUIRED TEST LOAD SHALL BE EQUIVALENT TO THE MANUFACTURER'S RECOMMENDED INSTALLATION TORQUE AS SHOWN ABOVE.  
A) ALL ANCHORS SHALL BE TESTED, UNO HEREIN.  
B) STILL BOLTS: TEST 10% OF ANCHORS.  
C) NONSTRUCTURAL APPLICATIONS SUCH AS EQUIPMENT ANCHORAGE: TEST 5% OF ANCHORS OR ALTERNATE BOLTS IN A GROUP, INCLUDING AT LEAST ONE-HALF THE ANCHORS IN EACH GROUP.  
D) IF ANY ANCHOR FAILS TESTING, ALL ANCHORS OF THE SAME TYPE SHALL BE TESTED, WHICH ARE INSTALLED BY THE SAME TRADE, NOT PREVIOUSLY TESTED UNTIL TWENTY (20) CONSECUTIVE ANCHORS PASS, THEN RESUME THE INITIAL TESTING FREQUENCY.
- TEST EQUIPMENT INCLUDING TORQUE WRENCHES ARE TO BE CALIBRATED USING AN APPROVED TESTING LABORATORY. THEY MUST BE CALIBRATED BY A STANDARD TRACEABLE TO THE NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY (NIST).
- TEST ACCEPTANCE CRITERIA:  
A) TORQUE WRENCH METHOD: ANCHORS TESTED WITH A CALIBRATED TORQUE WRENCH MUST ATTAIN THE SPECIFIED TORQUE WITH 1/4 TURN OF THE SCREW AFTER INITIAL SEATING OF THE SCREW HEAD.
- DO NOT INSTALL SCREW ANCHORS IN CONCRETE THAT IS LESS THAN 7 DAYS OLD.
- ANCHORS ARE LIMITED TO USE IN DRY, INTERIOR LOCATIONS.
- SCREW ANCHORS ARE PROHIBITED FOR RESISTING FATIGUE OR SHOCK LOADING AND ARE NOT PERMITTED TO SUPPORT PURE-TENSION-RATED CONSTRUCTION.
- PERIODIC SPECIAL INSPECTION IS REQUIRED UNLESS NOTED IN TABLE 1705A.3 "REQUIRED VERIFICATION AND INSPECTION OF CONCRETE CONSTRUCTION" INCLUDED WITHIN THESE GENERAL NOTES.

## CONCRETE - EPOXY ANCHORED THREADED RODS

- MATERIALS: (ICC ESR 2322)  
HELTI HIT-RE500 EPOXY ADHESIVE  
CONCRETE (MIN)..... $F'c = 2,500$  PSI STONE AGGREGATE  
THREADED RODS.....ASTM A-193 TYPICAL  
NUTS.....ASTM A-563 HEX, GRADE A
- INSTALLATION:  
A) CARBIDE-TIPPED DRILL BITS ANSI B212.15-1994.  
B) HOLES CLEANED OF DUST AND DEBRIS WITH A NYLON BRUSH AND A JET OF COMPRESSED AIR.  
C) INSTALLATION AND ALLOWABLE LOADING:  

ROD DIA (IN)	BIT DIA (IN)	MIN EMBED (IN)	ALLOWABLE TENSION (LBS)	ALLOWABLE SHEAR (LBS)	MIN EDGE DIST (IN)	MIN EDGE TIGHTENING TORQUE (FT LBS)
3/8	7/16	3-3/8	1,370	1,320	5-1/4	18
1/2	9/16	4-1/2	2,400	2,375	6-3/8	30
5/8	3/4	5-5/8	3,595	3,375	7-1/2	75
3/4	7/8	6-3/4	5,025	4,600	10-1/8	150
7/8	1	7-7/8	5,340	5,330	11-5/8	175
1	1-1/8	9	6,440	6,140	13-1/2	235
1-1/4	1-3/8	11-1/4	8,645	8,875	14-1/2	400
- ALLOWABLE LOADS ARE STRENGTH DESIGN LOADS.
- DO NOT INSTALL IN CONCRETE THAT IS LESS THAN 7 DAYS OLD.
- MINIMUM MEMBER THICKNESS TO RECEIVE ROD SHALL BE NO LESS THAN 1.5 TIMES THE ANCHOR EMBEDMENT DEPTH.
- ANCHORS SHALL BE INSTALLED IN HAMMER DRILLED HOLES.

## CONCRETE-EPOXY ANCHORED REINFORCEMENT

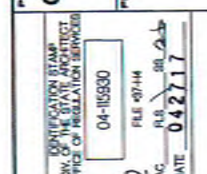
- MATERIALS: (ICC ESR 2332)  
HELTI HIT-RE500 EPOXY ADHESIVE  
CONCRETE (MIN)..... $F'c = 2,500$  PSI STONE AGGREGATE  
REINFORCEMENT.....ASTM A615 GRADE 60
- INSTALLATION:  
A) CARBIDE-TIPPED DRILL BITS ANSI B212.15-1994.  
B) HOLES CLEANED OF DUST AND DEBRIS WITH A NYLON BRUSH AND A JET OF COMPRESSED AIR.  
C) INSTALLATION AND ALLOWABLE LOADS:  

BAR DIA (IN)	BIT DIA (IN)	MIN EMBED (IN)	ALLOWABLE TENSION (LBS)	ALLOWABLE SHEAR (LBS)	MIN EDGE DIST (IN)
#3	1/2	3-3/8	1,370	1,320	5-1/4
#4	5/8	4-1/2	2,400	2,375	6-3/8
#5	3/4	5-5/8	3,595	3,375	7-1/2
#6	7/8	6-3/4	5,025	4,600	10-1/8
#7	1	7-7/8	5,340	5,300	11-5/8
#8	1-1/8	9	6,440	6,140	13-1/2
- ALLOWABLE LOADS ARE STRENGTH DESIGN LOADS.
- DO NOT INSTALL IN CONCRETE THAT IS LESS THAN 7 DAYS OLD.
- MINIMUM MEMBER THICKNESS TO RECEIVE REBAR SHALL BE NO LESS THAN 1.5 TIMES THE ANCHOR EMBEDMENT DEPTH.
- REBAR SHALL BE INSTALLED IN HAMMER DRILLED HOLES.



PREPARED FOR THE  
**GROSSMONT UNION HIGH SCHOOL DISTRICT**  
P.O. BOX 1048  
LA MESA, CALIFORNIA

PREPARED BY  
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4054 30TH STREET  
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GENERAL NOTES  
BOILER/CHILLER REPLACEMENT  
CENTRAL PLANT EQUIPMENT UPGRADE  
VALHALLA HIGH SCHOOL  
1725 HILLSDALE ROAD  
EL CAJON, CA 92019

REVISION DATE

PROJECT NO. PWA #03E1.10

FILE NAME

DATE: 4/29/2017 DRAWN: RD CHECKED: DPK

SHEET NO. 1 OF SHEETS

1705.01

SDSE

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S1.0



# SPRINT ADHESIVE ANCHORED THROUGH ROOF-MASONRY (GROUT FILLED)

1. THE USE OF SPRINT ADHESIVE ANCHORS SHALL BE LIMITED TO LOCATIONS SPECIFIED ON THE APPROVED CONTRACT DRAWINGS.
2. THE ANCHORS MUST BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S PUBLISHED INSTALLATION INSTRUCTIONS AND A VALID 300-ES EVALUATION REPORT. 100-ES-2882 FOR HELIX HIT-100 TO ADHESIVE ANCHORS.

3. MATERIALS:
  - HELIX HIT-100.....ADHESIVE
  - CARBON THREADED ROD.....ASTM A-307 GRADE C, OR ASTM A36
  - NUTS.....ASTM A-307 GRADE A
  - WASHERS.....ASTM F-444

CMU (MIN).....F<sub>cm</sub> = 1,500 PSI.....ASTM C90.....GRADE N  
 GROUT.....F<sub>g</sub> = 3,000 PSI.....COARSE GROUT  
 BORTAS.....COMPRESSIVE STRENGTH = 1,500 PSI

\*PROVIDE NOT DIPPED GALVANIZED ANCHORS COMPLYING WITH ASTM A-153, CLASS C OR D, OR STAINLESS STEEL ANCHORS WHERE ANCHORS ARE USED IN NET, HANG OR EXTENSION CONDITIONS.

## 4. INSTALLATION:

A) PREDRILL HOLES NORMAL TO THE SURFACE USING A ROTARY HAMMER, IN EITHER THE ROTATION-AND-HAMMERING OR ROTATION-ONLY MODE, HAVING A CHISEL-TIPPED DRILL BIT COMPLYING WITH ANSI B212.15-1994.

B) HOLES CLEARED OF DUST AND DEBRIS PER MANUFACTURER'S PUBLISHED INSTALLATION INSTRUCTIONS.

C) MINIMUM HOLE DIAMETER IN THE FIXTURE OR FASTENED PART SHALL BE THE ANCHOR DIAMETER + 1/16".

D) "FACE OF" GROUT-FILLED CMU SETTING DETAILS:

- 1) ANCHORS ARE PERMITTED TO BE INSTALLED AT ANY LOCATION IN THE FACE OF THE GROUT-FILLED CMU (SILL, WEB, HEAD JOINT, ETC.), LIMITED TO ONE ANCHOR PER CELL.

HELIX HIT-100 TO ADHESIVE (ESR-2882) (FACE OF CMU)		THREADED ROD DIAMETER (IN)	
INSTALLATION STEPS	UNITS	3/8	1/2
DRILL BIT DIA	IN	7/16	1 1/16
MIN EMBED (CON)	IN	3-5/8	4-1/2
MIN EDGE DIST (CON)	IN	12	12
MIN SPACING (CON)	IN	12-1/2	18
ALLOWABLE TENSION	LBS	1240	2095
ALLOWABLE SHEAR	LBS	850	1495
TENSION TEST LOAD (CON)	LBS	2240	4070

5. TEST LOADS AND FREQUENCY: SPECIFIC TEST LOADING CRITERIA SHALL BE AS SHOWN BELOW.
  - A) ALL ANCHORS SHALL BE TESTED, UNO HEREIN.
  - B) SILL BOLTS: TEST 10% OF ANCHORS.
  - C) NONSTRUCTURAL APPLICATIONS SUCH AS EQUIPMENT ANCHORAGE: TEST 50% OF ANCHORS OR ALTERNATE BOLTS IN A GROUP, INCLUDING AT LEAST ONE-HALF THE ANCHORS IN EACH GROUP.
  - D) IF ANY ANCHOR FAILS TESTING, ALL ANCHORS OF THE SAME TYPE SHALL BE TESTED, UNLESS ARE INSTALLED BY THE SAME TRADE, NOT PREVIOUSLY TESTED UNTIL TWENTY (20) CONSECUTIVE ANCHORS PASS, THEN RESUME THE INITIAL TESTING FREQUENCY.

6. TEST ACCEPTANCE CRITERIA:
  - A) HYDRAULIC RAMP METHOD: ANCHORS TESTED WITH A HYDRAULIC JACK OR SPRING LOADED DEVICES SHALL MAINTAIN THE TEST LOAD FOR A MINIMUM OF 15 SECONDS AND SHALL EXHIBIT NO DISCERNABLE MOVEMENT DURING THE TENSION TEST, E.G., AS EVIDENCED BY LOOSENING OF THE WASHER UNDER THE NUT. THE TESTING DEVICE SHALL NOT RESTRICT THE CONCRETE SHEAR CONE TYPE FAILURE MECHANISM FROM OCCURRING.

7. DO NOT INSTALL SPRINT ADHESIVE ANCHORS IN MASONRY UNTIL IT HAS REACHED ITS MINIMUM SPECIFIED COMPRESSIVE STRENGTH.

8. SPRINT ADHESIVE SHALL BE FULLY CURED BEFORE THE APPLICATION OF TENSION.

9. PERIODIC SPECIAL INSPECTION IS REQUIRED AND SHALL IN ACCORDANCE WITH THE VALID 300-EVALUATION REPORT. INITIAL INSPECTION IS REQUIRED FOR EACH DIFFERENT SUBCONTRACTOR. THE SPECIAL INSPECTION SHALL VERIFY ANCHOR TYPE, ANCHOR DIMENSIONS, MASONRY TYPE, MASONRY COMPRESSIVE STRENGTH, DRILL BIT SIZE, ADHESIVE IDENTIFICATION AND EXPIRATION DATE, HOLE DIMENSIONS, HOLE CLEAVING PROCEDURES, ANCHOR SPACING, EDGE DISTANCES, ANCHOR EMBEDMENT AND MANUFACTURER'S PUBLISHED INSTALLATION PROCEDURE. ANY CHANGE IN THE ANCHOR PRODUCT BEING INSTALLED OR THE PERSONNEL PERFORMING THE INSTALLATION WILL REQUIRE AN INITIAL INSPECTION.

## ABBREVIATIONS

AB	ANCHOR BOLT	HORIZ	HORIZONTAL
ABV	ABOVE	HSB	HIGH STRENGTH BOLT
ADDL	ADDITIONAL	HSN	HORIZONTALLY SLOTTED HOLES
ADJ	ADJACENT	HT	HEIGHT
ALT	ALTERNATE	I.F.	INSIDE FACE
ARCH	ARCHITECTURAL	JST	JOIST
(B)	BOTTOM	JT	JOINT
BLK	BLOCK	KP	KING POST
BLKG	BLOCKING	LDGR	LEDGER
BLW	BELOW	LOC	LOCATION
BM	BEAM	LT WT	LIGHTWEIGHT
BN	BOUNDARY NAIL	MAFL	MATERIAL
E.O.F	END OF FOOTING	MAK	MASONRY
EP	BASE PLATE	MB	MACHINE BOLT
BRG	BEARING PLATE	MECH	MEDICAL
BTHN	BETWEEN	MFR	MANUFACTURER
CB	CAMBER	MIN	MINIMUM
CB	CARRIAGE BOLT	MISC	MISCELLANEOUS
CIP	CAST-IN-PLACE	MTL	METAL
CJ	CONSTRUCTION	(N)	NEW
	JOINT/CEILING	NIC	NOT IN CONTRACT
CL	CENTER LINE	NS	NEAR SIDE
CLR	CLEAR	NTS	NOT TO SCALE
CMU	CONCRETE MASONRY	O.F.	OUTSIDE FACE
	UNIT	OH	OPPOSITE HAND
COL	COLUMN	OPNG	OPENING
CONC	CONCRETE	OPP	OPPOSITE
CONN	CONNECTION	PC	PRECAST
CONST	CONSTRUCTION	PL	PLATE
CONT	CONTINUOUS	PLCS	PLACES
CP	COMPLETE	PLYND	PLYWOOD
CSK	COUNTERSINK	PP	PARTIAL
CTRD	CENTERED		PENETRATION
DBL	DOUBLE	FT	PRESSURE TREATED
DF	DOUBLE FIBER/LARCH	FW	FLATE WASHER
DIA	DIAMETER	R	RADIUS
DEM	DIMENSION	REINF	REINFORCEMENT
DN	DOWN	REQD	REQUIRED
DO	DOWN (REPEAT)	REF	REFERENCE
DP	DEEP	SCHED	SCHEDULE
DWG	DRAWING	SEP	SEPARATION
DWL	DONEL	SIN	SIMILAR
(E)	EXISTING	SMS	SHEET METAL SCREW
EA	EACH	SG	SQUARE
EF	EACH FACE	STD	STANDARD
EL	ELEVATION	STBR	STAGGER
ELEC	ELECTRICAL	STIFF	STIFFENER
LEV	ELEVATOR	STL	STEEL
EMBED	EMBEDMENT	STRUCT	STRUCTURAL
EN	EDGE NAIL	(T)	TOP
EQ	EQUAL/EQUIVALENT	TBS	TOP AND BOTTOM
ES	EACH SIDE	TS	TAPERED GIRDER
EXP	EXPANSION	THK	THICK/THICKNESS
FF	FOUNDATION	THRD	THREADED
FJ	FLOOR JOIST	TN	TRENAIL
FLG	FLANGE	T.O.C	TOP OF CONCRETE
FLR	FLOOR	T.O.P	TOP OF PARAPET
FN	FIELD NAIL	T.O.S	TOP OF STEEL
FO	FACE OF	T.O.W	TOP OF WALL
FOC	FACE OF CONCRETE	TS	TUBE STRUCTURAL
FOH	FACE OF MASONRY	TSW	TOP SEAM WELD
FOS	FACE OF STUD	TYP	TYPICAL
FRMG	FRAMING	UNO	UNLESS OTHERWISE NOTED
FS	FAR SIDE	(V)	VERTICAL
FTG	FOOTING	VERT	VERTICAL
GA	GAGE	VSH	VERTICALLY SLOTTED HOLES
GALV	GALVANIZED	W/	WITH
GLB	GLUED LAMINATED	W/O	WITHOUT
GR	GRADE	WP	WATERPROOF
(H)	HORIZONTAL	WPJ	WORK POINT
HO	HOLDOWN	WT	WEIGHT
HOR	HEADER	WWE	WELDED WIRE FABRIC
HGR	HANGER		

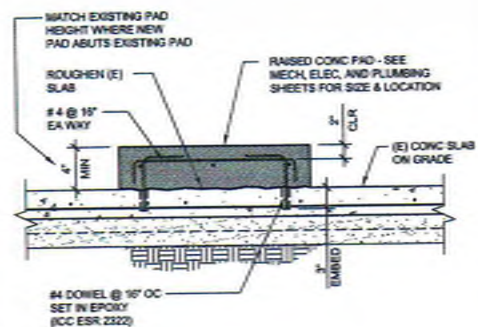
OFFICE OF PROFESSIONAL OVERSIGHT  
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 04-15930  
 FILE # 07-44  
 DATE 04/27/17

GENERAL NOTES  
 BOILER/CHILLER REPLACEMENT  
 CENTRAL PLANT EQUIPMENT UPGRADE  
 VALHALLA HIGH SCHOOL  
 1725 HILLSDALE ROAD  
 EL CAJON, CA 92019

PROJECT NO. PWA #0361.10  
 FILE NAME:  
 DATE: 4/26/2017  
 DRAWN: RD  
 CHECKED: DRK  
 SHEET NO. 1 OF 1

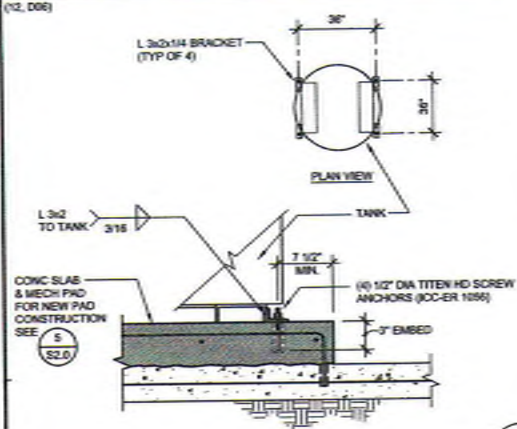


(12, DA-09)



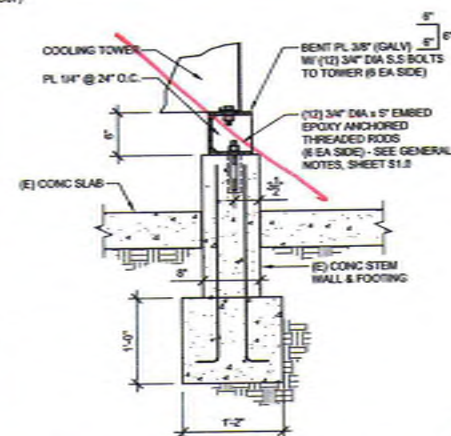
## HOUSEKEEPING PAD

(12, D08)



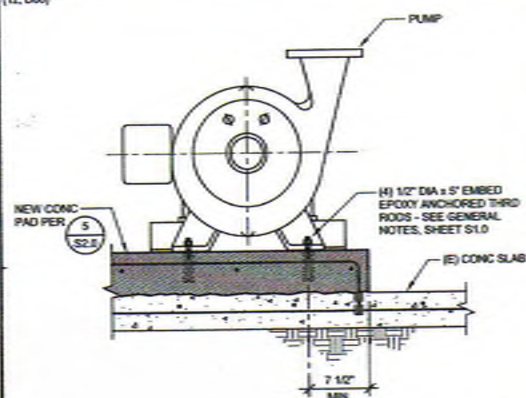
## BUFFER TANK

(12, D07)



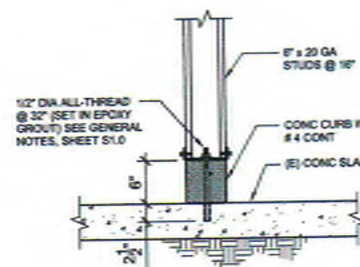
## DETAIL

(12, D06)



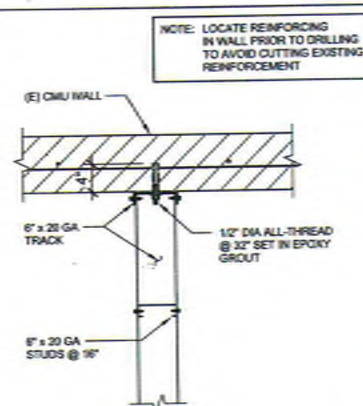
## DETAIL

(12, D01)



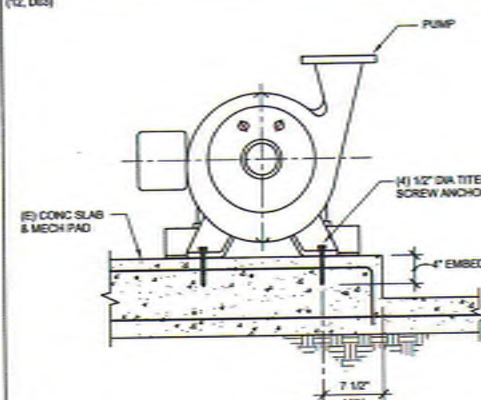
## DETAIL

(12, D02)



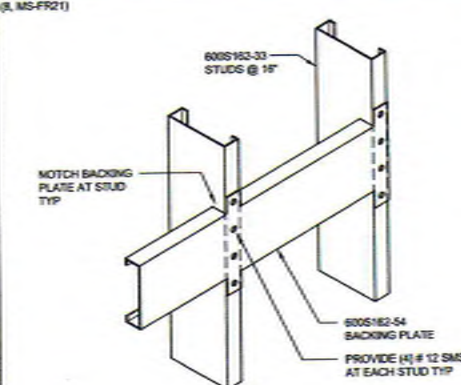
## PLAN VIEW

(12, D03)



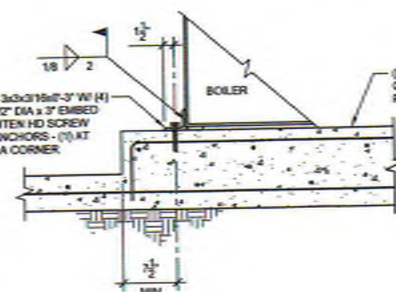
## DETAIL

(8, MS-FR21)



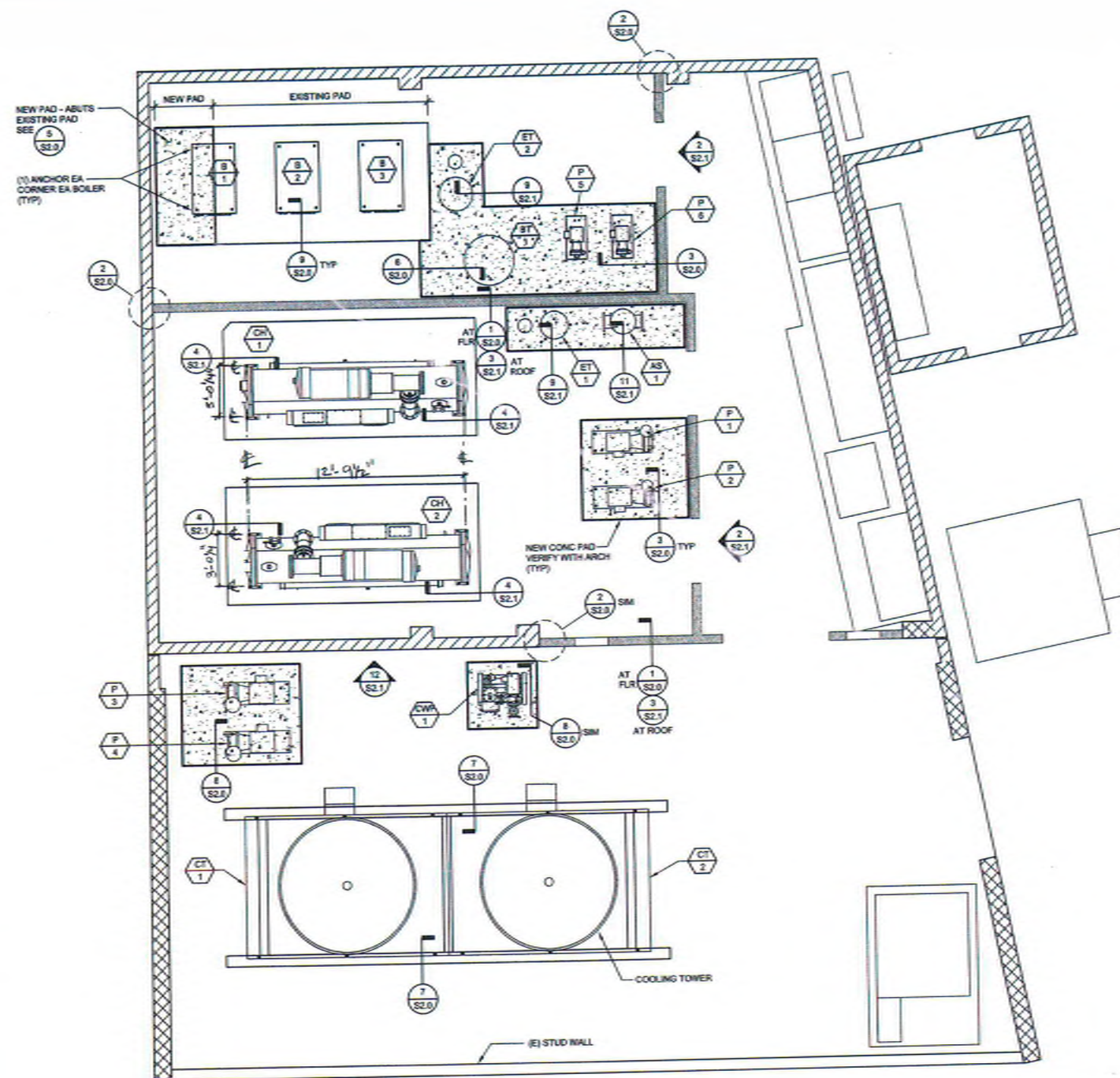
## BACKING PLATE

(12, BOILER)



## DETAIL

1" = 1'-0"



## LEGEND:



## NOTES:

- FOR FLOOR MOUNTED PIPE SUPPORT, SEE DETAIL S2.1

## MECHANICAL ROOM PLAN

SCALE: 1/4" = 1'-0"



PREPARED FOR THE  
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DATE: 04-10-2017  
FILE: 0114  
AC: PLS  
DATE: 04.27.17

MECHANICAL ROOM PLAN & DETAILS  
BOILER/CHILLER REPLACEMENT

CENTRAL PLANT EQUIPMENT UPGRADE

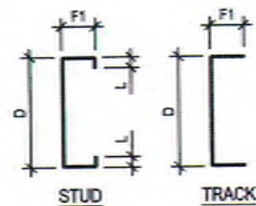
VALHALLA HIGH SCHOOL  
1725 HILLSDALE ROAD  
EL CAJON, CA 92019

PROJECT NO.: PWR-00361.10  
FILE NAME:  
DATE: 4/26/2017  
DRAWING: RD  
CHECKED: DPV

S2.0  
SHEET NO.: OF SHEETS

RFI  
#16  
Rensio





## COLD FORMED STEEL STUD NOTES:

- ALL SECTIONS SHALL BE MANUFACTURED IN ACCORDANCE WITH THE LATEST AISI SPECIFICATION AND ESR-3064P.
- BENT, KINKED, DISTORTED OR DAMAGED SECTIONS SHALL NOT BE USED.
- STUDS MAY HAVE 1 1/2" x 4" WEB CUT-OUTS @ 24". CUT-OUTS SHALL NOT BE CLOSER THAN 12" FROM SECTION ENDS UOIN.
- BOX HEADER AND JAMB STUDS SHALL BE UNPUNCHED, WORK WITH (2) S2.1
- SECTION PROPERTIES ARE BASED UPON THE "STEEL STUD MANUFACTURERS ASSOCIATION" (SSMA) CATALOG OF PRODUCERS.
- USE: 400S125-43 @ 16" UOIN WHERE 4" STUDS ARE SPECIFIED  
USE: 400T125-43 WHERE 4" TRACKS ARE SPECIFIED UOIN  
USE: 600S162-43 @ 16" UOIN WHERE 6" STUDS ARE SPECIFIED  
USE: 600T125-43 WHERE 6" TRACKS ARE SPECIFIED UOIN  
USE: 800S162-43 @ 16" UOIN WHERE 8" STUDS ARE SPECIFIED  
USE: 800T125-43 WHERE 8" TRACKS ARE SPECIFIED UOIN

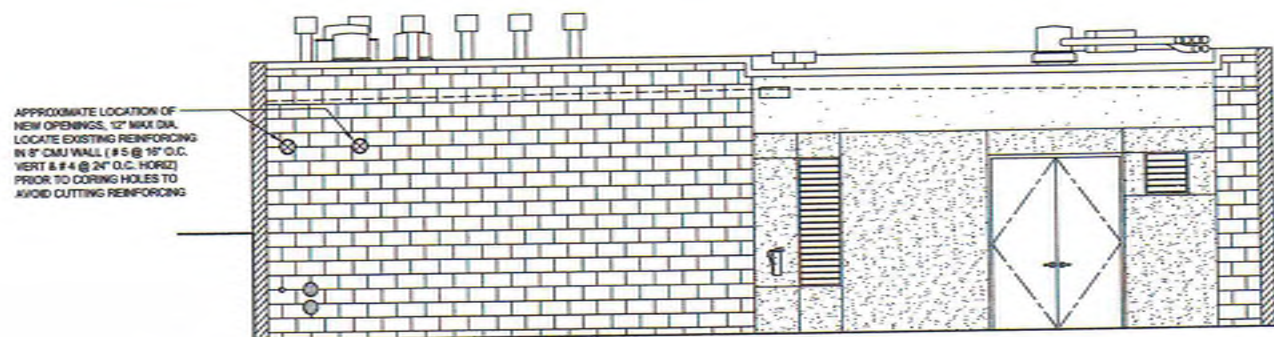
## FASTENER NOTES:

- FASTENERS SHALL BE HILTI BRAND AS MANUFACTURED BY HILTI, INC. OR APPROVED EQUAL.

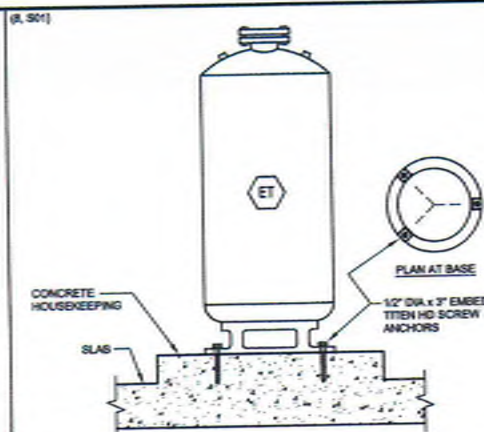
MARK	GA	DESIGN THK	DIMENSIONS IN INCHES			EFFECTIVE SECTION PROPERTIES		Fy (ksi)
			L	D	F1	Ix in <sup>4</sup>	S in <sup>3</sup>	
400S125-33	20	0.0346	0.188"	4.000"	1.250"	0.524	0.203	33
600S125-33	20	0.0346	0.188"	6.000"	1.250"	1.361	0.369	33
250S137-33	20	0.0346	0.375"	2.500"	1.375"	0.203	0.158	33
362S137-33	20	0.0346	0.375"	3.625"	1.375"	0.479	0.232	33
600S137-33	20	0.0346	0.375"	6.000"	1.375"	1.548	0.455	33
400S162-43	16	0.0451	0.500"	4.000"	1.625"	0.892	0.417	33
400S162-43	14	0.0713	0.500"	4.000"	1.625"	1.346	0.656	50
600S162-33	20	0.0346	0.500"	6.000"	1.625"	1.793	0.577	33
600S162-43	16	0.0451	0.500"	6.000"	1.625"	2.316	0.787	33
600S162-54	16	0.0566	0.500"	6.000"	1.625"	2.860	0.916	50
600S162-68	14	0.0713	0.375"	6.000"	1.625"	3.525	1.164	50
600S137-68	14	0.0713	0.500"	6.000"	1.375"	3.064	1.030	50
800S162-54	16	0.0566	0.500"	8.000"	1.625"	5.600	1.229	50
1000S200-54	16	0.0566	0.625"	10.000"	2.000"	12.768	1.705	50
250T125-33	20	0.0346	-	2.50"	1.250"	0.166	0.103	33
362T125-33	20	0.0346	-	3.625"	1.250"	0.384	0.174	33
600T125-33	20	0.0346	-	6.0"	1.250"	1.258	0.297	33
400T125-43	16	0.0451	-	4.0"	1.250"	0.666	0.282	33
600T125-43	16	0.0451	-	6.0"	1.250"	1.768	0.461	33
600T125-54	16	0.0566	-	6.0"	1.250"	2.241	0.582	50
800T125-43	16	0.0451	-	8.0"	1.250"	3.484	0.640	33

METAL TO METAL FASTENER SIZE (UOIN)	
METAL THICKNESS "T"	SCREW TYPE
T < 12 GA	#10 HWH W/ #2 POINT
12 GA < T < 16"	1/4-14 W/ #3 POINT 1/8-14 #12-24 HWH #4 POINT
1/4" < T < 1/2"	#12-24 HWH #5 POINT
METAL TO WOOD FASTENER SIZE	
METAL THICKNESS "T"	SCREW TYPE
T < 12 GA	#10 PFH W/ #3 POINT

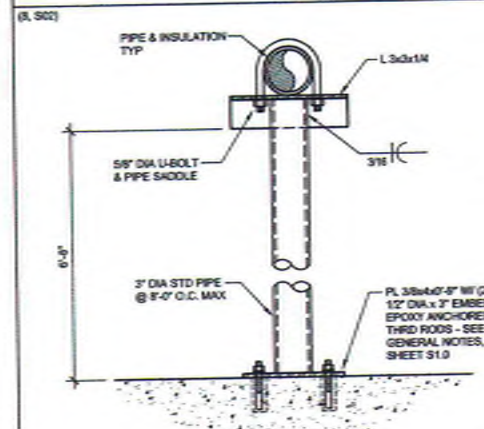
## COLD FORMED STEEL STUD PROPERTIES



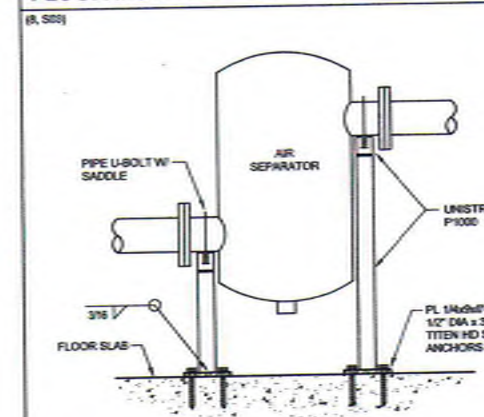
## EXISTING COURTYARD WALL ELEVATION



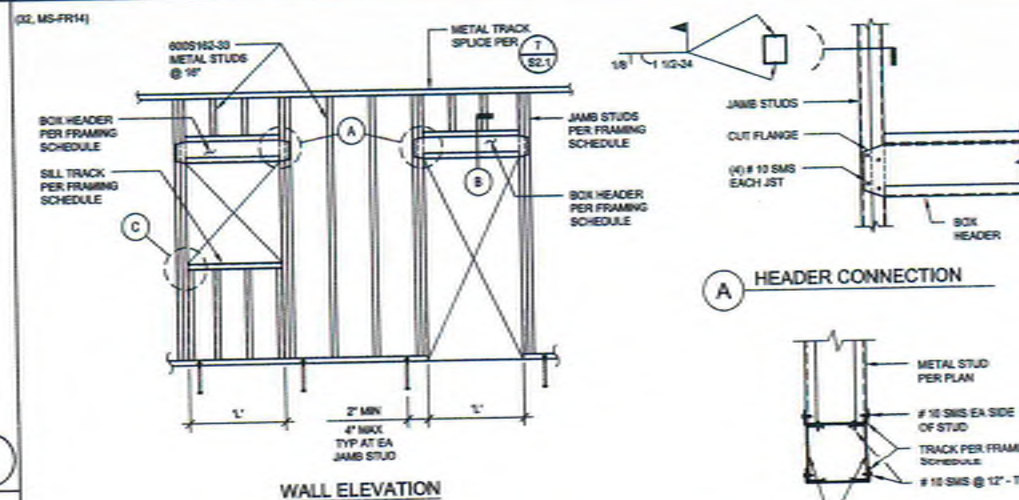
## EXPANSION TANK MOUNTING



## FLOOR MOUNTED PIPING SUPPORT



## AIR SEPARATOR MOUNTING



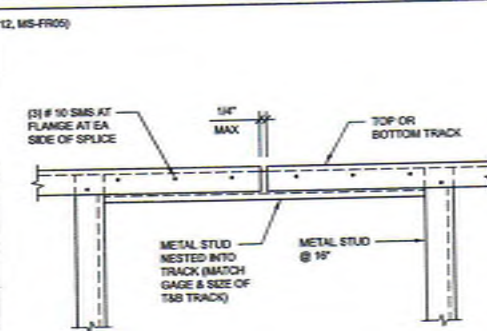
## WALL ELEVATION

WALL TYPE	SPAN LENGTH "L"	BOX HEADER		JAMB STUDS	NO. #10 W/FR HEAD SMS AT EA JST TO JAMB
		DBL JST	TRACK		
6" STUDS	8" TO 15'-0"	2 - 600S162-43	2 - 600T125-43	2 - 600S162-43	4
	9'-0" TO 18'-0"	2 - 600S162-54	2 - 600T125-54	2 - 600S162-54	4
	10'-0" TO 12'-0"	2 - 600S162-68	2 - 600T125-54	2 - 600S162-68	4

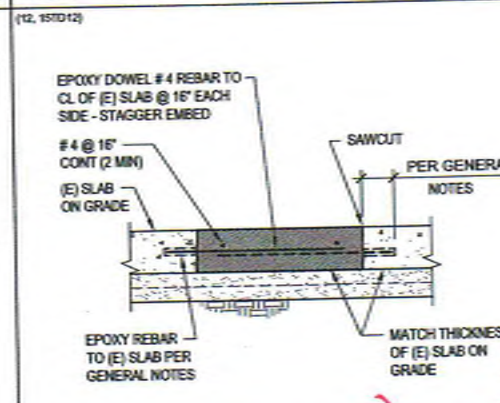
## NOTES:

- METAL STUD WALL FRAMING MEMBERS SHALL BE IN ACCORDANCE WITH ESR-8493P.
- FOR STUD SECTION PROPERTIES, SEE (15) S2.1

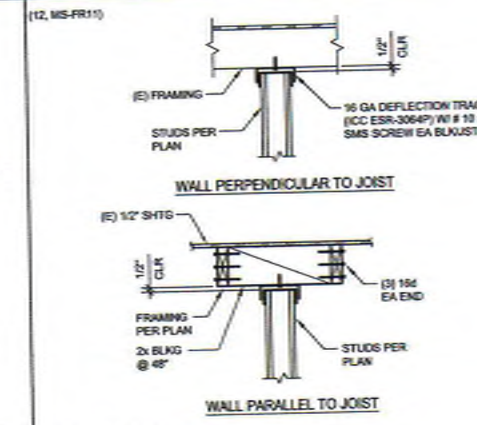
## METAL STUD WALL FRAMING



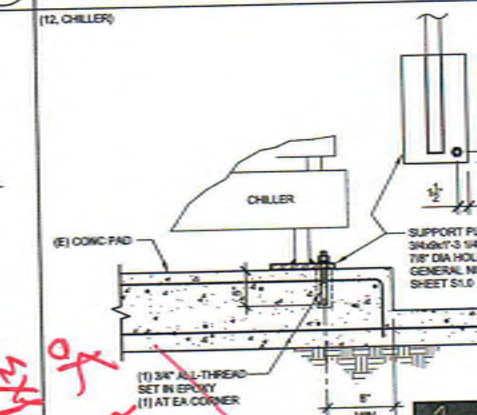
## TRACK SPLICE



## SLAB INFILL



## TOP CONN AT NON-BRG/NON-SHEAR WALLS



## DETAIL



GROSSMONT UNION HIGH SCHOOL DISTRICT  
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EXISTING WALL  
DIV. OF THE STATE ARCHITECT  
OFFICE OF REGULATION SERVICES  
04-15030  
FEL 09/14  
AC 08/14  
DATE 04/27/17



DETAILS  
BOILER/CHILLER REPLACEMENT  
CENTRAL PLANT EQUIPMENT UPGRADE  
VALHALLA HIGH SCHOOL  
1725 HILLSDALE ROAD  
EL CAJON, CA 92019

REVISION  
DATE  
PROJECT NO. PWK-0351.10  
FILE NAME  
DATE: 4/25/2017  
DRAWN: RD  
CHECKED: DPK  
S2.1  
SHEET NO.: OF SHEETS



SINGLE LINE SYMBOL	DOUBLE LINE SYMBOL	ABBREV.	DESCRIPTION
			EXISTING HVAC TO REMAIN
			EXISTING HVAC TO BE REMOVED
			DUCT - 1ST DIM, SIDE SHOWN - 2ND DIM, NOT SHOWN INSIDE CLEAR DIMS IN INCHES
			Ø - ROUND DUCT INSIDE CLEAR DIAMETER IN INCHES
			DIRECTION OF AIR FLOW
			DUCT RISES OR DROPS IN DIRECTION OF ARROW
			DUCT TRANSITION
			DUCT CAP
		MVD	MANUAL VOLUME DAMPER
		BDD	BACKDRAFT DAMPER
		MD	MOTORIZED DAMPER
		AP	ACCESS PANEL OR CLEANOUT
		FD	FIRE DAMPER 1-1/2 HOUR RATED UNLESS OTHERWISE NOTED
		FSD	FIRE SMOKE DAMPER 1-1/2 HOUR RATED UNLESS OTHERWISE NOTED
			SQUARE ELBOW TURNING VANES
			RADIUS ELBOW
			SUPPLY OR OUTSIDE AIR DUCT UP
			SUPPLY OR OUTSIDE AIR DUCT DOWN
			RETURN AIR DUCT UP
			RETURN AIR DUCT DOWN
			EXHAUST AIR DUCT UP
			EXHAUST AIR DUCT DOWN
			ROUND DUCT UP
			ROUND DUCT DOWN
			DUCT TEMPERATURE SENSOR
			DUCT SMOKE DETECTOR
			FLEXIBLE CONNECTION
			LINED DUCT - INSIDE CLEAR DIMENSIONS SHOWN
			SUPPLY AIR TAKEOFF WITH DAMPER
			RETURN/EXHAUST AIR TAKEOFF WITH DAMPER
			RECTANGULAR SUPPLY DIFFUSER FOUR-WAY AIRFLOW DIRECTION UNLESS OTHERWISE NOTED
			RECTANGULAR RETURN GRILLE
			RECTANGULAR EXHAUST GRILLE
			ROUND SUPPLY DIFFUSER

SINGLE LINE SYMBOL	DOUBLE LINE SYMBOL	ABBREV.	DESCRIPTION
			SIDEWALL REGISTER (SUPPLY)
			SIDEWALL REGISTER (RETURN OR EXHAUST)
		POC	POINT OF CONNECTION
		POD	POINT OF DISCONNECTION
			KEYNOTE
		RL	REFRIGERANT LIQUID
		RS	REFRIGERANT SUCTION
		CWS	CHILLED WATER SUPPLY
		CWR	CHILLED WATER RETURN
		HWS	HEATING HOT WATER SUPPLY
		HWR	HEATING HOT WATER RETURN
		PUMP	PUMP
			PIPE TURNING DOWN
			PIPE TURNING UP
			VALVE ON RISE OR DROP
			CAPPED PIPE END
			CONCENTRIC REDUCER
			ECCENTRIC REDUCER
			UNION
			TEMPERATURE GAUGE
			PRESSURE GAUGE
			PRESSURE/TEMPERATURE PORT
			MANUAL ISOLATION VALVE
			MANUAL ISOLATION VALVE W/ BLIND FLANGE
			PIPE MOUNTED TEMPERATURE SENSOR
			PIPE MOUNTED FLOW SWITCH
			PIPE MOUNTED DIFFERENTIAL PRESSURE SENSOR
			ROOM WALL MOUNTED TEMPERATURE SENSOR OR THERMOSTAT
			WALL MOUNTED SWITCH

ABBREV.	DESCRIPTION	ABBREV.	DESCRIPTION
APF	ABOVE FINISHED FLOOR	FT	FEET
AMB	AMBIENT	FF	FINISHED FLOOR
APD	AIR PRESSURE DROP	FG	FINISHED GRADE
ARCH	ARCHITECTURAL	FLA	FILL LOAD AMPIERS
BDD	BACKDRAFT DAMPER	FPF	FEET PER INCH
BHP	BRAKE HORSEPOWER	FPM	FEET PER MINUTE
BTU/H	BTU PER HOUR	FPS	FEET PER SECOND
CD	CONDENSATE DRAIN	FT	FEET
CFM	CUBIC FEET PER MINUTE	FV	FACE VELOCITY
CONT	CONTINUATION	GA	GAUGE
CP	CONTROL PANEL	GPM	GALLONS PER MINUTE
DB	DRY BULB	H	HEIGHT
DIA. Ø	DIAMETER	HD	FEET OF WATER
DX	DIRECT EXPANSION (REFRIGERANT)	HP	HORSEPOWER
EA	EXHAUST AIR	HR	HOUR
EAT	ENTERING AIR TEMPERATURE	ID	INSIDE DIAMETER
EDB	ENTERING DRY BULB TEMPERATURE	IN	INCHES
EER	ENERGY EFFICIENCY RATIO	LAT	LEAVING AIR TEMPERATURE
EFF	EFFICIENCY	L	LENGTH
ELEC	ELECTRICAL	LB	POUNDS
ENT	ENTERING	LDB	LEAVING DRY BULB TEMPERATURE
ESP	EXTERNAL STATIC PRESSURE	LWB	LEAVING WET BULB TEMPERATURE
EWB	ENTERING WET BULB TEMPERATURE	LWT	LEAVING WATER TEMPERATURE
EXT	ENTERING WATER TEMPERATURE	MAX	MAXIMUM
EX	EXISTING	MEN	THOUSAND BTU PER HOUR
FA	FREE AREA	MCA	MINIMUM CIRCUIT AMPACITY

ABBREV.	DESCRIPTION
MB	MINIMUM
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NPSH	NET POSITIVE SUCTION HEAD
NS	NOT TO SCALE
OA	OUTSIDE AIR
OD	OUTSIDE DIAMETER
OV	OUTLET VELOCITY
PD	PRESSURE DROP
PLB	PLUMBING
PRV	PRESSURE REDUCING VALVE
PSI	POUNDS PER SQUARE INCH
PSIG	PSI GAUGE
QTY	QUANTITY
RA	RETURN AIR
RH	RELATIVE HUMIDITY
RPM	REVOLUTIONS PER MINUTE
SA	SUPPLY AIR
SS	STAINLESS STEEL
STRUCT	STRUCTURAL
TDH	TOTAL DYNAMIC HEAD
TS	TRANSFER GRILLE
TSP	TOTAL STATIC PRESSURE
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
UP	UP THROUGH ROOF
VPHZ	VOLTS, PHASE, HERTZ
VD	VOLUME DAMPER
V	VENT
W	WET BULB
WG	WATER GAUGE
WPD	WATER PRESSURE DROP

DESCRIPTION OF TAGS	
	REGISTER/DIFFUSER TYPES
	GPM
REGISTER OR DIFFUSER TAG	
	EQUIPMENT TYPE
	UNIT NUMBER
EQUIPMENT TAG	
	DETAIL NUMBER
	SHEET NUMBER
DETAIL CALL OUT	
	DETAIL NUMBER
	SHEET NUMBER
SECTION CALL OUT	

GENERAL NOTES	
1.	ALL WORK SHALL COMPLY WITH THE 2016 EDITION OF THE CALIFORNIA BUILDING, MECHANICAL, PLUMBING, AND OTHER APPLICABLE FEDERAL, STATE, AND LOCAL CODES AS ADOPTED AND ENFORCED BY THE LOCAL JURISDICTION HAVING AUTHORITY. IN CASE THE PLANS SHOW MORE STRINGENT REQUIREMENTS, THE PLANS SHALL GOVERN THE DESIGN. HOWEVER, THE DESIGN DOCUMENTS SHALL NOT BE INTERPRETED AS AUTHORITY TO VIOLATE CODES OR REGULATIONS.
2.	SUBMISSION OF BID IN CONNECTION WITH THIS WORK SHALL IMPLY THAT THE BIDDER HAS EXAMINED THE JOB SITE UNDER WHICH THE CONTRACTOR WILL BE OBLIGATED TO OPERATE UNDER THIS CONTRACT. NO EXTRA CHARGE WILL BE ALLOWED FOR FAILURE OF ANY BIDDER TO EXAMINE THE SITE PRIOR TO BID.
3.	WHERE USED, THE TERM "PROVIDE" SHALL MEAN TURNISH AND INSTALL.
4.	IN THE EVENT OF A CONFLICT OR INCONSISTENCY BETWEEN ITEMS INDICATED ON DESIGN PLANS/SPECIFICATIONS WITH CODE REQUIREMENTS, THE MORE STRINGENT STANDARD SHALL PREVAIL.
5.	CONTRACTOR SHALL FURNISH LABOR, MATERIALS, EQUIPMENT, APPURTENANCES, AND TRANSPORTATION AS REQUIRED TO PROPERLY INSTALL ALL HVAC SYSTEMS OR RELATED COMPONENTS AS INDICATED ON PLANS AND SPECIFIED HEREIN.
6.	ALL EQUIPMENT, MATERIAL, AND APPURTENANCES TO BE INSTALLED AS PART OF THE PROJECT SHALL BEAR AN UNDERWRITERS LABORATORIES LABEL (UL) AND INSTALLED IN SUCH A MANNER FOR WHICH THEY ARE DESIGNED AND APPROVED.
7.	CONTRACTOR SHALL DOCUMENT AND RELAY ANY MAJOR DEVIATIONS FROM THE DESIGN DOCUMENTS, AND ATTAIN APPROVAL FROM THE OWNER/DESIGN TEAM BEFORE PROCEEDING. CONTRACTOR SHALL PROVIDE AS-BUILT COPIES INDICATING ALL CHANGES/DEVIATIONS MADE DURING CONSTRUCTION.
8.	ALL WORK SHALL BE PERFORMED IN A CLEAN AND WORKMANLIKE MANNER. CARE SHALL BE EXERCISED TO MINIMIZE ANY CONVENIENCE OR DISTURBANCE TO OTHER AREAS OF THE BUILDING WHICH ARE TO REMAIN IN OPERATION. ISOLATE WORK AREAS BY MEANS TO KEEP DUST AND DIRT WITHIN THE CONSTRUCTION AREA.
9.	NO PIPING, EQUIPMENT, ETC. SHALL BE REMOVED, DISCONNECTED OR SHUT DOWN WITHOUT PRIOR REVIEW WITH THE OWNER'S REPRESENTATIVE TO CONFIRM THAT AREAS TO REMAIN IN OPERATION WILL NOT BE AFFECTED. IF ANY AREAS NOT WITHIN THE SCOPE OF WORK ARE AFFECTED BY ANY SHUTDOWN, REMOVAL OR DISCONNECTION, SUFFICIENT ADVANCE NOTICE MUST BE GIVEN TO THE OWNER'S REPRESENTATIVE INDICATING WHICH AREAS WILL BE AFFECTED, WHEN THE PROPOSED SHUTDOWN WILL OCCUR, AND FOR HOW LONG A PERIOD OF TIME.
10.	THE ARRANGEMENT OF EQUIPMENT AND PIPING SHOWN ON THE DRAWINGS IS BASED UPON INFORMATION AVAILABLE TO THE ENGINEER AT THE TIME OF DESIGN AND IS NOT INTENDED TO SHOW EXACT DIMENSIONS PARTICULAR TO A SPECIFIC MANUFACTURER. THE DRAWINGS ARE, IN PART, DIAGRAMMATIC AND SOME FEATURES OF THE ILLUSTRATED EQUIPMENT INSTALLATION MAY REQUIRE REVISION TO MEET ACTUAL EQUIPMENT INSTALLATION REQUIREMENTS. STRUCTURAL SUPPORTS, FOUNDATIONS, CONNECTED PIPING, VALVES, PIPE SUPPORTS AND ELECTRICAL CONDUIT SPECIFIED MAY HAVE TO BE ALTERED OR ADDITIONAL ITEMS REQUIRED TO ACCOMMODATE THE EQUIPMENT PROVIDED. NO ADDITIONAL PAYMENT WILL BE MADE FOR SUCH REVISIONS, ALTERATIONS, AND/OR ADDITIONS.
11.	CONTRACTOR SHALL VERIFY ALL DIMENSIONS AT THE SITE HAVING FIELD MEASUREMENTS AND SHOP DRAWINGS NECESSARY FOR FABRICATION OR INSTALLATION OF HVAC AND PIPING SYSTEMS. MAKE ALLOWANCE FOR BEAMS, PIPES, AND OTHER OBSTRUCTIONS IN BUILDING CONSTRUCTION. CHECK DRAWINGS SHOWING PIPING, FOUNDATIONS, CONNECTED PIPING, VALVES, PIPE SUPPORTS AND ELECTRICAL CONDUIT SPECIFIED MAY HAVE TO BE ALTERED OR ADDITIONAL ITEMS REQUIRED TO ACCOMMODATE THE EQUIPMENT PROVIDED. NO ADDITIONAL PAYMENT WILL BE MADE FOR SUCH REVISIONS, ALTERATIONS, AND/OR ADDITIONS.
12.	CONTRACTOR SHALL COORDINATE HIS WORK WITH ALL OTHER TRADES PRIOR TO FABRICATION, PURCHASE, AND/OR INSTALLATION OF ALL WORK.
13.	BEFORE COMMENCEMENT OF WORK, CONTRACTOR SHALL VERIFY THE EXACT LOCATIONS, ELEVATIONS, AND CHARACTERISTICS OF ALL UTILITIES.
14.	EXISTING MATERIALS THAT ARE REMOVED SHALL NOT BE REUSED IN NEW SYSTEMS, EXCEPT WHERE INDICATED AS BEING RELOCATED.
15.	ALL EQUIPMENT SHALL BE INSTALLED IN STRICT COMPLIANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS.
16.	GALVANIZED SHEET METAL SHALL BE PROVIDED FOR ALL HVAC DUCT SYSTEMS EXCEPT WHERE ANOTHER MATERIAL IS INDICATED, AND SHALL BE CONSTRUCTED/SUPPORTED/INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE CALIFORNIA MECHANICAL CODE AND THE LATEST SHAWMA STANDARDS.
17.	ALL PIPING SHALL BE INSTALLED AS INDICATED ON THE DRAWINGS IN A CLEAN AND WORKMANLIKE MANNER AND BE SUPPORTED AS REQUIRED BY CODES. PIPING SHALL BE SET UP AND DOWN AND OFFSET AS REQUIRED TO SUIT FIELD CONDITIONS. DIELECTRIC COUPLINGS SHALL BE USED WHERE DISSIMILAR METALS ARE JOINED.
18.	CONTRACTOR SHALL PROVIDE ALL NECESSARY SUPPORTS FOR FIXTURES, DUCTWORK, PIPING, AND MECHANICAL EQUIPMENT IN ORDER TO COMPLY WITH SEISMIC REQUIREMENTS AS OUTLINED BY THE LATEST EDITIONS OF THE CALIFORNIA BUILDING CODE, SHAWMA INSTALLATION STANDARDS, AND ALL RELATED LOCAL ORDINANCES.
19.	PIPING AND DUCT SUPPORTS SHALL BE AS FOLLOWS: ALL BRACINGS OF DUCTS AND PIPING SHALL BE INSTALLED IN ACCORDANCE WITH SHAWMA GUIDELINES OR AS DETAILED AND SPECIFIED HEREIN. WHERE BRACING DETAILS ARE NOT SHOWN ON THE DRAWINGS OR IN THE GUIDELINES, THE FIELD INSTALLATION SHALL BE SUBJECT TO THE APPROVAL OF THE MECHANICAL ENGINEER. A COPY OF THE GUIDELINES PUBLISHED BY SHAWMA SHALL BE PROVIDED BY THE CONTRACTOR AND KEPT ON THE JOB AT ALL TIMES.
20.	CONTRACTOR SHALL NOT BORE, NOTCH, CUT, OR PENETRATE INTO A STRUCTURAL MEMBER WITHOUT WRITTEN APPROVAL FROM THE STRUCTURAL ENGINEER OF RECORD AND SEA.
21.	ISOLATE AND DRAIN EXISTING PIPING SYSTEM AS REQUIRED TO ACCOMMODATE INSTALLATION OF THE WORK.
22.	LOCATE TEMPERATURE SENSING INSTRUMENTS AT PIPING ELBOWS AND TURBULENT AREAS OF MECHANICAL EQUIPMENT WHERE THE VELOCITY LIMITATIONS WILL NOT BE EXCEEDED.
23.	PRIOR TO OCCUPANCY ALL HVAC SYSTEMS SHALL BE BALANCED IN ACCORDANCE WITH AMEC OR NEBS STANDARDS AND ALL CONTRACT DOCUMENTS BY AN INDEPENDENT AIR BALANCE CONTRACTOR. CONTRACTOR SHALL PROVIDE CERTIFICATION OF OUTSIDE AIR VENTILATION RATES AND THAT ALL SYSTEMS HAVE BEEN BALANCED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
24.	ALL FLEXIBLE DUCTWORK SHALL NOT EXCEED 7'-0" IN LENGTH TO RESPECTIVE AIR DEVICE, SHALL BE INSTALLED PER MANUFACTURER'S LISTING STRETCHED AS TIGHT AS POSSIBLE, AND SHALL MEET THE REQUIREMENTS OF NFPA 40A IN CONSTRUCTION AND INSTALLATION.
25.	MANUAL VOLUME DAMPERS SHALL BE PROVIDED IN ALL DUCT BRANCHES TO INDIVIDUAL DIFFUSERS, GRILLES, AND REGISTERS.
26.	AIR DISTRIBUTION SYSTEMS SHALL NOT BE OPERATED WITHOUT A FILTER IN PLACE. CONTRACTOR SHALL REPLACE ALL FILTERS WITH A COMPLETE AND NEW SET PRIOR TO BUILDING OCCUPANCY.
27.	COVER ALL OPENINGS IN EQUIPMENT, PIPING, DUCTS, AND OTHER SYSTEMS TO EXCLUDE ENTRANCE OF DIRT OR OTHER FOREIGN MATERIAL DURING CONSTRUCTION.
28.	REFER TO THE SPECIFICATIONS BOOK FOR ADDITIONAL REQUIREMENTS.

GREEN BUILDING CODE NOTES	
1.	AT THE TIME OF ROUGH INSTALLATION AND DURING STORAGE ON CONSTRUCTION SITE UNTIL FINAL STARTUP OF THE HEATING, COOLING AND VENTILATING EQUIPMENT, ALL DUCT AND OTHER RELATED AIR DISTRIBUTION COMPONENT OPENINGS SHALL BE COVERED WITH TAPE, PLASTIC SHEETMETAL, OR OTHER METHODS ACCEPTABLE TO THE ENFORCING AGENCY TO REDUCE THE AMOUNT OF DUST, WATER DEBRIS WHICH MAY ENTER THE SYSTEM, (CAL GREEN SECTION 5304.3).
2.	FOR BUILDINGS OR ADDITIONS EQUIPPED WITH DEMAND CONTROL VENTILATION, CO2 SENSORS AND VENTILATION CONTROLS SHALL BE SPECIFIED AND INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF 2016 CALIFORNIA ENERGY CODE, SECTION 1205.4(4), (CAL GREEN SECTION 5306.2).
3.	IN ADDITION TO TESTING AND ADJUSTING, BEFORE A NEW SPACE-AIR CONDITIONING SYSTEM SERVING A BUILDING OR SPACE IS OPERATED FOR NORMAL USE, BALANCE THE SYSTEM IN ACCORDANCE WITH THE PROCEDURES DEFINED BY THE TESTING ADJUSTING AND BALANCING BUREAU NATIONAL STANDARDS, THE NATIONAL ENVIRONMENTAL BALANCING BUREAU PROCEDURAL STANDARDS, OR ASSOCIATED AIR BALANCE COUNCIL NATIONAL STANDARDS.
4.	PROVIDE THE BUILDING OWNER OR REPRESENTATIVE WITH DETAILED OPERATING AND MAINTENANCE INSTRUCTIONS AND COPIES OF GUARANTEES/WARRANTIES FOR EACH SYSTEM. OAH INSTRUCTIONS SHALL BE CONSISTENT WITH OSHA REQUIREMENTS IN CGC, TITLE 8, SECTION 344.2 AND OTHER RELATED REGULATIONS.

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DATE: 04/16/17  
FILE: 04-155900  
AC: 04/16/17  
DATE: 04/16/17

MECHANICAL LEGEND AND GENERAL NOTES  
CENTRAL PLANT EQUIPMENT UPGRADE  
VALHALLA HIGH SCHOOL  
1725 HILLSDALE ROAD  
EL CAJON, CA 92019

PROJECT NO.: PVA 203610  
FILE NAME:  
DATE: 4/16/2017  
DRAWN: ELP/PS  
CHECKED: CRMR

**M-001**  
SHEET NO. 1 OF 1 SHEETS







Per CW Driver RFI # 4 Iron butterfly's can be used for PVC valves.

FILTER BANK SCHEDULE													
GENERAL DATA				CFM	MAX. FACE VELOCITY (FPM)	PRESSURE DROP (IN. WG)		FILTERS			OPENING SIZE IN (IN)	REMARKS	OPERATING HEIGHT (LB)
TAG	MANUFACTURER	MODEL	LOCATION			INITIAL	FINAL	TYPE	QTY	SIZE IN (IN)			
FE 1	CANFIL FARR	TYPE B BUILT-UP	CHILLER ROOM	400	350	0.08	0.25	MERY 5	3	24x24x2	24x12	CANFIL FAR 30/50 2" THICK FILTERS	40
FE 2	CANFIL FARR	TYPE B BUILT-UP	ELECTRICAL ROOM	1050	210	0.08	0.25	MERY 5	1	24x24x2	24x24	CANFIL FAR 30/50 2" THICK FILTERS	40

### MEP COMPONENT ANCHORAGE NOTE

ALL MECHANICAL, PLUMBING, AND ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER THE DETAILS ON THE DSA APPROVED CONSTRUCTION DOCUMENTS. WHERE NO DETAIL IS INDICATED, THE FOLLOWING COMPONENTS SHALL BE ANCHORED OR BRACED TO MEET THE FORCE AND DISPLACEMENT REQUIREMENTS PRESCRIBED IN THE 2016 CBC, SECTIONS 18A1.1 THROUGH 18A1.12 AND ASCE 7-10 CHAPTER 8, 28 AND 30.

- ALL PERMANENT EQUIPMENT AND COMPONENTS.
- TEMPORARY OR MOVABLE EQUIPMENT THAT IS PERMANENTLY ATTACHED (E.G. HARD WIRED) TO THE BUILDING UTILITY SERVICES SUCH AS ELECTRICITY, GAS OR WATER.
- MOVABLE EQUIPMENT WHICH IS STATIONED IN ONE PLACE FOR MORE THAN 8 HOURS AND HEAVIER THAN 400 POUNDS ARE REQUIRED TO BE ANCHORED WITH TEMPORARY ATTACHMENTS.

THE FOLLOWING MECHANICAL AND ELECTRICAL COMPONENTS SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE, BUT THE ATTACHMENT NEED NOT BE DETAILED ON THE PLANS. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK, PIPING AND CONDUIT.

- COMPONENTS WEIGHING LESS THAN 400 POUNDS AND HAVE A CENTER OF MASS LOCATED 4 FEET OR LESS ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT.
- COMPONENTS WEIGHING LESS THAN 20 POUNDS, OR IN THE CASE OF DISTRIBUTED SYSTEMS, LESS THAN 5 POUNDS PER FOOT, WHICH ARE SUSPENDED FROM A ROOF OR FLOOR OR HANG FROM A WALL.

FOR THOSE ELEMENTS THAT DO NOT REQUIRE DETAILS ON THE APPROVED DRAWINGS, THE INSTALLATION SHALL BE SUBJECT TO THE APPROVAL OF THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE OR STRUCTURAL ENGINEER. DELEGATED RESPONSIBILITY AND THE DSA DISTRICT STRUCTURAL ENGINEER. THE PROJECT INSPECTOR WILL VERIFY THAT ALL COMPONENTS AND EQUIPMENT HAVE BEEN ANCHORED IN ACCORDANCE WITH ABOVE REQUIREMENTS.

#### PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEM BRACING NOTE

PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEMS SHALL BE BRACED TO COMPLY WITH THE FORCES AND DISPLACEMENTS PRESCRIBED IN ASCE 7-10 SECTION 18.5 AS DEFINED IN ASCE 7-10 SECTION 18A.6, 18A.7, 18A.8, AND 2016 CBC, SECTIONS 18A1.12, 18A1.24, 18A1.25 AND 18A1.26.

THE METHOD OF SHOWING BRACING AND ATTACHMENTS TO THE STRUCTURE FOR IDENTIFIED DISTRIBUTION SYSTEM ARE AS NOTED BELOW. WHEN BRACING AND ATTACHMENTS ARE BASED ON A PRE-APPROVED INSTALLATION GUIDE (E.G. SHAKMA OR OSHPD OPM), COPIES OF THE BRACING SYSTEM INSTALLATION GUIDE OR MANUAL SHALL BE AVAILABLE ON THE JOBSITE PRIOR TO THE START OF AND DURING THE HANGING AND BRACING OF THE DISTRIBUTION SYSTEMS. THE STRUCTURAL ENGINEER OF RECORD SHALL VERIFY THE ADEQUACY OF THE STRUCTURE TO SUPPORT THE HANGING AND BRACE LOADS.

MECHANICAL PIPING (MP), MECHANICAL DUCTS (MD), PLUMBING PIPING (PP), ELECTRICAL DISTRIBUTION SYSTEMS (ES)

MP ES MD PP ES - OPTION 1: DETAILED ON THE APPROVED DRAWINGS WITH PROJECT SPECIFIC NOTES AND DETAILS.

MP MD PP ES - OPTION 2: SHALL COMPLY WITH THE APPLICABLE OSHPD PRE-APPROVAL (OPM) # \_\_\_\_\_.

MP MD PP ES - OPTION 3: SHALL COMPLY WITH SHAKMA SEISMIC RESTRAINT MANUAL, OSHPD EDITION (2004), INCLUDING ANY ADDENDUM, FASTENERS AND OTHER ATTACHMENTS NOT SPECIFICALLY IDENTIFIED IN THE SHAKMA SEISMIC RESTRAINT MANUAL, OSHPD EDITION, ARE DETAILED ON THE APPROVED DRAWINGS WITH PROJECT SPECIFIC NOTES AND DETAILS. THE DETAILS SHALL ACCOUNT FOR THE APPLICABLE SEISMIC HAZARD LEVEL \_\_\_\_\_ AND CONNECTION LEVEL \_\_\_\_\_ FOR THE PROJECT AND CONDITIONS.

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PREPARED FOR THE  
**GROSSMONT UNION HIGH SCHOOL DISTRICT**

PREPARED BY  
**PLATT/WHITELEW ARCHITECTS, INC.**

NEW DEVELOPMENT PROJECT  
OFFICE OF REGULATION SERVICES

FILE # 04-115930  
AC FILE # 04-115930  
DATE 04/18/17

NO. 13347  
DATE 04/18/17  
4/18/17

**MECHANICAL SCHEDULES**

**CENTRAL PLANT EQUIPMENT UPGRADE**

**VALHALLA HIGH SCHOOL**  
1725 HILLSDALE ROAD  
EL CAJON, CA 92019

PROJECT NO. FVA 105610

FILE NAME:

DATE 4/18/2017 DRAWN: ELPS  
CHECKED: GRMR

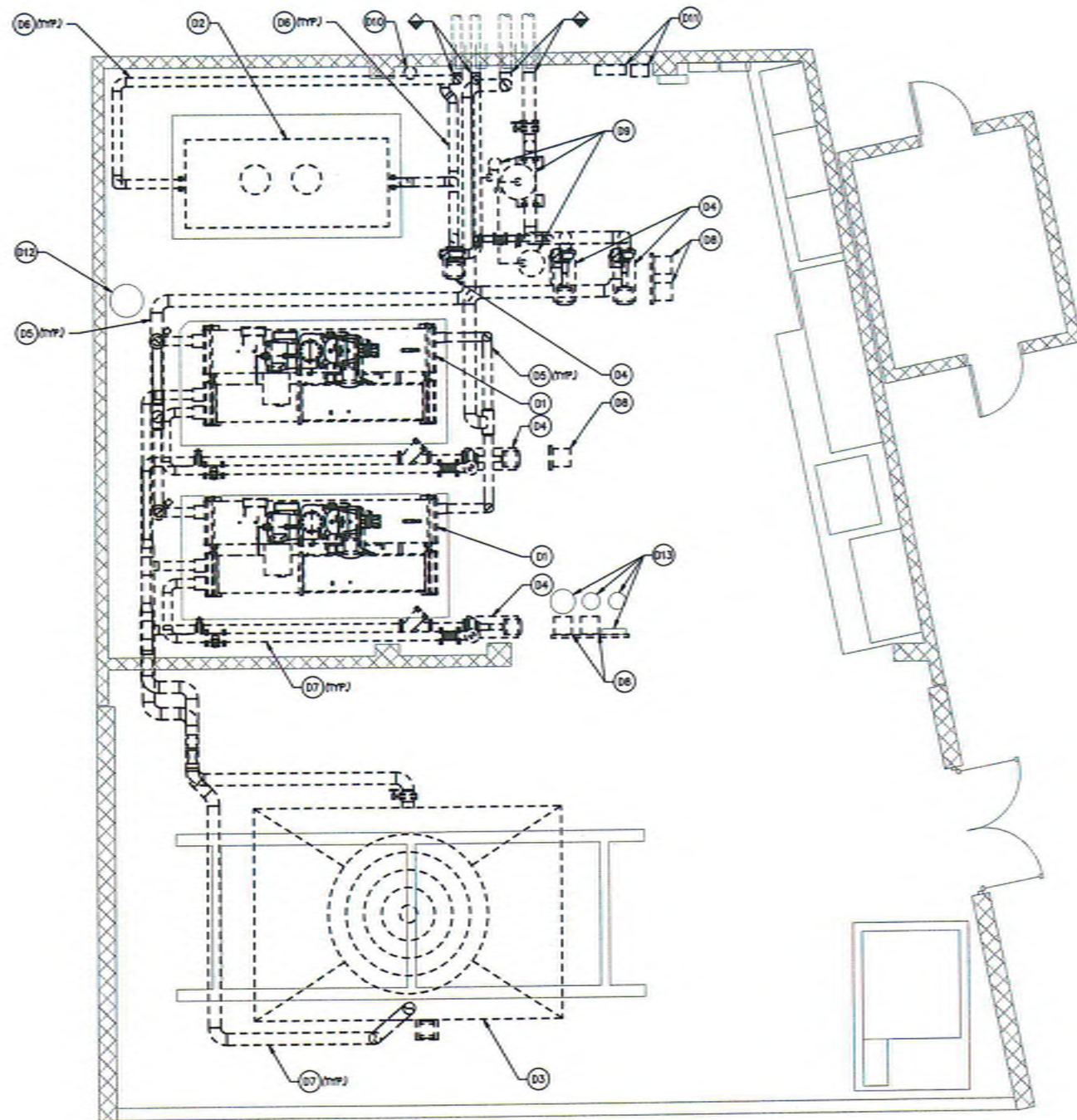
**M-003**

SHEET NO. 1 OF 1 SHEETS

**TURPIN & RATTAN**  
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CONSULTING ENGINEERS  
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TRF PROJECT # 16432.501





**MECHANICAL - DEMOLITION FLOOR PLAN**  
SCALE 1/4" = 1'-0"

# **KEYNOTES**

- D1 DEMO EXISTING CHILLER AND ASSOCIATED APPURTENANCES.
- D2 DEMO EXISTING BOILER AND ASSOCIATED APPURTENANCES.
- D3 DEMO EXISTING COOLING TOWER AND ASSOCIATED APPURTENANCES.
- D4 DEMO EXISTING HYDRONIC PUMP, VALVES, AND ASSOCIATED APPURTENANCES. REMOVE AND SALVAGE EXISTING PUMP MOTOR AND TURN OVER TO OWNER.
- D5 DEMO EXISTING CHILLED WATER PIPING, SUPPORTS, VALVES, AND ASSOCIATED APPURTENANCES.
- D6 DEMO EXISTING HEATING HOT WATER PIPING, SUPPORTS, VALVES, AND ASSOCIATED APPURTENANCES.
- D7 DEMO EXISTING CONDENSER WATER PIPING, SUPPORTS, VALVES, AND ASSOCIATED APPURTENANCES.
- D8 REMOVE AND SALVAGE EXISTING FRAME MOUNTED VARIABLE FREQUENCY DRIVE AND TURN OVER EXISTING DRIVE TO OWNER. DEMO EXISTING INSTRUIT FRAME.
- D9 DEMO EXISTING CHILLED WATER AIR SEPARATOR, EXPANSION TANK, CHEMICAL BYPASS FEEDER, AND ASSOCIATED PIPING AND APPURTENANCES.
- D10 DEMO EXISTING HEATING HOT WATER CHEMICAL BYPASS FEEDER AND ASSOCIATED PIPING AND APPURTENANCES.
- D11 DEMO EXISTING HVAC CONTROL PANEL AND UPS ENCLOSURES.
- D12 REMOVE AND SALVAGE EXISTING HEATING HOT WATER EXPANSION TANK AND RETAIN FOR RE-INSTALLATION.
- D13 REMOVE AND SALVAGE EXISTING CONDENSER WATER CHEMICAL WATER TREATMENT CONTROLLER, TANKS, AND PIPES AND RETAIN FOR RE-INSTALLATION.

PREPARED FOR THE  
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CONSTRUCTION PERMIT  
OFFICE OF THE CITY ENGINEER  
CITY OF SAN DIEGO

FILE NO. 04-15030  
AC PLD EL RLS  
DATE 04/27/17



**MECHANICAL - DEMOLITION  
FLOOR PLAN**  
**CENTRAL PLANT EQUIPMENT UPGRADE**  
VALHALLA HIGH SCHOOL  
1725 HILLSDALE ROAD  
EL CAJON, CA 92019

REVISION	DATE

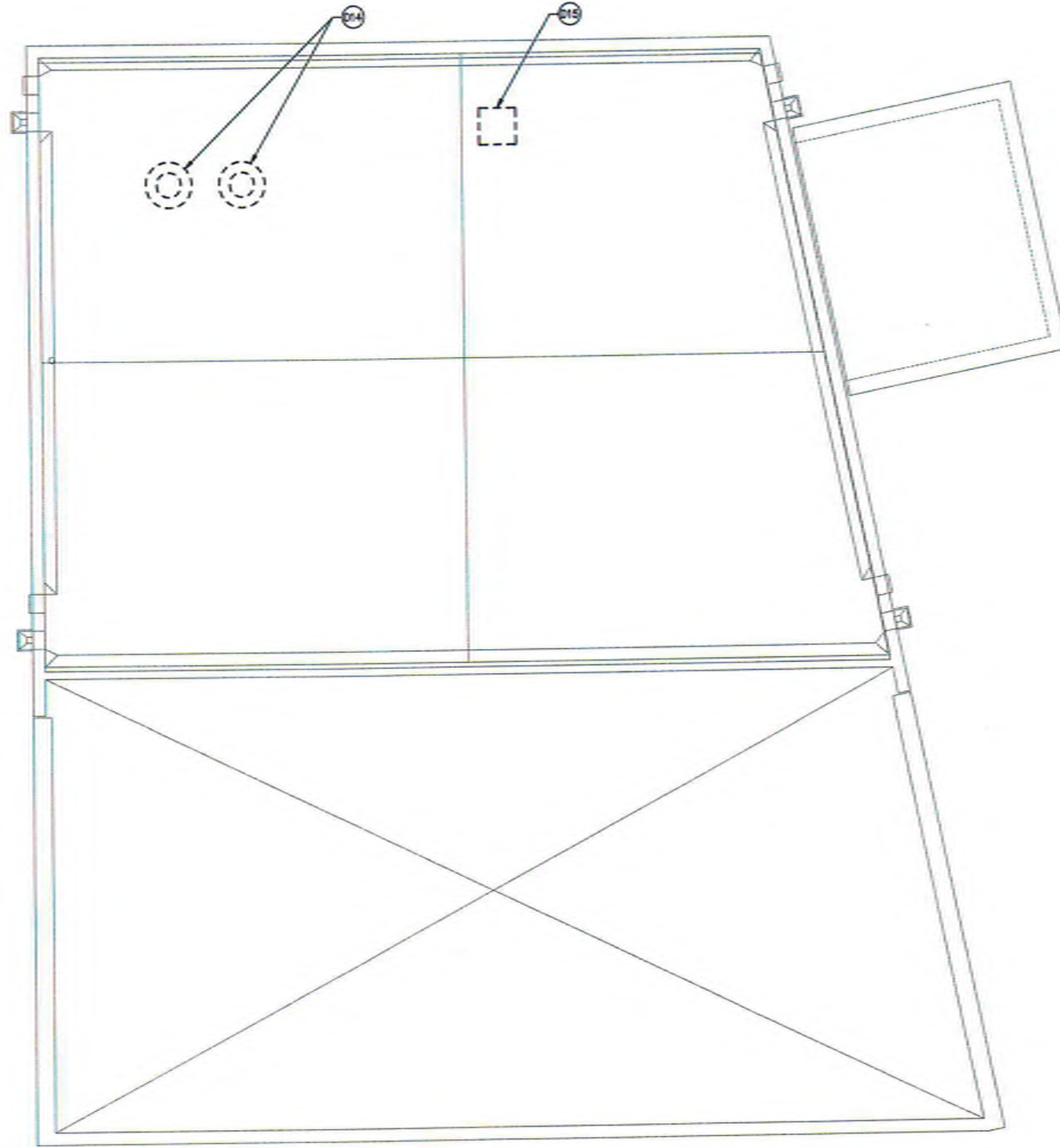
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TREI PROJECT # 16432.S01

PROJECT NO. FMA 20861.0  
FILE NAME  
DATE 4/14/2017 DRAWN EL/PS  
CHECKED GR/WR  
**M-101**  
SHEET NO. 1 OF 5 SHEETS



J:\16432201 - 01655 Vehicle 15 Control Plant Upgrade\16432201\16432201\_M-102\_Mechanical - DEMOLITION ROOF PLAN.dwg 04/18/2017 10:11



MECHANICAL - DEMOLITION ROOF PLAN

SCALE 1/4" = 1'-0"



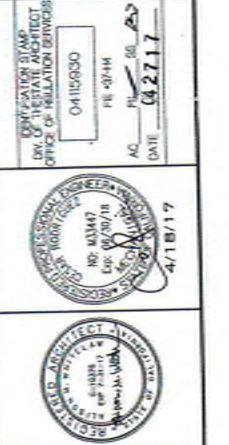
**KEYNOTES**

- D14 DEMO EXISTING GAS FLUE VENT THRU ROOF AND TERMINATION. PATCH AND REPAIR ROOF PER A-101 AND A-104.
- D15 DEMO EXISTING ROOF CAP. PATCH AND REPAIR ROOF PER A-101 AND A-104.

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TREI PROJECT # 164322.S01

PROJECT NO. PMA 4056130  
FILE NAME  
DATE 4/14/2017 DRAWN: EL/PS  
CHECKED: GR/MR  
**M-102**  
SHEET NO. 1 OF SHEETS

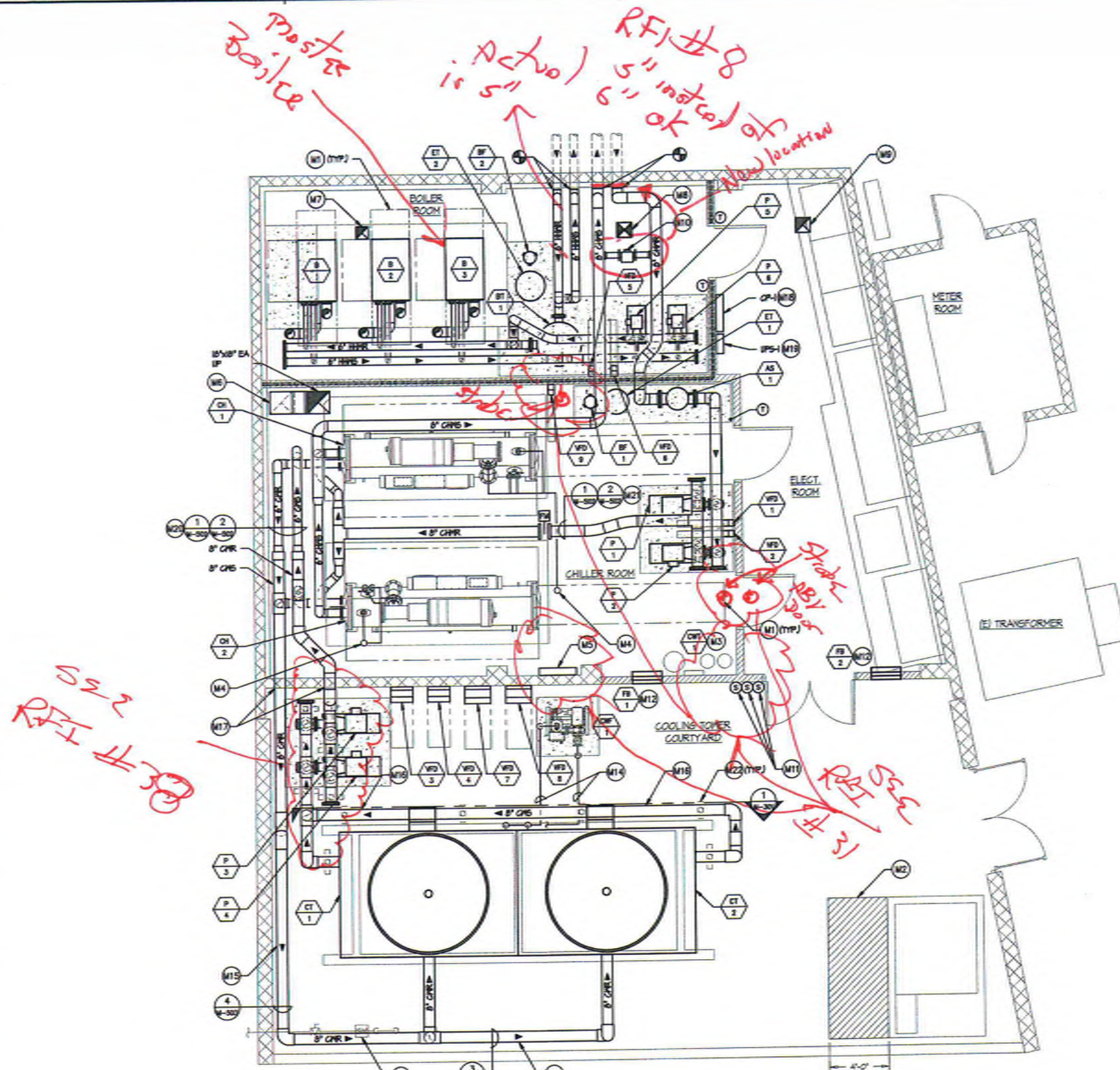
**MECHANICAL - DEMOLITION  
ROOF PLAN**  
**CENTRAL PLANT EQUIPMENT UPGRADE**  
**VALHALLA HIGH SCHOOL**  
1725 HILLSDALE ROAD  
EL CAJON, CA 92019



CERTIFICATION STAMP  
DIV. OF PLANNING ARCHITECT  
OFFICE OF REGULATION DIVISION  
AC 041109300  
FILE 07/18  
DATE 04/27/17

PREPARED FOR THE  
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**MECHANICAL - FLOOR PLAN**  
SCALE: 1/4" = 1'-0"



**KEYNOTES**

- M1 PROVIDE MECHANICAL EQUIPMENT CLEARANCE AND ACCESS PER MANUFACTURER'S REQUIREMENTS.
- M2 PROVIDE CLEARANCE ADJACENT TO ELECTRICAL TRANSFORMER PER ELECTRICAL CODE REQUIREMENTS.
- M3 EXISTING RELOCATED CONDENSER WATER TREATMENT SYSTEM CONSISTING OF CHEMICAL BARRELS AND CHEMICAL TREATMENT CONTROLLER. MANUFACTURER'S SERVICE REPRESENTATIVE SHALL INSPECT AND RE-COMMISSION EXISTING SYSTEM.
- M4 3" REFRIGERANT PRESSURE RELIEF PIPE UP THRU ROOF. CONNECT TO INDIVIDUAL CHILLER REFRIGERANT PRESSURE RELIEF VALVES. COVERED PIPING SIZE SHALL BE SUCH THAT THE INTERNAL FREE AREA IS EQUAL OR GREATER THAN THE SUM OF THE FREE AREAS OF EACH INDIVIDUAL CONNECTED PIPE AND PER 2016 CHC SECTION 102.1 - DISCHARGE PIPING.
- M5 REFRIGERANT MONITORING PANEL MOUNTED TO CONCRETE BLOCK WALL PER DETAIL 6M-SOL. FIELD ROUTE PIPING TO REMOTE SENSORS. FIELD LOCATE REMOTE SENSORS FOR OPTIMAL COVERAGE OF CHILLER ROOM.
- M6 18"x18" EA DUCT, OFFSET 48" AND ROUTE DOWN TO WITHIN 12" OF FINISHED FLOOR. PROVIDE 18"x18" OPENING IN DUCT NEAR FLOOR LEVEL AND NEAR CEILING LEVEL. COVER OPENINGS WITH 1/2" GALVANIZED WIRE SCREEN. SUPPORT PER DETAIL 6M-SOL.
- M7 10"x10" EA UP THRU ROOF. COVER OPENING WITH 1/2" GALVANIZED WIRE SCREEN.
- M8 12"x12" EA UP THRU ROOF. COVER OPENING WITH 1/2" GALVANIZED WIRE SCREEN.
- M9 12"x12" EA UP THRU ROOF. COVER OPENING WITH 1/2" GALVANIZED WIRE SCREEN.
- M10 4" GPM BYPASS AND AUTOMATIC MOTORIZED CONTROL VALVE.
- M11 PROVIDE (a) BREAK GLASS TYPE OVERRIDE SWITCHES AND (b) AMBER AND (c) GREEN PILOT LIGHT ON WALL ADJACENT TO DOOR. EACH SWITCH SHALL HAVE A SINGLE FUNCTION FOR THE FOLLOWING ACTIONS:  
SWITCH 1: CH-1 SHUTDOWN (OFF ONLY)  
SWITCH 2: CH-2 SHUTDOWN (OFF ONLY)  
SWITCH 3: EF-1 EMERGENCY (ON ONLY)  
THE AMBER PILOT LIGHT SHALL INDICATE NO FLOW ACROSS EF-1 AND THE GREEN PILOT LIGHT SHALL INDICATE FLOW ACROSS EF-1.  
REFER TO SEQUENCE OF OPERATIONS FOR MORE INFORMATION.
- M12 OUTSIDE AIR LOWER PER ARCHITECT.
- M13 EXISTING NATURAL GAS METER AND PIPING ASSEMBLY. EQUIPMENT, PIPING, AND SUPPORTS SHALL BE LOCATED TO MAINTAIN ACCESS TO AND SERVICEABILITY OF THE NATURAL GAS PIPING.
- M14 2-1/2" AND 3" CONDENSER WATER PIPING TO AND FROM COOLING TOWER SLEEPER CONNECTIONS.
- M15 CONDENSER WATER PIPING ROUTED HIGH ON EXISTING WALL. REFER TO DETAIL 6M-SOL AT STUD WALL AND 4M-SOL AT CHU WALL.
- M16 CONDENSER WATER PIPING ROUTED LOW ALONG EXISTING COOLING TOWER SUPPORT PIERS.
- M17 CONDENSER WATER PIPING THRU EXISTING CHU WALL. REFER TO STRUCTURAL SHEET 52.0 FOR CORE DETAILS.
- M18 HVAC CONTROL PANEL MOUNT TO WALL PER DETAIL 1M-SOL.
- M19 HVAC CONTROL UNINTERRUPTIBLE POWER SUPPLY. MOUNT TO WALL PER DETAIL 1M-SOL.
- M20 THREADED ROD HANGERS FOR SUSPENDED PIPING RUNNING PERPENDICULAR TO EXISTING WOOD JOISTS SHALL ATTACH DIRECTLY TO JOISTS PER DETAIL 2M-SOL.
- M21 THREADED ROD HANGERS FOR SUSPENDED PIPING RUNNING PARALLEL TO EXISTING WOOD JOISTS SHALL ATTACH TO STRUT SPANNING EXISTING JOISTS PER DETAIL 2M-SOL.
- M22 FLOOR MOUNTED PIPE SUPPORTS. REFER TO DETAIL 6M-SOL.

**SHEET NOTES**

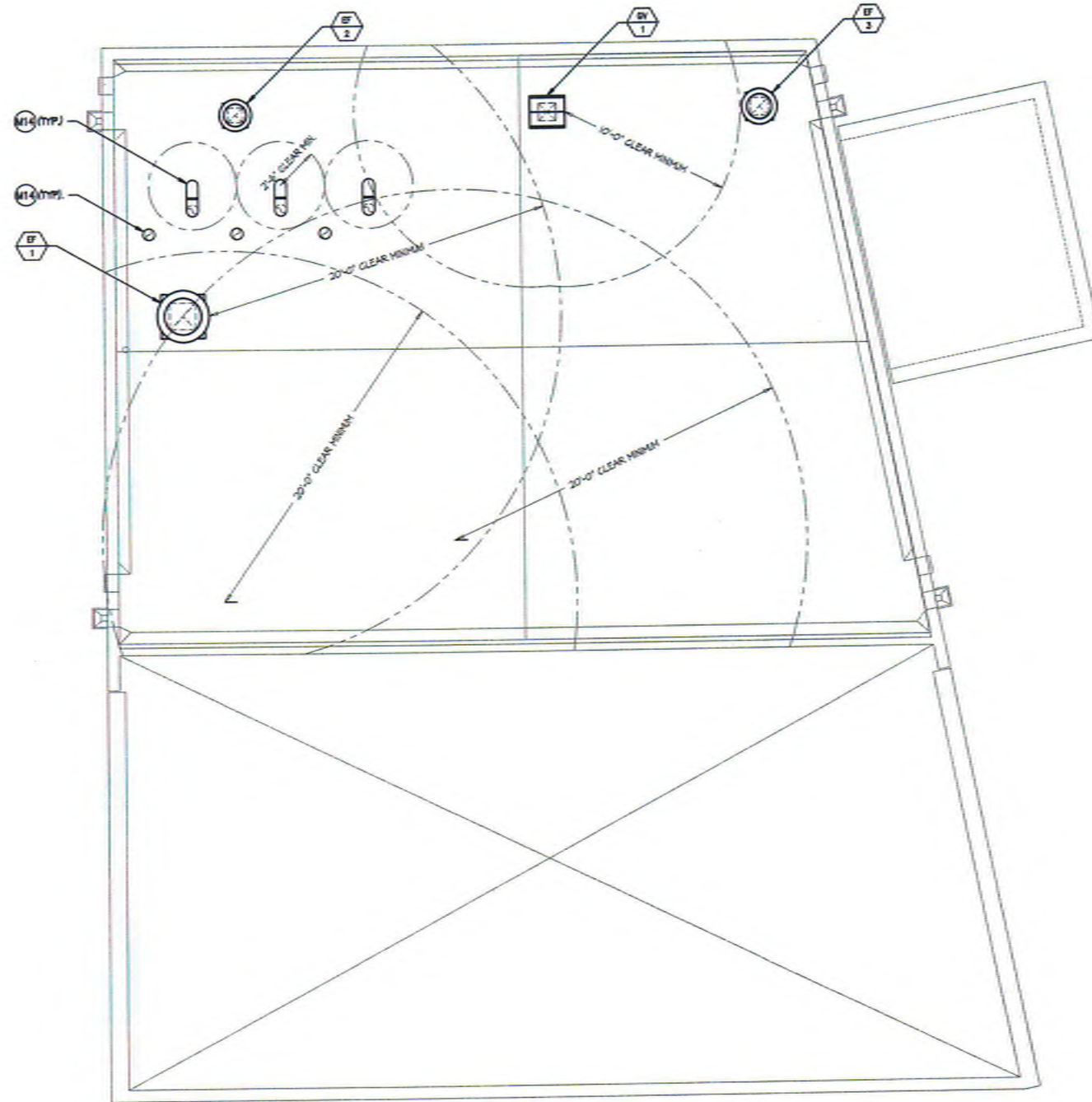
- 1. SUPPORT CEILING SUSPENDED PIPING PER DETAIL 1M-SOL AND 2M-SOL.
- 2. SUPPORT FLOOR MOUNTED PIPING PER DETAIL 6M-SOL.
- 3. PROVIDE METAL JACKETING FOR ALL PVC PIPING LOCATED OUTDOORS.
- 4. MOUNT VFDs AND CONTROL PANELS TO METAL STUD WALL PER 1M-SOL AND TO CHU WALL PER 6M-SOL.
- 5. PIPING PENETRATIONS OF FIRE-RATED STUD WALLS SHALL BE PER DETAIL 1M-SOL FOR UNINSULATED METAL PIPING AND 2M-SOL FOR INSULATED METAL PIPING.

**WALL LEGEND (REFER TO A-102)**

- EXISTING CHU WALL
- EXISTING METAL FRAMED WALL
- METAL FRAMED WALL
- FIRE-RATED ASSEMBLY

<p><b>GROSSMONT UNION HIGH SCHOOL DISTRICT</b> P.O. BOX 1048 LA MESA, CALIFORNIA</p>		<p><b>PLATT/WHITELEW ARCHITECTS, INC.</b> 4024 80TH STREET SAN DIEGO, CA 92126-4328 FAX (619) 449-4360</p>	
<p>PREPARED FOR THE</p>		<p>PREPARED BY</p>	
<p>ENGINEERING STAMP DIV. OF THE STATE ARCHITECT OFFICE OF REGULATION &amp; ENFORCEMENT</p>		<p>LA 161433.501 FILE 07/14 DATE 04/22/17</p>	
<p>MECHANICAL - FLOOR PLAN</p>		<p>CENTRAL PLANT EQUIPMENT UPGRADE</p>	
<p>VALHALLA HIGH SCHOOL 1725 HILLSDALE ROAD EL CAJON, CA 92019</p>		<p>PROJECT NO. FWA 1056110 FILE NAME: DATE: 4/16/2017 DRAWN: ELPS CHECKED: GRMR</p>	
<p><b>TURPIN &amp; RATTAN</b> ENGINEERING, INC. CONSULTING ENGINEERS 4719 PALM AVENUE LA MESA, CA 91941-5221 619 / 455 / 5224 FAX 455 / 5235 E-MAIL: ENGINEER@TRRSD.COM</p>		<p><b>M-201</b> SHEET NO. 1 OF 2 SHEETS</p>	





**MECHANICAL - ROOF PLAN**  
SCALE: 1/4" = 1'-0"

**KEYNOTES**

- M14 8" CATEGORY IV GAS FLUE THRU ROOF. TERMINATE WITH MANUFACTURER'S TERMINATION KIT MINIMUM 5' ABOVE ROOF SURFACE.
- M15 8" DIRECT VENT COMBUSTION AIR INTAKE. PROVIDE GOOSENECK MINIMUM 30" FROM BOILER FLUE DISCHARGE. COVER OPENING WITH 1/2" GALVANIZED WIRE SCREEN.

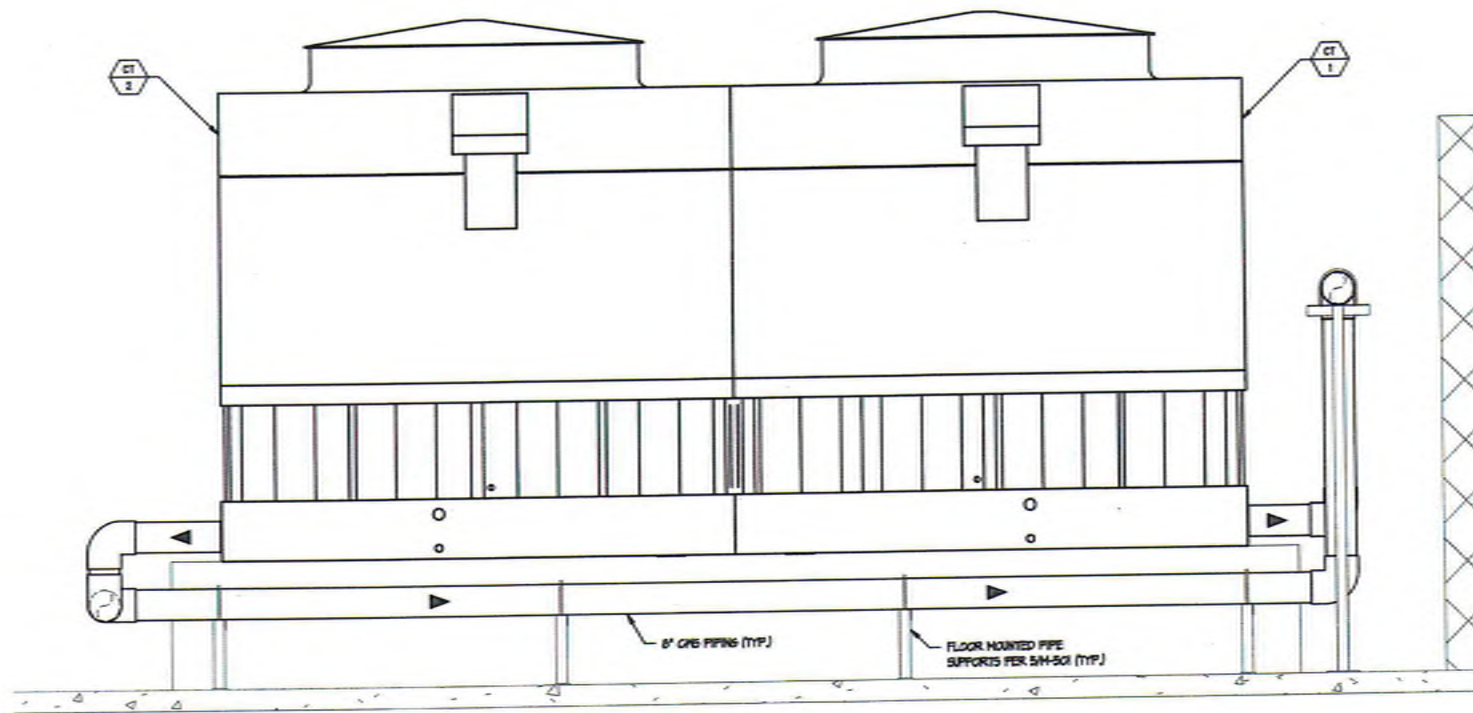
**SHEET NOTE**

- 1. FIELD VERIFY LOCATION OF REFRIGERATION ROOF VENTILATION SYSTEM AND REFRIGERATION RELIEF DISCHARGE TERMINATIONS SUCH THAT THERE ARE NO OPENINGS TO THE BUILDING PERIM 20'-0".

<p>PREPARED FOR THE <b>GROSSMONT UNION HIGH SCHOOL DISTRICT</b> P.O. BOX 1043 LA MESA, CALIFORNIA</p>		<p>PREPARED BY <b>PLATT/WHITE LAW ARCHITECTS, INC.</b> 4034 BOTT STREET SAN DIEGO, CA 92106-4380 FAX (619) 546-4380</p>	
<p>CONFIRMATION STAMP DIV. OF THE STATE ARCHITECT OFFICE OF REGULATION SERVICES</p>		<p>FILE NO. 04-155300 FILE 03-144 DATE 04/27/17</p>	
<p>NO. 153417 EXP. 06/30/18 4/18/17</p>		<p>4/18/17</p>	
<p><b>MECHANICAL - ROOF PLAN</b></p>		<p><b>CENTRAL PLANT EQUIPMENT UPGRADE</b></p>	
<p><b>CENTRAL PLANT EQUIPMENT UPGRADE</b> VALHALLA HIGH SCHOOL 1725 HILLSDALE ROAD EL CAJON, CA 92019</p>		<p>PROJECT NO. PVA ROBA110</p>	
<p>DATE 4/14/2017</p>		<p>DRAWN: ELIPS CHECKED: CRMR</p>	
<p><b>M-202</b></p>		<p>SHEET NO. 1 OF SHEETS</p>	

**TURPIN & RATTAN**  
ENGINEERING, INC.  
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619-546-7624 / 6224 FAX 619-546-7623  
E-MAIL: ENGINEER@TRRINC.COM  
TREI PROJECT # 16432.S01

J:\16432.501 - 06050 Vehicle HS Central Plant Upgrade\16432.501\16432.501\_M-301\_Mechanical Sections.dwg 01/18/2017 19:12



COOLING TOWER SECTION

SCALE: 1/4" = 1'-0"

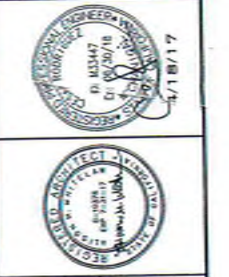


1  
M-301

**TURPIN & RATTAN**  
ENGINEERING, INC.  
CONSULTING ENGINEERS  
4719 PALM AVENUE  
LA MESA, CA 91941-5521  
619 / 455 / 6224 FAX 666 / 6223  
E-MAIL: ENGINEER@TRERCO.COM  
TRER PROJECT # 16432.501

PROJECT NO. FNA 008610  
FILE NAME:  
DATE: 4/4/2017 DRAWN: ELPS  
CHECKED: CRMR  
**M-301**  
SHEET NO. 1 OF 1 SHEETS

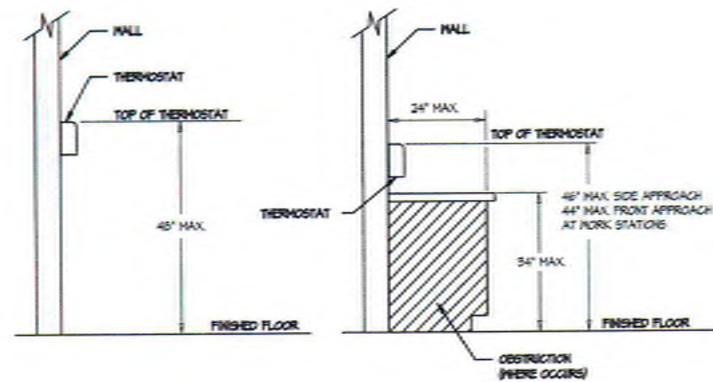
MECHANICAL SECTIONS  
CENTRAL PLANT EQUIPMENT UPGRADE  
VALHALLA HIGH SCHOOL  
1725 HILLSDALE ROAD  
EL CAJON, CA 92019



DESIGNED BY: JAP  
CHKD BY: JAP  
DATE: 04/15/2017  
AC: 04/15/2017  
DATE: 04/27/17

PREPARED FOR THE  
**GROSSMONT UNION HIGH SCHOOL DISTRICT**  
P.O. BOX 1048  
LA MESA, CALIFORNIA  
PREPARED BY  
**PLATT/WHITE LAW ARCHITECTS, INC.**  
4084 90TH STREET  
SAN DIEGO, CA 92126-4326 FAX (619) 646-4360

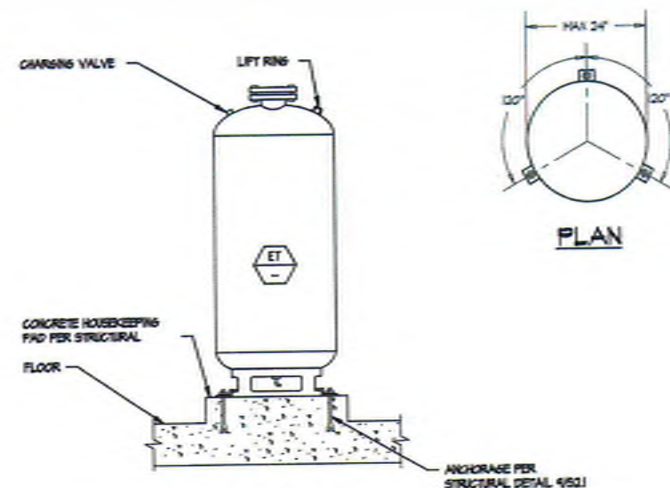




**THERMOSTAT MOUNTING DETAIL**

NO SCALE

1  
M-501

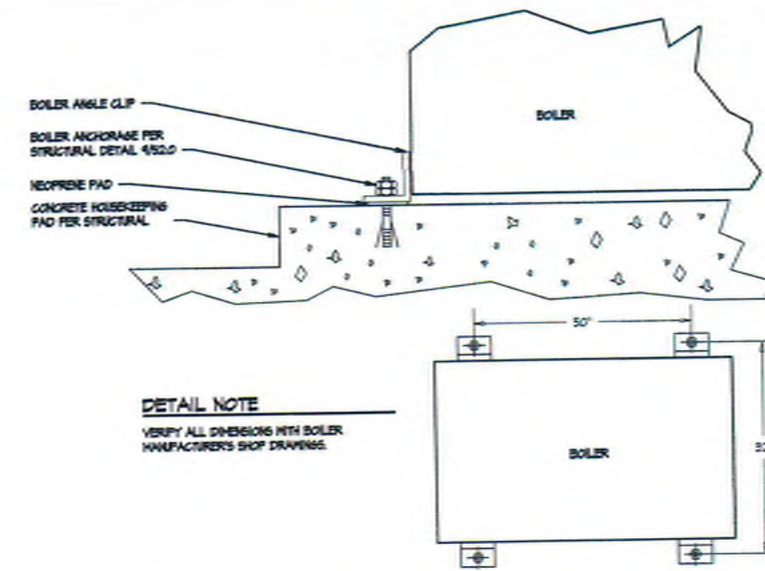


**ELEVATION**

**EXPANSION TANK MOUNTING DETAIL**

NO SCALE

2  
M-501



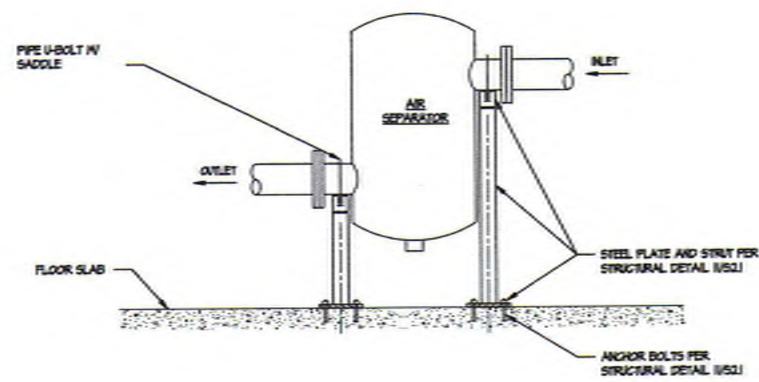
**DETAIL NOTE**

VERIFY ALL DIMENSIONS WITH BOILER MANUFACTURER'S SHOP DRAWINGS.

**BOILER MOUNTING DETAIL**

NO SCALE

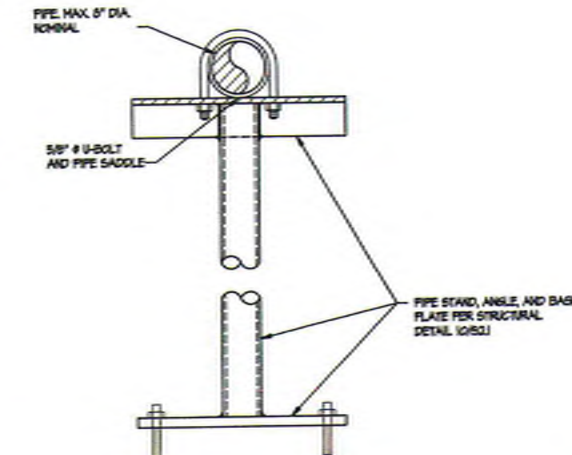
3  
M-501



**AIR SEPARATOR MOUNTING DETAIL**

NO SCALE

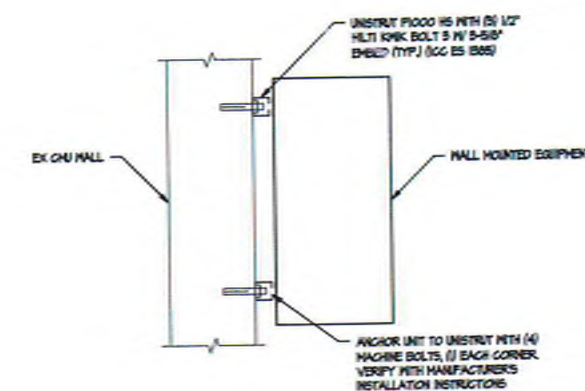
4  
M-501



**FLOOR MOUNTED PIPING SUPPORT DETAIL**

NO SCALE

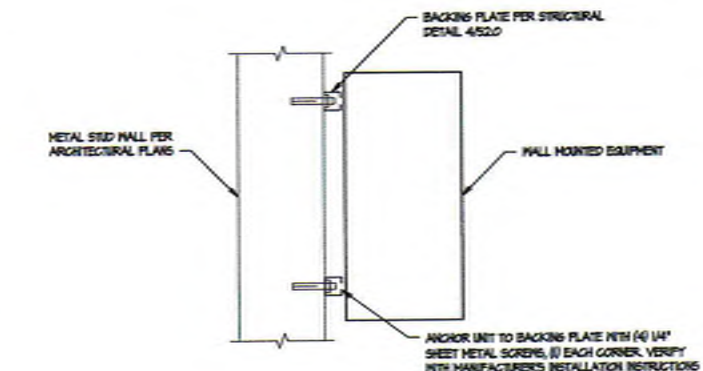
5  
M-501



**WALL MOUNTED EQUIPMENT ANCHORAGE (CMU WALL)**

NO SCALE

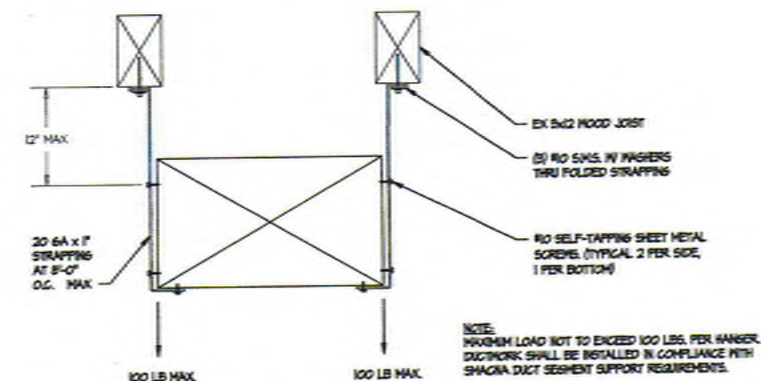
6  
M-501



**WALL MOUNTED EQUIPMENT ANCHORAGE (FRAME WALL)**

NO SCALE

7  
M-501



**DUCT HANGER SUPPORT DETAIL**

NO SCALE

8  
M-501

**GROSSMONT UNION HIGH SCHOOL DISTRICT**  
P.O. BOX 1048  
LA MESA, CALIFORNIA

**PLATT/WHITEAW ARCHITECTS, INC.**  
4084 80TH STREET  
SAN DIEGO, CA 92146-4380

**MECHANICAL DETAILS**

**CENTRAL PLANT EQUIPMENT UPGRADE**

**VALHALLA HIGH SCHOOL**  
1725 HILLSDALE ROAD  
EL CAJON, CA 92019

PROJECT NO. PWA 4086.110

FILE NAME: 4/14/2017

DATE: 4/14/2017

CHECKED: CRMR

**M-501**

SHEET NO. 1 OF 1

**TURPIN & RATTAN**  
ENGINEERS, INC.

CONSULTING ENGINEERS

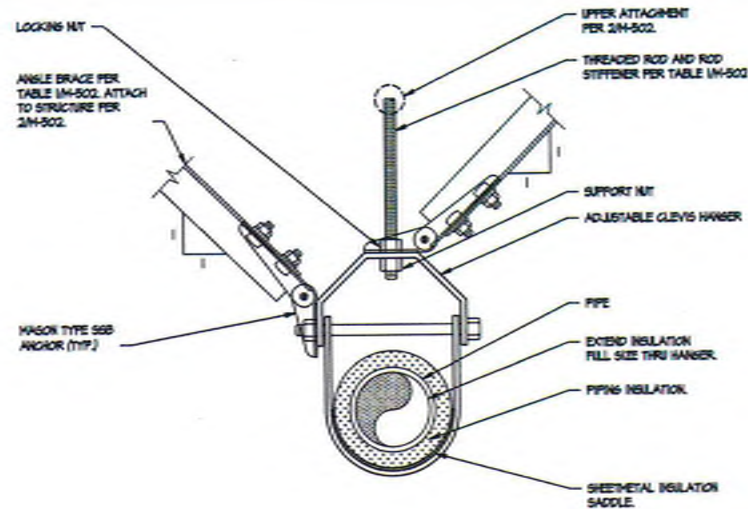
4719 PALM AVENUE  
LA MESA, CA 91941-9221

619 / 466 / 6224 FAX 466 / 6233

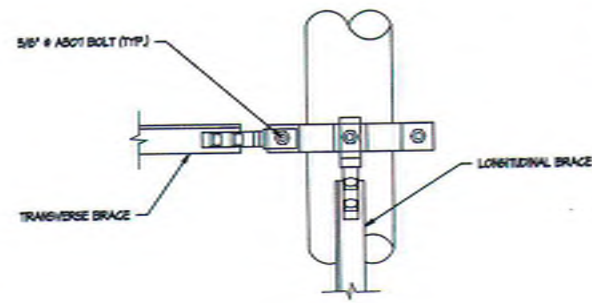
E-MAIL: ENGINEER@TRRINC.COM

TRR PROJECT # 16432.501

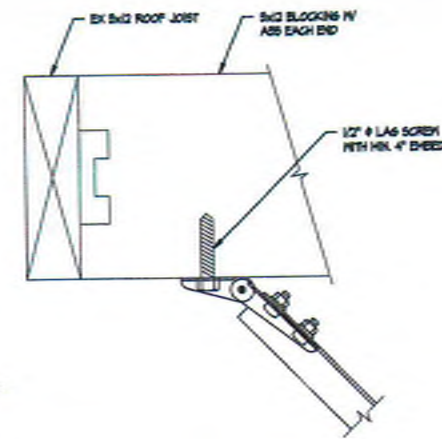




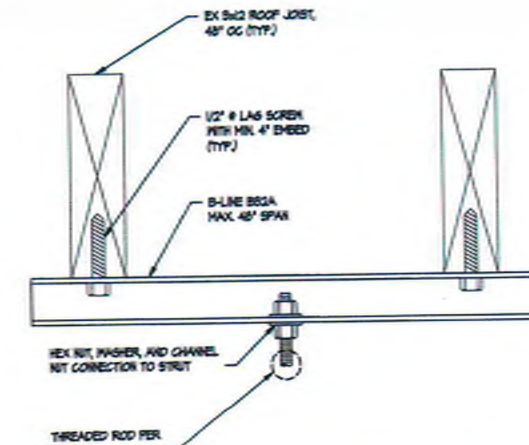
ELEVATION



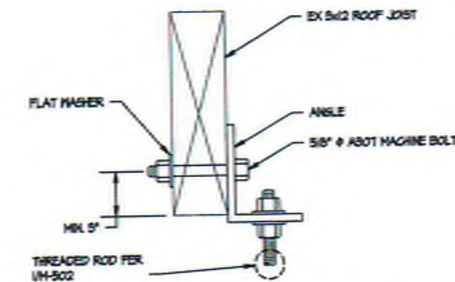
PLAN



SEISMIC BRACING ANCHOR ATTACHMENT TO WOOD



ROD HANGER ATTACHMENT TO STRUT



ROD HANGER ATTACHMENT TO WOOD

PIPE DIA. (IN)	MAX. WEIGHT PER FOOT (LB)	HANGER ROD DIA. (IN)	MAX. HANGER SPACING (IN)	MAX. UNBRACED ROD LENGTH (IN)	ROD STIFFENER ANGLE SIZE (IN)	BRACE ANGLE SIZE (IN)	MAX. BRACE ANGLE SPACING (FT)
1	2.5	5/8	22	8	1 x 1 x 1/8	NR	NR
1-1/4	3.5	5/8	22	8	1 x 1 x 1/8	NR	NR
1-1/2	4.5	5/8	22	8	1 x 1 x 1/8	NR	NR
2	6.2	5/8	22	8	1 x 1 x 1/8	NR	NR
2-1/2	11	1/2	31	11	1 x 1 x 1/8	NR	NR
3	12	1/2	31	11	1-1/2 x 1-1/2 x 1/4	2 x 2 x 1/4	40
4	18.5	5/8	34	11	1-1/2 x 1-1/2 x 1/4	2 x 2 x 1/4	26
6	34.5	3/4	46	32	1-1/2 x 1-1/2 x 1/4	2 x 2 x 1/4	20
8	55	1	46	45	1-1/2 x 1-1/2 x 1/4	2 x 2 x 1/4	12

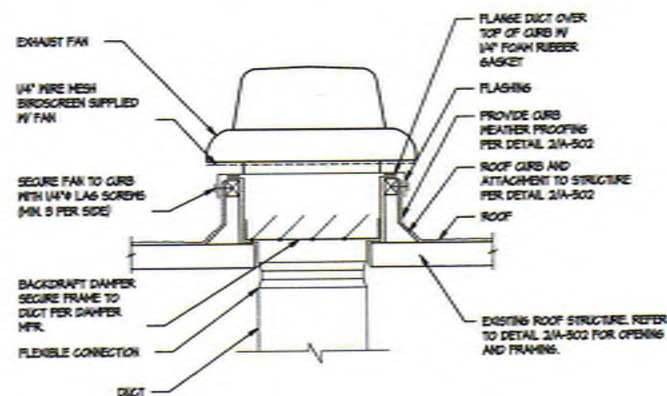
NOTE: TRANSVERSE AND LONGITUDINAL BRACES SHALL BE PROVIDED AT THE SPACING INDICATED IN THIS TABLE AND AT EACH CHANGE IN DIRECTION. LONGITUDINAL BRACING MAY BE OMITTED AT CHANGE IN DIRECTION WHERE A TRANSVERSE BRACE IS PROVIDED WITHIN 24\"/>

PIPE HANGER DETAIL

NO SCALE

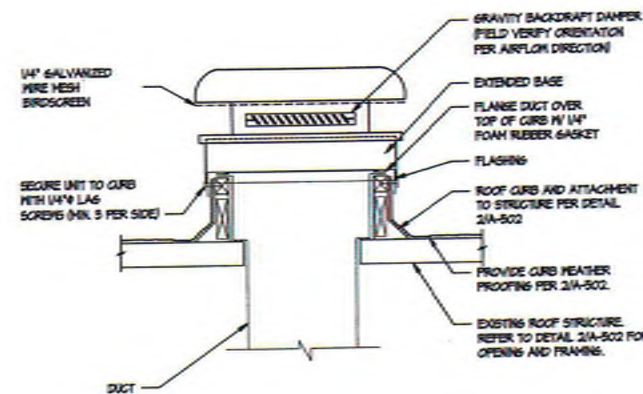
PIPE HANGER UPPER ATTACHMENT DETAILS

NO SCALE



ROOF MOUNTED EXHAUST FAN DETAIL

NO SCALE



ROOF MOUNTED GRAVITY VENTILATOR DETAIL

NO SCALE

**GROSSMONT UNION HIGH SCHOOL DISTRICT**  
P.O. BOX 1043  
LA MESA, CALIFORNIA

**PLATT/WHITEHAW ARCHITECTS, INC.**  
4034 30TH STREET  
SAN DIEGO, CA 92108-4826 FAX (619) 548-4850

MECHANICAL DETAILS

CENTRAL PLANT EQUIPMENT UPGRADE

VALHALLA HIGH SCHOOL

1725 HILLSDALE ROAD

EL CAJON, CA 92019

PROJECT NO. PMA 20561.10

FILE NAME:

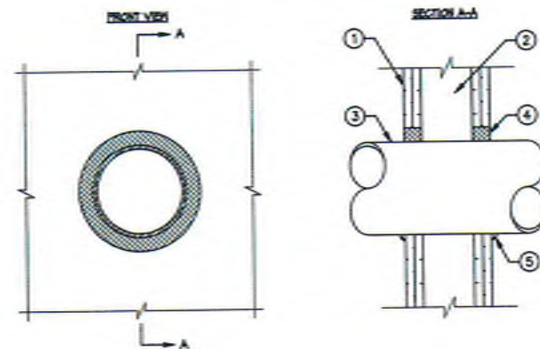
DATE: 4/14/2017 DRAWN: ELPS CHECKED: CRMR

**M-502**

SHEET NO. 1 OF 1 SHEETS



ULCUL SYSTEM NO. M-1054  
METAL PIPE THROUGH 1-HR. OR 2-HR. GYPSUM WALL ASSEMBLY  
F RATING = 1-HR. AND 2-HR.  
T RATING = 0-HR.  
L RATING AT AMBIENT = LESS THAN 1 CPM/50 FT.  
L RATING AT 400°F = 4 CPM/50 FT.



#### KEYNOTES

- 1 GYPSUM WALL ASSEMBLY (ULCUL CLASSIFIED 1500 OR 1400 SERIES) (1-HR. OR 2-HR. FIRE-RATING) (2-HR. SHOWN)
- 2 NOT SHOWN: WOOD STUDS TO CONSIST OF NOMINAL 2"x4" LUMBER. STEEL STUDS TO BE MINIMUM 2-1/2" WIDE.
- 3 PENETRATING ITEM TO BE ONE OF THE FOLLOWING:  
A. MAXIMUM 30" NOMINAL DIAMETER STEEL PIPE (SCHEDULE 10 OR HEAVIER).  
B. MAXIMUM 30" NOMINAL DIAMETER COPPER PIPE.  
C. MAXIMUM 6" NOMINAL DIAMETER COPPER PIPE.  
D. MAXIMUM 6" NOMINAL DIAMETER STEEL CONDUIT.  
E. MAXIMUM 4" NOMINAL DIAMETER EMT.
- 4 MINIMUM 5/8" DEPTH HLT-1 FS-ONE INTUMESCENT FIRESTOP SEALANT.
- 5 MINIMUM 1/2" BEAD HLT-1 FS-ONE INTUMESCENT FIRESTOP SEALANT AT POINT OF CONTACT.

#### NOTES

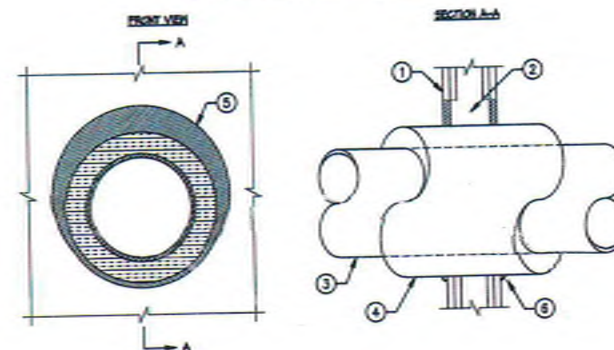
1. MAXIMUM DIAMETER OF OPENING:  
A. 50-1/4" FOR STEEL STUD WALLS.  
B. 14-1/2" FOR WOOD STUD WALLS.
2. ANNULAR SPACE = MINIMUM 0", MAXIMUM 2-1/4".
3. PIPE MAY BE INSTALLED WITH CONTINUOUS POINT OF CONTACT.
4. PIPE MAY BE INSTALLED AT AN ANGLE NOT GREATER THAN 45° FROM PERPENDICULAR.

### METAL PIPE THROUGH GYPSUM WALL (1 & 2 HOUR RATINGS)

NO SCALE

1  
M-503

ULCUL SYSTEM NO. M-1000  
INSULATED METAL PIPE THROUGH 1-HR. OR 2-HR. GYPSUM WALL ASSEMBLY  
F RATING = 1-HR. AND 2-HR.  
T RATING = 0-HR.  
L RATING AT AMBIENT = 4 CPM/50 FT.  
L RATING AT 400°F = LESS THAN 1 CPM/50 FT.



#### KEYNOTES

- 1 GYPSUM WALL ASSEMBLY (ULCUL CLASSIFIED 1500 OR 1400 SERIES) (1-HR. OR 2-HR. FIRE-RATING) (2-HR. SHOWN)
- 2 NOT SHOWN: WOOD STUDS TO CONSIST OF NOMINAL 2"x4" LUMBER. STEEL STUDS TO BE MINIMUM 2-1/2" WIDE.
- 3 PENETRATING ITEM TO BE ONE OF THE FOLLOWING:  
A. MAXIMUM 12" NOMINAL DIAMETER STEEL PIPE (SCHEDULE 10 OR HEAVIER).  
B. MAXIMUM 6" NOMINAL DIAMETER COPPER PIPE.  
C. MAXIMUM 4" NOMINAL DIAMETER STEEL CONDUIT.  
D. MAXIMUM 4" NOMINAL DIAMETER EMT.
- 4 MAXIMUM 2" THICK GLASS-FIBER PIPE INSULATION.
- 5 MINIMUM 5/8" DEPTH HLT-1 FS-ONE HIGH PERFORMANCE INTUMESCENT FIRESTOP SEALANT.
- 6 MINIMUM 1/2" BEAD HLT-1 FS-ONE HIGH PERFORMANCE INTUMESCENT FIRESTOP SEALANT AT POINT OF CONTACT.

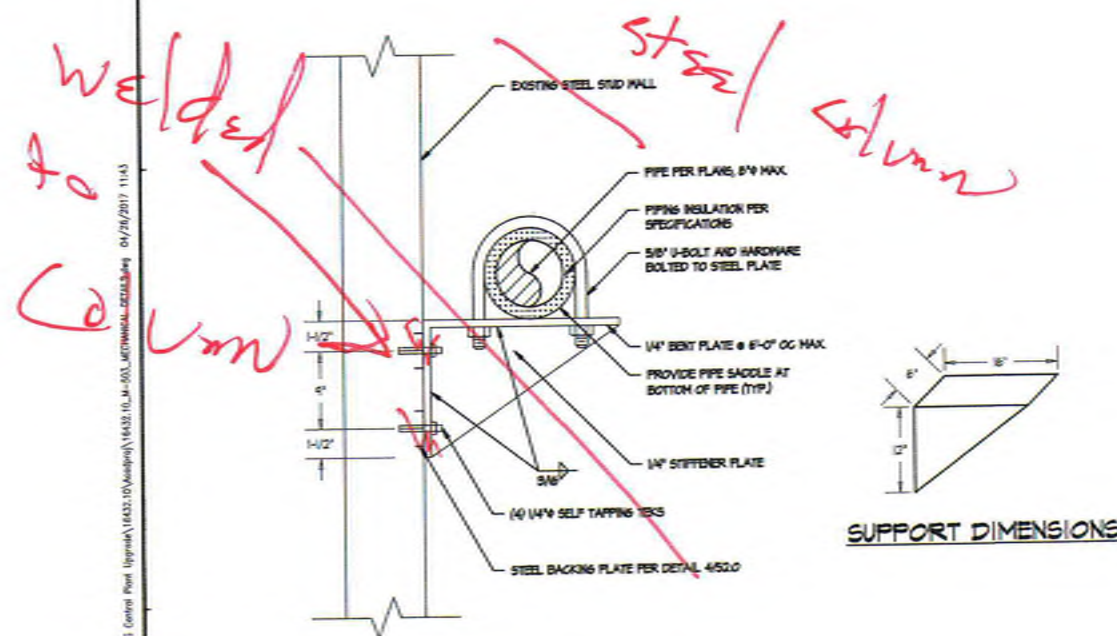
#### NOTES

1. MAXIMUM DIAMETER OF OPENING = 18".
2. ANNULAR SPACE = MINIMUM 0", MAXIMUM 1-1/8".

### INSULATED METAL PIPE THROUGH GYPSUM WALL (1 & 2 HOUR RATINGS)

NO SCALE

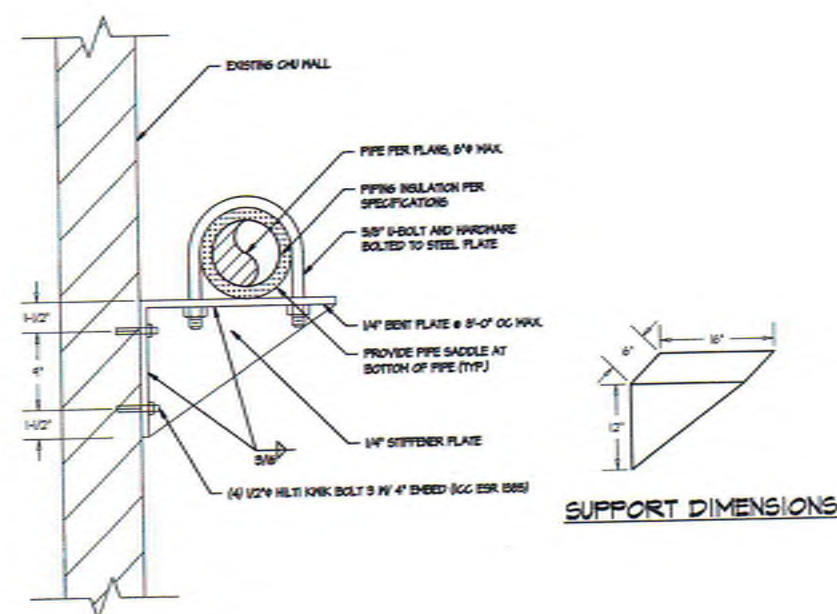
2  
M-503



### WALL MOUNTED PIPE SUPPORT AT STUD WALL

NO SCALE

3  
M-503



### WALL MOUNTED PIPE SUPPORT AT CMU WALL

NO SCALE

4  
M-503

PREPARED FOR THE  
**GROSSMONT UNION HIGH SCHOOL DISTRICT**  
P.O. BOX 1048  
LA MESA, CALIFORNIA

PREPARED BY  
**PLATT/WHITEHAW ARCHITECTS, INC.**  
4034 30TH STREET  
SAN DIEGO, CA 92106-4328 FAX (619) 440-4860

DATE: 04/15/2017  
FILE: 16432.501  
AC: 16432.501  
DATE: 04/27/17

4/18/17

MECHANICAL DETAILS  
CENTRAL PLANT EQUIPMENT UPGRADE  
VALHALLA HIGH SCHOOL  
1725 HILLSDALE ROAD  
EL CAJON, CA 92019

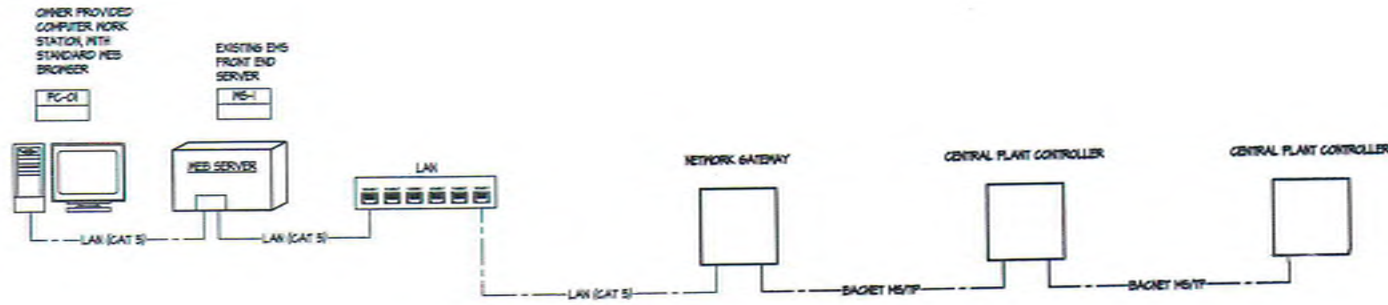
PROJECT NO. PWA 1606110  
FILE NAME:  
DATE: 4/14/2017  
DRAWN: ELPS  
CHECKED: CRMR  
**M-503**  
SHEET NO. 1 OF 5 SHEETS

**TURPIN & RATTAN**  
ENGINEERS, INC.  
CONSULTING ENGINEERS  
4710 PALM AVENUE  
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619 / 455 / 6224 FAX 655 / 6230  
E-MAIL: ENGINEER@TRC200.COM  
TREC PROJECT # 16432.501

REVISION

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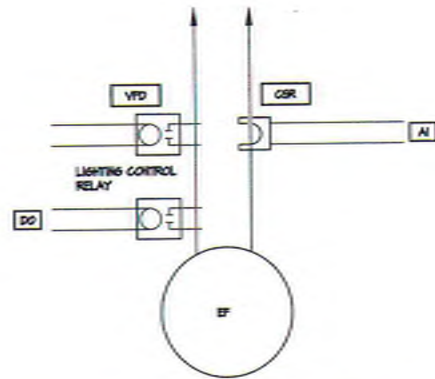




## HVAC CONTROL SYSTEM ARCHITECTURE

NO SCALE

1  
M-601



## CHILLER ROOM EXHAUST FAN CONTROL (EF-1)

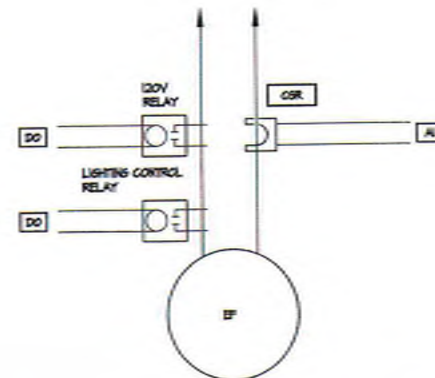
NO SCALE

DDC HARDWARE I/O POINT LIST					
POINT DESCRIPTION	AI	DI	AO	DO	
EF-1 FAN VFD START/STOP				X	
EF-1 FAN VFD BACNET INTERFACE	X				
EF-1 FAN VFD SPEED COMMAND			X		
EF-1 FAN CURRENT SENSOR	X				
CHILLER ROOM TEMPERATURE	X				
CHILLER ROOM LIGHTING CONTROL		X			
CHILLER ROOM REFRIGERANT ALARM - LEVEL 1	X				
CHILLER ROOM REFRIGERANT ALARM - LEVEL 2	X				
POINT TOTALS	AI	DI	AO	DO	
	8	1	1	1	

### SEQUENCE OF OPERATION

1. START/STOP:
  - 1.1. THE EXHAUST FAN VFD SHALL MODULATE TO MAINTAIN THE RESPECTIVE ROOM TEMPERATURE SETPOINT OF 85°F (ADJ.). MINIMUM VFD SPEED SHALL BE 30 Hz. FAN SHALL DE-ENERGIZE WHEN ROOM TEMPERATURE IS BELOW SETPOINT AT MINIMUM SPEED.
  - 1.2. THE EXHAUST FAN SHALL ENERGIIZE AND THE VFD SHALL OPERATE AT 60 Hz UPON DETECTION OF A REFRIGERANT LEAK.
2. LIGHTING CONTROL INTERLOCK:
  - 2.1. THE EXHAUST FAN SHALL BE INTERLOCKED TO THE LIGHTING CONTROL SYSTEM OF THE ZONE IT IS SERVING. THE EXHAUST FAN SHALL BE COMMANDED ON WHEN THE LIGHTING IN THE ZONE IS ON. LIGHTING INTERLOCK SHALL OPERATE INDEPENDENT OF ROOM TEMPERATURE CONTROL.
3. ALARM:
  - 3.1. WHEN THE FAN IS ENERGIIZED, THE FAN STATUS SHALL BE DETERMINED BY THE CURRENT SENSING RELAY. AFTER AN OPERATOR DEFINABLE FEEDBACK TIME DELAY, IF THE MINIMUM CURRENT LEVEL IS NOT OBTAINED, AN ALARM SHALL BE GENERATED TO THE ENCS.
  - 3.2. UPON DETECTION OF A REFRIGERANT LEAK, AN ALARM SHALL BE GENERATED TO THE ENCS.

3  
M-601



## TYPICAL EXHAUST FAN CONTROL (EF-2 AND EF-3)

NO SCALE

DDC HARDWARE I/O POINT LIST					
POINT DESCRIPTION	AI	DI	AO	DO	
EF-2 START/STOP				X	
EF-2 CURRENT	X				
BOILER ROOM TEMPERATURE	X				
BOILER ROOM LIGHTING CONTROL		X			
EF-3 START/STOP				X	
EF-3 CURRENT	X				
ELECTRICAL ROOM TEMPERATURE	X				
ELECTRICAL ROOM LIGHTING CONTROL		X			
POINT TOTALS	AI	DI	AO	DO	
	4	2	2	2	

### SEQUENCE OF OPERATION

1. START/STOP:
  - 1.1. THE EXHAUST FAN SHALL START AND STOP TO MAINTAIN THE RESPECTIVE ROOM TEMPERATURE SETPOINT OF 85°F (ADJ.).
2. LIGHTING CONTROL INTERLOCK:
  - 2.1. THE EXHAUST FAN SHALL BE INTERLOCKED TO THE LIGHTING CONTROL SYSTEM OF THE ZONE IT IS SERVING. THE EXHAUST FAN SHALL BE COMMANDED ON WHEN THE LIGHTING IN THE ZONE IS ON. LIGHTING INTERLOCK SHALL OPERATE INDEPENDENT OF ROOM TEMPERATURE CONTROL.
3. ALARM:
  - 3.1. WHEN THE FAN IS ENERGIIZED, THE FAN STATUS SHALL BE DETERMINED BY THE CURRENT SENSING RELAY. AFTER AN OPERATOR DEFINABLE FEEDBACK TIME DELAY, IF THE MINIMUM CURRENT LEVEL IS NOT OBTAINED, AN ALARM SHALL BE GENERATED TO THE ENCS.

3  
M-601

PREPARED FOR THE  
**GROSSMONT UNION HIGH SCHOOL DISTRICT**  
P.O. BOX 1048  
LA MESA, CALIFORNIA

PREPARED BY  
**PLATT/WHITE LAW ARCHITECTS, INC.**  
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CONTRACTOR'S STAMP  
DIV. OF THE STATE ARCHITECT  
OFFICE OF REGULATION SERVICES  
04-115530  
FILE # 07-14  
DATE 04/27/17

PROFESSIONAL ENGINEER  
NO. 43341  
EXP. 8/31/18  
A/18/17

**MECHANICAL CONTROLS**  
CENTRAL PLANT EQUIPMENT UPGRADE  
VALHALLA HIGH SCHOOL  
1725 HILLSDALE ROAD  
EL CAJON, CA 92019

PROJECT NO. FWA 4036-10  
FILE NAME:  
DATE 4/14/2017 DRAWN: EL/PS  
CHECKED: CR/MR  
**M-601**  
SHEET NO. OF SHEETS

**TURPIN & RATTAN**  
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TRR PROJECT # 16432.501



CENTRAL PLANT DDC HARDWARE I/O POINT LIST				
POINT DESCRIPTION	AI	DI	AO	DO
GH-1 START/STOP				X
GH-1 CHILLED WATER SUPPLY TEMPERATURE RESET			X	
GH-1 CHM MOTORIZED ISOLATION VALVE COMMAND				X
GH-1 CHM MOTORIZED ISOLATION VALVE POSITION FEEDBACK	X			
GH-1 CHM SUPPLY TEMPERATURE	X			
GH-1 CHM RETURN TEMPERATURE	X			
GH-1 EVAPORATOR DIFFERENTIAL PRESSURE	X			
GH-1 CHM MOTORIZED ISOLATION VALVE COMMAND				X
GH-1 CHM MOTORIZED ISOLATION VALVE POSITION FEEDBACK	X			
GH-1 CHM SUPPLY TEMPERATURE	X			
GH-1 CHM RETURN TEMPERATURE	X			
GH-1 CHM BUCKET INTERFACE	X			
P-1 CHM PUMP START/STOP				X
P-1 CHM PUMP BUCKET INTERFACE	X			
P-1 CHM PUMP SPEED COMMAND				X
P-1 CHM PUMP CURRENT SENSOR	X			
GH-2 START/STOP				X
GH-2 CHILLED WATER SUPPLY TEMPERATURE RESET			X	
GH-2 CHM MOTORIZED ISOLATION VALVE COMMAND				X
GH-2 CHM MOTORIZED ISOLATION VALVE POSITION FEEDBACK	X			
GH-2 CHM SUPPLY TEMPERATURE	X			
GH-2 CHM RETURN TEMPERATURE	X			
GH-2 EVAPORATOR DIFFERENTIAL PRESSURE	X			
GH-2 CHM MOTORIZED ISOLATION VALVE COMMAND				X
GH-2 CHM MOTORIZED ISOLATION VALVE POSITION FEEDBACK	X			
GH-2 CHM SUPPLY TEMPERATURE	X			
GH-2 CHM RETURN TEMPERATURE	X			
GH-2 BUCKET INTERFACE	X			
P-2 CHM PUMP START/STOP				X
P-2 CHM PUMP BUCKET INTERFACE	X			
P-2 CHM PUMP SPEED COMMAND				X
P-2 CHM PUMP CURRENT SENSOR	X			
CHM LOOP SUPPLY TEMPERATURE	X			
CHM LOOP RETURN TEMPERATURE	X			
POINT TOTALS	AI	DI	AO	DO
	18	4	4	8

CENTRAL PLANT DDC HARDWARE I/O POINT LIST				
POINT DESCRIPTION	AI	DI	AO	DO
B-1 START/STOP				X
B-1 HEATING HOT WATER SUPPLY TEMPERATURE RESET			X	
B-1 HHM MOTORIZED ISOLATION VALVE COMMAND				X
B-1 HHM MOTORIZED ISOLATION VALVE POSITION FEEDBACK	X			
B-1 HHM SUPPLY TEMPERATURE	X			
B-1 HHM RETURN TEMPERATURE	X			
B-1 ALARM	X			
B-1 BUCKET INTERFACE	X			
B-2 START/STOP				X
B-2 HEATING HOT WATER SUPPLY TEMPERATURE RESET			X	
B-2 HHM MOTORIZED ISOLATION VALVE COMMAND				X
B-2 HHM MOTORIZED ISOLATION VALVE POSITION FEEDBACK	X			
B-2 HHM SUPPLY TEMPERATURE	X			
B-2 HHM RETURN TEMPERATURE	X			
B-2 ALARM	X			
B-2 BUCKET INTERFACE	X			
B-3 START/STOP				X
B-3 HEATING HOT WATER SUPPLY TEMPERATURE RESET			X	
B-3 HHM MOTORIZED ISOLATION VALVE COMMAND				X
B-3 HHM MOTORIZED ISOLATION VALVE POSITION FEEDBACK	X			
B-3 HHM SUPPLY TEMPERATURE	X			
B-3 HHM RETURN TEMPERATURE	X			
B-3 ALARM	X			
B-3 BUCKET INTERFACE	X			
P-3 HHM PUMP START/STOP				X
P-3 HHM PUMP BUCKET INTERFACE	X			
P-3 HHM PUMP SPEED COMMAND				X
P-3 HHM PUMP CURRENT SENSOR	X			
P-4 HHM PUMP START/STOP				X
P-4 HHM PUMP BUCKET INTERFACE	X			
P-4 HHM PUMP SPEED COMMAND				X
P-4 HHM PUMP CURRENT SENSOR	X			
HHM LOOP SUPPLY TEMPERATURE	X			
HHM LOOP RETURN TEMPERATURE	X			
POINT TOTALS	AI	DI	AO	DO
	18	4	4	8

CENTRAL PLANT DDC HARDWARE I/O POINT LIST				
POINT DESCRIPTION	AI	DI	AO	DO
CT-1 FAN VFD START/STOP				X
CT-1 FAN VFD BUCKET INTERFACE	X			
CT-1 FAN VFD SPEED COMMAND				X
CT-1 FAN CURRENT SENSOR	X			
CT-1 BASIN LOW LEVEL ALARM			X	
CT-1 BASIN HIGH LEVEL ALARM			X	
CT-1 CH SUPPLY TEMPERATURE	X			
CT-1 CH RETURN TEMPERATURE	X			
CT-2 FAN VFD START/STOP				X
CT-2 FAN VFD BUCKET INTERFACE	X			
CT-2 FAN VFD SPEED COMMAND				X
CT-2 FAN CURRENT SENSOR	X			
CT-2 BASIN LOW LEVEL ALARM			X	
CT-2 BASIN HIGH LEVEL ALARM			X	
CT-2 CH SUPPLY TEMPERATURE	X			
CT-2 CH RETURN TEMPERATURE	X			
P-5 CH PUMP START/STOP				X
P-5 CH PUMP BUCKET INTERFACE	X			
P-5 CH PUMP SPEED COMMAND				X
P-5 CH PUMP CURRENT SENSOR	X			
P-4 CH PUMP START/STOP				X
P-4 CH PUMP BUCKET INTERFACE	X			
P-4 CH PUMP SPEED COMMAND				X
P-4 CH PUMP CURRENT SENSOR	X			
CH LOOP SUPPLY TEMPERATURE	X			
CH LOOP RETURN TEMPERATURE	X			
CHM FLOW METER	X			
CHM MOTORIZED BYPASS VALVE COMMAND				X
CHM MOTORIZED BYPASS VALVE POSITION FEEDBACK	X			
POINT TOTALS	AI	DI	AO	DO
	28	4	4	8

## CHILLED WATER SYSTEM SEQUENCE OF OPERATION

- The CHM system will be enabled when any AHU fan system is running and any fan system chilled water valve is above 50% open. The CHM system will be disabled when all AHU fan systems are off and all fan system chilled water valves are less than 10% open for more than 20 minutes. System has a minimum off time of 50 minutes.
- When the CHM system is enabled -
  - The lead chiller, GH-1 or 2, will be enabled.
  - The lag chiller, GH-1 or 2, will be enabled when the lead chiller SFLA exceeds 60% for 15 minutes or the lead chiller reports a Fault Code. The lag chiller will be disabled when the lead chiller SFLA drops below 60% for 10 minutes and there is no Fault Code reported by the lead chiller.
  - The chiller will operate to maintain the CHM supply temperature at setpoint, 42.0 deg F (adj).
  - The bypass valve will be modulated to maintain the minimum CHM flow through the operating chiller.
  - The lead and lag chillers will alternate on a weekly basis to equalize runtime on the chillers.
  - If the chilled water supply temperature rises 3 deg F or more above the chilled water temperature setpoint and the difference between the chilled water supply temperature and chilled water return temperature is less than 4 deg F for 20 minutes then the lead chiller will be disabled and the lag chiller will become the lead chiller and an alarm will be generated. This condition will remain in effect until the alarm is acknowledged and the condition is manually reset by the operator.
- Chilled Water Pumps, GHM1/GHM2
  - The lead CHM pump will be started when at least one chiller GHM isolation valve is commanded open. The lead CHM pump will stop when both chiller GHM isolation valves are commanded closed.
  - The lag CHM pump will be started when either the lead CHM pump fails to run or the lead pump is running at 45% speed or higher for 10 minutes. The pumps will run at the same speed. The lag CHM pump will stop when the pump speeds drop below 40%.
  - The speed of the CHM pumps will be modulated to maintain the CHM differential pressure at setpoint.
  - The CHM system differential pressure setpoint will be incremented 1.0 psid every 1 minute when any AHU fan system CHM control valve is open more than 50%.
  - The CHM system differential pressure setpoint will be decremented 1.0 psid every 5 minutes when all of the AHU fan system CHM control valves are less than 50% open.
  - The CHM system differential pressure setpoint will be limited to a minimum of 12.0 psid and a maximum of 25.0 psid.
  - The lead and lag pumps will alternate on a weekly basis to equalize runtime on the pumps.
- Cooling Tower Fans, CT-1 & CT-2
  - The lead cooling fans will be enabled when either of the two chillers is enabled. The two cooling tower fans will be disabled when both chillers are disabled and both chillers indicate an EOL condition.
  - When a cooling tower is enabled -
    - Its isolation valves will be opened.
    - Both the tower fan VFDs will be started when the condenser water temperature rises above the condenser water setpoint. The tower fan VFDs will be stopped when the condenser water temperature drops 2 deg F below the condenser water setpoint with the tower fans operating at minimum speed.
    - The speed of the tower fans will be modulated to maintain the condenser water temperature at setpoint.
  - When a cooling tower is disabled -
    - Its isolation valves will be closed.
    - The tower fan VFDs will be stopped.
  - The lag CT will be started when either the lead CT fan fails to run or the lead fan is running at 45% speed or higher for 10 minutes. All fans will run at the same speed. The lag CT will stop when the fan speeds drop below 40%.
  - The lead and lag CTs will alternate on a weekly basis to equalize runtime on the fans.
  - The condenser water temperature setpoint will be set to the value of the coldest outside air wetbulb plus an operator defined offset.
  - The condenser water setpoint will be limited to a minimum of the chilled water return temperature plus 5 deg F.
  - The condenser water setpoint will be limited to a maximum of 85 deg F.
  - The outside air wetbulb will be calculated every 15 minutes from the measured outside air drybulb temperature and the measured outside air relative humidity.
- Condenser Water Pumps, GHM1, GHM2
  - The lead CHM pump will be started when one chiller GHM isolation valve is commanded open and at least one pair of cooling tower isolation valves are commanded open. The lag CHM pump will be started when the second chiller GHM isolation valve is commanded open. The lag CHM pump will be stopped when the second chiller GHM isolation valve is commanded closed. The lead CHM pump will stop when both chiller GHM isolation valves are commanded closed or both sets of cooling tower isolation valves are commanded closed.
  - The lead and lag pumps will alternate on a weekly basis to equalize runtime on the pumps.

- Pump and CHM System Alarms
  - Pump not in RUN/ON.
  - Pump on/off status does not match pump on/off command 30 seconds after pump command is issued.
  - Pump VFD alarm reported by VFD.
  - System differential pressure exceeds user defined low limit setpoint or high limit setpoint when the large CHM system is enabled. This alarm will be disabled for the first 15 minutes the large CHM system is enabled.
  - Chilled water system supply temperature exceeds user defined low limit setpoint or high limit setpoint.
  - Condenser water system supply temperature exceeds user defined low limit setpoint or high limit setpoint.
  - Chiller alarm as reported by the chiller.
  - VFD alarm as reported by the VFD. In the case of the cooling tower fans this will also report the vibration switch has activated.

## HEATING HOT WATER SYSTEM SEQUENCE OF OPERATION

- The HHM system will be enabled when any AHU fan system is running. The HHM system will be disabled when all AHU fan systems are off.
- When the HHM system is enabled -
  - The lead HHM pump will run continuously.
  - The lag HHM pump will be started when either the lead HHM pump fails to run or the lead pump runs is running at above 40% for 5 minutes.
  - When both pumps are running they shall run at the same speed to maintain the differential pressure setpoint.
  - When both pumps are running below 40% for more than 5 minutes, disable the lag pump and return to single pump operation.
  - The speed of the HHM pumps will be modulated to maintain the HHM differential pressure at setpoint.
  - The HHM system differential pressure setpoint will be incremented 1.0 psid every 1 minute when any HHM control valve is open more than 50%.
  - The HHM system differential pressure setpoint will be decremented 1.0 psid every 5 minutes when all HHM control valves are less than 50% open.
  - The HHM system differential pressure setpoint will be limited to a minimum of 12.0 psid and a maximum of 20.0 psid.
  - The HHM system bypass valve will be used as a safety to relieve any differential pressure. If the differential pressure rises 5 psid above setpoint, modulate the valve open to maintain a differential setpoint 5 psid above the pump setpoint.
  - The lead boiler will be enabled when the lead boiler is unable to meet the HHM temperature setpoint for 5 minutes (disabled for the first 50 minutes of operation).
  - The lag 1 boiler will be enabled when the lead boiler is unable to meet the HHM temperature setpoint for 5 minutes (disabled for the first 50 minutes of operation).
  - The lag 2 boiler will turn off after the HHM setpoint has been maintained for 15 minutes and no heating hot water valve is more than 40% open.
  - The lag 1 boiler will turn off after the HHM setpoint has been maintained for 15 minutes and no heating hot water valve is more than 50% open.
  - The boilers will be given a leaving temperature setpoint as defined below.
  - The leaving water setpoint will be incremented 1.0°F every 5 minutes when any HHM control valve is open more than 50%.
  - The leaving water setpoint will be decremented 1.0°F every 10 minutes when all of the HHM control valves are less than 50% open.
  - The boiler leaving water temperature setpoint will be limited to a minimum of 100°F and a maximum of 160°F.

- HHM System Alarms
  - Pump not in RUN/ON.
  - Pump on/off status does not match pump on/off command 30 seconds after pump command is issued.
  - Pump VFD alarm reported by VFD.
  - System differential pressure exceeds user defined low limit setpoint or high limit setpoint when the HHM system is enabled. This alarm will be disabled when for the first 15 minutes the HHM system is enabled.
  - System supply temperature exceeds user defined low limit setpoint or high limit setpoint. This alarm will be disabled when for the first 30 minutes the HHM system is enabled.

DAVID J. TURPIN  
No. 13347  
Exp. 03/31/18  
Mechanical Engineering  
State of California

MECHANICAL CONTROLS

CENTRAL PLANT EQUIPMENT UPGRADE

VALHALLA HIGH SCHOOL

1725 HILLSDALE ROAD

EL CAJON, CA 92019

PROJECT NO. FMA 1056.10

FILE NAME:

DATE: 4/14/2017 DRAWN: ELPS CHECKED: GRMR

M-602

SHEET NO. 1 OF 1 SHEETS

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TREI PROJECT # 16432.SD1

GROSSMONT UNION HIGH SCHOOL DISTRICT

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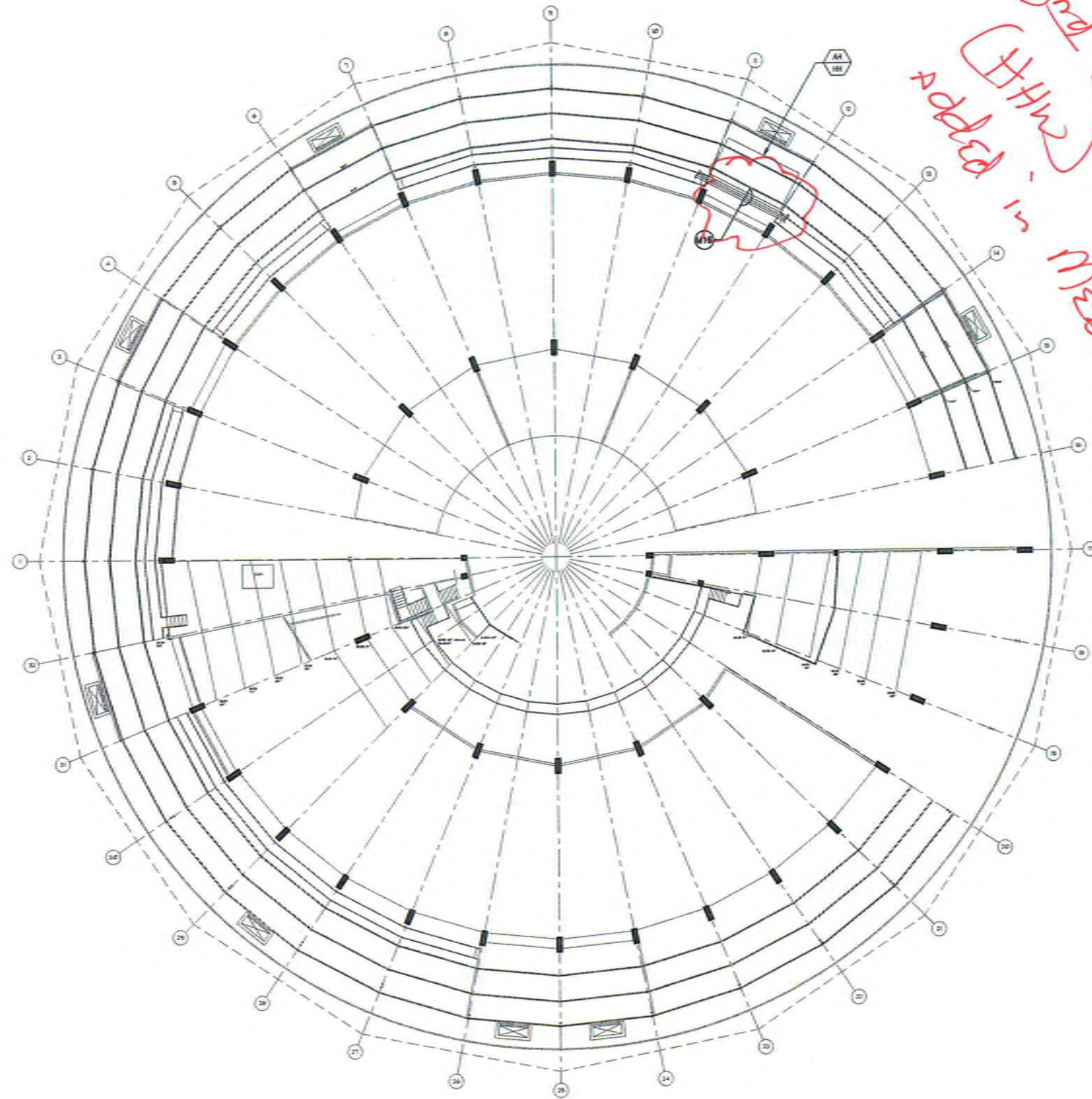
PLATT/WHITELEW ARCHITECTS, INC.

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**KEYNOTE**  
EXISTING CHASER AND HTR/HR PIPING. PROVIDE DIFFERENTIAL PRESSURE SENSORS IN PIPING SUB-MANS. FIELD VERIFY EXACT LOCATION.

<b>PREPARED FOR THE</b> GROSSMONT UNION HIGH SCHOOL DISTRICT P.O. BOX 1048 LA MESA, CALIFORNIA	
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<b>UNIVERSITY MICROFILMS</b> SERIALS ACQUISITION 300 N ZEEB RD ANN ARBOR MI 48106-1500 AC 04-155300 DATE 04/27/17	<b>FILE #</b> 04-155300 <b>DATE</b> 04/27/17
<b>MECHANICAL CONTROLS</b>	
<b>CENTRAL PLANT EQUIPMENT UPGRADE</b>	
VALHALLA HIGH SCHOOL 1725 HILLSDALE ROAD EL CAJON, CA 92019	
<b>PROJECT NO.</b> FVA 16432	<b>FILE NAME</b>
<b>DATE</b> 4/16/2017	<b>DRAWN</b> ELPS <b>CHECKED</b> CRMR
<b>M-603</b>	
<b>SHEET NO. 1 OF 1 SHEETS</b>	

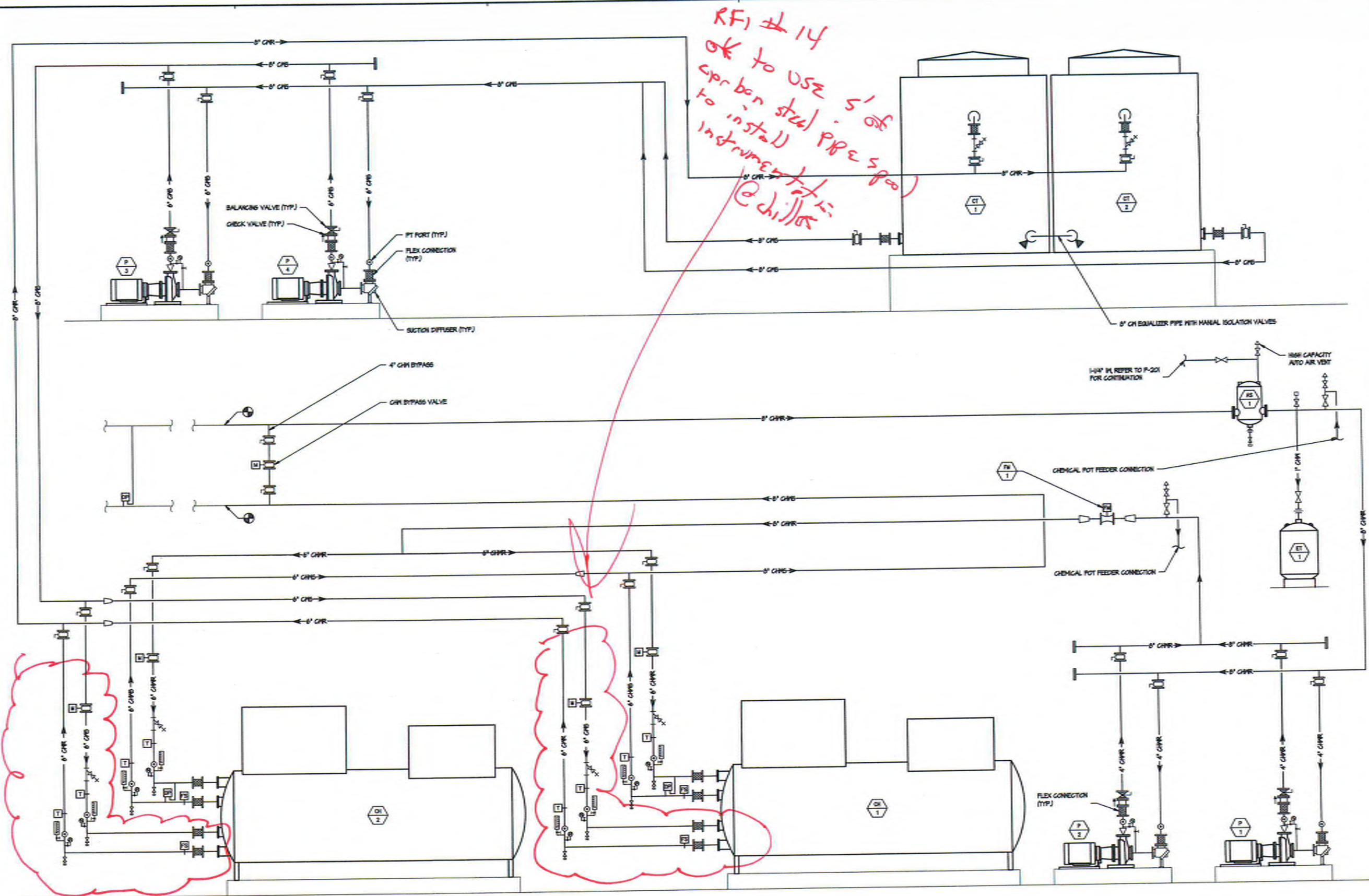
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TREC PROJECT # 16432.S01

CLASSROOM BUILDING LEVEL 400 MEZZANINE OVERALL PLAN  
NO SCALE

1  
M-603



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RFI # 14  
OK to use 5' of  
carbon steel pipe spec  
to install P&E spec  
instrumentation  
@ chiller

CHILLED WATER AND CONDENSER WATER FLOW DIAGRAM  
NO SCALE

1  
M-701

**TURPIN & RATTAN**  
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TREI PROJECT # 16432.S01

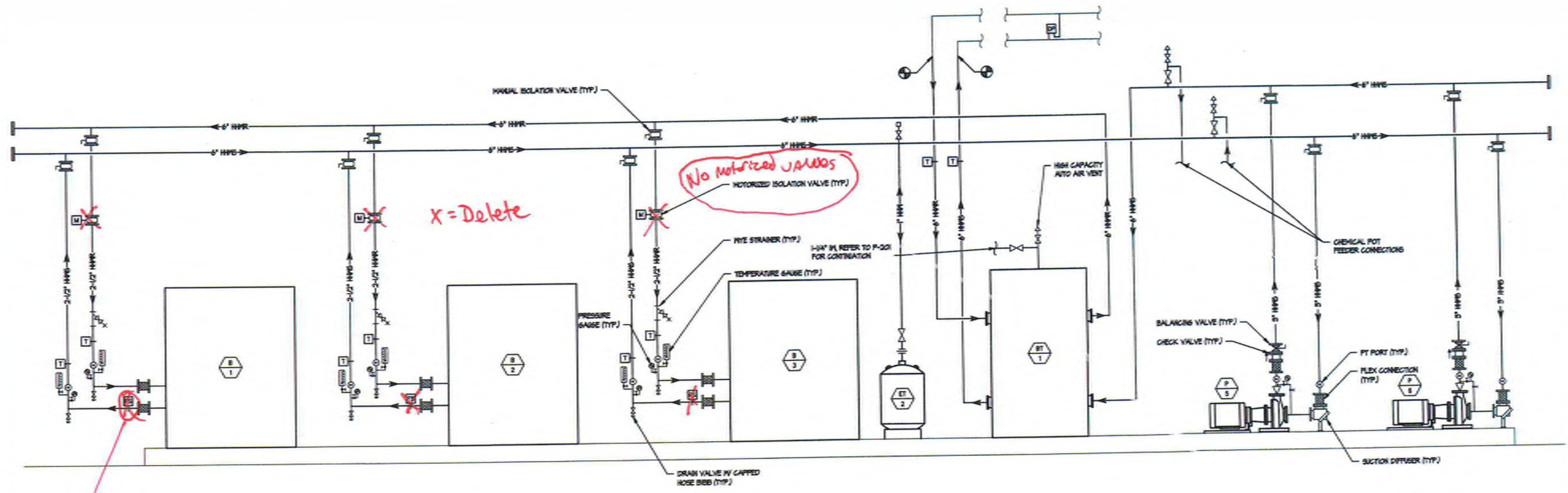
<b>PREPARED FOR THE</b> <b>GROSSMONT UNION HIGH SCHOOL DISTRICT</b> P.O. BOX 1048 LA MESA, CALIFORNIA	
<b>PREPARED BY</b> <b>PLATT/WHITEAW ARCHITECTS, INC.</b> 4034 30TH STREET SAN DIEGO, CA 92104-4326 FAX (619) 540-4360	
<b>ENGINEERING TEAM</b> TWO GRADE ARCHITECT OFFICE OF REGULATION SERVICES 04-15930 FILE NO. 042717 DATE 4/18/17	<b>MECHANICAL PIPING DIAGRAMS</b>
<b>CENTRAL PLANT EQUIPMENT UPGRADE</b> VALHALLA HIGH SCHOOL 1725 HILLSDALE ROAD EL CAJON, CA 92019	
<b>PROJECT NO.</b> PMA 006130	<b>FILE NAME</b>
<b>DATE</b> 4/18/2017	<b>DRAWN</b> ELPS
	<b>CHECKED</b> GRMR
<b>M-701</b>	
<b>SHEET NO. 1 OF 1 SHEETS</b>	



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No Flow switches  
they are in the  
interior

See  
for  
RFI # 30  
Sensor modification



HEATING HOT WATER FLOW DIAGRAM  
NO SCALE

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PREPARED FOR THE OFFICE OF FACILITIES SERVICES FILE NO. 04-10530 AC. FILED BY DATE 04/27/17	
MECHANICAL PIPING DIAGRAMS CENTRAL PLANT EQUIPMENT UPGRADE VALHALLA HIGH SCHOOL 1725 HILLSDALE ROAD EL CAJON, CA 92019	
PROJECT NO. FMA 10561.0 FILE NAME: DATE 4/14/2017 DRAWN: ELPS CHECKED: GRMR <b>M-702</b> SHEET NO. 1 OF 1 SHEETS	

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TREI PROJECT # 16432.S01



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TEL PRO-JECT # 16432.S01



## PIPING NOTES

### PIPING

- ALL PIPE SUPPORTS, CLAMPS, HANGERS AND BRACKETS SHALL HAVE INTEGRAL NOISE ISOLATORS. PENETRATIONS OF ANY UNRAISED FRAMING OR STRUCTURAL MEMBER, INCLUDING BUT NOT LIMITED TO STUDS, JOISTS AND RAFTERS, SHALL HAVE SOUND ISOLATED INSERTION CLAMPS. HUBBARD HOLDRITE SILENCER SYSTEM OR EQUAL.
- ALL PIPING PENETRATING RATED WALLS OR FLOORS SHALL HAVE FIRESTOPPING ASSEMBLY MATCHING WALL RATING PER DETAIL VM-805. FOR LOCATIONS OF RATED WALLS SEE FLOOR PLAN LEGENDS AND ARCHITECTURAL DRAWINGS.
- PIPING PENETRATING FOUNDATION WALLS SHALL BE PROVIDED WITH STANDARD WEIGHT GALVANIZED STEEL PIPE SLEEVES TWO PIPE SIZES LARGER THAN PIPE PASSING THRU AND WITH VOID FILLED WITH MANUFACTURED SLEEVE SEAL SYSTEM (METAFLEX OR EQUAL).
- ALL PIPING PENETRATING FOUNDATION WALLS & FLOORS OR WHICH WILL COME INTO DIRECT CONTACT WITH CONCRETE SHALL BE PROVIDED WITH POLYETHYLENE PIPE SHIELDING INSTALLED PER THE MANUFACTURER'S RECOMMENDATIONS. NORSTON "POLYTRAP" AND "POLYTRAP-C" OR EQUAL.
- IN ADDITION TO THE SPECIFICATION REQUIREMENTS FOR SUPPORTS AND THEIR SPACING PROVIDE THE FOLLOWING: HANGERS AND SUPPORTS WITHIN 12" OF EACH ELBOW, TEE AND JOINT FOR ALL PIPING; SUPPORTS WITHIN 12" OF EACH COUPLING FOR 3" AND SMALLER CAST IRON PIPE; SUPPORTS ON BOTH SIDES OF EACH COUPLING FOR 4" AND LARGER CAST IRON PIPE.

## MEP COMPONENT ANCHORAGE NOTE

ALL MECHANICAL, PLUMBING, AND ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER THE DETAILS ON THE DSA APPROVED CONSTRUCTION DOCUMENTS. WHERE NO DETAIL IS INDICATED, THE FOLLOWING COMPONENTS SHALL BE ANCHORED OR BRACED TO MEET THE FORCE AND DISPLACEMENT REQUIREMENTS PRESCRIBED IN THE 2016 CBC, SECTIONS 18B4.02 THROUGH 18B4.05 AND ASCE 7-10 CHAPTER 15.26 AND 50.

- ALL PERMANENT EQUIPMENT AND COMPONENTS.
- TEMPORARY OR MOVABLE EQUIPMENT THAT IS PERMANENTLY ATTACHED (E.G. HARD WIRES) TO THE BUILDING UTILITY SERVICES SUCH AS ELECTRICITY, GAS OR WATER.
- MOVABLE EQUIPMENT WHICH IS STATIONED IN ONE PLACE FOR MORE THAN 6 HOURS AND HEAVIER THAN 400 POUNDS ARE REQUIRED TO BE ANCHORED WITH TEMPORARY ATTACHMENTS.

THE FOLLOWING MECHANICAL AND ELECTRICAL COMPONENTS SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE, BUT THE ATTACHMENT NEED NOT BE DETAILED ON THE PLANS. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK, PIPING AND CONDUIT.

- COMPONENTS WEIGHING LESS THAN 400 POUNDS AND HAVE A CENTER OF MASS LOCATED 4 FEET OR LESS ABOVE THE ADJACENT FLOOR OR ROOF LEVEL, THAT DIRECTLY SUPPORT THE COMPONENT.
- COMPONENTS WEIGHING LESS THAN 20 POUNDS, OR IN THE CASE OF DISTRIBUTED SYSTEMS, LESS THAN 5 POUNDS PER FOOT, WHICH ARE SUPPORTED FROM A ROOF OR FLOOR OR HANG FROM A WALL.

FOR THOSE ELEMENTS THAT DO NOT REQUIRE DETAILS ON THE APPROVED DRAWINGS, THE INSTALLATION SHALL BE SUBJECT TO THE APPROVAL OF THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE OR STRUCTURAL ENGINEER DELEGATED RESPONSIBILITY AND THE DSA DISTRICT STRUCTURAL ENGINEER. THE PROJECT INSPECTOR WILL VERIFY THAT ALL COMPONENTS AND EQUIPMENT HAVE BEEN ANCHORED IN ACCORDANCE WITH ABOVE REQUIREMENTS.

### PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEM BRACING NOTE

PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEMS SHALL BE BRACED TO COMPLY WITH THE FORCES AND DISPLACEMENTS PRESCRIBED IN ASCE 7-10 SECTION 15.5 AS DEFINED IN ASCE 7-10 SECTION 15.5.1, 15.5.2, 15.5.3, AND 2016 CBC, SECTIONS 18B4.02, 18B4.03, 18B4.04, AND 18B4.05.

THE METHOD OF SHOWING BRACING AND ATTACHMENTS TO THE STRUCTURE FOR IDENTIFIED DISTRIBUTION SYSTEMS ARE AS NOTED BELOW. WHEN BRACING AND ATTACHMENTS ARE BASED ON A PRE-APPROVED INSTALLATION GUIDE (E.G. SHACMA OR OSFPD OPM), COPIES OF THE BRACING SYSTEM INSTALLATION GUIDE OR MANUAL SHALL BE AVAILABLE ON THE JOBSITE PRIOR TO THE START OF AND DURING THE HANGING AND BRACING OF THE DISTRIBUTION SYSTEMS. THE STRUCTURAL ENGINEER OF RECORD SHALL VERIFY THE ADEQUACY OF THE STRUCTURE TO SUPPORT THE HANGING AND BRACE LOADS.

MECHANICAL PIPING (MP), MECHANICAL DUCTS (MD), PLUMBING PIPING (PP), ELECTRICAL DISTRIBUTION SYSTEMS (ES)

MP □ MD □ PP □ ES □ - OPTION 1: DETAILED ON THE APPROVED DRAWINGS WITH PROJECT SPECIFIC NOTES AND DETAILS.

MP □ MD □ PP □ ES □ - OPTION 2: SHALL COMPLY WITH THE APPLICABLE OSFPD PRE-APPROVAL (OPM) # \_\_\_\_\_

MP □ MD □ PP □ ES □ - OPTION 3: SHALL COMPLY WITH SHACMA SEISMIC RESTRAINT MANUAL, OSFPD EDITION (2006), INCLUDING ANY ADDENDA, FASTENERS AND OTHER ATTACHMENTS NOT SPECIFICALLY IDENTIFIED IN THE SHACMA SEISMIC RESTRAINT MANUAL, OSFPD EDITION, ARE DETAILED ON THE APPROVED DRAWINGS WITH PROJECT SPECIFIC NOTES AND DETAILS. THE DETAILS SHALL ACCOUNT FOR THE APPLICABLE SEISMIC HAZARD LEVEL: \_\_\_\_\_ AND CONNECTION LEVEL: \_\_\_\_\_ FOR THE PROJECT AND CONDITIONS.

## GENERAL NOTES

### GENERAL NOTES

- ALL WORK OF THIS SECTION SHALL FULLY CONFORM TO THE REQUIREMENTS OF THE 2016 CALIFORNIA PLUMBING CODE (C.P.C.), 2016 CALIFORNIA BUILDING CODE (C.B.C.), 2016 CALIFORNIA MECHANICAL CODE (C.M.C.), CALIFORNIA ADMINISTRATIVE CODE TITLE 24, THE CALIFORNIA GREEN STANDARDS MODEL CODE, THE AMERICAN SOCIETY OF TESTING AND MATERIALS AND APPLICABLE NFPA STANDARDS.
- SUBSTITUTIONS, BIDDERS DESIRING TO OBTAIN APPROVAL OF AN ARTICLE, DEVICE, PRODUCT, MATERIAL, FUTURE, FORM OR TYPE OF CONSTRUCTION OTHER THAN THOSE SPECIFIED BY NAME, MAKE OR CATALOG NUMBER, SHALL REQUEST WRITTEN APPROVAL FROM THE ARCHITECT NOT LESS THAN TEN (10) DAYS BEFORE THE BID DUE DATE.
- THE SPECIFICATIONS ARE AN INTEGRAL PART OF THESE DOCUMENTS AND THE REQUIREMENTS THEREIN MUST BE INCLUDED IN THE INTERPRETATION OF THE DRAWINGS AND IMPLEMENTATION OF WORK.
- AREA SEPARATION WALLS: WHERE PLUMBING PENETRATES THE AREA SEPARATION WALL SURFACE, THE SECTION PASSING THROUGH THE WALL SURFACE AND THE FUTURE CONNECTIONS ATTACHED THERETO, SHALL BE ONLY OF METAL.

### UTILITY NOTES

- CONTRACTOR SHALL VERIFY ALL POINT OF CONNECTIONS PRIOR TO INSTALLATION OF ANY PIPING.
- LOCATIONS AND DEPTHS OF EXISTING UNDERGROUND UTILITIES AND OTHER UNDERGROUND OBSTRUCTIONS AND CONDITIONS ARE GENERALLY UNKNOWN AND IF SHOWN ARE AT APPROXIMATE LOCATIONS. CONTRACTOR SHALL HIRE A UTILITY LOCATING SERVICE TO LOCATE ALL EXISTING PLUMBING AND OTHER UNDERGROUND UTILITIES PRIOR TO DIGGING. VERIFY EXACT LOCATION SIZE AND EXTENT OF ALL OBSTRUCTIONS AND OTHER CONDITIONS WHICH MAY AFFECT THE PROPOSED WORK. UNDER THE PROJECT, TAKE EVERY PRECAUTION TO PREVENT DAMAGE TO EXISTING WORK, INCLUDING HAND DIGGING AROUND EXISTING UTILITIES, TREE ROOT SYSTEMS, AND LANDSCAPE FEATURES. ANY DAMAGE TO EXISTING UTILITIES OR STRUCTURES SHALL BE IMMEDIATELY REPAIRED OR REPLACED IN ACCORDANCE WITH THE CLIENT'S DIRECTION AT THE CONTRACTOR'S EXPENSE.
- CONTRACTOR SHALL EXERCISE EXTREME CARE TO AVOID DAMAGE IN EXPOSING UNDERGROUND SERVICES. IN ADDITION TO WHAT IS NOTED ABOVE, THE CONTRACTOR SHOULD REQUEST THAT UTILITY AGENCIES LOCATE AND MARK ANY UNDERGROUND PIPING OR CABLES THAT MAY BE IN THE AREA OF WORK. WHERE AN UNDERGROUND FACILITY IS ENCOUNTERED PRIOR TO BE SHOWN ON THE PLANS OR MENTIONED IN ANY OTHER CONTRACT DOCUMENT, THE CONTRACTOR SHALL DISCONTINUE THE EXCAVATION AND IMMEDIATELY CALL THE ARCHITECT FOR INSPECTION.
- PRIOR TO INSTALLATION OF ANY SEWER AND STORM DRAIN LINES, THE CONTRACTOR SHALL PHYSICALLY VERIFY THE ELEVATION SIZE AND MATERIAL AT THE POINT OF CONNECTION. IF THE ACTUAL ELEVATION IS HIGHER THAN INDICATED AND THE BUILDING SEWER OR DRAIN CANNOT BE INSTALLED AS SHOWN, THE CONTRACTOR SHALL NOT PROCEED WITH THE CONSTRUCTION OF SAID LINES AND SHALL IMMEDIATELY INFORM THE ARCHITECT.

### INTERRUPTION OF SERVICES AND DEMOLITION NOTES

- DEMOLITION, CAPPING AND REROUTING SHALL BE PERFORMED AS SHOWN TO ACCOMMODATE NEW CONSTRUCTION.
- EXISTING SERVICES REQUIRED TO STAY IN OPERATION IN AREAS NOT REDEMOLISHED SHALL BE MAINTAINED, REROUTED OR OTHERWISE PROVIDED WITH TEMPORARY CONNECTIONS TO PREVENT INTERRUPTIONS.
- IF IMPOSSIBLE TO PREVENT INTERRUPTIONS, CONNECTIONS SHALL BE PERFORMED DURING "OFF-HOURS" AND COORDINATED WITH THE OWNER'S REPRESENTATIVE.
- PROVIDE A MINIMUM OF SEVEN (7) DAYS WRITTEN ADVANCE NOTICE OF INTERRUPTION. DO NOT INTERRUPT SERVICES WITHOUT WRITTEN CONSENT OF THE OWNER.

### FIXTURES

- ALL FIXTURES SHALL BE NEW, APPROVED, FREE FROM FLAWS AND BLEMISHES WITH CLEAR AND CLEAN FINISHED SURFACES.
- ALL PLUMBING FIXTURES SHOWN ON DRAWINGS AND AS LISTED ON THE DRAWING FIXTURE SCHEDULE SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. FIXTURES AND TRIM SHALL BE PROPERLY ANCHORED AND CALLED ALONG ALL JOINTS.
- HOSE BIBBS: PERMANENT VACUUM BREAKERS SHALL BE INCLUDED WITH ALL HOSE BIBBS.
- FLOOR DRAINS SHALL HAVE 1/2" MAX. GRATE OPENINGS IN ALL DIRECTIONS OF TRAVEL.

### TESTS AND ADJUSTMENTS

- THE NEW PLUMBING PIPING SHALL BE FLUSHED AND THEN TESTED PER LOCAL CODE REQUIREMENTS AND ALL DEFECTS CORRECTED WITH NEW MATERIALS.
- ALL NEW DOMESTIC WATER PIPING SHALL BE FLUSHED OUT, TESTED AT 50 PSIG AND SHALL BE LEFT UNDER PRESSURE OF SUPPLY MAIN OR A MINIMUM OF 50 PSIG FOR THE REMAINDER OF THE CONSTRUCTION PERIOD. NO AIR TESTING IS ALLOWED. TESTS ARE TO BE APPLIED FOR A MINIMUM PERIOD OF ONE HOUR AND UNTIL TESTS ARE COMPLETE. FINAL PRESSURES AT THE END OF THE TEST PERIOD SHALL BE NOT MORE NOR LESS THAN THAT CAUSED BY EXPANSION OR CONTRACTION OF THE TEST MEDIUM DUE TO TEMPERATURE CHANGES. PROVIDE ADDITIONAL VALVES AS REQUIRED IN THE CONNECTIONS OF NEW PIPING TO FACILITATE TESTING.
- PLUMBING FIXTURES SHALL BE FILLED WITH WATER AND CHECKED FOR LEAKS AND RETARDED DRAINAGE FLOW.
- SOIL, WASTE, VENT AND CONDENSATE PIPING SHALL BE TESTED WITH A MINIMUM OF 10 FEET OF HEAD AT EACH JOINT FOR A MINIMUM OF THREE HOURS WITH NO LOSS IN HEAD.
- ALL NEW AND EXISTING GAS PIPING SHALL BE TESTED. PIPING CARRYING GAS AT PRESSURE LESS THAN 1/2 INCH WATER COLUMN SHALL BE TESTED AT NOT LESS THAN 3 PSI FOR A PERIOD OF ONE HOUR MINIMUM WITH NO LOSS IN PRESSURE. PIPING CARRYING GAS AT PRESSURE MORE THAN 1/2 INCH WATER COLUMN SHALL BE TESTED AT 60 PSI FOR A PERIOD OF ONE HOUR MINIMUM WITH NO LOSS IN PRESSURE. FOLLOWING PRESSURE TEST THE PIPE SYSTEM SHALL BE PURGED WITH INERT GAS PER 2016 C.P.C. 1205.6.

## PLUMBING LEGEND

SYMBOL	ABBR.	DESCRIPTION
	POC	POINT OF CONNECTION
	EX	DENOTES EXISTING (SHOWN LIGHT)
	R	REMOVE EXISTING EQUIPMENT OR PIPING
	W OR S	WASTE OR SOIL PIPING ABOVE GRADE
	W OR S	WASTE OR SOIL PIPING BELOW GRADE
	Y	SANITARY VENT PIPING
	W	INDIRECT WASTE PIPING
	SD	STORM DRAIN PIPING ABOVE GRADE OR FLOOR
	SD	STORM DRAIN PIPING BELOW GRADE OR FLOOR
	OSD	OVERFLOW STORM DRAIN PIPING
	CD	CONDENSATE DRAIN PIPING (AIR CONDITIONING)
	CW	COLD WATER PIPING
	HW	HOT WATER PIPING
	HW	HOT WATER RETURN PIPING
	TP	TRAP PRIMER LINE PIPING
	G	GAS PIPING (1/2" N.C. TO 1 1/2" N.C.)
	MPS	MEDIUM PRESSURE GAS PIPING (1/2" N.C. TO 5 PSI)
	GV	GATE VALVE
	BLV	BALANCING VALVE
	BV	BALL VALVE
	GC	GAS COOK
	PRV	PRESSURE REDUCING VALVE
	GPR	GAS PRESSURE REGULATOR
	CV/BWV	CHECK VALVE/BACKWATER VALVE
	RFBP	REDUCED PRESSURE BACKFLOW PREVENTER
	PTRV	PRESSURE & TEMPERATURE RELIEF VALVE
	FD	FLOOR DRAIN
	FS	FLOOR SINK
	GCO	GRADE CLEANOUT IN YARD BOX
	FCO	FLOOR CLEANOUT
	WCO	WALL CLEANOUT
	HB	HOSE BIBB
	TP	TRAP PRIMER
	TH	THERMOMETER
	WHA "X"	WATER HAMMER ARRESTOR (P.D.I. SIZE)
	U	UNION
		CAPPED PIPE END (DRIP LEG)
	DN	PIPE TURNING DOWN
	UP	PIPE TURNING UP
		VALVE ON RISE OR DROP
	WM	WATER METER
	VTR	VENT THRU ROOF
	AP	ACCESS PANEL
	B/G	BELOW GRADE
	CFH	CUBIC FEET PER HOUR
	DFU	DRAINAGE FIXTURE UNITS
	ET	EXPANSION TANK
	FF	FINISHED FLOOR
	FPS	FEET PER SECOND
	GPM	GALLONS PER MINUTE
	E	INVERT ELEVATION
	N.C.	NORMALLY CLOSED
	TYP	TYPICAL
	VTR	VENT THRU ROOF
	VPHW	VOLTS/PHASE/HERTZ

PREPARED FOR THE  
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PROJECT NO. PMA 16061.10

FILE NAME:

DATE 4/14/2017 DRAWN ELAPS  
CHECKED GRVR

**P-001**

SHEET NO. 1 OF 1 SHEETS

PLUMBING LEGEND AND  
GENERAL NOTES

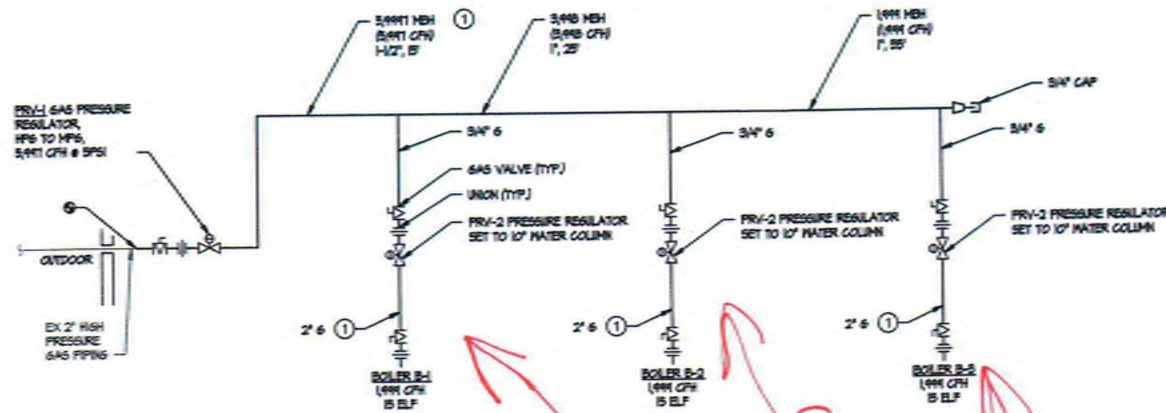
CENTRAL PLANT EQUIPMENT UPGRADE

VALHALLA HIGH SCHOOL  
1725 HILLSDALE ROAD  
EL CAJON, CA 92019

TURPIN & RATTAN  
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TREI PROJECT # 16432.S01





**KEYNOTE**  
 ① SCH. 40 ASTM A53 GRADE A BLACK STEEL PIPING.

**NATURAL GAS PIPING RISER DIAGRAM**  
 NO SCALE

GAS CALCULATIONS			
DESCRIPTION	QUANTITY	BTH INPUT EACH	TOTAL BTH INPUT
EXISTING BOILER DEMOLISHED	1	<1500,000	<1500,000
(N) BOILER (B-1, B-2, B-3)	3	594,000	1,782,000
BTH INPUT TOTAL		1,782,000	
CFH INPUT - (TOTAL BTH / 1000)		1,782 CFH	
TOTAL EQUIVALENT LENGTH OF 1/2\"		35'	
(SEE NOTE 1)			
MAIN EXISTING 1/2\"		2"	
TOTAL EQUIVALENT LENGTH OF 1/2\"		15'	
MAIN 1/2\"		2"	

**NOTE:**  
 (1) EQUIVALENT LENGTH FROM METER TO MOST DISTANT PRESSURE REGULATOR IN SYSTEM (SERVING BOILER B-3).

ALL LOW PRESSURE GAS PIPING SIZED PER 2016 C.P.C. TABLE 1206.2 (1) INLET PRESSURE: LESS THAN 2 P.S.I. PRESSURE DROP: 0.5 IN W.C. SPECIFIC GRAVITY: 0.80

WATER PIPE SIZE TABLE							
PIPE SIZE (IN)	COLD WATER (5 FPS MAX VELOCITY)				HOT WATER (5 FPS MAX VELOCITY)		
	GPM	VELOCITY (FPS)	FLUSH TANK (L)	FLUSH VALVE (L)	GPM	VELOCITY (FPS)	FIXTURE UNITS
1/2	25	3.0	5	0	25	3.0	3
3/4	6	4.0	7	0	6	4.0	7
1	14	4.8	20	0	14	4.8	20
1-1/4	22	5.6	35	0	14	5.0	28
1-1/2	35	6.2	65	20	28	5.0	47
2	75	8.0	250	150	48	5.0	120
2-1/2	125	4.0	500	340	70	5.0	255
3	180	8.0	810	750	120	5.0	480
4	240	8.0	1600	1600	140	5.0	872

FIXTURE SCHEDULE						
ITEM	FIXTURE	ROUGH-IN CONNECTIONS				
		TRAP	WASTE	VENT	COLD WATER	HOT WATER
1B-1	HOSE BIB	-	-	-	3/4"	-
1C-1	FLOOR SINK	-	2"	-	-	-
1D-1	FLOOR DRAIN	2"	2"	2"	-	-
1E-1	EMERGENCY EXTINGUISHING SHOWER STATION	-	-	-	1-1/4"	-

EQUIPMENT SCHEDULE		
ITEM	FIXTURE	REMARKS
1F-1	PRESSURE REDUCING VALVE	GAS PRESSURE REDUCING VALVE BY ELSTER AMERICAN METER, MODEL 1800B2 2" SERIES 1800, FACTORY SET AT 5.0 PSI, SPRING NO. 1800H00, ORIFICE 5/8", PROVIDE WITH ISOLATION GAS COCK.
1F-2	PRESSURE REDUCING VALVE	GAS PRESSURE REDUCING VALVE BY ELSTER AMERICAN METER, MODEL 1800B2 5-1/2" RANGE, 1-1/4" OUTLET WITH 1/2" ORIFICE, FACTORY SETTING OUTLET OF 7" I.D., FIELD SET AT 10" I.D., PROVIDE WITH ISOLATION GAS COCK.
1F-3	PRESSURE REDUCING VALVE	WATER PRESSURE REDUCING VALVE BY Watts, REGULATOR NO. 225 SERIES, VALVE SHALL HAVE BRONZE BODY AND BRONZE STRAINER, SET AT 80 PSI MAX PRESSURE.
1F-4	TRAP PRIMER STATION	SURFACE MOUNTED TRAP PRIMER ASSEMBLY STATION, PFS-4 MODEL BY PRECISION PLUMBING PRODUCTS. PROVIDE WITH 120V SOLENOID VALVE FOR ELECTRONIC CONTROL, 3-WIRE SINGLE POINT CONNECTION, 24-HR. ADJUSTABLE TIMER, ATMOSPHERIC VACUUM BREAKER, CAP USED MANIFOLD OPENINGS.

*Gas Regulator  
 Conflicts  
 changed 1/11 to 9/16"  
 Per manufacturer*

DAVID J. TURPIN  
 CIVIL ENGINEER  
 No. 103447  
 Exp. 03/31/18

PROJECT NO. FNA 1036110

FILE NAME:  
 DATE 4/14/2017 DRAWN: ELPS CHECKED: GRMR

P-002

SHEET NO. 1 OF 2 SHEETS

PREPARED FOR THE  
**GROSSMONT UNION HIGH SCHOOL DISTRICT**  
 P.O. BOX 1043  
 LA MESA, CALIFORNIA 92043

PREPARED BY  
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PLUMBING SCHEDULES

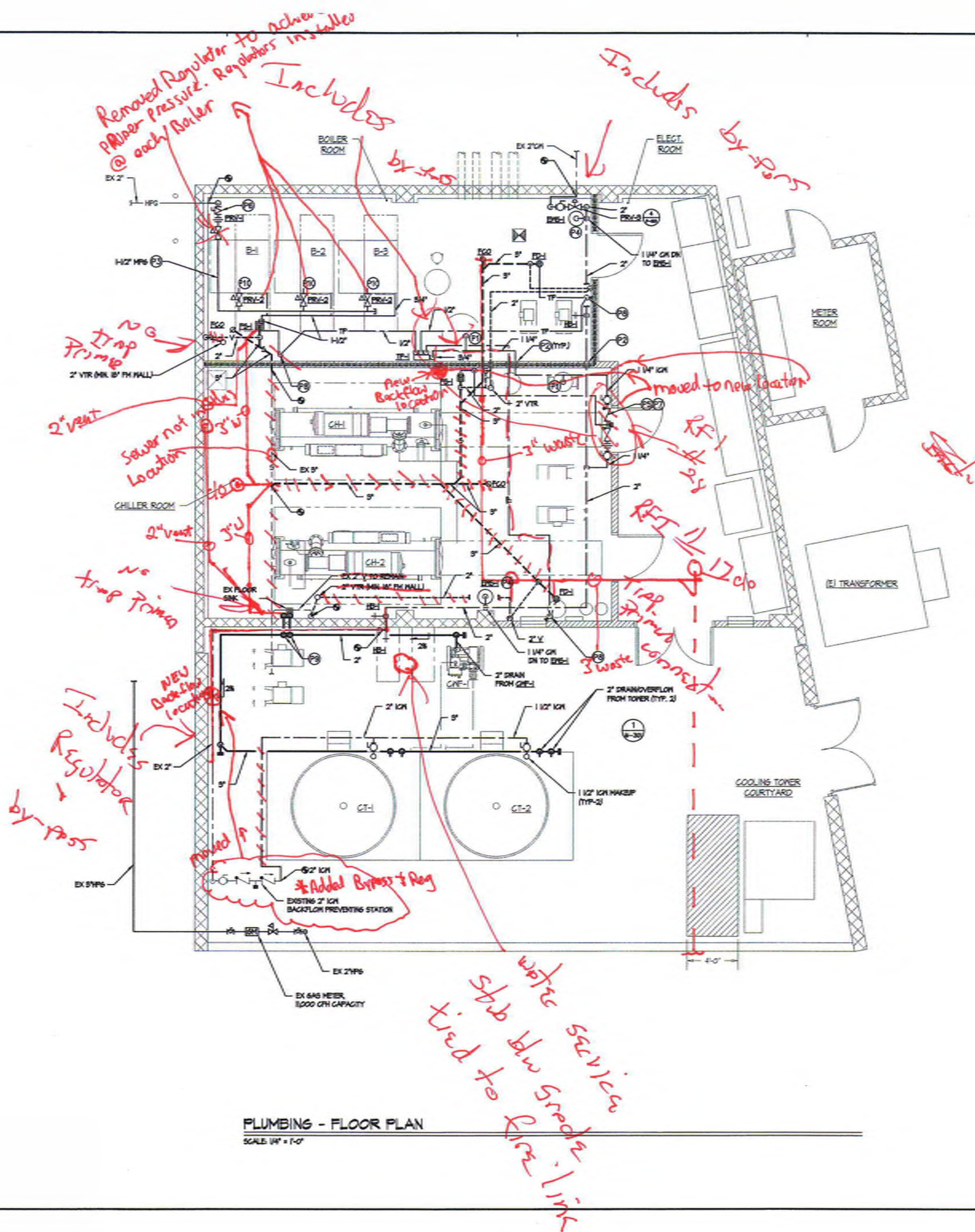
**CENTRAL PLANT EQUIPMENT UPGRADE**

**VALHALLA HIGH SCHOOL**  
 1725 HILLSDALE ROAD  
 EL CAJON, CA 92019









PLUMBING - FLOOR PLAN  
SCALE: 1/4" = 1'-0"

# KEYNOTES

1. 1/4" IN FOR EQUIPMENT MAKE UP WATER FOR CONTINUATION OF IN. SEE MECHANICAL DIAGRAMS M-101 AND M-102.
2. FOR FIRE RATED WALL PENETRATION, SEE FIRE RATED WALL PENETRATION METALLIC PIPE DETAIL SHEET 2M-508.
3. FOR MEDIUM PRESSURE GAS PIPE LINE SIZES, SEE MEDIUM PRESSURE GAS PIPING DIAGRAM SHEET P-002.
4. FOR EMERGENCY SHOWER, ESE-1, INSTALLATION, SEE EMERGENCY SHOWER DETAIL EP-502.
5. ROUTE 1" DRAIN LINE FROM OUTLET OF BACK ELON PREVENTOR TO FLOOR SINK (E-1) ROUTE 1" LINE BEHIND EXPANSION TANK AND AIR SEPARATOR.
6. FOR GAS PRESSURE REGULATOR AND EARTHQUAKE VALVE INSTALLATION, SEE GAS PRESSURE REGULATOR DETAIL GP-501.
7. PROVIDE BACKFLOW PREVENTOR WITH INTERMEDIATE VENT DOWNSTREAM OF INLINE VALVE. ROUTE 1/2" VENT LINE TO FLOOR SINK, SEE DETAIL 4P-502.
8. ROUTE 1/2" TRAP PRIMER LINES DOWN ON HALL TO BELOW GRADE, THEN TO FUTURE TRAP.
9. COOLING TOWER AND CONDENSER WATER FILTER DRAIN PIPING SHALL BE SLOPED AT 1/4" PER LF TOWARDS DISCHARGE POINT. ROUTE THROUGH WALL TO EXISTING FLOOR SINK SEAL WALL PENETRATION WEATHERTIGHT.
10. PROVIDE GAS AND CONDENSATE DISCHARGE CONNECTIONS TO BOILER PER MANUFACTURER'S INSTRUCTIONS, SEE 4P-501.

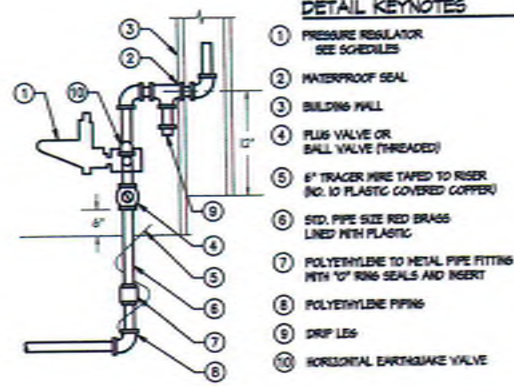
## WALL LEGEND

1/4" RATED WALL

<p>PREPARED FOR THE <b>GROSSMONT UNION HIGH SCHOOL DISTRICT</b> P.O. BOX 1048 LA MESA, CALIFORNIA</p>		<p>PREPARED BY <b>PLATT/WHITE LAW ARCHITECTS, INC.</b> 4034 30TH STREET SAN DIEGO, CA 92104-4328 FAX (619) 546-4360</p>	
<p>CONSTRUCTION STAMP OFFICE OF REGULATION SERVICES FILE NO. 04-15930 AC. 03/17/16 DATE 04/27/17</p>		<p>NO. 03347 EX. 03/17/16 4/18/17</p>	
<p>PLUMBING - FLOOR PLAN CENTRAL PLANT EQUIPMENT UPGRADE</p>		<p>VALHALLA HIGH SCHOOL 1725 HILLSDALE ROAD EL CAJON, CA 92019</p>	
<p>REVISION</p>		<p>DATE</p>	
<p>PROJECT NO. PMA 006410</p>		<p>FILE NAME:</p>	
<p>DATE 4/14/2017</p>		<p>DRAWN: ELP CHECKED: GRM</p>	
<p>SHEET NO. 1</p>		<p>OF SHEETS</p>	

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TREI PROJECT # 16432.S01

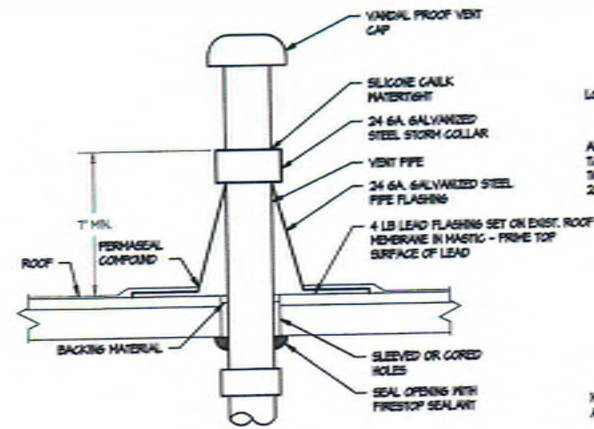




HORIZONTAL GAS EARTHQUAKE VALVE: PACIFIC SEISMIC PRODUCTS MODEL 502(1) OR EQUAL U.L. LISTING SA2482-502(1).

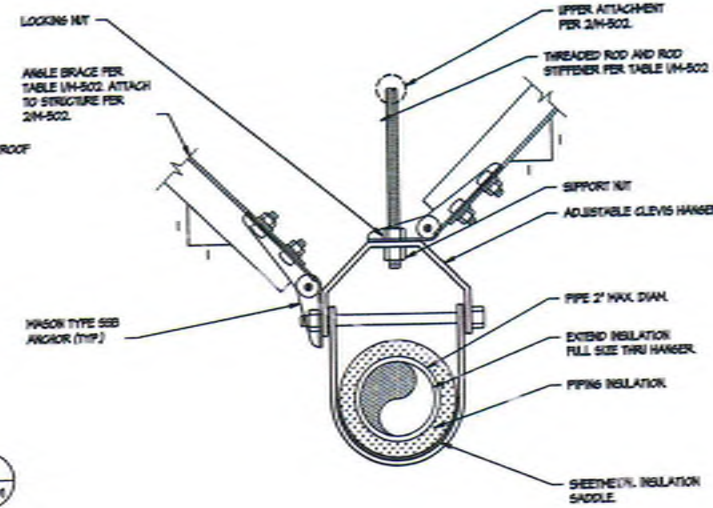
**GAS PRESSURE REGULATOR**  
NO SCALE

8  
P-501



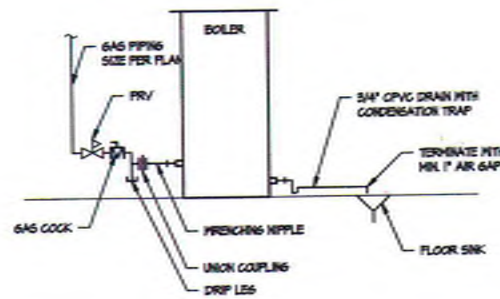
**VENT THRU ROOF DETAIL**  
NO SCALE

5  
P-501



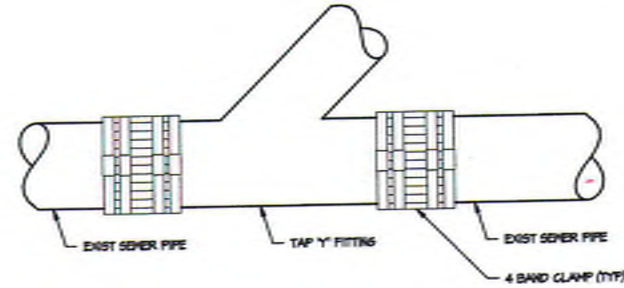
**PIPE HANGER DETAIL**  
NO SCALE

3  
P-501



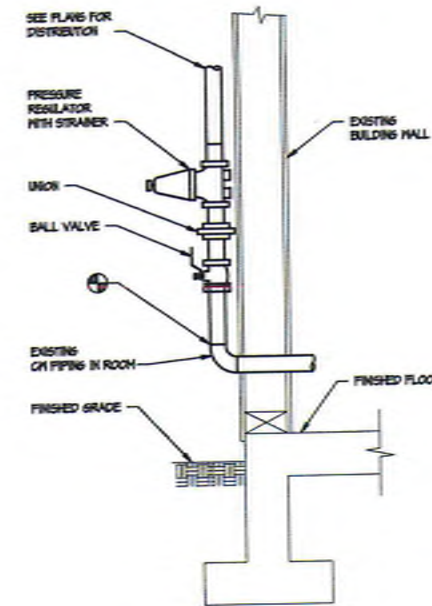
**BOILER PIPING DETAIL**  
NO SCALE

9  
P-501



**SEWER POINT OF CONNECTION DETAIL**  
NO SCALE

6  
P-501

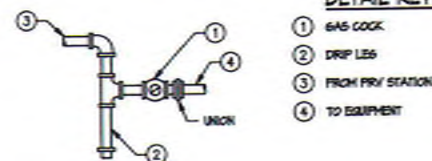


**WATER PRESSURE REGULATOR**  
NO SCALE

4  
P-501

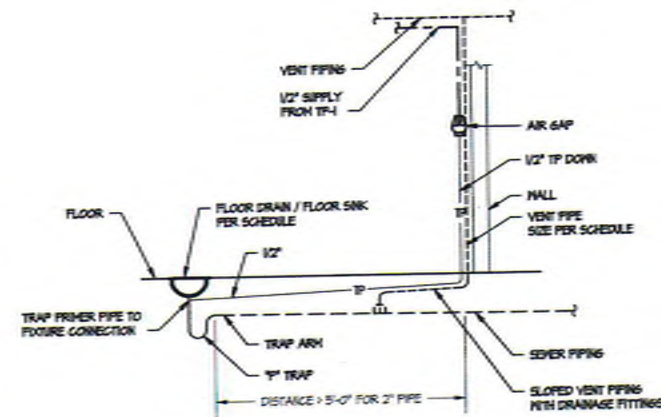
NOT USED  
NO SCALE

1  
P-501



**GAS PIPING DRIP LEG**  
NO SCALE

10  
P-501



**FLOOR DRAIN VENT CONNECTION DETAIL**  
NO SCALE

7  
P-501

NOT USED  
NO SCALE

2  
P-501

PREPARED FOR THE  
**GROSSMONT UNION HIGH SCHOOL DISTRICT**  
P.O. BOX 8048  
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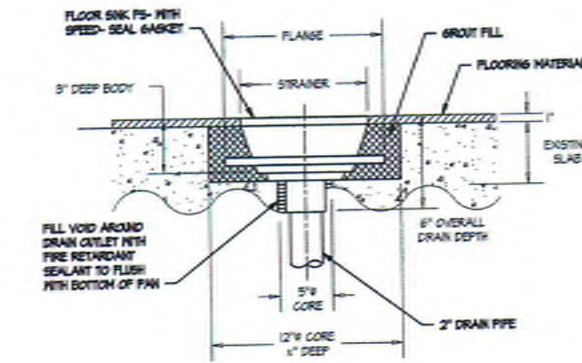
DATE: 04/15/2017  
FILE: 041515030  
AC: 042717  
DATE: 04/27/17

PLUMBING DETAILS  
**CENTRAL PLANT EQUIPMENT UPGRADE**  
VALHALLA HIGH SCHOOL  
1725 HILLSDALE ROAD  
EL CAJON, CA 92019

PROJECT NO.: FWA 1036110  
FILE NAME:  
DATE: 4/14/2017  
DRAWN: EL/PS  
CHECKED: GR/MR  
**P-501**  
SHEET NO. 1 OF 5 SHEETS

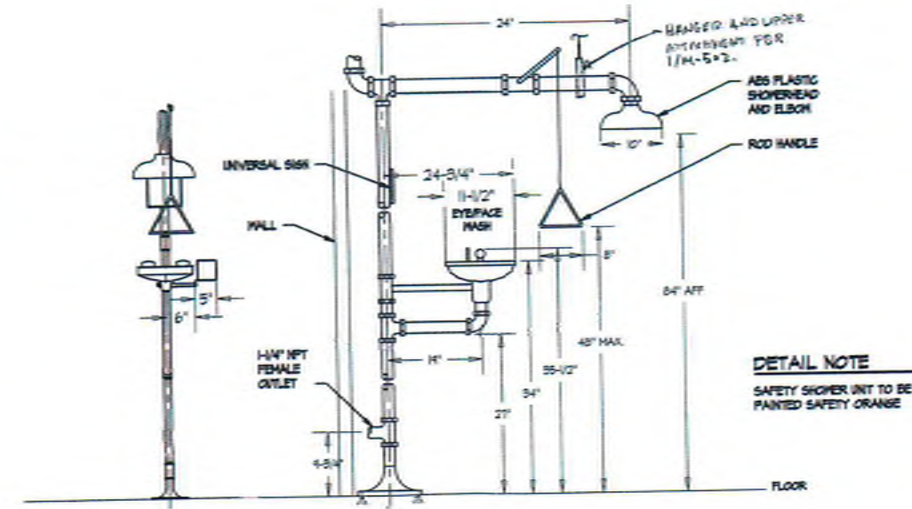
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TREI PROJECT # 16432.S01





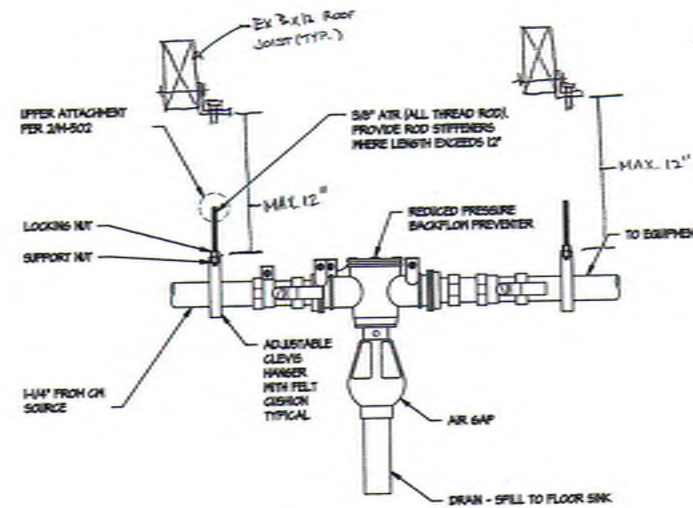
**FLOOR SINK PIPING DETAIL**  
NO SCALE

3  
P-502



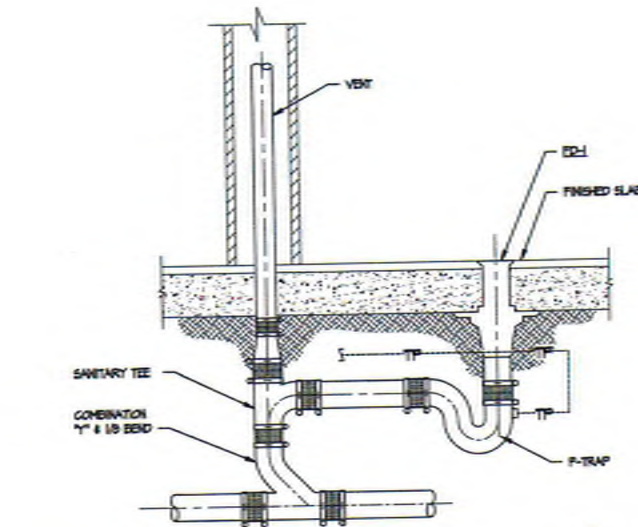
**EMERGENCY SHOWER / EYEWASH DETAIL**  
NO SCALE

1  
P-502



**REDUCED PRESSURE BACKFLOW PREVENTER**  
NO SCALE

4  
P-502



**FLOOR DRAIN**  
NO SCALE

2  
P-502

 <b>GROSSMONT UNION HIGH SCHOOL DISTRICT</b> P.O. BOX 1045 LA MESA, CALIFORNIA		<b>PLATT/WHITELAW ARCHITECTS, INC.</b> 4054 80TH STREET SAN DIEGO, CA 92126-4328 FAX (619) 546-4350
PREPARED FOR THE GROSSMONT UNION HIGH SCHOOL DISTRICT PROJECT NO. 16432.S01-002		PREPARED BY PLATT/WHITELAW ARCHITECTS, INC.
CIVIL ENGINEER NO. 13347 DATE 04/18/17		ARCHITECT NO. 13347 DATE 04/18/17
<b>PLUMBING DIAGRAMS</b> <b>CENTRAL PLANT EQUIPMENT UPGRADE</b> <b>VALHALLA HIGH SCHOOL</b> 1725 HILLSDALE ROAD EL CAJON, CA 92019		
PROJECT NO. PWA 006110 FILE NAME:		DATE 4/14/2017 DRAWN: ELPS CHECKED: GRMR
TURPIN & RATTAN ENGINEERS, INC. CONSULTING ENGINEERS 4719 PALM AVENUE LA MESA, CA 91941-5231 619 / 456-7624 FAX 456 / 6233 E-MAIL: ENGINEER@TRTSD.COM		<b>P-502</b> SHEET NO. 1 OF SHEETS







# LIGHTING FIXTURE SCHEDULE


FIXTURE TYPE	MANUFACTURER AND CATALOG NUMBER (3)	EQUIVALENT MANUFACTURER SUBJECT TO APPROVAL OF SHOP DRAWINGS	LAMPS				FIXTURE		BALLAST OR DRIVER TYPE	MOUNTING (2)(3)	DESCRIPTION (1)(6)
			QTY.	TYPE	WATTS	COLOR TEMP.	INPUT VOLTS	TOTAL INPUT WATTS			
(A)	PHILIPS DAY-BRITE LF-4-FR-31-40-3-LA6-MOUNTING HARDWARE	COOPER METALUX SKLED SERIES LITHONIA ELK SERIES (INCLUDING EQUAL OR GREATER DELIVERED LUMEN OUTPUT AND EQUAL OR LESS TOTAL FIXTURE WATTAGE)	-	LED	35	4000°K	27V	35	ELECTRONIC	SURFACE	2 (8" X 4" 500 LUMEN LED WRAPAROUND LUMINAIRE WITH CONTOURED FROSTED ACRYLIC LENS AND WHITE WHITE FINISH. CHAIN HUNG FIXTURE AT 9'-0" WHERE OBSTACLES PREVENT SURFACE MOUNTING.
(B)	PHILIPS GARDCO G2-BL-1000-WH-65-2-WH-2K-HS	ANY TRUE EQUAL (INCLUDING EQUAL OR GREATER DELIVERED LUMEN OUTPUT AND EQUAL OR LESS TOTAL FIXTURE WATTAGE)	-	LED	35	4000°K	27V	35	ELECTRONIC	SURFACE HALL	FULL CUTOFF 4800 LUMEN LED SCORCE WITH TYPE 2 (WIDE THROW) OPTICS, DIFFUSING LENS, DIE-CAST ALUMINUM HOUSING WITH TEXTURED POLYESTER POWDER COAT FINISH AND INTEGRAL PASSIVE INFRARED MOTION SENSOR. HALL MOUNTED BOX FOR SURFACE CONDUIT. UL LISTED FOR RET LOCATIONS. MOUNT AT 40'-6"

## FIXTURE NOTES

1. FIXTURE CONNECTIONS SHALL BE AS INDICATED ON THE PLANS AND SHALL COMPLY WITH THE APPLICABLE REQUIREMENTS OF TITLE 24, CALIFORNIA ENERGY EFFICIENCY REGULATIONS.
2. ALL SURFACE MOUNTED FIXTURES SHALL BE SUPPORTED PER 504-502. ALL LIGHT FIXTURES SHALL BE INSTALLED PER THE CALIFORNIA BUILDING CODE.
3. CATALOG NUMBERS ARE BASED ON VENDOR INFORMATION, SALES LITERATURE AND PHOTOGRAPHIC DATA ON HAND AT THE TIME OF PROJECT DESIGN BY TURPIN & RATTAN AND ARE INTENDED TO CONVEY THE FEATURES/PERFORMANCE REQUIRED. EACH FIXTURE MUST BE PROVIDED COMPLETE WITH ALL FITTINGS AS APPROPRIATE FOR PROPER MOUNTING AT THE LOCATIONS INDICATED.
4. LINEAR FIXTURES ARE GRAPHICALLY SHOWN IN MULTIPLES OF 4'-0" LENGTHS. CONTRACTOR SHALL ORDER FIXTURES AS ONE-PIECE 4'-0", 8'-0", 12'-0" OR 16'-0" AS APPROPRIATE USING THE MOST EFFICIENT DISTRIBUTION OF DRIVERS AND INCORPORATING THE MOST SYMMETRICAL APPEARANCE OF THE SUSPENSION ELEMENTS. FOR FURTHER CLARIFICATION PRIOR TO BIDDING, PRICING, OR ORDERING CONFER WITH ENGINEER.

## NOTE

LIGHTING CONTROLS VENDOR SHALL BE RESPONSIBLE FOR PROVIDING ALL FLEXIBLE RATED COMMUNICATIONS CABLES WITH TERMINATIONS, TOGETHER WITH COORDINATION AS NECESSARY FOR THE SUPPLY OF ALL INTEGRATED LIGHTING CONTROL INTERFACE DEVICES IN ALL LIGHT FIXTURES. IRRESPECTIVE OF FIXTURE MANUFACTURER TO OFFER A FULLY OPERABLE TITLE 24 COMPLIANT LIGHTING CONTROL SYSTEM.

 <p><b>GROSSMONT UNION HIGH SCHOOL DISTRICT</b> P.O. BOX 1048 LA MESA, CALIFORNIA</p>		 <p><b>PLATT/WHITE LAW ARCHITECTS, INC.</b> 4034 30TH STREET SAN DIEGO, CA 92104-4320 FAX (619) 546-4550</p>	
<p>PREPARED FOR THE</p>		<p>DATE: 04-15-2017 FILE: 04-15-2017 AC: 04-15-2017 DATE: 04-15-2017</p>	
<p>REVISION</p>		<p>DATE</p>	
<p>PROJECT NO. FWA 006110</p>		<p>FILE NAME:</p>	
<p>DATE: 4/14/2017</p>		<p>DRAWN: ELPS CHECKED: CRMR</p>	
<p><b>E-002</b></p>		<p>SHEET NO. 1 OF 1 SHEETS</p>	

**TURPIN & RATTAN**  
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TREI PROJECT # 16432.S01

**FIXTURE SCHEDULE**  
**CENTRAL PLANT EQUIPMENT UPGRADE**  
**VALHALLA HIGH SCHOOL**  
**1725 HILLSDALE ROAD**  
**EL CAJON, CA 92019**













0 2' 4' 6' 12'


1/4" = 1'-0"



PROJECT NO. FWA #086130	
FILE NAME:	
DATE: 4/14/2011	DRAWN: EL/PS CHECKED: GRM
E-101	
SHEET NO. 1 OF 1 SHEETS	

**ELECTRICAL - DEMOLITION  
FLOOR PLAN**

**CENTRAL PLANT EQUIPMENT UPGRADE**

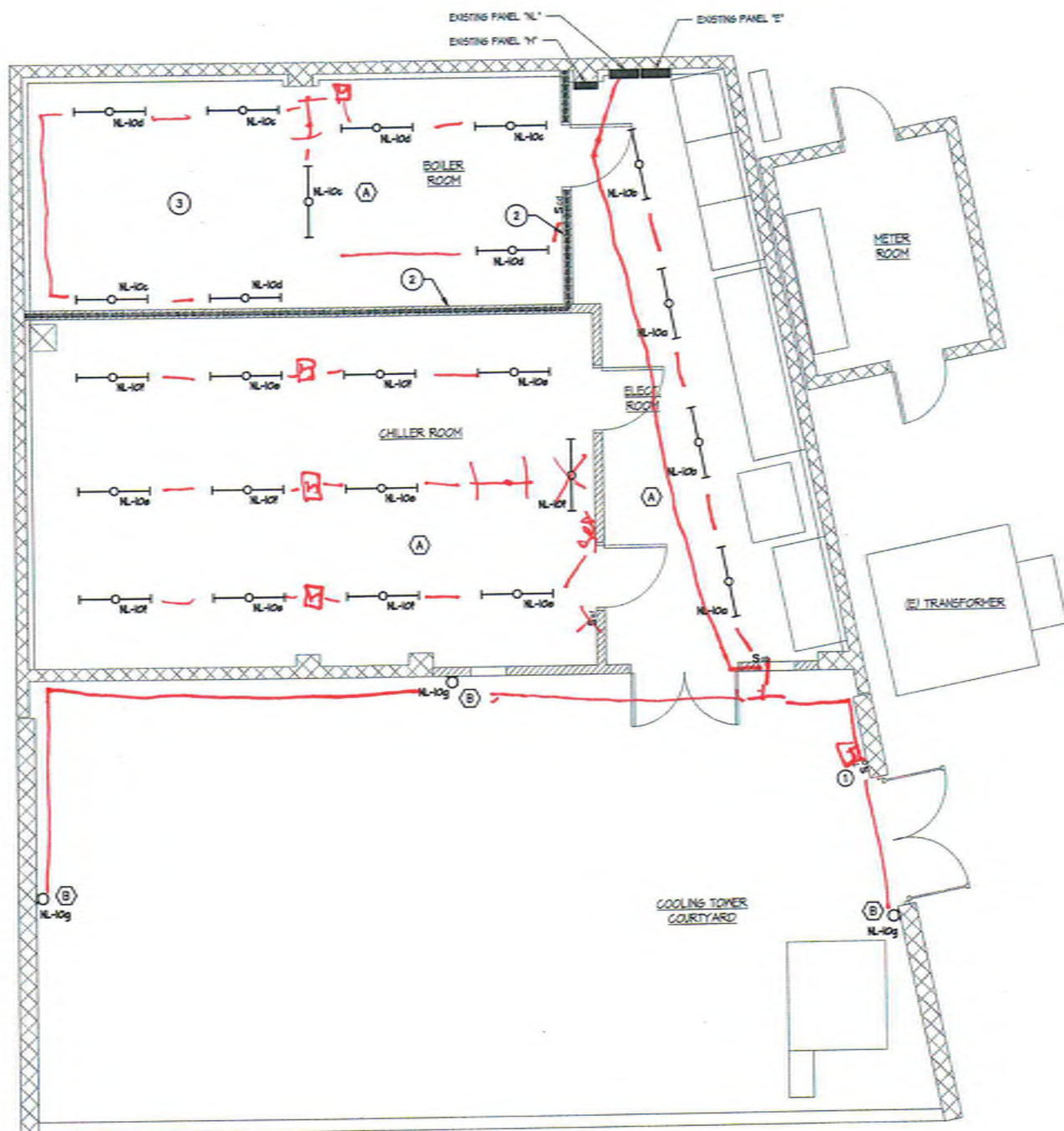
 VALHALLA HIGH SCHOOL  
1725 HILLSDALE ROAD  
EL CAJON, CA 92019



PREPARED FOR THE  
**GROSSMONT UNION HIGH SCHOOL DISTRICT**  
 P.O. BOX 1945  
 LA MESA, CALIFORNIA



all  
lighting  
mounted  
@ ceiling



ELECTRICAL - LIGHTING FLOOR PLAN



- KEYNOTES**
- MECHANICAL SPRING FOUNT 2 HOUR THER IN WEATHERPROOF SURFACE MOUNT ENCLOSURE FOR CONTROL OF EXTERIOR LIGHTS.
  - 1-HR RATED MALL SEE DETAIL 215-401 FOR ALL CONDUIT PENETRATIONS OF THIS MALL.
  - 1-HR RATED 6VP BOARD CEILING IN THIS ROOM SEE DETAIL 215-401 FOR ALL CONDUIT PENETRATIONS OF THIS CEILING.

**SHEET NOTE**

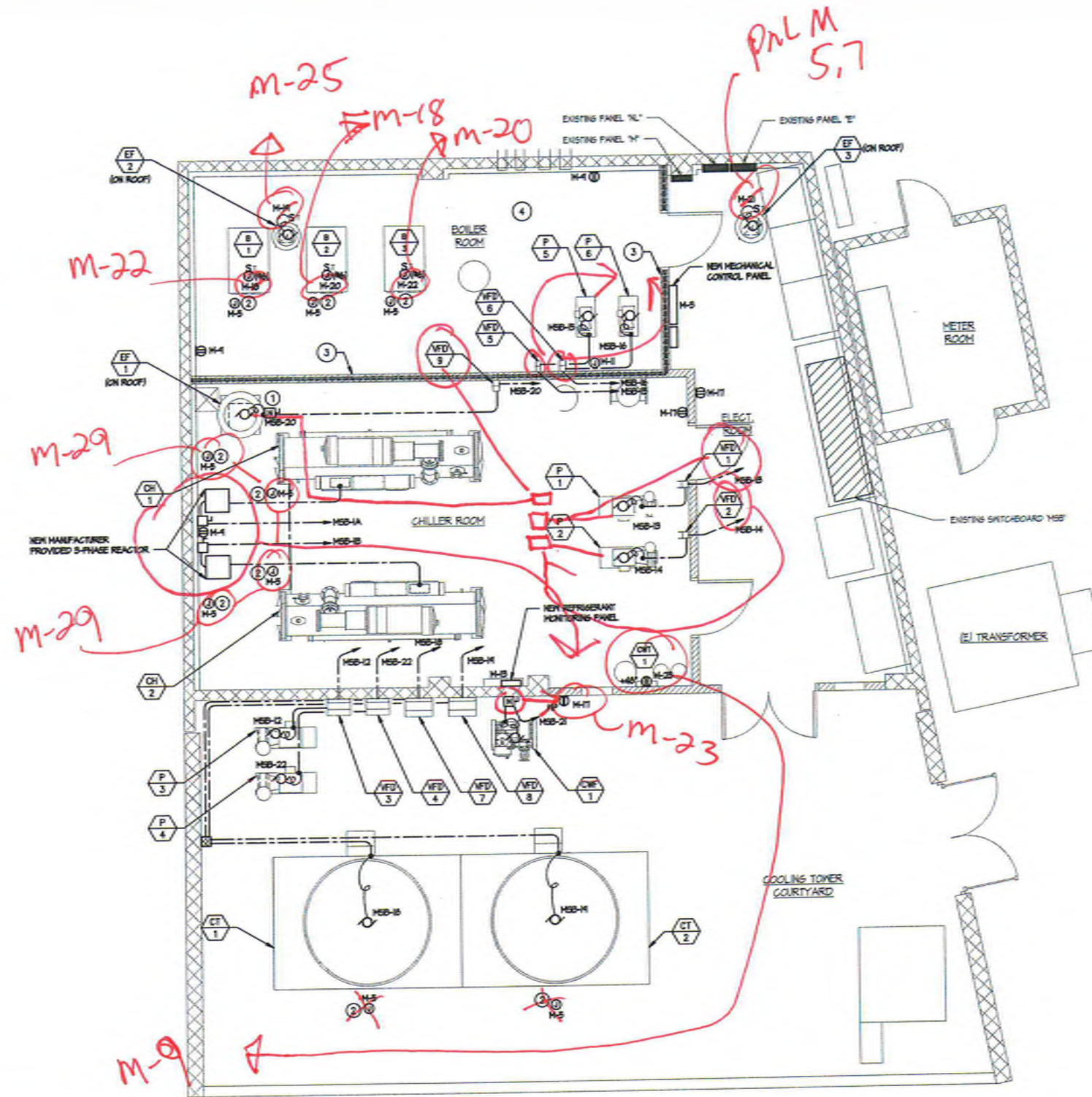
EXTERIOR LIGHTING IS LOCATED IN AN INDUSTRIAL AREA AND IS FOR USE DURING NIGHT MAINTENANCE ONLY. PER TITLE 24 2019-6 BUILDING ENERGY EFFICIENCY STANDARDS SECTION 1401 THIS LIGHTING IS EXEMPT.

<p>PREPARED FOR THE <b>GROSSMONT UNION HIGH SCHOOL DISTRICT</b> P.O. BOX 1049 LA MESA, CALIFORNIA</p>	
<p>PREPARED BY <b>PLATT/WHITE LAW ARCHITECTS, INC.</b> 4034 30TH STREET SAN DIEGO, CA 92104-4380 FAX (619) 440-4380</p>	
<p>CERTIFICATION STAMP DIV. OF THE STATE ARCHITECT OFFICE OF REGULATION &amp; ENFORCEMENT FILE NO. 04-110300 DATE 04/27/17</p>	<p>1934 Exp. 12-31-18 ELECTRICAL J. WHITE J. WHITE</p>
<p><b>ELECTRICAL - LIGHTING FLOOR PLAN</b></p>	
<p><b>CENTRAL PLANT EQUIPMENT UPGRADE</b></p>	
<p><b>VALHALLA HIGH SCHOOL</b> 1725 HILLSDALE ROAD EL CAJON, CA 92019</p>	
<p>REVISION</p>	<p>DATE</p>
<p>PROJECT NO. FMA 2008.10</p>	
<p>FILE NAME</p>	
<p>DATE: 4/14/2017</p>	<p>DRAWN: EL/PS CHECKED: CR/MR</p>
<p><b>E-201</b></p>	
<p>SHEET NO. 1 OF 2 SHEETS</p>	

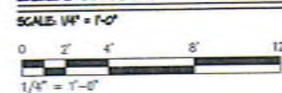
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TREI PROJECT # 16432.S01





**ELECTRICAL - POWER FLOOR PLAN**



- KEYNOTES**
1. PROVIDE WEATHERPROOF DISCONNECT AT EXHAUST FAN. VERIFY EXACT MOUNTING LOCATION WITH EQUIPMENT SUBMITTAL.
  2. PROVIDE GCV CONNECTION TO MECHANICAL CONTROL VALVE.
  3. IIR RATED WALL. SEE DETAIL 205-601 FOR ALL CONDUIT PENETRATIONS OF THIS WALL.
  4. IIR RATED GYP. BOARD CEILING IN THIS ROOM. SEE DETAIL 205-601 FOR ALL CONDUIT PENETRATIONS OF THIS CEILING.

- SHEET NOTES**
1. VARIABLE FREQUENCY DRIVES SHOWN ARE FURNISHED AND MOUNTED BY MECHANICAL INSTALLATION AND ALL CONNECTIONS BY ELECTRICAL CONTRACTOR.
  2. VERIFY POWER POINT OF CONNECTION TO MECHANICAL EQUIPMENT WITH SHOP DRAWINGS PRIOR TO INSTALLATION.

<p>PREPARED FOR THE <b>GROSSMONT UNION HIGH SCHOOL DISTRICT</b> P.O. BOX 1048 LA MESA, CALIFORNIA</p>		<p>PREPARED BY <b>PLATT/WHITEAW ARCHITECTS, INC.</b> 4034 80TH STREET SAN DIEGO, CA 92146-4326 FAX (619) 446-4350</p>	
<p>EXISTENCE STAMP DIV. OF THE STATE ARCHITECT OFFICE OF REGULATION SERVICES 04-110330 FILE 07-114 DATE 04/27/17</p>		<p>1933 ELECTRICAL STATE OF CALIFORNIA</p>	
<p><b>ELECTRICAL - POWER FLOOR PLAN</b></p>		<p><b>CENTRAL PLANT EQUIPMENT UPGRADE</b></p>	
<p><b>VALHALLA HIGH SCHOOL</b> 1725 HILLSDALE ROAD EL CAJON, CA 92019</p>		<p>PROJECT NO. PVA 2026110 FILE NAME: DATE: 4/14/2017 DRAWN: EL/PS CHECKED: CR/MR</p>	
<p><b>TURPIN &amp; RATTAN</b> ENGINEERING, INC. CONSULTING ENGINEERS 4319 PALM AVENUE LA MESA, CA 91941-5321 619 / 455 / 6224 FAX 455 / 6233 E-MAIL: ENGINEER@TRRSD.COM</p>		<p><b>E-202</b> SHEET NO. 1 OF SHEETS</p>	

TREI PROJECT # 16432.001











PANEL ID: #		EOSTING		FEED ROOM		LOAD TYPES	
LOCATION: CHILLER PL.		NAME		FEED ROOM		LOAD 1 - BOILER CONTROLS	
BUSE AMP'S		BUSE AMP'S		FEED ROOM		LOAD 2 - BOILER CONTROLS	
MOUNTING SURFACE		MOUNTING SURFACE		FEED ROOM		LOAD 3 - BOILER CONTROLS	
A/C SYSTEM		A/C SYSTEM		FEED ROOM		LOAD 4 - BOILER CONTROLS	

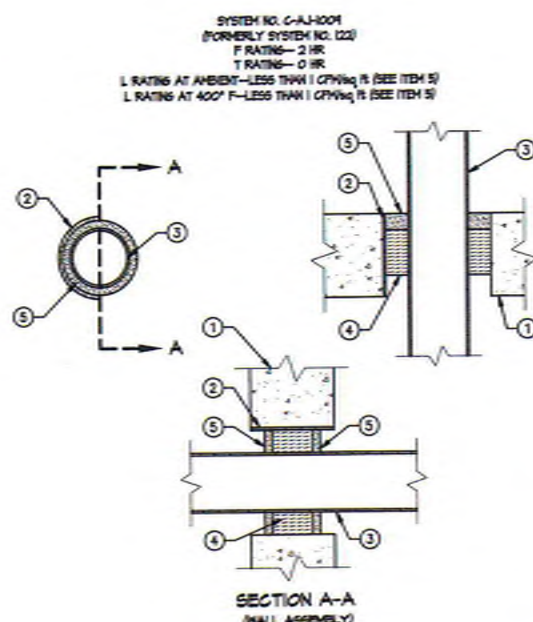
NO	DESCRIPTION	LOAD TYPE	WTR	LOAD-AMPS PHASE	LOAD-AMPS PHASE	WTR	LOAD TYPE	DESCRIPTION
1	RECEIVER & ITS SIDE ROOM	20V				70	NON	EXISTING LOAD
2	CONTROL PANEL	20V		500		0	NON	---
3	BOILER CONTROL VALVE	20V			1000	40	NON	EXISTING LOAD
4	RECEIVER	20V				0	NON	---
5	RECEIVER	20V		500		70	NON	EXISTING LOAD
6	RECEIVER	20V			100	0	NON	---
7	RECEIVER	20V				600	NON	EXISTING LOAD
8	RECEIVER	20V		500		0	NON	---
9	RECEIVER	20V			500	500	WTR	BOILER
10	RECEIVER	20V		400	500	500	WTR	BOILER
11	RECEIVER	20V			700	500	WTR	BOILER
12	RECEIVER	20V				0	NON	---
13	RECEIVER	20V			200		NON	EXISTING LOAD
14	RECEIVER	20V					NON	EXISTING LOAD
15	RECEIVER	20V					NON	EXISTING LOAD
16	RECEIVER	20V					NON	EXISTING LOAD
17	RECEIVER	20V					NON	EXISTING LOAD
18	RECEIVER	20V					NON	EXISTING LOAD
19	RECEIVER	20V					NON	EXISTING LOAD
20	RECEIVER	20V					NON	EXISTING LOAD
21	RECEIVER	20V					NON	EXISTING LOAD
22	RECEIVER	20V					NON	EXISTING LOAD
23	RECEIVER	20V					NON	EXISTING LOAD
24	RECEIVER	20V					NON	EXISTING LOAD
25	RECEIVER	20V					NON	EXISTING LOAD
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33	RECEIVER	20V					NON	EXISTING LOAD
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97	RECEIVER	20V					NON	EXISTING LOAD
98	RECEIVER	20V					NON	EXISTING LOAD
99	RECEIVER	20V					NON	EXISTING LOAD
100	RECEIVER	20V					NON	EXISTING LOAD

CONNECTED TO		DEMAND ON		PHASE		PHASE		PHASE		CONNECTED LOAD PER PHASE	
LINE 1		LINE 2		LINE 3		LINE 4		LINE 5		TOTAL CONNECTED LOAD (VA)	
LINE 6		LINE 7		LINE 8		LINE 9		LINE 10		TOTAL CONNECTED LOAD (VA)	
LINE 11		LINE 12		LINE 13		LINE 14		LINE 15		TOTAL CONNECTED LOAD (VA)	
LINE 16		LINE 17		LINE 18		LINE 19		LINE 20		TOTAL CONNECTED LOAD (VA)	
LINE 21		LINE 22		LINE 23		LINE 24		LINE 25		TOTAL CONNECTED LOAD (VA)	
LINE 26		LINE 27		LINE 28		LINE 29		LINE 30		TOTAL CONNECTED LOAD (VA)	
LINE 31		LINE 32		LINE 33		LINE 34		LINE 35		TOTAL CONNECTED LOAD (VA)	
LINE 36		LINE 37		LINE 38		LINE 39		LINE 40		TOTAL CONNECTED LOAD (VA)	
LINE 41		LINE 42		LINE 43		LINE 44		LINE 45		TOTAL CONNECTED LOAD (VA)	
LINE 46		LINE 47		LINE 48		LINE 49		LINE 50		TOTAL CONNECTED LOAD (VA)	
LINE 51		LINE 52		LINE 53		LINE 54		LINE 55		TOTAL CONNECTED LOAD (VA)	
LINE 56		LINE 57		LINE 58		LINE 59		LINE 60		TOTAL CONNECTED LOAD (VA)	
LINE 61		LINE 62		LINE 63		LINE 64		LINE 65		TOTAL CONNECTED LOAD (VA)	
LINE 66		LINE 67		LINE 68		LINE 69		LINE 70		TOTAL CONNECTED LOAD (VA)	
LINE 71		LINE 72		LINE 73		LINE 74		LINE 75		TOTAL CONNECTED LOAD (VA)	
LINE 76		LINE 77		LINE 78		LINE 79		LINE 80		TOTAL CONNECTED LOAD (VA)	
LINE 81		LINE 82		LINE 83		LINE 84		LINE 85		TOTAL CONNECTED LOAD (VA)	
LINE 86		LINE 87		LINE 88		LINE 89		LINE 90		TOTAL CONNECTED LOAD (VA)	
LINE 91		LINE 92		LINE 93		LINE 94		LINE 95		TOTAL CONNECTED LOAD (VA)	
LINE 96		LINE 97		LINE 98		LINE 99		LINE 100		TOTAL CONNECTED LOAD (VA)	

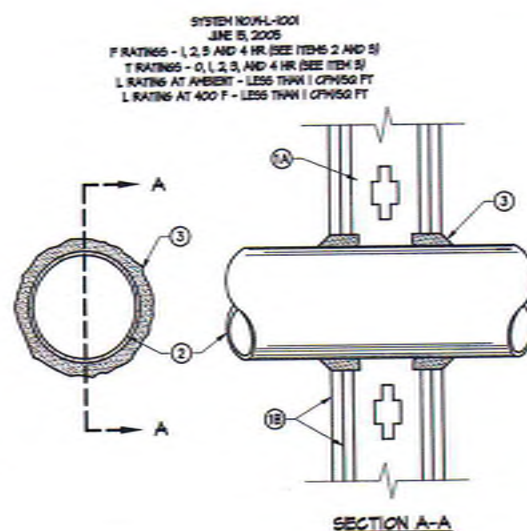
### mechanical Control Valve

EF-3

37 refrigerant Monitoring panel



### CONCRETE PENETRATION DETAILS



GYPSUM BOARD WALL/CEILING CONDUIT PENETRATION DETAIL

1. WALL ASSEMBLY - THE 1, 2, 5 OR 4 HR FIRE-RATED GYPSUM WALLBOARD/STUD WALL ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER DESCRIBED IN THE INDIVIDUAL UB00 OR 0400 SERIES WALL OR PARTITION DESIGNS IN THE U. FIRE RESISTANCE DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION FEATURES:

A STUCCO FULL FRAMING MAY CONSIST OF EITHER WOOD STUDS MAX 2" IN FIRE RATED ASSEMBLIES) OR STEEL CHANNEL STUDS. WOOD STUDS TO CONSIST OF NOM 2 BY 4 IN, 2S BY 102 IN, 102 IN LAMBER SPACED TO INFL 1406 MM CG WITH NOM 2 BY 4 IN, 2S BY 102 IN LAMBER END FLATES AND CROSS BRACES. STEEL STUDS MAY BE 102 IN H-8 IN, 102 IN H-10 IN OR 102 IN H-12 IN DEEP CHANNELS. STUDS MAY BE 102 IN H-8 IN OR 102 IN H-10 IN "DEEP BOARD" - NOM 102 IN OR 102 IN OR 16 MM THICK. GYPSUM FL. (222 CM) MAY BE WITH SQUARE OR TAPERED EDGES. THE GYPSUM FULLBOARD TYPE, THICKNESS, NUMBER OF LAYERS, FASTENER TYPE AND SHEET ORIENTATION SHALL BE AS SPECIFIED IN THE RESUBMITTAL SPECIFICATIONS. MAXIMUM MAX OF OPENING IS 26 IN. (660 MM).

SE WAKUPU DI GORONTALO (JANUARI 2010)	P RATING-10	T RATING-8
1000	10-2	8-2
1000	8-4	8-4
1000	10-2	8
1000	8-4	8

3M COMPANY - OF ZEPH CULK OR FB-3000 MIT SEALANT.  
REARERS THE IL CLASSIFICATION MARKING

- ② THROUGH PENETRANT - ONE CONDUIT INSTALLED EITHER CONCENTRICALLY OR ECCENTRICALLY WITHIN THE FIRESTOP SYSTEM. THE ANNULAR SPACE BETWEEN CONDUIT AND PERIMETRY OF OPENING SHALL BE MIN. OF 0 IN. (0 MM) POINT CONTACT TO MAX 2 IN. (51 MM). CONDUIT TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF CONDUITS MAY BE USED:
- A. CONDUIT - NOM 6 IN. (152 MM) DIAM (OR SMALLER) STEEL CONDUIT OR NOM 4 IN. (102 MM) DIAM (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING.
- ③ FILLING OR GROUT MATERIAL - GROUT OR SEALANT - MIN. 5/16 IN. (7.94 MM) AND 2-1/2 IN. (63.5 MM) AND 84 MM THICKNESS OF GROUT FOR 1, 2 AND 4 RATED ASSEMBLIES, RESPECTIVELY, APPLIED WITH ANNULAR FILLING OF CORE SURFACES OF PENETRANT. MIN. 1/8 IN. (3.18 MM) THICK LAYER OF GROUT APPLIED TO SYSTEM-BASE/PENETRANT INTERFACE AT POINT CONTACT LOCATION ON BOTH SIDES OF WALL.
- THE HOURLY FIRE RATING OF THE FIRESTOP SYSTEM IS DEPENDENT UPON THE HOURLY FIRE RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED, AS SHOWN IN THE FOLLOWING TABLE.
- THE HOURLY T RATING OF THE FIRESTOP SYSTEM IS DEPENDENT UPON THE TYPE OR SIZE OF THE PIPE OR CONDUIT AND THE HOURLY FIRE RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED, AS SHOWN BELOW.



# FIRE ALARM SYSTEM NOTES

- THE FIRE ALARM SYSTEM SHOWN ON THESE DRAWINGS SHALL BE USED FOR CONSTRUCTION.
- APPLICABLE CODE FOR FIRE ALARM:  
2016 CALIFORNIA BUILDING CODE, TITLE 24 PART 2  
2016 CALIFORNIA ELECTRICAL CODE, TITLE 24 PART 3  
2016 NFPA 72 WITH CSM AMENDMENTS  
2016 CALIFORNIA FIRE CODE, TITLE 24 PART 4.
- AUDIBLE DEVICES SHALL BE SIMILAR TO WHAT IS EXISTING ON CAMPUS. AUDIBILITY SHALL BE A MINIMUM OF 5 DB ABOVE AMBIENT NOISE, BUT NOT LESS THAN 75 DB AT 10'-0".
- THESE DRAWINGS SHALL SERVE AS SHOP DRAWINGS OF THE FIRE ALARM SYSTEM AND HAVE BEEN SUBMITTED TO THE DSA-ORS FOR REVIEW AND APPROVAL.
- THE LOCATION OF AUTOMATIC DETECTORS, MANUAL STATIONS AND OTHER FIRE ALARM EQUIPMENT AND DEVICES, AS SHOWN ON PLAN, ARE FOR CONSTRUCTION.
- THE FIRE ALARM SYSTEM SHALL CONFORM TO ARTICLE 160 OF CALIFORNIA ELECTRICAL CODE. INSTALLATION OF THE FIRE ALARM SYSTEM SHALL NOT BE STARTED UNTIL DETAILED PLANS AND SPECIFICATIONS, INCLUDING CALIFORNIA STATE FIRE MARSHAL LISTING NUMBERS FOR EACH COMPONENT.
- THE FOLLOWING INFORMATION IS INCLUDED IN THESE PLANS:  
a. IDENTIFICATION OF TYPE OF WIRING USED  
b. FLOOR PLAN SHOWING NEW FIRE ALARM DEVICES  
c. REWER DIAGRAM AND POINT TO POINT DIAGRAM  
d. CSM LISTING SHEET SHOWING EXIST. DATA FOR ALL COMPONENTS  
e. WIRING SPEC SHEET OR ALL FIRE ALARM EQUIPMENT  
f. BATTERY AND VOLTAGE DROP CALCULATIONS FOR EACH PANEL WITH A BATTERY  
g. SYMBOLS OF ALL FIRE ALARM DEVICES INSTALLED  
h. ELEVATION DETAIL OF MANUAL STATION, STROBES, HORNSTROBES, AND HORNS  
i. SYSTEM OPERATION MATRIX, EFFECT OF THE OPERATION OF EACH FIRE ALARM DEVICE IS SHOWN ON THESE PLANS.
- FLASHING VISUAL WARNING DEVICES SHALL HAVE A FREQUENCY OF NOT MORE THAN 60 FLASHES PER MINUTE AND SHALL BE SYNCHRONIZED.
- STROBE SIGNALING DEVICES FOR THE HEARING IMPAIRED SHALL BE STATE FIRE MARSHAL APPROVED AND LISTED.

## SPECIAL NOTE

BOX RESISTOR DEVICES SHALL BE INSTALLED INSIDE EACH FIRE ALARM TERMINAL CABINET.

# FIRE ALARM EQUIPMENT SCHEDULE

ITEM DESCRIPTION	SYMBOL	MOUNTING	CATALOG NO.	CSFM LISTING NO.
EXISTING FIRE ALARM CONTROL PANEL "TAC" (NETWORKABLE)	□	+48"	LI-11B-2B	T165-1105-0125
EXISTING NOTIFICATION APPLIANCE CIRCUIT POWER SUPPLY "TAC" (DSA 404-10192)	□	+48"	HFP2456	T355-1651-0102
HEAT DETECTOR 4 SQUARE DEEP BOX WITH 5-0 RING	⊙	CEILING	ATD-4LCP / B30LP (BASE)	T210-1105-0105 T800-1653-0104
COMBINATION HORN AND VISUAL DEVICE SEPARATELY CIRCUITED ON FLUSH WALL MOUNTED OUTLET BOXES (5/8" OR 1" CANDLE AS INDICATED)	⊕	LENG BETWEEN +50" AND +48" OR +50" TO BOTTOM OF LENG	P2R (SYSTEM SENSOR)	T125-1653-0188
EXISTING HORN - WEATHER RESISTANT SA-HEB-R WEATHERPROOF BACKBOX (DSA 404-10192)	⊕	+40"	HRK (SYSTEM SENSOR)	T155-1653-0184
ADDRESSABLE MANUAL PULL STATION	⊕	+48"	MS-1AF	T150-1105-0104

# SEQUENCE OF OPERATION MATRIX

ACTION	DEVICES		
	MANUAL PULL STATION	SMOKE/HEAT DETECTORS	AC POWER FAILURE
SOUND ALARM AT FAC	YES	YES	NO
ACTIVATE RELAY FOR OFF-SITE MONITORING	YES	YES	YES
SOUND TROUBLE BELLER AT FAC	ON HORN FAULT	ON HORN FAULT	YES
ANNUNCIATE AT FAC	YES	YES	YES
ACTIVE HORN AND VISUALS	YES	YES	NO

# SUPERVISORY SIGNAL

# FIRE ALARM SYSTEM DESCRIPTION

THE FIRE ALARM SYSTEM CONSISTS OF MODIFICATIONS TO A RECENTLY INSTALLED, FULLY AUTOMATIC, NETWORKED, ADDRESSABLE SYSTEM.

THE EXISTING FIRE ALARM SYSTEM IN THIS BUILDING WAS INSTALLED UNDER DSA 404-10192.

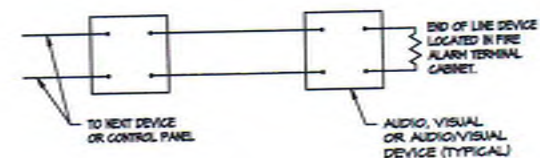
## FIRE ALARM WIRING SCHEDULE

DESIG.	DESCRIPTION
AV	AUDIO/VISUAL CIRCUIT, 2W2 THIN
Z	ADDRESSABLE LOOP, 1 TRISTED PAIR #6
P	POWER CIRCUIT, 2W4

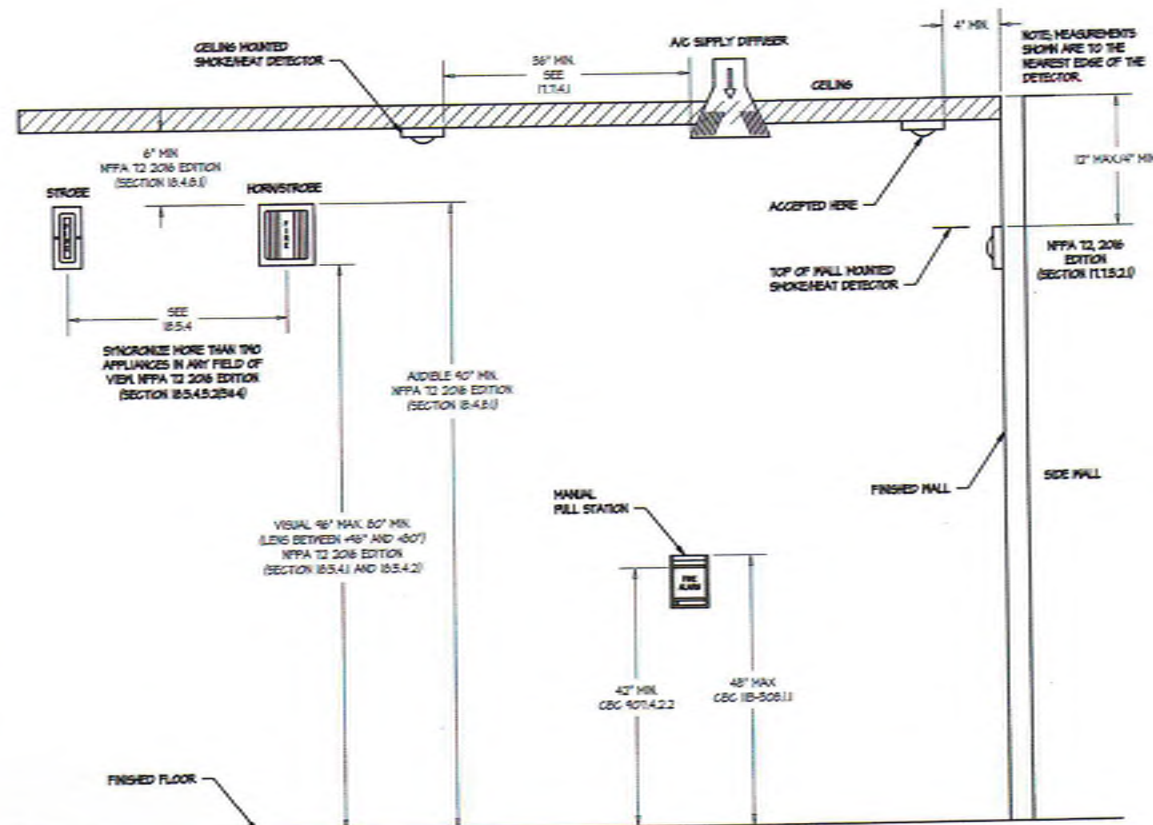
\* ALL FIRE ALARM WIRING SHALL BE ROUTED IN 3/4" EMT (MINIMUM)

## FIRE RATED WALL LEGEND

— — — — —	LINE OF 4-HOUR RATED WALL ASSEMBLY
— — — — —	LINE OF 2-HOUR RATED WALL ASSEMBLY
— — — — —	LINE OF 1-HOUR RATED WALL ASSEMBLY

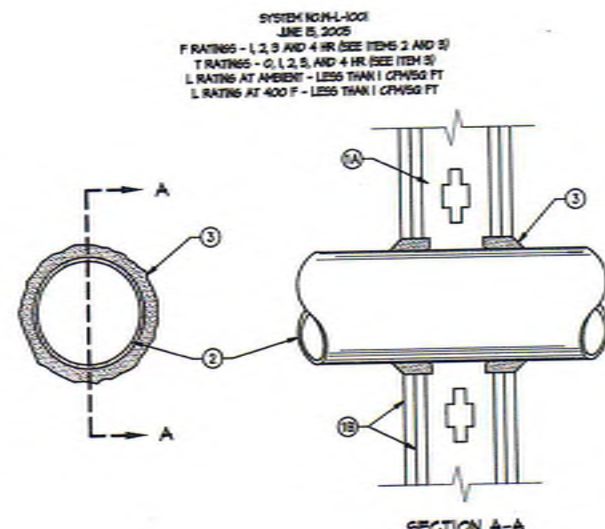


TYPICAL AUDIO/VISUAL CIRCUIT WIRING DIAGRAM  
NO SCALE



FIRE ALARM DEVICE ELEVATIONS

NO SCALE



GYPSUM BOARD WALL/CEILING CONDUIT PENETRATION DETAIL

NO SCALE

## KEYNOTES

- WALL ASSEMBLY - THE 1/2" OR 4 HR FIRE-RATED GYPSUM HALLEBOARD/STO WALL ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER DESCRIBED IN THE INDIVIDUAL 1500 OR 1600 SERIES WALL OR PARTITION DESIGNS IN THE UL FIRE RESISTANCE DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION FEATURES:  
A. STUCCO - WALL FRAMING MAY CONSIST OF EITHER WOOD STUDS (MAX 2 HR FIRE RATED ASSEMBLY) OR STEEL CHANNEL STUDS. WOOD STUDS TO CONSIST OF NOM 2 BY 4 IN LUMBER SPACED 16 IN OC WITH NOM 2 BY 4 IN LUMBER END PLATES AND CROSS BRACES. STEEL STUDS TO BE MIN 5-5/8 IN. WIDE BY 1-3/8 IN. DEEP CHANNELS SPACED MAX 24 IN OC.  
B. GYPSUM BOARD - NOM 1/2 OR 5/8 IN THICK, 4 FT. WIDE WITH SQUARE OR TAPERED EDGES. THE GYPSUM HALLEBOARD TYPE, THICKNESS, NUMBER OF LAYERS, FASTENER TYPE AND SHEET ORIENTATION SHALL BE SPECIFIED IN THE INDIVIDUAL 1500 OR 1600 SERIES DESIGN IN THE UL FIRE RESISTANCE DIRECTORY. MAX DIAH OF OPENING IS 26 IN.
- THROUGH PENETRANT - ONE CONDUIT INSTALLED EITHER CONCENTRICALLY OR ECCENTRICALLY WITHIN THE FIRESTOP SYSTEM. THE ANNULAR SPACE BETWEEN CONDUIT AND PERIPHERY OF OPENING SHALL BE MIN OF 0 IN (POINT CONTACT) TO MAX 2 IN. CONDUIT TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF CONDUITS MAY BE USED:  
A. CONDUIT - NOM 6 IN DIAH (OR SMALLER) STEEL CONDUIT OR NOM 4 IN DIAH (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING.
- FILL, VOID OR CAVITY MATERIAL - CALK OR SEALANT - MIN 5/8" DIAH 1-1/8 AND 2-1/2 IN THICKNESS OF CALK FOR 1/2" AND 4 HR RATED ASSEMBLIES, RESPECTIVELY, APPLIED WITHIN ANNULUS, FLUSH WITH BOTH SURFACES OF WALL. MIN 1/4 IN DIAH BEAD OF CALK APPLIED TO GYPSUM BOARD/PENETRANT INTERFACE AT POINT CONTACT LOCATION ON BOTH SIDES OF WALL. THE HOURLY F RATING OF THE FIRESTOP SYSTEM IS DEPENDENT UPON THE HOURLY F RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED, AS SHOWN IN THE FOLLOWING TABLE. THE HOURLY T RATING OF THE FIRESTOP SYSTEM IS DEPENDENT UPON THE TYPE OR SIZE OF THE PIPE OR CONDUIT AND THE HOURLY F RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED, AS TABULATED BELOW.

ED MAX PIPE OR CONDUIT DIAH IN.	F RATING HR	T RATING HR
1	1 or 2	0, 1 or 2
1	3 or 4	3 or 4
4	1 or 2	0
6	3 or 4	0
12	1 or 2	0

SH COMPANY - OF 250# CALK OR FS-3000 HT SEALANT, REPAIRING THE UL CLASSIFICATION MARKING

## FIRE ALARM LEGEND AND GENERAL NOTES

### CENTRAL PLANT EQUIPMENT UPGRADE

VALHALLA HIGH SCHOOL  
175 HILLSDALE ROAD  
EL CAJON, CA 92019

REVISION DATE

PROJECT NO. PMA 105610

FILE NAME:

DATE 4/14/2017

DRAWN: ELPS

CHECKED: GRM

SHEET NO. 1 OF 1 SHEETS

EF-001

TURPIN & RATTAN

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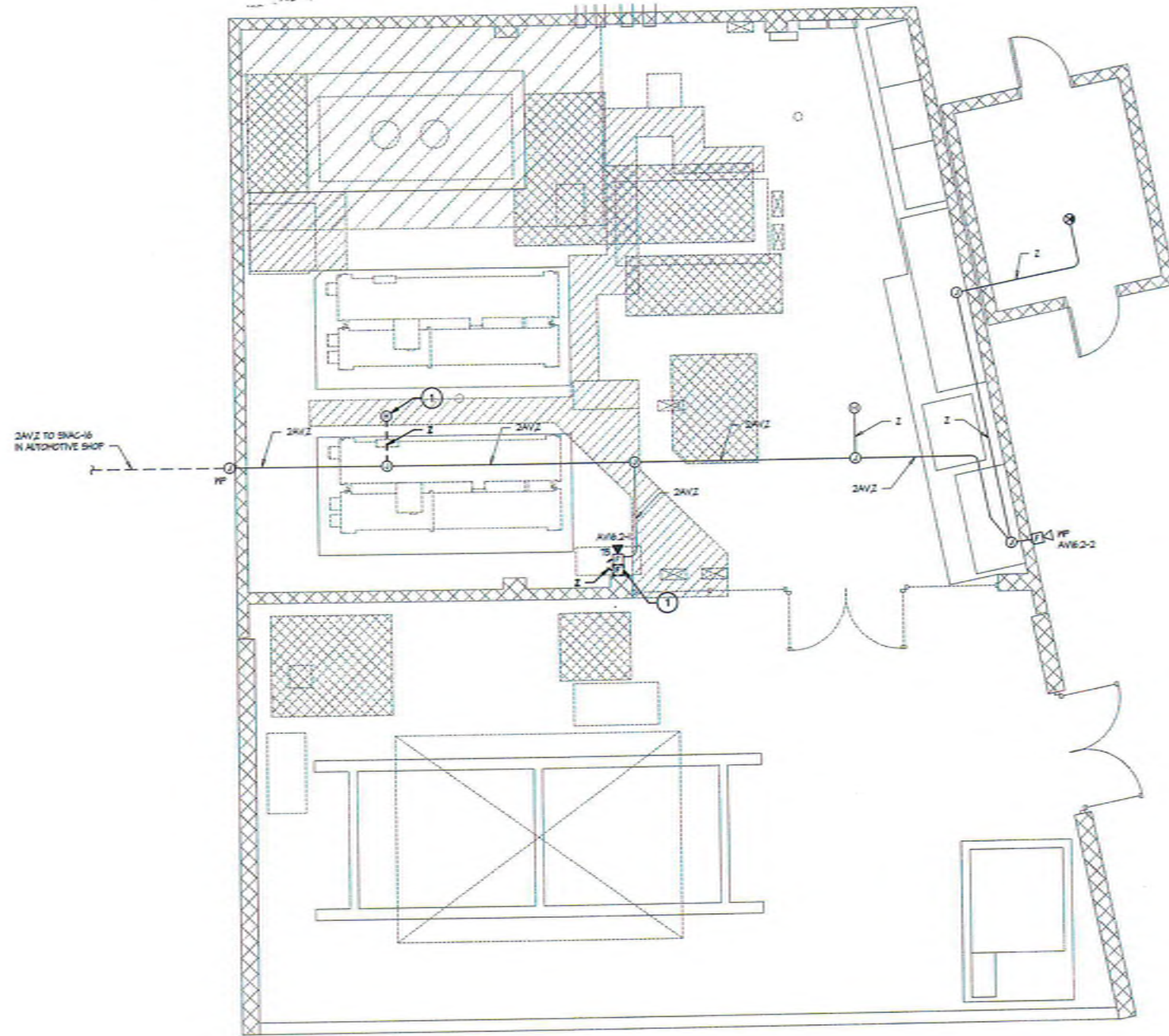
TRR PROJECT # 16432.501







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FIRE ALARM - DEMOLITION FLOOR PLAN

SCALE 1/4" = 1'-0"



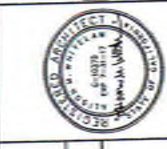
- KEYNOTE**
- EXISTING FIRE ALARM DEVICE SHALL BE CLEANED AND SAVED FOR RECONNECTION.

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TRR PROJECT # 16432.501

PROJECT NO. PVA 406610  
FILE NAME:  
DATE: 4/14/2017 DRAWN: EL/PS  
CHECKED: CR/MR  
**EF-101**  
SHEET NO. : OF SHEETS

**FIRE ALARM - DEMOLITION  
FLOOR PLAN**  
**CENTRAL PLANT EQUIPMENT UPGRADE**  
**VALHALLA HIGH SCHOOL**  
**1725 HILLSDALE ROAD**  
**EL CAJON, CA 92019**

INVESTIGATION REPORT  
DIV. OF THE STATE ARCHITECT  
OFFICE OF REGULATION SERVICES  
04-105930  
FILE 07/14  
AC FILE 07/14  
DATE 04/27/17

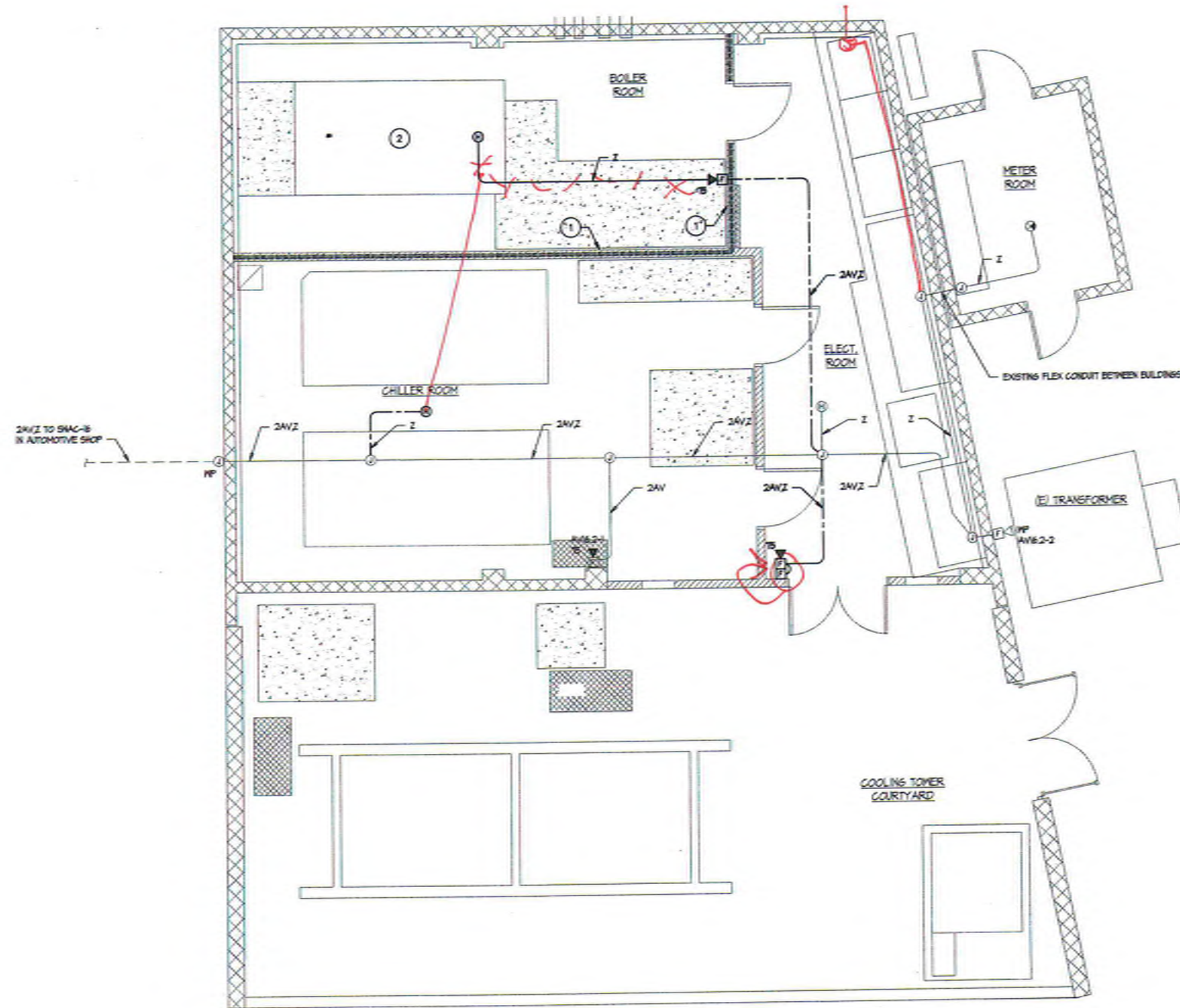


PREPARED FOR THE  
**GROSSMONT UNION HIGH SCHOOL DISTRICT**  
P.O. BOX 1043  
LA MESA, CALIFORNIA

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**FIRE ALARM - FLOOR PLAN**  
SCALE: 1/4" = 1'-0"  
1/4" = 1'-0"



- KEYNOTES**
1. IIR RATED WALL: SEE DET-001 FOR ALL CONDUIT PENETRATIONS OF THIS WALL.
  2. IIR RATED GYP. BOARD CEILING IN THIS ROOM: SEE DETAIL DET-001 FOR ALL CONDUIT PENETRATIONS OF THIS CEILING.

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TREC PROJECT # 164332.S01

PROJECT NO. PWA 006610  
FILE NAME:  
DATE: 4/14/2017 DRAWN: EL/PS  
CHECKED: GR/MR  
**EF-201**  
SHEET NO. 1 OF SHEETS

**FIRE ALARM - FLOOR PLAN**  
**CENTRAL PLANT EQUIPMENT UPGRADE**  
**VALHALLA HIGH SCHOOL**  
1725 HILLSDALE ROAD  
EL CAJON, CA 92018

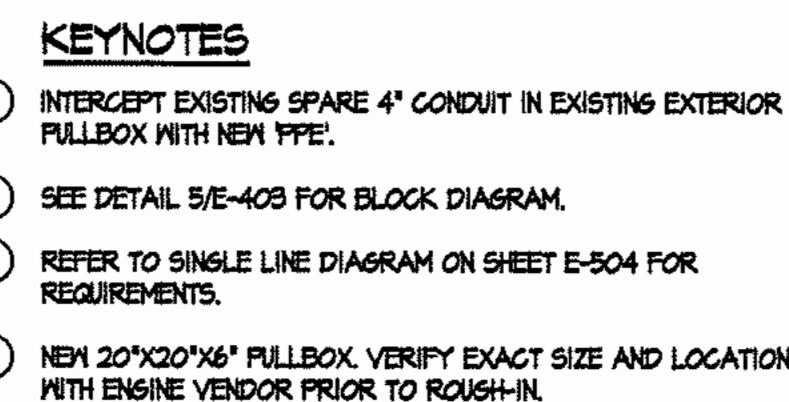
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OFFICE OF REGULATION & PERMITS  
FILE NO. 04-115930  
AC FILE NO. 04-115930  
DATE 04/28/17



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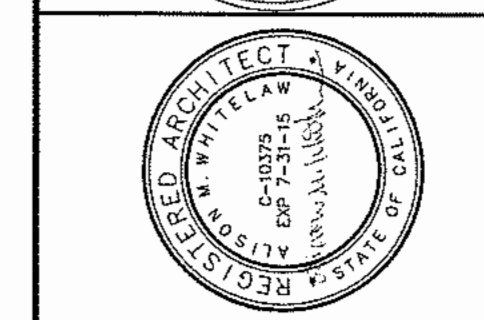



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01/23/15



ENLARGED SITE PLAN	MAIN BUILDING FULL MODERNIZATION	 <p>VALHALLA HIGH SCHOOL 1725 HILLSDALE ROAD EL CAJON, CA 92019</p>
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REVISION	DATE
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index



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**TREI # 09219.07**

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09219.07 E009 ENLARGED SITE PLAN.DWG

PROJECT NO.	PWA 0361.4
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FILE NAME:	
DATE: JAN 15, 2015	DRAWN: PS/H CHECKED: M

E-009

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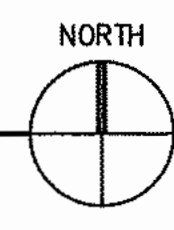
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- KEYNOTES**
- ① EXISTING WALL MOUNTED 36" SQ X 12" D WEATHERPROOF FULLBOX AND SPARE CONDUITS STUBBED INTO MEZZANINE SPACE TO BE REMOVED. CUT BACK CONDUITS TO EXISTING UNDERGROUND TRENCH TO GRADE AND INSTALL NEW FLUSH MOUNTED HANDHOLE.
  - ② NEW FEEDER PFE IN EXISTING SPARE UNDERGROUND CONDUIT BETWEEN EXISTING EXTERIOR FULLBOXES. EXTEND NEW CONDUIT WITH NEW FEEDER PFE FROM EXISTING FULLBOX TO NEW DISTRIBUTION SWITCHBOARD PFE.
  - ③ RE-USE EXISTING EXTERIOR LIGHTING CONDUIT PATHWAYS WHERE APPLICABLE.

ELECTRICAL LEGEND	
SYMBOL	DESCRIPTION
	WHEN HOMERUN IS NOT SHOWN, BRANCH CIRCUIT NUMBER(S) (AND PANELBOARD) ARE DESIGNATED BY NUMBERS ADJACENT TO OUTLET: INDICATES CONTROLLING SWITCH LEG.
	DENOTES BRANCH CIRCUIT(S) SUPPLYING OUTLET.
	WHEN USED, DENOTES PANELBOARD SUPPLYING OUTLET. DENOTES BRANCH CIRCUIT WIRE SIZE WHEN OTHER THAN 12 AWG.
BRANCH CIRCUIT WIRING NOTE: MULTIWIRE BRANCH CIRCUITS SHALL ORIGINATE FROM MULTIPLE-POLE CIRCUIT BREAKERS AS REQUIRED BY CEC (NEC) 210.4(B). BRANCH CIRCUITS THAT ORIGINATE FROM SINGLE-POLE CIRCUIT BREAKERS SHALL NOT BE INSTALLED AS PART OF A MULTIWIRE CIRCUIT. EACH SINGLE-POLE BREAKER CIRCUIT SHALL HAVE A DEDICATED NEUTRAL CONDUCTOR. REFER TO THE PANEL SCHEDULES FOR CIRCUIT BREAKER REQUIREMENTS.	

**SITE PLAN**  
SCALE: 1"=30'-0"  
0 15' 30' 60' 90'  
1" = 30'-0"



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**SITE PLAN**

MAIN BUILDING FULL MODERNIZATION

**VALHALLA HIGH SCHOOL**  
1725 HILLSDALE ROAD  
EL CAJON, CA 92019

REVISION

DATE

**E-008**

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PROJECT NO. PWA 0361.4

FILE NAME:

DATE: JAN 15, 2015 DRAWN: PS/HL  
CHECKED: MR

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