



PROJECT MANUAL FOR:

CAMPUS HVAC SYSTEM UPGRADE

BAKERSFIELD, CALIFORNIA

10/06/22

FREMONT ELEMENTARY SCHOOL
BAKERSFIELD CITY SCHOOL DISTRICT
ARCHITECT PROJECT NO: 566-0018
DISTRICT PROJECT NO: 22213.00-26-MP
DSA #03-122640

SET NO: _____

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CAMPUS HVAC SYSTEM UPGRADE

FREMONT ELEMENTARY SCHOOL BAKERSFIELD CITY SCHOOL DISTRICT BAKERSFIELD, CALIFORNIA KERN OF COUNTY

APPROVED:
BAKERSFIELD CITY SCHOOL DISTRICT

BY: BOARD RESOLUTION

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Bakersfield, CA 93301
C-19670



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John A. Martin and Associates, Inc.
950 South Grand Ave. 4th Floor
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SE-4757



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627 Olive Street
Santa Barbara, CA 93101
E-13083



IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT

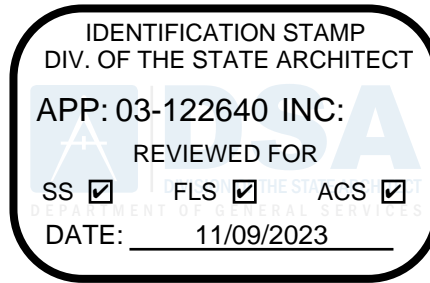
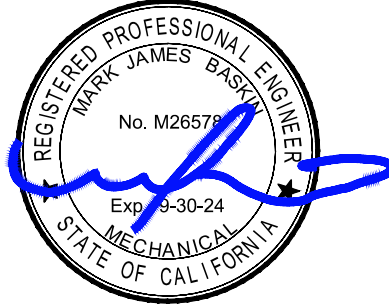
APP: 03-122640 INC:

REVIEWED FOR

SS FLS THE STATE ARCHITECT ACS

DATE: 11/09/2023

Mark Baskin, P.E., LEED AP
BASKIN MECHANICAL ENGINEERS
175 Fulton Street
Fresno, CA 93721
M-26578



01-NOTICE TO CONTRACTORS CALLING FOR BIDS

1. OWNER: BAKERSFIELD CITY SCHOOL DISTRICT
2. PROJECT IDENTIFICATION NAME: CAMPUS HVAC SYSTEM UPGRADE
3. PROJECT LOCATION: FREMONT ELEMENTARY SCHOOL 607 Texas St, Bakersfield, CA 93307
4. PROJECT DESCRIPTION: *[attach extra page(s) if necessary]* .

This project is anticipated to start on approximately **[date]** and is anticipated to have a duration of _____ calendar days for completion.

5. BID DEADLINE: Bids are due on **[date]** at **[time]** or at any other date or time as set by Addendum.

6. PLACE OF BID RECEIPT:

7. METHOD OF BID RECEIPT: Personal delivery, courier, or mailed via United States Postal Service to above address.

8. PLACE PLANS ARE ON FILE:

9. SEALED BID MARKING:

10. ALTERNATES: If alternate bids are called for, the contract will be awarded to the lowest responsive and responsible bidder on the basis indicated below:

[check only one]

- (a) The lowest bid shall be the lowest bid price on the base contract without consideration of the prices on the additive or deductive items.
- (b) The lowest bid shall be the lowest total of the combined bid prices on the base contract and alternates [specify].
- (c) The lowest bid shall be the lowest total of the bid prices on the base contract and alternates _____, taken in order, up to a maximum amount to be publicly disclosed before the first bid is opened.
- (d) The lowest bid shall be determined in a manner that prevents any information that would identify any of the bidders or proposed subcontractors or suppliers from being revealed to the public entity before the ranking of all bidders from lowest to highest has been determined.
- (e) Not applicable to this project, as no alternates are requested.

11. MANDATORY JOB WALK: Meet at:

Date: Time:

Location:

If a job walk is required on this project, attendance at the entire job walk is mandatory and failure to attend the entire job walk may result in your bid being rejected as non-responsive. Contact OWNER for details on required job walks and related documentation.

12. PLAN DEPOSIT REQUIRED: \$

13. This is a prevailing wage project. OWNER has ascertained the general prevailing rate of per diem wages in the locality in which this work is to be performed for each craft or type of worker needed to execute this contract. These rates are on file at OWNER's office, and a copy may be obtained upon request, or at www.dir.ca.gov. Contractor shall post a copy of these rates at the job site. ALL PROJECTS OVER \$1,000 ARE SUBJECT TO PREVAILING WAGE MONITORING AND ENFORCEMENT BY THE LABOR COMMISSIONER.

It shall be mandatory upon the contractor to whom the contract is awarded (CONTRACTOR), and upon any SUBCONTRACTOR, to pay not less than the specified rates to all workers employed by them in the execution of the contract.

14. A Payment Bond for contracts over \$25,000 and a Performance Bond for all contracts will be required prior to commencement of work. These bonds shall be in the amounts and form called for in the Contract Documents.

15. Pursuant to the provisions of Public Contract Code Section 22300, CONTRACTOR may substitute certain securities for any funds withheld by OWNER to ensure CONTRACTOR's performance under the contract. At the request and expense of CONTRACTOR, securities equivalent to any amount withheld shall be deposited, at the discretion of OWNER, with either OWNER or a state or federally chartered bank as the escrow agent, who shall then pay any funds otherwise subject to retention to CONTRACTOR. Upon satisfactory completion of the contract, the securities shall be returned to CONTRACTOR.

Securities eligible for investment shall include those listed in Government Code Section 16430, bank and savings and loan certificates of deposit, interest bearing demand deposit accounts, standby letters of credit, or any other security mutually agreed to by CONTRACTOR and OWNER. CONTRACTOR shall be the beneficial owner of any securities substituted for funds withheld and shall receive any interest on them. The escrow agreement shall be in the form indicated in the Contract Documents.

16. To bid on or perform the work stated in this Notice, CONTRACTOR must possess a valid and active contractor's license of the following classification(s) .

No CONTRACTOR or subcontractor shall be qualified to bid on, be listed in a bid proposal, subject to the requirements of § 4104 of the Public Contract Code, for a public works project (submitted on or after March 1, 2015) unless currently registered with the Department of Industrial Relations (DIR) and qualified to perform public work pursuant to Labor Code § 1725.5. No CONTRACTOR or subcontractor may be awarded a contract for public work on a public works project (awarded after April 1, 2015) unless registered with the DIR. DIR's web registration portal is:

www.dir.ca.gov/Public-Works/Contractors.html

17. CONTRACTOR and all subcontractors must furnish electronic certified payroll records (eCPR) to the Labor Commissioner [specify weekly, bi-weekly or monthly] in PDF format. Registration at www.dir.ca.gov/Public-Works/Certified-Payroll-Reporting.html is required to use the eCPR system.

The following notice is given as required by Labor Code Section 1771.5(b)(1): CONTRACTOR and any subcontractors are required to review and comply with the provisions of the California Labor Code, Part 7, Chapter 1, beginning with Section 1720, as more fully discussed in the Contract Documents. These sections contain specific requirements concerning, for example, determination and payment of prevailing wages, retention, inspection, and auditing payroll records, use of apprentices, payment of overtime compensation, securing workers' compensation insurance, and various criminal penalties or fines which may be imposed for violations of the requirements of the chapter. Submission of a bid constitutes CONTRACTOR's representation that CONTRACTOR has thoroughly reviewed these requirements.

18. *[check only one]*

- (a) OWNER will retain 5% of the amount of any progress payments.
- (b) OWNER will retain 10% of the amount of any progress payments because the project has been found to be substantially complex on the basis of _____.

19. This Project requires does not require prequalification pursuant to AB 1565 of all general contractors and all mechanical, electrical and plumbing subcontractors. If required, a Prequalification package may be obtained by downloading the necessary forms from _____. A bid package will not be accepted from any bidder that is required to submit a completed questionnaire and supporting documents pursuant to AB 1565, but has not done so at least ten (10) business days prior to the date fixed for the public opening of sealed bids or that has not been prequalified for at least five (5) business days prior to that date.

02-INSTRUCTIONS TO BIDDERS

**WARNING: READ THIS DOCUMENT CAREFULLY
DO NOT ASSUME THAT IT IS THE SAME AS OTHER
SIMILAR DOCUMENTS YOU MAY HAVE SEEN
EVEN IF FROM THE SAME OWNER**

**PROJECT TITLE/BID #: CAMPUS HVAC SYSTEM UPGRADE
OWNER: BAKERSFIELD CITY SCHOOL DISTRICT**

1. Preparation of Bid Form.

The Owner invites bids on the form attached to be submitted at the time and place stated in the Notice to Contractors Calling for Bids. Bids shall be submitted on the prescribed Bid Form, completed in full. All bid items and statements shall be properly and legibly filled out. Numbers shall be stated both in words and in figures where so indicated, and where there is a conflict in the words and the figures, the words shall govern. The signatures of all persons shall be in longhand. Prices, wording, and notations must be in ink or typewritten.

2. Form and Delivery of Bids.

The bid must conform to and be responsive to all Contract Documents and shall be made on the Bid Form provided. The complete bid, together with any additional materials required, shall be enclosed in a sealed envelope, addressed and hand-delivered or mailed to the Owner at the address set forth in the Notice to Contractors Calling for Bids, and must be received on or before the time set for the opening of bids. The envelope shall be plainly marked in the upper left-hand corner with the bidder's name, the project designation, and the date and time for the opening of bids. It is the bidder's sole responsibility to ensure that its bid is received prior to the bid deadline. In accordance with Government Code Section 53068, any bid received after the scheduled closing time for receipt of bids shall be returned to the bidder unopened.

At the time set for the opening of bids, the sealed bids will be opened and publicly read aloud at the place indicated in the Notice to Contractors Calling for Bids. However, if this project calls for prequalification of bidders pursuant to Public Contract Code Section 20111.5, only those sealed bids received from bidders who have been prequalified for at least one day prior to bid opening shall be opened and publicly read aloud.

3. Bid Security.

Each bid shall be accompanied by a bid security in cash, a certified or cashier's check, or bid bond in an amount not less than 10 percent of the total bid price payable to the Owner. The bid security shall be given as a guarantee that if awarded the contract the bidder will execute and return the Construction Agreement within 10 working days after

award of the contract and will furnish on the prescribed forms a satisfactory Payment (labor and material) Bond and separate Performance Bond, in accordance with the Contract Documents and Civil Code Sections 9550 et seq., and certificates evidencing that the required insurance is in effect in the amounts set forth in the Contract Documents. In case of refusal or failure to timely execute the Construction Agreement and furnish the required bonds and insurance certificates, the bid security shall be forfeited to the Owner. If the bidder elects to furnish a bid bond as its bid security, the bidder shall use the bid bond form included in the Contract Documents, unless the Owner elects to waive the use of the form provided, in its sole discretion.

4. Signature.

At the various times such documents are required to be submitted, the Bid Form, all bonds, the Designation of Subcontractors form, all Information Required of Bidder or prequalification forms, Workers Compensation Certificate, Drug-Free Workplace Certification, Non-Collusion Affidavit, Asbestos and Lead Based Paint Certification, Iran Contracting Act Certification, the Construction Agreement, and all Guarantees must be signed in the name of the bidder and must bear the signature of the person or persons duly authorized to sign these documents. Where indicated, if bidder is a corporation, the legal name of the corporation shall first be set forth, together with two signatures: one from among the chairman of the board, president, or vice president, and one from among the secretary, chief financial officer, or assistant treasurer. Alternatively, the signature of other authorized officers or agents may be affixed, if duly authorized by the corporation. Such documents shall include the title of such signatories below the signature and shall bear the corporate seal. Where indicated, if bidder is a joint venture or partnership, the bidder shall submit with the bid certifications signed by authorized officers of each of the parties to the joint venture or partnership, naming the individual (1) who shall be the agent of the joint venture or partnership, (2) who shall sign all necessary documents for the joint venture or partnership and, (3) should the joint venture or partnership be the successful bidder, who shall act in all matters relative to the resulting contract for the joint venture or partnership. If bidder is an individual, his/her signature shall be placed on such documents.

5. Modifications.

Changes in or additions to any of the bid documents, the summary of the work bid upon, or the alternative proposals, or any other modifications which are not specifically called for by the Owner, may result in the Owner's rejection of the bid as not being responsive. No oral or telephonic modification of any bid will be considered. However, prior to the opening of bids, a telegraphic modification signed by the bidder and postmarked and received prior to the opening of bids, or a facsimile modification duly signed by the bidder received prior to the opening of bids, may be considered if included within a sealed bid.

6. Erasures, Inconsistent, or Illegible Bids.

The bid submitted must not contain any erasures, interlineations, or other corrections unless each correction creates no inconsistency and is suitably authenticated and noted by signature of the bidder. In the event of inconsistency between words and figures in the bid, words shall control figures. In the event the Owner determines that any bid is unintelligible, illegible, or ambiguous, the Owner may reject the bid as not being responsive.

7. Examination of Site and Contract Documents.

At its own expense and prior to submitting bids, each bidder shall examine all documents relating to the project, visit the site, and determine the local conditions which may in any way affect the performance of the work, including the general prevailing rate of per diem wages and other relevant cost factors. Each bidder shall be familiar with all federal, state, and local laws, ordinances, rules, regulations, and codes affecting the performance of the work, including the cost of permits and licenses required for the work. Each bidder shall make such surveys and investigations, including investigation of subsurface or latent physical conditions at the site or where work is to be performed, as it may deem necessary for performance of the work at the price being bid. Each bidder shall determine the character, quality, and quantities of the work to be performed and the materials and equipment to be provided, and shall correlate its observations, investigations, and determinations with all requirements of the project.

The Contract Documents show and describe the existing conditions as they are believed to have been used in the design of the work and are only provided as information for the bidder. **The Owner is not making any warranties regarding this information. The Owner shall not be liable for any loss sustained by the successful bidder resulting from any variance between the conditions and design data given in the Contract Documents and the actual conditions revealed during the bidder's pre-bid examination or during the progress of the work.** Bidder agrees that the submission of a bid shall be incontrovertible evidence that the bidder has complied with and agrees to further comply with all the requirements of this section.

8. Withdrawal of Bids.

Any bid may be withdrawn, either personally, by written request, or by telegraphic or facsimile request confirmed in the manner specified above for bid modifications, at any time prior to the scheduled closing time for receipt of bids. In accordance with this paragraph, the bid security shall be returned for bids withdrawn prior to the scheduled closing time for receipt of bids. No bidder may withdraw any bid for a period of 60 days after the award of the contract. A bidder's unawarded alternative bids remain open for a period of six months after award of contract as irrevocable offers to enter into either change orders or separate contracts for the stated price adjustment.

9. Agreement and Bonds.

The Construction Agreement and the form of the Payment and Performance Bonds which the successful bidder as Contractor will be required to execute are included in the Contract Documents and should be carefully examined by the bidder. The Payment Bond shall be in an amount not less than 100 percent of the amount of the contract in accordance with Civil Code section 9554. The successful bidder as Contractor will also be required to furnish a separate Performance Bond in the amount of 100 percent of the contract amount. Sufficient bonds shall be fully executed and returned to Owner with the executed Construction Agreement.

10. Interpretation of Contract Documents.

If any 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, a written request for an interpretation or correction shall be submitted to the Owner. The bidder submitting the written request shall be responsible for its prompt delivery. Any interpretation or correction of the Contract Documents will be made only by addendum issued by the Owner, and a copy of any addendum will be hand-delivered, mailed, or faxed to each bidder known to have received a set of the Contract Documents. No person is authorized to make any oral interpretation of any provision in the Contract Documents, nor shall any oral interpretation be binding on the Owner. If there are discrepancies on drawings, plans, or specifications, or conflicts between drawings, plans, specifications, terms, or conditions, the interpretation of the Owner shall prevail. Bidder shall become familiar with the plans, specifications, and drawings.

SUBMISSION OF A BID WITHOUT REQUESTING CLARIFICATIONS SHALL BE INCONTROVERTIBLE EVIDENCE THAT THE BIDDER HAS DETERMINED THAT THE PLANS, SPECIFICATIONS, AND DRAWINGS ARE SUFFICIENT FOR BIDDING AND COMPLETING THE WORK, THAT BIDDER IS CAPABLE OF READING, FOLLOWING AND COMPLETING THE WORK IN ACCORDANCE WITH THE PLANS, SPECIFICATIONS, AND DRAWINGS, AND THAT THE PLANS, SPECIFICATIONS, AND DRAWINGS FALL WITHIN AN ACCEPTABLE STANDARD FOR THESE ITEMS, AND THAT BIDDER AGREES THAT THE PROJECT CAN AND WILL BE COMPLETED ACCORDING TO THE OWNER'S TIME LINES AND ACCORDING TO THE PROGRESS SCHEDULE TO BE SUBMITTED BY THE SUCCESSFUL BIDDER INCORPORATING THE OWNER'S TIME LINES FOR COMPLETION OF THE PROJECT.

11. Bidders Interested in More Than One Bid.

No person, firm, or corporation shall be allowed to make or file or be interested in more than one bid for the same work unless alternate bids are specifically called for by the Owner. A person, firm, or corporation that has submitted a sub-proposal to a bidder, or that has quoted prices of materials to a bidder, is not disqualified from submitting a

proposal or quoting prices to other bidders or submitting a bid on the project.

12. Award of Contract.

(a) The Owner reserves the right to reject any or all bids, or to waive any irregularities or informalities in any bids or in the bidding process, and to award more than one contract. If two identical low bids are received from responsive and responsible bidders, the Owner will determine which bid will be accepted pursuant to Public Contract Code Section 20117.

(b) If made by the Owner, award of the contract will be by action of the governing board or other governing body to the lowest responsive and responsible bidder. In the event an award of the contract is made to a bidder and that bidder fails or refuses to execute the Agreement and provide the required documents within the time required, the Owner may award the contract to the next lowest responsive and responsible bidder or release all bidders. An election by the Owner to reject all bids does not release the bid security of any bidder who has previously been awarded the contract and failed or refused to execute the Agreement and provide the required documents.

(c) In ascertaining the low bidder, the bids will be examined without reference to any substitutions requested by any bidder, whether or not the substitution request would result in a modification of the contract price.

13. Alternatives.

If alternate bids are called for, the contract will be awarded to the lowest responsive and responsible bidder on the basis indicated in the Notice to Contractors Calling for Bids. Owner reserves the right to award or reject any, all, or any combination of the alternates called for in the bid documents, whether or not the alternate(s) was included in the calculations used to identify the low bidder. All bid alternates not part of the contract initially awarded by Owner shall remain open and valid for a period of six months after the contract is awarded as irrevocable offers to enter into either change orders or separate contracts on the items for the price adjustment contained in the bid alternate.

14. Public Contract Code Section 20111.5—Discretionary Prequalification of Bidders.

[check one]

- Discretionary Prequalification is not required to bid on this project.
- Discretionary Prequalification is required to bid on this project. Prospective bidders are required to submit to the Owner a completed prequalification questionnaire and financial statement, on forms provided by the Owner, no later than five days prior to the date fixed for the public opening of sealed bids. These

documents will be the basis for determining which bidders are qualified to bid the project. Bidders will be notified by telephone and mail of their prequalification status within four days after submission of prequalification documents. Bids will not be accepted from any bidder who has not been prequalified at least one day prior to the bid opening. Pursuant to Public Contract Code Section 20111.5, the information in the prequalification questionnaire and financial statement will be kept confidential. Prequalification documents may be obtained by contacting the Owner or by downloading them from .

15. Public Contract Code Section 20111.6—Mandatory Prequalification of General Contractors and Mechanical, Electrical and Plumbing Subcontract Bidders.

[check one]

- Mandatory Prequalification of general contractors and mechanical, electrical and plumbing subcontractors is not required to bid on this project.
- Mandatory Prequalification of general contractors and mechanical, electrical and plumbing subcontractors is required to bid on this project. Prospective bidders holding licenses in classifications A, B, C-4, C-7, C-10, C-16, C-20, C-34, C-36, C-38, C- 42, C- 43 and C- 46 are required to submit to the Owner a completed prequalification questionnaire and financial statement, on forms provided by the Owner, no later than ten (10) working days prior to the date fixed for the public opening of sealed bids. These documents will be the basis for determining which bidders in the listed license categories are qualified to bid the project. Bidders will be notified by telephone, mail or email of their prequalification status within five (5) working days after submission of prequalification documents. Bids will not be accepted from any bidder who is required to prequalify and who has not been prequalified at least five (5) working days prior to the bid opening. Pursuant to Public Contract Code Section 20111.6, the information in the prequalification questionnaire and financial statement will be kept confidential. Prequalification documents may be obtained by contacting the Owner or by downloading them from .

15. Competency of Bidders.

In selecting the lowest responsive and responsible bidder, consideration will be given not only to the financial standing but also to the general competency of the bidder for performance of the work. By submitting a bid, each bidder agrees that in determining the successful bidder and its eligibility for the award, the Owner may consider the bidder's experience, facilities, conduct, and performance under other contracts, financial condition, reputation in the industry, and other factors relating to or which could affect the bidder's performance of the project.

The Owner may also consider the qualifications and experience of subcontractors and

other persons and organizations (including those who are to furnish the principal items of material and equipment) proposed for those portions of the work. Operating costs, maintenance considerations, performance data, and guarantees of materials and equipment may also be considered by the Owner. In this regard, the Owner may conduct such investigations as the Owner deems necessary to assist in the evaluation of any bid and to establish the responsibility, qualifications, and financial ability of the bidder, proposed subcontractors, and other persons and organizations to do the work to the Owner's satisfaction within the prescribed time. The Owner reserves the right to reject the bid of any bidder who does not pass any such evaluation to the satisfaction of the Owner, or in the Owner's sole discretion, to permit substitution of subcontractor(s) found non-responsible.

16. Listing Subcontractors.

Each bidder shall submit a list of the proposed subcontractors, including their address, California contractor's license number and DIR Registration number, on the project as required by the Subletting and Subcontracting Fair Practices Act (Public Contract Code Section 4100 and following sections) on the form furnished with the Contract Documents. If alternate bids are called for and the bidder intends to use different or additional subcontractors, a separate list of subcontractors must be submitted for each such alternate bid. The Owner may request that bidder submit information to assess the responsibility of the bidder's proposed subcontractors. The apparent low bidder shall, within 24 hours of the bid opening, provide a complete listing of all subcontractors, including full name, address, telephone numbers, contractor's license number and type and DIR Registration number.

17. Workers' Compensation.

In accordance with the provisions of Labor Code Section 3700, the successful bidder shall secure the payment of compensation to all employees. The successful bidder awarded the contract shall sign and file with the Owner, at the time of returning the executed Construction Agreement, the certificate which is included as a part of the Contract Documents.

18. Contractor's License.

At the bid opening date and time, if a bidder is not properly licensed and registered to perform the project in accordance with Division 3, Chapter 9, of the California Business and Professions Code, Labor Code section 1725.5 and the Notice Calling for Bids, as required, that bidder's bid will be rejected as non-responsive. Business and Professions Code Section 7028.15 precludes payment for work or materials unless the Registrar of Contractors verifies to the Owner that the bidder was properly licensed at the time the bid was submitted. If this project is federally funded, the bidder must be properly licensed prior to the award of the contract. Any bidder not properly licensed and registered with DIR is subject to penalties under the law and the contract can be considered void. If the

license classification specified in these Contract Documents is that of a “specialty contractor” as defined in Business and Professions Code Section 7058, the specialty contractor awarded the contract for this work shall construct a majority of the work in accordance with the provisions of Business and Professions Code Section 7059.

19. Anti-Discrimination.

It is the policy of the Owner that in all work performed under contracts there be no unlawful discrimination against any prospective or active employee engaged in the work because of race, color, ancestry, national origin, religious creed, sex, age, marital status, physical disability, mental disability, or medical condition. The successful bidder agrees to comply with applicable federal and state laws, including but not limited to the California Fair Employment and Housing Act, beginning with Government Code Section 12900 and Labor Code Section 1735. In addition, the successful bidder agrees to require like compliance by any subcontractors employed on the work by that bidder.

20. Hold Harmless.

The successful bidder awarded the contract shall hold harmless and indemnify various parties as more clearly set forth elsewhere in the Contract Documents.

21. Substitutions.

(a) All bids should be calculated and submitted on the project as described in the bid documents, and on the assumption that substitution requests submitted with the bid will not be approved. Notwithstanding the foregoing, substitution requests submitted with bids will be given due consideration and adjustments to the contract, which may include adjustment to contract price, will be contained in a change order should the request be approved. Bidders not desiring to bid without prior approval of a proposed substitution should follow the procedure contained in this section for pre-bid review of proposed substitutions.

(b) Should the bidder wish to request prior to bid opening any substitution for the specified materials, process, service, or equipment, the bidder shall submit a written request at least ten (10) working days before the bid opening date and time. If the requested substitution is acceptable, the Owner will approve it in an addendum issued to all bidders of record. Requests received less than ten (10) working days prior to bid opening will not be considered prior to the bid date. Extensions of the bid date shall not operate to extend the deadline for requesting substitutions unless the Owner so states in an addendum issued to all bidders of record.

(c) If a substitution is not requested and considered prior to the bid date, the bidder shall submit with the bid all proposed substitutions, if any, on the Substitution Listing form contained in the bid documents.

(d) With respect to any materials, process, service, or equipment listed in the bid, unless the bidder clearly indicates in its Substitution Listing that it is proposing to use an "equal" material, process, service, or equipment, its bid shall be considered as offering the specified material, process, service, or equipment referred to by the brand name or trade name specified.

(e) Unless expressly authorized in the bid documents, no bid may be conditioned on the Owner's acceptance of a proposed substitution. Any bid containing any such condition may be treated as a non-responsive bid.

(f) It is expressly understood and agreed that the Owner reserves the right to reject any proposed substitution. It is further expressly understood and agreed that in the event the Owner rejects a proposed "equal" item, or any other requested substitution, the specified material, process, service, or equipment designated by brand name or trade name, or other item as specified, will be provided.

(g) No substitution request of any kind or nature may be made after the bid date, except by the express written permission of the Owner and on such terms as Owner may require, or in an emergency, as in the case where a specified material, process, service, equipment, or other item has become unavailable through no fault of the bidder.

(h) These time limitations shall be complied with strictly, and in no case will an extension of time for completion be granted because of the failure to request the substitution of an item at the times and in the manner set forth herein.

(i) Prior to contract award, the Owner shall notify the bidder of the Owner's decision concerning proposed substitutions of "equal" items submitted with the bid. The Owner shall notify bidder of the Owner's decision on any other proposed substitutions as those decisions are made. Notification of all decisions by the Owner shall be in writing, and no proposed substitution shall be deemed approved unless the Owner has confirmed it in writing.

(j) With respect to all proposed substitutions, the requirements applicable to the Contractor in the Contract Documents shall be applicable to all bidders requesting substitutions.

22. Surety Qualifications.

Bid bonds executed by a surety insurer admitted in the State of California for purposes of issuance of such bonds will be accepted by Owner as sufficient.

Payment and/or performance bonds executed by a surety insurer admitted in the State of

California with a minimum “A minus, VIII” rating (A minus V” when the price stated in the Contract Documents is less than \$500,000) as rated by the current edition of Best’s Key Rating Guide published by A.M. Best Company, Oldwick, New Jersey 08858, shall be presumed by Owner to be sufficient for the issuance of such bonds. In the alternative, any admitted surety company which satisfies the requirements set forth in Code of Civil Procedure Section 995.660 shall be accepted and approved for the issuance of bonds, and documents demonstrating satisfaction of the requirements of Section 995.660 with respect to the bid bond must be submitted with the bid. No personal sureties will be accepted.

23. Liquidated Damages.

All work must be completed within the time limits set forth in the Contract Documents. Bidders must understand that the goodwill, educational process, and other business of the Owner will be damaged if the project is not completed within the time limits required. Should the work not be completed within the specified time for completion, the successful bidder awarded the contract may be liable for liquidated damages and for expenses incurred by the Owner for failure to timely complete the project. Such damages shall be deducted from any payments due or to become due to the successful bidder.

SUBMISSION OF A BID ON THIS PROJECT SHALL BE TAKEN AS CONCLUSIVE AND IRREFUTABLE EVIDENCE THAT BIDDER AGREES WITH THE REQUIREMENTS OF THIS SECTION.

24. Drug-Free Workplace Certification.

Pursuant to Government Code section 8350 and following, the successful bidder will be required to execute and return to Owner the Drug-Free Workplace Certificate contained in the Contract Documents with the executed Construction Agreement. The bidder will be required to take positive measures outlined in the certificate to ensure the presence of a drug-free workplace. Failure to abide with the conditions set forth in the Drug-Free Workplace Act could result in penalties, including termination of the Construction Agreement or suspension of payment under the Construction Agreement.

25. Non-Collusion Declaration.

In accordance with the provisions of Public Contract Code section 7106, each bid must be accompanied by a Non-Collusion Declaration executed under penalty of perjury under the laws of the State of California.

26. Implementation of Disabled Veteran Business Enterprises Requirements.

In accordance with Education Code Section 17076.11, the Owner has a participation goal for disabled veteran business enterprises of at least three percent per year of the overall dollar amount of funds allocated to the Owner 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 Owner. Prior to and as a condition precedent for final payment under any contract for this project, the successful bidder will be required to provide appropriate documentation to the Owner identifying the amount paid to disabled veteran business enterprises in conjunction with the contract, so the Owner can assess its success at meeting this goal.

27. Asbestos and Lead-Based Paint Certification.

The form of Contractor's Certificate Regarding Non-Asbestos Containing Materials and Exclusion of Lead Products, as contained in the Contract Documents, shall be executed and submitted with the bid.

28. Fingerprinting Requirements.

The successful bidder and all subcontractors at any level will be required to comply with any applicable laws on fingerprinting construction workers. Minimum requirements are set forth in the Contract Documents, and the form for certification of compliance is contained in the Contract Documents. The successful bidder must complete and return this form when directed by Owner.

29. California Products.

Price, fitness, and quality being equal with regard to supplies, the Owner may prefer supplies grown, manufactured, or produced in California. The Owner may next prefer supplies partially grown, manufactured, or produced in California. Where the Owner has a preference, the bids of the suppliers or the prices quoted by them (i) must not exceed by more than five percent the lowest bids/prices quoted by out-of-state suppliers, (ii) the major portion of the manufacture of the supplies is not done outside of California, and (iii) the public good will be served. Refer to specifications for indications of Owner preferences. Government Code Sections 4330-4334.

30. Contractor License And DIR Registration Required.

To perform the work required for this project, Bidder must possess the type of contractor's license specified in the Notice to Contractors Calling for Bids, and must be registered with the Department of Industrial Relations (DIR) as a public works contractor. Contractor registration can be accomplished through the portal <https://efiling.dir.ca.gov/PWCR/>. No CONTRACTOR or subcontractor shall be qualified to bid on, be listed in a bid proposal, subject to the requirements of § 4104 of the Public Contract Code, for a public works project (submitted on or after March 1, 2015) unless currently registered with the DIR and qualified to perform public work pursuant to Labor Code § 1725.5. No CONTRACTOR or subcontractor may be awarded a contract for public work on a public works project (awarded after April 1, 2015) unless registered with the DIR.

31. Post-Bid Credits.

Should any bidder or proposed subcontractor to any bidder issue any credit or otherwise reduce its bid or quote pertaining to the work of this project, the value of the credit or other reduction shall be passed on to the Owner less only the applicable markups for profit and overhead as specified in the Contract Documents on change orders.

32. Contents of Bid.

The bid will include the following documents: Bid Form, List of Subcontractors, Substitution Listing form, Non-collusion Declaration, Exclusion of Asbestos and Lead Based Paint Products Certification, Contractors' Qualification Questionnaire (if required) Mandatory Prequalification Package (if required), Iran Contracting Act Certification (if required), Bid Bond or other bid security, and Certification of Attendance at Mandatory Job Walk, if a job walk is required on this project.

33. Bid Protests.

Any bidder having submitted a bid on the project may file a protest against the proposed contract award or challenging the validity of other bids. The protest must meet all of the following requirements:

- (a) The protest shall be submitted in writing and shall contain all the materials required by these provisions; one that does not contain all the required material shall not be recognized.
- (b) The protest shall be received by the Owner no later than close of business on the second business day after bid opening; one received after that time shall not be recognized.
- (c) Each protest shall contain the following:
 - (i) Identification by name, address, and telephone number of the protesting person(s), company and/or organization and identification of the project to which the protest pertains.
 - (ii) The protest shall set forth in detail all grounds for the protest, including without limitation all facts, identification by name of any other bids or bidders involved in the protest, all supporting documentation, together with any legal authorities and/or argument in support of the grounds for the protest. Any matters not set forth in the written protest shall be deemed waived. All factual contentions must be supported by competent, admissible, and credible evidence.

(d) Any protest not conforming to the requirements of this section shall be rejected as invalid.

(e) Where a protest is filed in conformity with this section, the Owner's staff, or such individual(s) as may be designated by the Owner, shall review and evaluate the basis of the protest and provide a written decision to the protesting bidder. The written decision shall either concur with or deny the protest.

(f) Submission of a written protest to and receipt of a written decision from the Owner staff shall be considered an administrative remedy, and failure to follow this procedure shall be a bar to any legal action.

(g) The written decision by the Owner's staff may be appealed to the Owner. The appeal must be filed with the Owner's governing board or other governing body within two business days of the protesting bidder's receipt of the written decision of the Owner's staff.

(h) The appeal must clearly state the reasons and basis for appealing the decision of the Owner's staff, making specific reference to any portions of the material submitted with the protest required.

(i) A hearing on the appeal shall be held before the Owner's governing board or other governing body within 45 days of receipt of the appeal.

(j) The Owner's governing board or other governing body will make a decision within seven days following the hearing. The decision of the Owner's governing board or other governing body is not subject to arbitration, mediation, reconsideration, or further appeal.

(k) Submission of an appeal to and receipt of a decision from the Owner's governing board or other governing body shall be considered an administrative remedy, and failure to follow this procedure shall be a bar to any legal action.

34. Procedure for Protesting Being Deemed A Non-Responsible Bidder.

Any bidder or prospective bidder deemed non-responsible after having submitted a bid may file an appeal of the action to the Owner's governing board or other governing body. The protest must meet all of the following requirements:

(a) The appeal shall be submitted in writing, and shall contain all the materials required by these provisions; one that does not contain all the required material shall not be recognized.

(b) The appeal must be received by the Owner's governing board or other governing body within two business days of the action by Owner giving rise to the

protest; one received after that time shall not be recognized.

(c) A hearing on the appeal shall be held before the Owner's governing board or other governing body prior to the award of contract.

(d) The decision of the Owner's governing board or other governing body is not subject to arbitration, mediation, reconsideration, or further appeal.

(e) Submission of a protest to and receipt of a decision from the Owner's governing board or other governing body shall be considered an administrative remedy, and failure to follow this procedure shall be a bar to any legal action.

35. All Projects Over \$1,000 Are Subject to Prevailing Wage Monitoring and Enforcement By the Labor Commissioner

The project is subject to prevailing wage monitoring and enforcement by the DIR, as indicated in the Notice Calling for Bids. The successful bidder and all subcontractors will be subject to the requirements of Subchapter 4.5 of Chapter 8 of Title 8 of the California Code of Regulations. The successful bidder and all subcontractors will be required to furnish certified payroll records to the Labor Commissioner on the frequency specified in the Notice Calling for Bids using the DIR's eCPR system. To access the DIR's eCPR system and to obtain additional information and assistance, bidders may go to DIR website www.dir.ca.gov/Public-Works/Certified-Payroll-Reporting.html. Failure to timely submit certified payroll records may result in debarment from public works projects by the Labor Commissioner for a period of one to three years.

03-BID FORM

Name of Bidder:

Project: CAMPUS HVAC SYSTEM UPGRADE

Project #: 566-0018

To: BAKERSFIELD CITY SCHOOL DISTRICT, referred to as "OWNER."

A. In compliance with your Notice to Contractors Calling for Bids and related documents, the undersigned bidder, having familiarized itself with the terms of the contract, the local conditions affecting the performance of the contract, the cost of the work at the place where the work is to be done, and the drawings and specifications and other contract documents, proposes and agrees to perform the contract within the time stipulated, 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 applicable taxes, utility, and transportation services necessary to perform the contract and complete in a workmanlike manner all of the work required in connection with the above-referenced project, including sheeting, shoring, and bracing, or equivalent method for protection of life and limb in trenches and open excavation in conformance with applicable safety orders, within the time limits set for completion of all work, all in strict conformity with the drawings and specifications and other contract documents, including Addenda Nos. _____ on file at the office of OWNER for the Base Bid sum of:

[list all]

dollars.

[written in words]

\$ _____.

[written in numbers]

B. If any of the following alternate bids are utilized and awarded, the undersigned agrees to make price adjustments, as indicated, to the Base Bid.

ALTERNATE BID 1:

[description of alternate]

Bid 1. State the amount to be **added** **deducted** to/from the Base Bid for Alternate
[select one]

dollars.
[written in words]

\$.
[written in numbers]

ALTERNATE BID 2:

[description of alternate]

Bid 2. State the amount to be **added** **deducted** to/from the Base Bid for Alternate
[select one]

dollars.
[written in words]

\$.
[written in numbers]

ALTERNATE BID 3:

[description of alternate]

Bid 3. State the amount to be **added** **deducted** to/from the Base Bid for Alternate
[select one]

dollars.
[written in words]

\$.
[written in numbers]

**REFER TO ANY ATTACHMENTS TO THIS BID FORM
FOR ADDITIONAL ALTERNATES**

C. The Bidder agrees that upon written notice of acceptance of this bid, he will execute the contract and provide all bonds and other required documents within ten (10) working days after contract award.

D. Attached is bid security not less than 10 percent of the bid, in the amount of \$ _____, in the form of (cash) (bid bond) (certified check) (cashier's check).
[check one]

E. The Bidder acknowledges that OWNER reserves the right to accept or reject any and/or all Base Bids and alternate bids. This entire bid shall remain open and active for sixty (60) days after bid opening, and any alternate bids not initially awarded shall remain active, as an irrevocable offer by the Bidder to enter into either a change order or separate contract, for up to six months after award of the contract.

F. It is understood and agreed that if written notice of the acceptance of this bid is mailed, telegraphed, or delivered to the Bidder after the opening of the bid, and within the time this bid is required to remain open, or at any time after that before this bid is withdrawn, the Bidder will execute and deliver to OWNER the Agreement and will also furnish and deliver to OWNER the Performance Bond and a separate Payment Bond as specified, certificates of insurance, and other required documents.

G. It is understood and agreed that should the Bidder fail or refuse to return executed copies of the Construction Agreement, bonds, insurance certificates, and other required documents to OWNER within the time specified, the bid security shall be forfeited to OWNER.

H. In submitting this bid, the Bidder offers and agrees that if the bid is accepted it will assign to OWNER all rights, title, and interest in and to all causes of action it may have under Section 4 of the Clayton Act (15 U.S.C. Section 15) or under the Cartwright Act (Business & Professions Code Section 16700 and following sections) arising from purchases of goods, materials, or services by the Bidder for sale to OWNER pursuant to the bid. Such assignment shall be made and become effective at the time OWNER tenders final payment under the contract. (Public Contract Code Section 7103.5; Government Code Section 4552.)

I. The Bidder hereby certifies that it is, and at all times during the performance of work under the Contract Documents shall be, in full compliance with the provisions of the Immigration Reform and Control Act of 1986 ("IRCA") in the hiring of its employees, and the Bidder shall indemnify, hold harmless, and defend OWNER against any and all actions, proceedings, penalties, or claims arising out of the Bidder's failure to comply strictly with the IRCA.

J. The Bidder understands that a licensed contractor shall not submit a bid to a public agency unless the Bidder's contractor's license number appears clearly on the bid, the license expiration date is stated, and the bid contains a statement that the representations made therein are made under penalty of perjury. Any bid not containing this information, or a bid containing information which is subsequently proven false, may

be considered non-responsive and may be rejected by the public agency.

K. Bidder's contractor's license is:

[number] [class] [expires]

[DIR registration number] [expires]

L. Attached is Bidder's AB 1565 Prequalification Questionnaire Validation Form (if required by the Notice to Contractors Calling for Bids, paragraph 20, and the Instructions to Bidders, paragraph 36).

M. The undersigned hereby declares that all of the representations of this bid, including all documents comprising the bid package, are true and are made under penalty of the perjury laws of the State of California.

INDIVIDUAL/DBA

*Signature: _____

Print Name:

Business Address:

Date: Telephone:

PARTNERSHIP

Partnership Name:

*By: _____, Partner

Print Name:

Business Address:

Date: Telephone:

Names of Other Partners:

CORPORATION

Corporation Name: _____, a _____ Corporation.
(State of Incorporation)

Business Address:

Date: _____ Telephone: _____

*By: _____ [Required] [Seal]
(President/Chief Executive Officer/Vice President) [Circle One]

Print Name:

*By: _____ [Required]
(Secretary/Treasurer/Chief Financial Officer/Assistant Treasurer) [Circle One]

Print Name:

JOINT VENTURE

Joint Venturer Name:

*Signed by: _____ (Joint Venturer)

Print Name:

Business Address:

Date: _____ Telephone: _____

Other Parties to Joint Venture:

If an individual joint venturer:

*By: _____ (Signature)
Print Name:

If a DBA joint venturer:

*By: _____ (Signature)
Print Name:

If a partnership joint venturer:

*By: _____ (Signature)

Print Name:

If a Corporation joint venturer:

[Seal]

(Name)

a _____ Corporation.
(State of Incorporation)

*By: _____

Print Name:

Title:

***Important Notice:** Labor Code § 1771.1(a) provides that "A contractor or subcontractor shall not be qualified to bid on, be listed in a bid proposal, subject to the requirements of Section 4104 of the Public Contract Code, or engage in the performance of any contract for public work, as defined in this chapter, unless currently registered and qualified to perform public work pursuant to Labor Code Section 1725.5. It is not a violation of this section for an unregistered contractor to submit a bid that is authorized by Section 7029.1 of the Business and Professions Code or by Section 10164 or 20103.5 of the Public Contract Code, provided the contractor is registered to perform public work pursuant to Section 1725.5 at the time the contract is awarded." Please go to <http://www.dir.ca.gov/Public-Works/PublicWorks.html> for more information and to register. This project is subject to monitoring by the Department of Industrial Relations.

04-SUBSTITUTION LISTING

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

TO: BAKERSFIELD CITY SCHOOL DISTRICT ("OWNER")

1. Pursuant to bidding and contract requirements for the work titled:
Project Title/Bid #: CAMPUS HVAC SYSTEM UPGRADE

The contract sum, proposed by the undersigned on the Bid Form, is for the work as shown on the drawings, described in the specifications, and otherwise defined in the Contract Documents. However, the undersigned proposes the following substitutions for the Owner's consideration. Should the Owner accept any or all of the proposed substitutions, the Bidder agrees to reduce the contract sum by the amount shown. Proposed substitutions must be submitted not later than 10 working days prior to the date of bid opening in order for such request to be reviewed before bidding. All substitutions must be listed on this form and submitted prior to or with the bid or they will not be reviewed.

2. Please complete, attaching additional sheets as necessary:

Bidder proposes [check one]: no substitutions.
 the following substitutions:

Specified Product or Material	Drawing Number or Specification Section	Proposed Substitution	Proposed Price Reduction

3. All bids should be calculated and submitted on the assumption that substitution requests will not be approved.

4. Bidder hereby certifies that the requested substitutions are equal or better in all respects to what is specified, unless otherwise noted.

**SIGNATURE MUST BE IDENTICAL
TO THAT PROVIDED ON BID FORM**

BIDDER:

By: _____

Print Name:

05-LIST OF SUBCONTRACTORS

TO BE SUBMITTED WITH BID

PROJECT TITLE: BID #: CAMPUS HVAC SYSTEM UPGRADE
OWNER: BAKERSFIELD CITY SCHOOL DISTRICT

A. In compliance with the Subletting and Subcontracting Fair Practices Act (Public Contract Code Section 4100 and following sections) and any amendments to the Act, each Bidder shall set forth below:

1. The name, location of the place of business California contractor license number and DIR registration number of:

a. Each subcontractor who will perform work or labor or render service to the Bidder in or about the construction of the work or improvement to be performed under the Construction Agreement;

b. Each subcontractor licensed by the State of California who, under subcontract to the Bidder, specially fabricates and/or installs a portion of the work or improvement according to detailed drawings contained in the plans and specifications, in an amount in excess of one-half of one percent of the Bidder's total bid or Ten Thousand Dollars (\$10,000), whichever is greater;

2. The portion of the work which will be done by each subcontractor.

B. The Bidder shall list only one subcontractor for each such portion as is defined by the Bidder in this bid.

C. If the Bidder fails to specify a subcontractor, or if the Bidder specifies more than one subcontractor for the same portion of work to be performed under the contract in excess of one-half of one percent of the Bidder's total bid, the Bidder shall be deemed to have agreed that the Bidder is fully qualified to perform that portion, and that the Bidder alone shall perform that portion.

D. No Bidder whose bid is accepted shall (i) substitute any subcontractor, (ii) permit any subcontractor to be voluntarily assigned or transferred, or allow it to be performed by anyone other than the original subcontractor listed in the original bid, or (c) sublet or subcontract any portion of the work in excess of one-half of one percent of the Bidder's total bid as to which the original bid did not designate a subcontractor, except as authorized in the Subletting and Subcontracting Fair Practices Act.

E. Violations of any provision of the Subletting and Subcontracting Fair Practices Act may be deemed by the OWNER to make the bid non-responsive and/or the Bidder non-responsible.

F. Attach additional sheets, as necessary.

SUBCONTRACTOR'S NAME & LOCATION	DESCRIPTION OF PORTION TO BE SUBCONTRACTED	CALIFORNIA CONTRACTOR LICENSE NO.	DIR REGISTRATION NUMBER

Firm Name:

By: _____
[Signature must match that on bid]

Print Name:

06-BID BOND

IF USED BY BIDDER, MUST BE COMPLETED AND SUBMITTED WITH BID

**PROJECT TITLE/BID #: CAMPUS HVAC SYSTEM UPGRADE
OWNER: BAKERSFIELD CITY SCHOOL DISTRICT**

KNOW ALL MEN BY THESE PRESENTS, that we, _____ as Principal, and _____ as Surety, are held and firmly bound unto the _____ (referred to as Owner) in the sum of _____ percent of the total amount of the bid of the Principal submitted to the Owner for the work and obligations described below for the payment of which sum in lawful money of the United States, well and truly to be made, we jointly and severally bind ourselves, our heirs, executors, administrators, successors, and assigns.

The condition of this obligation is such that whereas the Principal has submitted the accompanying bid dated _____, 20____, for: \$ _____.

NOW, THEREFORE, if the Principal shall not withdraw said bid within the period specified therein after the opening of the same, or if no period be specified, within 60 days after said opening; and if the Principal is awarded the contract, and shall within the specified period, or if no period is specified, within five working days after the award of the contract, enter into a written contract with the Owner in accordance with the bid as accepted and give bonds with good and sufficient surety or sureties as may be required for the faithful performance and proper fulfillment of such contract and for the payment of labor and materials used for the performance of the contract, provide certificates evidencing the required insurance is in effect (in the amounts required in the contract documents), and provide any other documents required under the contract documents to be submitted at the time the contract is executed, then the above obligation shall be void and of no effect, otherwise to remain in full force and effect.

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

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

IN WITNESS WHEREOF, the parties have executed this instrument under their several seals this _____ day of _____, 20____, the name and corporate party being hereto affixed and duly signed by its undersigned authorized representative.

DATED:

PRINCIPAL

By: _____

Title:

DATED:

SURETY

By: _____

Title:

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

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

PROJECT TITLE/BID #: CAMPUS HVAC SYSTEM UPGRADE

OWNER: BAKERSFIELD CITY SCHOOL DISTRICT

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 _____ [date], at _____ [city], _____ [state].

Contractor:

By _____

Title:

Signature: _____

08-EXCLUSION OF LEAD AND ASBESTOS PRODUCTS

TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID

PROJECT TITLE/BID #: CAMPUS HVAC SYSTEM UPGRADE

OWNER: BAKERSFIELD CITY SCHOOL DISTRICT

Pursuant to the provisions of the California Education Code for construction, modernization, or renovation of school facilities, lead based paint, lead plumbing, and solders, or other potential sources of lead contamination shall not be utilized in the construction of any new school facility or the modernization or renovation of any existing school facility.

The Contractor agrees that sources and potential sources of lead contamination, whether in products or materials, will not be used in performing work under the Agreement.

In addition, the Contractor agrees that asbestos containing products or materials will not be used in performing work under the Agreement.

At completion of work under the Agreement, the Contractor will warrant and represent to the Owner the following:

1. That no asbestos containing products or materials, or sources or potential sources of lead contamination, were used in performing work under the Agreement.
2. That should any asbestos containing products, or sources or potential sources of lead contamination, be found to have been used by the Contractor or any subcontractor, supplier, or vendor on the Project, the Contractor will replace them, together with all related materials, at no cost to the Owner.
3. That should the replacement require any interruption in the normal operation of the school, the Contractor will pay all costs necessarily incurred to keep the school functioning with the least possible disruption to its day-to-day operations.

Executed at _____, California, on _____, 20_____.

Firm Name:

By:

Title:

Signed: _____
[Signature must match that on bid]

09-CONSTRUCTION AGREEMENT

THIS AGREEMENT, dated _____, in the County of Kern, State of California, is by and between the BAKERSFIELD CITY SCHOOL DISTRICT ("OWNER") and ("CONTRACTOR").

For the consideration stated in this Agreement, OWNER and CONTRACTOR agree as follows:

1. Contract Documents. The complete Agreement includes all of the Contract Documents as defined in the General Conditions and any other documents comprising any portion of the bid package, and all modifications, addenda, and amendments of or to any of these documents, all of which are incorporated by reference into this Agreement. The Contract Documents are complementary, and what is called for by any one shall be as binding as if called for by all.

2. Scope of Performance. CONTRACTOR shall perform within the time set forth in Paragraph 4 of this Agreement everything required to be performed, and shall provide and furnish all labor, materials, necessary tools, expendable equipment, and all utility and transportation services described in the Contract Documents and required for construction of

All of the work to be performed and materials to be furnished shall be completed in a good workmanlike manner in strict accordance with the Plans, Drawings, Specifications and all provisions of the Contract Documents as defined above. CONTRACTOR shall be liable to OWNER for any damages arising as a result of a failure to fully comply with this obligation, and CONTRACTOR shall not be excused with respect to any failure to so comply by any act or omission of OWNER, the Architect, Engineer, Inspector, Division of State Architect, or representative of any of them, unless such act or omission actually prevents CONTRACTOR from fully complying with the requirements of the Contract Documents, and unless CONTRACTOR protests at the time of the alleged prevention that the act or omission is preventing CONTRACTOR from fully complying with the Contract Documents. The protest shall not be effective unless reduced to writing and filed with OWNER within three working days of the date of occurrence of the act or omission preventing CONTRACTOR from fully complying with the Contract Documents.

3. Contract Price. Subject to any additions or deductions as provided in the Contract Documents, as full consideration for the faithful performance of the contract OWNER shall pay to CONTRACTOR the sum of \$ _____.

4. Construction Period. The work shall be commenced on or before the _____ day after receiving OWNER's Notice to Proceed and shall be completed within _____ consecutive calendar days from the date specified in the Notice to Proceed.

5. Liquidated and Other Damages. All work must be completed within the time limits set forth in the Contract Documents. If the work is not completed in accordance with the time limits set forth in this Agreement, in accordance with Government Code Section 53069.85, CONTRACTOR shall pay to OWNER as fixed and liquidated damages, and not as a penalty, the sum of \$ _____ for each calendar day of delay until work is completed and accepted.

Detailed requirements concerning liquidated damages and other damages which may be assessed if CONTRACTOR fails to complete the project within the time period provided in this Agreement are contained in the General Conditions.

6. Insurance. Prior to commencing the work, CONTRACTOR shall take out and maintain during the life of this contract, and shall require all subcontractors, if any, whether primary or secondary, to take out and maintain all insurance as required in the General Conditions.

7. Substitution of Securities. Public Contract Code Section 22300 permits the substitution of securities for any monies withheld by a public agency to ensure performance under a contract. At the request and expense of CONTRACTOR, securities equivalent to the amount withheld shall be deposited with the public agency, or with a state or federally chartered bank in California as the escrow agent, who shall then pay such monies to CONTRACTOR. OWNER retains the sole discretion to approve the bank selected by CONTRACTOR to serve as escrow agent. Upon satisfactory completion of the contract, the securities shall be returned to CONTRACTOR. Securities eligible for investment shall include those listed in Government Code Section 16430 or bank or savings and loan certificates of deposit. CONTRACTOR shall be the beneficial owner of any securities substituted for monies withheld and shall receive any interest thereon.

In the alternative, under Section 22300, CONTRACTOR may request OWNER to make payment of earned retentions directly to the escrow agent at the expense of CONTRACTOR. Also at CONTRACTOR's expense, CONTRACTOR may direct investment of the payments in securities, and CONTRACTOR shall receive interest earned on such investment upon the same conditions as provided for securities deposited by CONTRACTOR. Upon satisfactory completion of the contract, CONTRACTOR shall receive from the escrow agent all securities, interest, and payments received by escrow agent from OWNER pursuant to the terms of Section 22300. Not later than 20 days after receipt of such payment, CONTRACTOR shall pay to each subcontractor the respective amount of interest earned, net of costs attributed to retention withheld from each subcontractor, on the amount of retention withheld to ensure performance of CONTRACTOR.

8. Corporate Status and Authorization. If CONTRACTOR is a corporation, the undersigned hereby represents and warrants that the corporation is duly incorporated and in good standing in the State of _____, and that _____, whose title is _____, is authorized to act for and bind the corporation.

9. Posting. Contractor shall be responsible to post job site notices prescribed by Title 8 CCR § 16451 (d) pertaining to prevailing wage monitoring by the Department of Industrial Relations.

10. Entire Agreement. This Agreement, including the Contract Documents incorporated by reference, constitutes the final, complete, and exclusive statement of the terms of the agreement between the parties pertaining to construction of the project. It supersedes all prior and contemporaneous understandings or agreements of the parties. No party has been induced to enter into this Agreement by, nor is any party relying on, any representation or warranty outside those expressly set forth in this Agreement. The Agreement can only be modified by an amendment in writing, signed by both parties and approved by action of OWNER's governing board or other governing body.

11. Parties in Interest. Nothing in this Agreement, whether express or implied, is intended to confer any rights or remedies under or by reason of this Agreement on any person other than the parties to this Agreement and their respective successors and assigns. Nothing in this Agreement, whether express or implied, is intended to relieve or discharge the obligation or liability of any third person to any party to this Agreement, nor shall any provision give any third person any right of subrogation or action against any party to this Agreement.

12. Severability. If any provision of this Agreement is held by a court of competent jurisdiction to be invalid or unenforceable, the remainder of the Agreement shall continue in full force and effect and shall in no way be impaired or invalidated.

13. Governing Law. The rights and obligations of the parties and the interpretation and performance of this Agreement shall be governed by the laws of California, excluding its conflict of laws rules.

The parties have executed this Agreement by the signatures of their authorized representatives effective the date indicated above.

DISTRICT

CONTRACTOR

By: _____

*By: _____

Signature

Signature

Print Name Above

Print Name Above

Print Title Above

Print Title Above

[Continued on Following Page]

***[CORPORATE SEAL OF
CONTRACTOR, if a corporation]***

Contractor's License No.

Tax ID/Social Security No.

DIR Registration No.

***Important Notice:** Labor Code § 1771.1(a) provides that “A contractor or subcontractor shall not be qualified to bid on, be listed in a bid proposal, subject to the requirements of Section 4104 of the Public Contract Code, or engage in the performance of any contract for public work, as defined in this chapter, unless currently registered and qualified to perform public work pursuant to Labor Code Section 1725.5. It is not a violation of this section for an unregistered contractor to submit a bid that is authorized by Section 7029.1 of the Business and Professions Code or by Section 10164 or 20103.5 of the Public Contract Code, provided the contractor is registered to perform public work pursuant to Section 1725.5 at the time the contract is awarded.” Please go to <http://www.dir.ca.gov/Public-Works/PublicWorks.html> for more information and to register. This project is subject to monitoring by the Department of Industrial Relations.

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10-GENERAL CONDITIONS-GC

PROJECT TITLE/ BID #: CAMPUS HVAC SYSTEM UPGRADE
OWNER: BAKERSFIELD CITY SCHOOL DISTRICT

ARTICLE 1 DEFINITIONS

A. Action of the Governing Board or Other Governing Body: An official act of the governing board or other governing body of OWNER.

B. Approve: The term “approve,” where used in conjunction with the Architect’s action on the CONTRACTOR’S submittals, applications, and request, is limited to the responsibilities and duties of the Architect stated in General and Supplementary Conditions. Approval shall not release CONTRACTOR from responsibility to fulfill Contract Document requirements, unless otherwise provided in the Contract Documents.

C. Architect: The person, persons, or entity selected by OWNER to provide architectural services to the Project. Architect is an independent contractor and is not an agent of OWNER.

D. Contract Documents: All contract documents, including all official documents on this Project, including the Notice Calling for Bids, Instructions to Bidders, Bid Form, Designation of Subcontractors, Workers’ Compensation Certificate, Performance Bond, Payment Bond, Change Orders, Shop Drawings and their Transmittals, Information Required of Bidder, all prequalification forms submitted pursuant to Public Contract Code sections 20111.5 or 20111.6, if any, Substitution Listing form on any approved substitutions, Non-Collusion Declaration, Insurance Certificates, Guarantees, Contractor’s Certificate Regarding Non-Asbestos and/or Lead Containing Materials, if any, Davis-Bacon Compliance Certification, Fingerprinting Certifications, Labor Compliance Program documents, General Conditions, Supplemental General Conditions, if any, Iran Contracting Act Certification, if any, Special Conditions and/or Requirements, if any, Plans, Drawings, Specifications, the Construction Agreement, and all Modifications, addenda, and amendments of those documents.

E. Modification:

1. A written amendment to the Contract Documents signed by both parties;
2. A fully executed Change Order;
3. A written interpretation issued by the Architect; or
4. A written order for a minor change in the Work issued by the Architect.

F. CONTRACTOR: That entity awarded this Construction Agreement by official action of OWNER. Throughout the Contract Documents CONTRACTOR is treated as being of singular number and neuter gender.

G. Date of Acceptance: The date when all of the following conditions are satisfied:

1. OWNER is able to occupy all portions of the project.
2. The notice of completion is recorded with local authorities.
3. The final verified report is filed with the Division of State Architect of the Department of General Services.
4. Acceptance of project by OWNER's governing board or other governing body.

H. Days: Calendar days unless noted otherwise.

I. Equivalent to: Equal or superior in function and quality and approved by the Architect.

J. Furnish: Means “supply and deliver to the project site, ready for unloading, unpacking, assembly, installation, and similar operations.”

K. Indicated: Refers to graphic representations, notes or schedules on the Drawings, or other Paragraphs or Schedules in Specifications, and similar requirements in Contract Documents. Where terms such as “shown,” “noted,” or “scheduled” are used, it is to help locate the reference; no limitation on locations is intended except as specifically noted.

L. Install: Used to describe operations at the project site, including the actual “unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protection, cleaning and similar operations.”

M. Installer: An entity engaged by CONTRACTOR, either as an employee, subcontractor, or sub-subcontractor for performance of a particular construction activity, including installation, erection, application, and similar required operations. Installers are required to be experienced in the operations they are engaged to perform and licensed as required in the individual specification sections.

N. Liquidated Damages: Pursuant to Government Code Section 53069.85, this is the specified sum of money that CONTRACTOR shall forfeit and pay to OWNER for

those specified portions of the Project that are uncompleted and delayed beyond the stated completion time.

O. Or Equal: Where named products in specification text are accompanied or are deemed by law to be followed by the term “or equal,” or other language of similar effect, CONTRACTOR shall comply with those Contract Document provisions for “substitutions” when obtaining Architect’s review and consideration.

P. OWNER: The school district, community college district, County Superintendent of Schools, or other public entity executing the Construction Agreement acting through its governing board or other governing body.

Q. Plans: The reproductions of the official drawings adopted and approved by OWNER showing locations, character, dimensions, and details of the work.

R. Project: The undertaking planned by OWNER and CONTRACTOR as provided in the Contract Documents.

S. Project Inspector/Inspector of Record: Any individual or firm retained by OWNER as the on-site inspector for a particular project hired by and paid by OWNER and under general direction of the Architect or registered engineer in charge. The Project Inspector shall be responsible for inspecting all work included in the Contract Documents. A special inspector shall be responsible only for inspecting the work for which he/she is approved. Inspectors are independent contractors and are not agents or employees of OWNER.

T. Project Manual: The volume(s) that include the bidding requirements, sample forms, and all of the initial Contract Documents, such as Conditions of the Contract, Schedules and Details Manual, the Specifications, and the addenda to be used on the Project.

U. Project Site: The space available to CONTRACTOR for performance of the Work, either exclusively or in conjunction with others performing other construction as part of the Project. The extent of the Project Site is shown on the Drawings, and may or may not be identical with the description of the land upon which the Project is to be built.

V. Provide: Includes “provide complete in place,” that is, furnish and install.

W. Refer: Indicates that the subject is defined or specified in further detail at another location in the Contract Documents or elsewhere as indicated. Except, as otherwise noted, “refer” does not imply that CONTRACTOR must purchase or subcontract the subject work in any special manner.

X. Related Work in Other Sections: A nonrestrictive term used throughout the Specifications to coordinate the Work and facilitate checking and bidding.

Y. Required: As required by Contract Documents.

Z. Safety Orders: Issued by Division of Industrial Safety and OSHA Safety and Health Standards for Construction.

AA. Specification: The printed instruction and requirements which complement the plans as to the methods and manner of performing the Work or to the quantities and qualities of the materials to be furnished.

BB. Subcontractor: Includes those having a direct contract with the CONTRACTOR and those who furnish material worked to a special design according to plans, drawings, and Specifications of this work, but does not include those who merely furnish material not so worked.

CC. Surety: The firm or corporation executing CONTRACTOR'S Performance Bond and/or Payment Bond as surety, as the context indicates.

DD. Testing Laboratory: An independent entity engaged to perform specific inspections or test, either at the Project Site or elsewhere, and to report on, and if required, interpret results of those inspections or tests. It is not an agent of OWNER.

EE. Unfinished: Refers to the status of the Work prior to reaching completion, as described in Article 61.

FF. Work: Work of the CONTRACTOR and subcontractors, including all labor or materials (including without limitation, equipment, and appliances), both incorporated in, or to be incorporated in the Project in order to fully meet the requirements of the Contract Documents.

ARTICLE 2 STATUS OF CONTRACTOR

A. CONTRACTOR is and shall at all times be deemed to be an independent contractor and shall be wholly responsible for the manner in which it performs the services required of it by the terms of the Contract Documents.

B. Nothing contained in the Contract Documents shall be construed as creating the relationship of employer and employee, or principal and agent, between OWNER and CONTRACTOR or any of CONTRACTOR'S agents or employees.

C. CONTRACTOR exclusively assumes the responsibility for the acts of its employees as they relate to the services to be provided during the course and scope of

their employment. CONTRACTOR, its agents, and employees shall not be entitled to any rights or privileges of OWNER employees and shall not be considered in any manner to be OWNER employees.

D. OWNER shall be permitted to monitor the activities of CONTRACTOR to determine compliance with the terms of the Contract Documents.

E. Contractors are required by law to be licensed and regulated by the Contractors' State License Board. Any contractor not so licensed is subject to penalties under the law and the Construction Agreement will be considered void pursuant to Business and Professions Code Section 7028.7. Any questions concerning a contractor may be referred to the Registrar, Contractors' State License Board, 3132 Bradshaw Road, Post Office Box 2600, Sacramento, California, 95826.

F. Contractors or subcontractors are not qualified to bid on, be listed in a bid proposal, subject to the requirements of Section 4104 of the Public Contract Code, or engage in the performance of any contract for public work, as defined in this chapter, unless currently registered and qualified to perform public work pursuant to Labor Code Section 1725.5. This project is subject to monitoring by the Department of Industrial Relations.

ARTICLE 3 CONTRACTOR SELECTION PROCESS AND PROHIBITED INTERESTS

A. As a means of maintaining the integrity of the formal selection process, contacts with individual members of OWNER's Board of Trustees or governing body on behalf of any bidding firm relative to this Project will be considered inappropriate.

B. No official of OWNER who is authorized in such capacity and on behalf of OWNER to negotiate, make, accept, or approve, or to take part in negotiating, making, accepting or approving, any architectural, engineering, inspection, construction, or material supply contract, or any subcontract in connection with construction of the Project, shall have any direct or indirect financial interest in any part of this Project.

C. No officer, employee, architect, attorney, engineer, or inspector of or for OWNER who is authorized in such capacity and on behalf of OWNER to exercise any executive, supervisory, or other similar functions in connection with construction of the Project shall have any direct or indirect financial interest in any part of this Project.

D. CONTRACTOR shall receive no compensation and shall repay OWNER for any compensation received should CONTRACTOR aid, abet, or knowingly participate in any violation of this Article.

ARTICLE 4 CHANGE IN NAME OR NATURE OF CONTRACTOR'S LEGAL ENTITY

Before CONTRACTOR makes any change in the name or legal nature of the CONTRACTOR'S entity, CONTRACTOR shall first notify OWNER in writing and cooperate with OWNER in making such changes as OWNER may request in the Contract Documents.

ARTICLE 5 DEBARRED CONTRACTOR

A. Pursuant to Labor Code Sections 1777.1 and 1777.7, a contractor may be prohibited from bidding or performing work as a subcontractor on a public works project.

B. Any contract on a public works project entered into between a contractor and a debarred subcontractor is void as a matter of law. A debarred subcontractor may not receive any public money for performing work as a subcontractor on a public works contract, and any public money that may have been paid to a debarred subcontractor by a contractor on the Project shall be returned to the awarding body. The contractor shall be responsible for the payment of wages to workers of a debarred subcontractor who has been allowed to work on the Project.

C. Pursuant to Public Contract Code Section 4701, CONTRACTOR shall request the substitution of any subcontractor who has been debarred by the California Labor Commissioner from working as a subcontractor on public work.

ARTICLE 6 SUBCONTRACTING

A. CONTRACTOR agrees to bind each and every subcontractor to the terms of the Contract Documents as far as the terms are applicable to the subcontractor's work. Each subcontract shall contain a reference to Contract Documents, and the terms of the Contract Documents shall be incorporated into and made a part of each subcontract. If CONTRACTOR subcontracts any part of its work under the Construction Agreement, CONTRACTOR shall be responsible to OWNER for any acts and omissions of its subcontractors and of persons either directly or indirectly employed by its subcontractors. Nothing contained in the Contract Documents shall create any contractual relationship between any subcontractor and OWNER.

B. OWNER'S consent to or approval of any subcontractor shall not in any way relieve CONTRACTOR of its obligations under the Contract Documents , and no such consent or approval shall be deemed to waive any provision of the Contract Documents.

C. CONTRACTOR must submit with its bid a Designation of Subcontractors. If CONTRACTOR specifies more than one subcontractor for the same portion of work or fails to specify a subcontractor, and such portion of the work exceeds one-half of one percent of the total bid, CONTRACTOR agrees that it is fully qualified to perform and

shall perform such work itself. The substitution or addition of subcontractors shall be permitted only as authorized by Public Contract Code Sections 4100, et seq.

D. All subcontractors shall be appropriately licensed and registered with DIR to perform the work for which employed in conformity with the laws of the State of California.

E. In accordance with California Business and Professions Code Section 7059, if CONTRACTOR is designated as a "specialty contractor" (as defined in Public Contract Code Section 7058), all of the work to be performed outside of the Contractor's license specialty, except "incidental" work as that term is used in Section 7059(a), shall be performed by a licensed subcontractor in compliance with the Subletting and Subcontracting Fair Practices Act, California Public Contract Code Section 4100, et seq.

F. A copy of each subcontract, if in writing, or if not in writing, then a written statement signed by the Contractor giving the name of the subcontractor and the terms and conditions of such subcontract, shall be filed with OWNER before the subcontractor begins work. Each subcontract will provide for termination in accordance with these General Conditions. Each subcontract shall provide for its annulment by CONTRACTOR at the order of the Architect if in the Architect's opinion the subcontractor fails to comply with the requirements of the Contract Documents insofar as the same may be applicable to this work.

G. Nothing contained in these General Conditions shall relieve CONTRACTOR of any liability or obligation under the Contract Documents, nor shall any permissible substitution or addition of a subcontractor result in any increase in the contract price or in an extension of time for completion of the Project.

H. CONTRACTOR shall require subcontractors to include the provisions of this article in their sub-subcontracts, if any.

I. Each subcontract applicable to this Project is hereby assigned to OWNER, such assignment to become effective only upon termination of the Construction Agreement for cause pursuant to the Contract Documents, and only as to such subcontracts as OWNER may, in its sole discretion, select and provide written notice of such assignment, and such assignments are subject to the rights and obligations of the surety on any applicable bonds, as detailed in the Contract Documents.

ARTICLE 7 ARCHITECT'S STATUS

A. The Architect shall be OWNER's representative during construction and shall observe the progress and quality of the Work on behalf of OWNER. The Architect shall have the authority to act on behalf of OWNER only to the extent expressly provided in the Contract Documents. The Architect shall have authority to stop work whenever necessary, in the Architect's reasonable opinion, to ensure the proper execution of the Work of the Project.

B. The Architect shall be, in the first instance, the judge of the performance of the Work. The Architect shall exercise authority under the Contract Documents to enforce CONTRACTOR's faithful performance.

C. The Architect shall have all authority and responsibility established by law, including Title 24 of the California Code of Regulations. The Architect has the authority to enforce compliance with the Contract Documents and CONTRACTOR shall promptly comply with instructions from the Architect or an authorized representative of the Architect.

D. On all questions related to quantities, acceptability of material, equipment, or workmanship, execution, progress, or sequence of work, the interpretation of plans, specifications, or drawings, and the acceptable performance of CONTRACTOR, the decision of the Architect shall govern and shall be a condition precedent to any payment, unless otherwise ordered by OWNER. CONTRACTOR shall not impair or delay the progress and completion of the Work by virtue of any question or dispute arising out of or related to the foregoing matters, or the instructions of the Architect relating to them.

E. General supervision and direction of the Work by the Architect shall in no way imply that the Architect or its representatives are in any way responsible for the safety of CONTRACTOR or its employees or that the Architect or its representatives will maintain supervision over CONTRACTOR'S construction methods, means, or personnel other than to ensure that the quality of the finished work is in accordance with the Contract Documents.

ARTICLE 8 PROJECT INSPECTOR AND INSPECTOR FACILITIES

A. One or more Project Inspectors ("IOR"), including specialty Inspectors as required, employed by OWNER and operating under direction of the Architect, in accordance with the requirements of the California Code of Regulations Titles 21 and 24, will be assigned to the Work. All work shall be performed under the observation of or with the knowledge of the Project Inspector. The Project Inspector shall have free access to all parts of the Work at any time. CONTRACTOR shall furnish the Project

Inspector with such information as may be necessary to keep the Project Inspector fully informed regarding the progress and manner of work and the character of materials.

B. Observations by the Project Inspector shall not in any way relieve CONTRACTOR from responsibility for full compliance with all terms and conditions of the Contract Documents, or be construed to lessen to any degree CONTRACTOR's responsibility for providing efficient and capable superintendence.

C. 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 CONTRACTOR of responsibility for the correction of subsequently discovered defects, or from its obligation to fully comply with the Contract Documents.

ARTICLE 9 COPIES FURNISHED

CONTRACTOR will be furnished five copies of the drawings and specifications free of charge. Additional copies may be obtained for the cost of reproduction.

ARTICLE 10 OWNERSHIP OF DRAWINGS

All documents prepared on behalf of OWNER including, without limitation the Plans, Specifications, drawings, and other documents, are instruments of service of the Architect and/or its consultants and are the property of OWNER. Neither CONTRACTOR nor any Subcontractor, Sub-subcontractor, material or equipment supplier or anyone else shall own or claim a copyright in such documents. Unless otherwise indicated, the Architect shall be deemed the author of such documents. Such documents are furnished to CONTRACTOR for use solely with respect to this Project, and are not to be used for any other purpose by CONTRACTOR or any Subcontractor, Sub-subcontractor, or material or equipment supplier, or anyone claiming through them without the express written consent of OWNER. CONTRACTOR, Subcontractors, Sub-subcontractors, and material or equipment suppliers are granted a limited license to use and reproduce applicable portions of the documents for use in the execution of their work under the Contract Documents.

ARTICLE 11 DOCUMENTS ON WORK

A. CONTRACTOR shall keep one copy of all Contract Documents, including addenda, change orders, shop drawings, and other modifications, and Titles 19, 21, and 24 of the California Code of Regulations, on the job at all times. The documents shall be kept in good order and accurately marked to record all changes made during construction. The documents shall be available to the Architect and its representatives at all times.

B. CONTRACTOR shall be acquainted with and comply with all statutes and regulations as they relate to this Project. (See particularly the duties of Contractor, Title 24 California Code of Regulations, Sections 4-343.) CONTRACTOR shall also be acquainted with and comply with all provisions of the California Code of Regulations relating to conditions on this Project, particularly Titles 8 and 17.

ARTICLE 12 DRAWINGS AND SPECIFICATIONS

A. Drawings and Specifications are intended to delineate and describe the Project and its component parts sufficiently to enable skilled and competent contractors to intelligently bid upon the work, and to carry the Work to a successful and timely conclusion.

B. Organization of the Specifications into divisions, sections, and articles, and arrangement of drawings, shall not control CONTRACTOR in dividing the Work among subcontractors or in establishing the extent of work to be performed by any trade.

C. The drawings and Specifications describe the work to be performed by 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 could have been shown.

D. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all. The Contract Documents are intended to encompass all labor and materials, equipment, and transportation necessary for proper execution of the Work. Any item of work mentioned in the Specifications and not shown on the drawings, or shown on the drawings and not mentioned in the Specifications, shall be provided by CONTRACTOR as if shown in both.

E. All materials or labor for the Work which are shown either by the Drawings or the Specifications (or are reasonably inferable from the Drawings or the Specifications as being necessary to complete the work) shall be provided by CONTRACTOR, whether or not the work is expressly covered in either the Drawings and/or the Specifications. It is intended that the Work be of sound, quality construction. CONTRACTOR must furnish adequate labor and materials to cover installation of all items indicated, described, or implied in the portion of the Work to be performed.

F. Drawings and Specifications are intended to comply with all laws, ordinances, rules and regulations of authorities having jurisdiction, and where referred to in the Contract Documents, such laws, ordinances, rules and regulations shall be considered as a part of the Contract Documents within the limits specified. If CONTRACTOR

observes that the drawings or Specifications are contrary to applicable law, ordinance, rule or regulation, CONTRACTOR shall immediately notify the Architect in writing, and any changes deemed necessary by the Architect shall be made as provided in the Contract Documents for changes in work. If CONTRACTOR performs any work which CONTRACTOR knows or through the exercise of reasonable diligence should have known to be contrary to any law, rule, regulation, or ordinance without seeking and obtaining clarification, CONTRACTOR shall bear any and all costs arising from it, including without limitation the costs of correction without increase or adjustment to the contract price or the time for performance.

G. Materials or work described in words which have a well known technical or trade meaning shall be deemed to refer to those recognized standards.

H. It is not the intention of the Contract Documents to go into detailed descriptions of any materials and/or methods commonly known to the trade under "trade name" or "trade term." The mere mention or notation of such "trade name" or "trade term" shall be considered a sufficient notice to CONTRACTOR that it will be required to complete the Work so named with all its incidental and accessory items according to the best practices of the trade.

I. Naming any material and/or equipment requires CONTRACTOR to furnish and install the named material/equipment, including all incidental and accessory items and/or labor necessary to achieve full and complete functioning of the material and/or equipment according to the best practices of the trade(s) involved, unless specifically noted otherwise.

J. Figured dimensions on drawings shall govern, but work not dimensioned shall be as directed. Work not particularly shown or specified shall be the same as similar parts that are shown or specified. Large scale drawings shall take precedence over smaller scale drawings as to shape and details of construction. Specifications shall govern as to materials, workmanship, and installation procedures, provided however that the drawing or specification calling for the higher quality material or workmanship shall prevail, without additional cost to OWNER.

K. In case of inconsistencies in the descriptions of work to be done, equipment to be provided or material to be used, it is intended that the more stringent, higher quality, and greater quantity of work shall apply, without additional cost to OWNER.

L. All items indicated on the drawings or in the Specifications as future items require CONTRACTOR to provide all the mechanical, electrical, and other necessary service hookups or provisions required to make the equipment function as intended. Such items shall be provided to the location where the future item is indicated to be installed.

M. In the event of an inconsistency between the Construction Agreement or General Conditions and the other various Contract Documents, the Construction Agreement or General Conditions shall control.

N. Drawings and specifications are intended to be fully cooperative and to agree. If CONTRACTOR observes that drawings and Specifications are in conflict, CONTRACTOR shall promptly notify the Architect in writing, requesting clarification. Should CONTRACTOR commence work on any part of the Work without seeking clarification, CONTRACTOR waives any claim for extra work or damages as a result of any ambiguity, conflict, or lack of information. Questions regarding interpretation of drawings and Specifications shall be clarified by the Architect in writing.

O. If 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 to be done under the Contract Documents which it knows, or should have known, to be in error, inconsistent, or ambiguous, or not sufficiently detailed or explained, CONTRACTOR shall bear any and all resulting costs, including without limitation the costs of correction without increase or adjustment to the contract price or the time for performance.

P. Should clarification by the Architect be deemed new or additional work, the cost shall be adjusted as provided in these General Conditions for "Changes and Extra Work," provided however that requirements calling for the higher quality material or workmanship shall prevail without additional cost to OWNER or time adjustment.

Q. In the event the Architect determines that CONTRACTOR's requests for clarification or interpretation are not justified, or do not reflect adequate, competent supervision or knowledge by CONTRACTOR, or by the subcontractors, CONTRACTOR shall be required to pay the Architect's reasonable and customary fees in processing and responding to such requests.

R. Some drawings or other documents may be required of CONTRACTOR. If CONTRACTOR performs, permits, or causes the performance of any work under the documents prepared by or on the behalf of CONTRACTOR which document is in error, inconsistent or ambiguous, or not sufficiently detailed or explained, 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. In no case shall any subcontractor proceed with the work if uncertain without CONTRACTOR'S written direction and/or approval.

S. If it is found at any time, whether before or after completion of the work, that CONTRACTOR has varied from the drawings and/or Specifications in materials, quality, form, or finish, or in the amount or value of the materials and labor used, the Architect shall make a recommendation either: (1) that all such improper work should be

removed, remade, and replaced, and all work disturbed by these changes be made good at CONTRACTOR'S sole expense; or (2) that OWNER deduct from any amount due CONTRACTOR the sum of money equivalent to the difference in value between the work performed and that called for by the drawings and Specifications. The Architect shall determine such difference in value. At its option, OWNER may pursue either recommendation made by the Architect.

ARTICLE 13 DETAIL DRAWINGS AND SPECIFICATIONS

A. In case of ambiguity, conflict, or lack of information, the Architect shall furnish additional instructions, by means of drawings or otherwise, necessary for proper execution of the Work. All drawings and instructions shall be consistent with the Contract Documents, true developments of them, and reasonably inferable from them. Any additional instructions shall be furnished with reasonable promptness, provided that CONTRACTOR informs the Architect of the relationship of the request to the critical path of construction.

B. Work shall be executed in conformity with the Contract Documents and CONTRACTOR shall do no work without proper drawings and instructions.

C. The Architect will furnish necessary additional details to more fully explain the work, which shall be considered as part of the Contract Documents.

D. Should any details be more elaborate, in the opinion of CONTRACTOR, than scale drawings and specifications warrant, CONTRACTOR shall give written notice to the Architect within five days of receipt of the details. In case no notice is given to the Architect within five days, it will be assumed the details are reasonable development of the scale drawings. In case notice is given, the details will be considered and if found justified the Architect will either modify the drawings or shall recommend to OWNER a change order for any extra work involved.

E. All parts of the construction shall be of the best quality of their respective kinds and CONTRACTOR shall use all diligence to become fully involved in the required construction and finish, and in no case to proceed with the different parts of the Work without first obtaining from the Architect directions and/or drawings as may be necessary for proper performance of the Work.

ARTICLE 14 SHOP DRAWINGS AND SUBMITTALS

A. The term "shop drawing" shall be understood to include, but not be limited to detail design calculations, fabrication and installation drawings, lists, graphs, and operating instructions.

B. CONTRACTOR shall check and verify all field measurements and shall promptly submit six copies of all shop or setting drawings, schedules, and material lists required for the work of various trades, checked and approved by CONTRACTOR.

C. All submittals of shop drawings, catalog cuts, data sheets, schedules, and material lists shall be complete and shall conform to contract drawings and specifications. Except where the preparation of a shop drawing is dependent upon the approval of a prior shop drawing, all shop drawings pertaining to the same class or portion of the work shall be submitted simultaneously.

D. Shop drawings shall be submitted at a time sufficiently early to allow review by the Architect and the Division of State Architect (DSA) if required, and to accommodate the rate of construction progress required under the Contract Documents. CONTRACTOR will be required to pay the Architect's reasonable and customary fees to expedite review of shop drawings which are not submitted in timely fashion.

E. Calculations of a structural nature must be approved by the DSA.

F. All shop drawing submittals shall be accompanied by an accurately completed transmittal form using the format provided by OWNER. Any shop drawing submittal not accompanied by the transmittal form, or where all applicable items on the form are not completed, will be returned for resubmittal. CONTRACTOR may authorize a material or equipment supplier to deal directly with the Architect with regard to shop drawings, however ultimate responsibility for the accuracy and completeness of the information contained in the submittal shall remain with CONTRACTOR.

G. Normally, a separate transmittal form shall be used for each specific item or class of material or equipment for which a submittal is required. Transmittal of shop drawings on various items using a single transmittal form will be permitted only when the items taken together constitute a manufacturer's "package" or are so functionally related that expediency indicates review of the group or package as a whole. At its option, CONTRACTOR or suppliers may obtain quantities of the shop drawing transmittal form at reproduction cost from the Architect.

H. CONTRACTOR's review and approval of shop drawings shall include the following stamp:

"CONTRACTOR has reviewed and approved not only the field dimensions but 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 CONTRACTOR and this duty of coordination has not been delegated to subcontractors, material suppliers, the Architect, or the engineers on this Project.

Signature of CONTRACTOR"

I. The Architect's review of shop drawings will be limited to checking for general agreement with the Contract Documents, and shall in no way relieve CONTRACTOR of responsibility for errors or omissions contained in them, nor shall the review operate to waive or modify any provision contained in the Contract Documents. The Architect's approval of the drawings or schedules shall not relieve CONTRACTOR of its responsibility for deviations from drawings or specifications unless CONTRACTOR has called the Architect's attention to the deviations, in writing, at the time of submission, and secured the Architect's written approval.

J. Fabricating dimensions, quantities of material, applicable code requirements, and other contract requirements shall be CONTRACTOR's responsibility.

K. Within 21 calendar days after receipt of shop drawings, the Architect will return one or more prints of each drawing to CONTRACTOR with the Architect's comments noted on them.

L. If prints of the shop drawings are returned to CONTRACTOR marked "NO EXCEPTIONS TAKEN," formal revision of the drawings will not be required. If prints of the shop drawings are returned to CONTRACTOR marked "MAKE CORRECTIONS NOTED," formal resubmittal of the drawings will not be required. If prints of the shop drawings are returned to CONTRACTOR marked "REVISE AND RESUBMIT," CONTRACTOR shall revise the drawings and resubmit six copies of the revised drawings to the Architect. If prints of the shop drawings are returned to CONTRACTOR marked "REJECTED; RESUBMIT," CONTRACTOR shall resubmit six new copies of the drawing to the Architect.

M. CONTRACTOR shall make a complete and acceptable submittal to the Architect by the second submission of drawings. OWNER shall withhold funds due to CONTRACTOR to cover additional costs of the Architect's review beyond the second submission and any other costs incurred by OWNER.

N. Fabrication of an item shall not be commenced before the Architect has reviewed the pertinent shop drawings and returned copies to CONTRACTOR marked "NO EXCEPTIONS TAKEN," or "MAKE CORRECTIONS NOTED." Revisions indicated on shop drawings shall be considered changes necessary to meet the requirements of the Contract Documents and shall not be taken as the basis of claims for extra work.

O. No work represented by required shop drawings shall be purchased or commenced until the applicable submittal has been approved. The work shall conform to the approved shop drawings and all other requirements of the Contract Documents. CONTRACTOR shall not proceed with any related work which may be affected by the

work covered under shop drawings until the applicable shop drawings have been approved, particularly where piping, machinery, equipment, and/or the required arrangements and clearances are involved.

P. CONTRACTOR SHALL HAVE NO CLAIM FOR DAMAGES OR EXTENSION OF TIME DUE TO ANY DELAY RESULTING FROM CONTRACTOR HAVING TO MAKE REQUIRED REVISIONS TO SHOP DRAWINGS UNLESS THE ARCHITECT'S REVIEW OF THE DRAWINGS IS DELAYED BEYOND THE TIME PROVIDED IN THE CONTRACT DOCUMENTS AND CONTRACTOR CAN ESTABLISH THAT THE ARCHITECT'S DELAY IN REVIEW ACTUALLY RESULTED IN A DELAY IN CONTRACTOR'S CONSTRUCTION SCHEDULE. CONTRACTOR SHALL NOT BE ENTITLED TO ANY CLAIM FOR DAMAGES RESULTING FROM DSA REVIEW EXTENDING BEYOND 15 CALENDAR DAYS AFTER SUBMITTAL. HOWEVER, OWNER MAY CONSIDER AN EXTENSION OF TIME DUE TO ANY DELAY CAUSED BY DSA REVIEW.

ARTICLE 15 SAMPLES

A. Within 35 calendar days following award of contract, or a shorter time as circumstances require, CONTRACTOR shall furnish for approval all samples required in the Specifications, together with catalogs and supporting data required by the Architect. This provision shall not authorize any extension of time for performance of the work. The Architect shall review the samples, as to conformance with design concept of work and compliance with information given in the Contract Documents, and approve or disapprove them within 10 working days from receipt.

B. Unless specified otherwise, sampling, preparation of samples, and tests shall be in accordance with the latest standards of the American Society for Testing and Materials.

C. Upon demand of the Architect or OWNER, designated samples shall be submitted or tests or examinations and considered before incorporation into the Work. CONTRACTOR shall be solely responsible for delays due to samples not being submitted in time to allow for tests. Acceptance or rejection will be expressed in writing. Work shall be equal to approved samples in every respect. Samples which are of value after testing will remain the property of CONTRACTOR.

D. Work commenced before approval of samples subject to tests or examinations shall be at the sole risk of CONTRACTOR. CONTRACTOR alone shall bear the entire cost of repair, removal, or replacement of work commenced prior to approval of samples subject to tests or examinations.

ARTICLE 16 WORK TO COMPLY WITH APPLICABLE LAWS AND REGULATIONS

A. CONTRACTOR shall give all notices and comply with all laws, ordinances, rules, and regulations relating to the Work required by the Contract Documents.

B. If CONTRACTOR observes that the Drawings and/or Specifications are at variance with any applicable law, ordinance, rule, or regulation, CONTRACTOR shall promptly notify the Architect in writing, and any changes deemed necessary by the Architect shall be made as provided in the Contract Documents for changes in work. If CONTRACTOR performs any work which CONTRACTOR knows, or through the exercise of reasonable care should have known, to be contrary to any laws, ordinances, rules, or regulations, and fails to notify the Architect, CONTRACTOR shall bear all arising costs, including without limitation the costs of correction without increase or adjustment to the contract price or the time for performance. Where Plans, Drawings, or Specifications state that materials, processes, or procedures must be approved by the DSA, State Fire Marshall, or other body or agency, CONTRACTOR shall be responsible for satisfying the requirements of those bodies or agencies.

ARTICLE 17 WORK AND MATERIALS

A. Except as otherwise specifically stated in the Contract Documents, CONTRACTOR shall provide and pay for all materials, labor, tools, equipment, water, light, power, transportation, supervision, temporary construction of every kind, and all other services and facilities necessary to perform and complete the Work within the time specified.

B. Unless otherwise specified, all materials shall be new and the best of their respective kinds and grades as noted or specified, and workmanship shall be of good quality.

C. Materials shall be furnished in ample quantities and at times to ensure uninterrupted progress of the work and shall be properly stored and protected. CONTRACTOR shall be solely responsible for any damage or loss by weather, theft, or other causes to materials or work under the Contract Documents. After issuance of the Notice to Proceed by OWNER, CONTRACTOR shall place orders for materials and/or equipment as specified so that delivery may be made without delays to the Work. Upon demand from the Architect, CONTRACTOR shall furnish to the Architect documentary evidence showing that orders have been placed.

D. In the event of failure to comply with the above instructions, OWNER reserves the right to place orders for any materials and/or equipment as it may deem advisable in order that the Work may be completed at the date specified in the Contract Documents, and all expenses incidental to procuring the materials and/or equipment shall be paid for by CONTRACTOR.

E. No material, supplies, or equipment for work under the Contract Documents shall be purchased subject to any chattel mortgage or under a conditional sale or other agreement by which an interest in all or any part is retained by the seller or supplier. CONTRACTOR warrants good title to all material, supplies, and equipment installed or incorporated in the Work, and upon completion of all work agrees to surrender the premises to OWNER, together with all improvements and appurtenances constructed or placed by CONTRACTOR, free from any claims, liens, or charges. CONTRACTOR further agrees that neither CONTRACTOR nor any person, firm, or corporation furnishing any materials or labor for any work covered by the Contract Documents shall have any right to a lien upon the premises or any improvement or appurtenance, except that CONTRACTOR may install metering devices or other equipment of utility companies or political subdivisions, title to which is commonly retained by the utility company or political subdivision. In the event of the installation of any metering device or equipment, CONTRACTOR shall advise OWNER as to its owner. Nothing contained in this article however shall defeat or impair the legal right of persons furnishing material or labor to look to funds due and owing CONTRACTOR for payment. This provision shall be inserted in all subcontracts and material contracts and notice of its provisions shall be given to all persons furnishing material for work when no formal contract is entered into for such material.

F. Title to new materials and/or equipment, and attendant liability for their protection and safety, shall remain in CONTRACTOR until incorporated in the Work and accepted by OWNER. No part of these materials and/or equipment shall be removed from their place of storage except for immediate installation in the Work, and CONTRACTOR shall keep an accurate inventory of all materials and/or equipment in a manner satisfactory to OWNER or its authorized representative.

G. Price, fitness, and quality being equal with regard to supplies, OWNER may prefer supplies grown, manufactured, or produced in California. OWNER may next prefer supplies partially manufactured, grown, or produced in California provided the bids of suppliers or the prices quoted by them do not exceed by more than five percent the lowest bids/prices quoted by out-of-state suppliers, the major portion of the manufacture of the supplies is not done outside of California, and the public good will be served. (Government Code Sections 4330-4334)

ARTICLE 18 CONTRACTOR'S SUPERVISION, PROSECUTION, AND PROGRESS

A. Unless personally present on premises where the work is being done, CONTRACTOR shall maintain competent project supervision at all times during working hours, which includes but is not limited to a Project Manager and all additional personnel necessary to maintain progress of the Project within the approved contract schedule satisfactory to the Architect. The Project Manager shall not be changed except with the written consent of the Architect. The Project Manager shall represent

CONTRACTOR in its absence and all directions given to the Project Manager shall be binding on CONTRACTOR.

B. Unless personally present on premises where the work is being done, CONTRACTOR shall maintain a competent Superintendent on the work site at all times, satisfactory to the Architect. The Superintendent shall not be changed except with the written consent of the Architect. The Superintendent shall represent CONTRACTOR in its absence and all directions given to the Superintendent shall be binding on CONTRACTOR.

C. Before commencing the Work, CONTRACTOR shall give written notice to OWNER and the Architect of the name, qualifications, and experience of CONTRACTOR's proposed Project Manager and Superintendent. If either the Project Manager or Superintendent is found unsatisfactory by OWNER, CONTRACTOR shall replace that person with one acceptable to the OWNER.

D. CONTRACTOR shall supervise and direct the work competently and efficiently, devoting such attention and applying such skills as may be necessary to perform the Work in accordance with the Contract Documents.

E. Before commencing the Work, CONTRACTOR shall verify all grade lines, levels, and dimensions indicated on the Drawings and shall report any apparent error or inconsistencies to the Architect before commencing work. CONTRACTOR shall not proceed until reported apparent errors and inconsistencies are corrected or otherwise resolved by the Architect and OWNER.

F. CONTRACTOR shall establish and maintain all construction grades, lines, and bench marks, and be responsible for their accuracy and protection.

G. CONTRACTOR represents itself to OWNER as a skilled, knowledgeable, and experienced CONTRACTOR who will or has carefully studied and compared the Contract Documents with each other, and CONTRACTOR further represents it has or shall at once report to the Architect any errors, inconsistencies, or omissions discovered in them. CONTRACTOR shall be liable to OWNER for damage resulting from errors, inconsistencies, or omissions in the Contract Documents that CONTRACTOR either:

1. Recognized and knowingly failed to report; or
2. Should have recognized, and which a similarly skilled, knowledgeable, and experienced contractor would have discovered, which CONTRACTOR negligently failed to recognize and report.

H. CONTRACTOR shall verify all indicated dimensions before ordering materials or equipment, or before performing work. CONTRACTOR shall take field measurements,

verify field conditions, and carefully compare the field measurements and conditions and other information known to CONTRACTOR with the Contract Documents before commencing work. Errors, inconsistencies, or omissions discovered shall be reported to OWNER at once. Upon commencement of any item of work, CONTRACTOR shall be responsible for dimensions related to the item of work and shall make any corrections necessary to make work properly fit at no additional cost to OWNER. This responsibility for verification of dimensions is a non-delegable duty and may not be shifted to subcontractors or agents.

I. Omissions from the Plans, drawings, or Specifications, or the mis-description of details of work which are manifestly necessary to carry out the intent of the Plans, drawings, and Specifications, or which are customarily performed, shall not relieve CONTRACTOR from performing such omitted or mis-described work, but they shall be performed as if fully and correctly set forth and described in the Plans, drawings, and Specifications.

J. CONTRACTOR shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction. CONTRACTOR shall be responsible to see that the finished work complies accurately and completely with the Contract Documents

ARTICLE 19 SUBSTITUTIONS

A. CONTRACTOR shall follow all instructions and requirements for substitutions set forth in the Instructions to Bidders and in this article.

B. OWNER desires that whenever possible all substitution requests be resolved prior to contract award. For that reason, no substitution requests, whether of "equal" materials, process, service, equipment, or otherwise, may be made after the bid date except by the express written permission of OWNER and on such terms as OWNER may require, or in the case of an emergency as where a specified material, process, service, equipment or other item has become unavailable through no fault of CONTRACTOR.

C. As to any emergency substitution request, CONTRACTOR shall timely submit the request, together with substantiating data, including substitution warranties, in order to prevent delays arising from the substitution request.

D. With respect to all proposed substitutions:

1. Every substitution request shall be on the substitution request form designated by OWNER, if any, and shall be accompanied by all substantiating data.

2. CONTRACTOR shall furnish with its substitution request all drawings, Specifications, samples, performance data, calculations, and other information as may be required to assist the Architect and OWNER in determining whether the proposed substitution is acceptable, including but not limited to the following:

- a. Identify product by Specifications section and article numbers; provide manufacturer's name and address, trade name of product, and model or catalog number; list fabricators and suppliers as appropriate.
- b. Attach product data as required by Specifications.
- c. List similar projects using product, dates of installation, and names of Architect/Engineer and owner.
- d. Give itemized comparison of proposed substitution with specified product, listing variations and reference to Specifications section and article numbers.
- e. Give quality and performance comparison between proposed substitution and specified product.
- f. Give cost data comparing proposed substitution with specified product and amount of net change to contract sum.
- g. Identify any required license fees or royalties.
- h. List availability of maintenance services and replacement materials.
- i. State the effect of the substitution on the construction schedule, and the effect of any changes required in other work or products; include a document waiving rights to additional payment or time that may become necessary because of the failure of the substitution to perform adequately.

3. OWNER is not responsible for locating or securing any information which is not included in any substantiating data.

4. The proposed substitution must be, in the opinion of OWNER, substantially equal or better in every respect to what is specified. The burden of proof as to the quality or suitability of proposed substitutions shall be borne by CONTRACTOR.

5. With the assistance of the Architect, OWNER shall be the sole judge as to the quality and suitability of proposed substituted items, and decisions of the OWNER shall be final and conclusive.
6. All substitutions shall be submitted with a substitution warranty. Any substitution requests submitted without the warranty will not be considered, but will be returned to CONTRACTOR without review or evaluation. If required by OWNER, CONTRACTOR shall provide an extended warranty for the requested substitution.
7. No extension of time shall be granted if the extension request arises from a request for substitution, whether by reason of delay in making the request, delay in OWNER's approval of the request, delay in obtaining other governmental approvals, delay in coordination of substitutions into or with other work or equipment, delay in obtaining the substituted items, increased time of installation or performance, or for any other reason.
8. Once any part or all of a substitution request has been denied, it is considered always denied.
9. A substitution request shall be submitted separately from any other submittal and shall be clearly marked as a "request for substitution."
10. If the substitution is accepted, CONTRACTOR shall bear all costs and be solely and directly responsible for fitting accepted substitute materials and equipment into the available space in a manner acceptable to the Architect and OWNER, and for the proper operation of the substituted equipment with other equipment with which it may be associated. In addition, CONTRACTOR shall acknowledge in writing on CONTRACTOR's letterhead, that CONTRACTOR accepts complete responsibility for additional costs required for modifications to building or other materials and equipment and additional coordination of work.
11. Any additional time, including Architect review time, and any additional coordination, inspection, materials, equipment, labor, tools, warranty extension, or other items necessary to either accomplish a substitution or arising as a result of a substitution request will be the sole responsibility of and at the sole expense of CONTRACTOR, who will reimburse OWNER for review or redesign services associated with approval by the Architect and obtaining all required approvals by other agencies.
12. CONTRACTOR shall also be responsible for meeting all code requirements whether local, city, county, state, federal, or other.

F. If the substitution requested by CONTRACTOR is not substantially equal or better in every respect to that specified, in the opinion of DISTRICT, CONTRACTOR shall provide and/or perform as specified.

G. In the event CONTRACTOR furnishes a material, process, service, or equipment more expensive than that specified, the difference in cost of such material, process, service, or equipment furnished shall be borne by CONTRACTOR. Any difference in cost between an approved substitution which is lower in cost than the originally specified item shall be refunded by CONTRACTOR to OWNER.

H. Any engineering, design, or approval agencies' fees required to make adjustments in material or work of all trades directly or indirectly affected by the approved substitution shall be borne entirely by CONTRACTOR. If a substitution is approved, any additional time required to obtain shop drawings, order materials, make modifications, perform testing, or whatever else is necessary to make the substitution function properly in place of the originally specified item shall be borne solely by CONTRACTOR. It will also be CONTRACTOR's responsibility to acquire and install the substituted item in the time frame allowed under the Contract Documents. No time extension need be granted to CONTRACTOR for any substitution, except as OWNER in its sole discretion may deem appropriate.

ARTICLE 20 PROTECTION OF WORK AND PROPERTY

A. CONTRACTOR shall be responsible for all damages to persons or property which occur as a result of CONTRACTOR's fault or negligence in connection with performance under the Contract Documents, and for the proper care and protection of all materials delivered and work performed until completion and final acceptance by OWNER. With the exception of damage to the Work caused by "acts of God," as defined in Public Contract Code 7105, CONTRACTOR assumes the risk for damage or destruction of any or all work performed under the Contract Documents. CONTRACTOR shall adequately protect adjacent property from settlement or loss of lateral support as provided by law and this article.

B. CONTRACTOR shall take, and require subcontractors to take, all necessary precautions for safety of workers and shall comply with all applicable federal, state, local, and other safety laws, standards, orders, rules, regulations, and building codes to prevent accidents or injury to persons on, about, or adjacent to the work site and to provide a safe and healthful place of employment. CONTRACTOR shall furnish, erect, and properly maintain at all times, as directed by OWNER or the Architect, 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. CONTRACTOR shall designate a responsible employee whose

duty shall be to post information regarding protection and obligations of workers and other notices required under occupational safety and health laws, to comply with reporting and other occupational safety requirements, and to protect the life, safety, and health of workers. The name and position of the person so designated shall be reported in writing to OWNER by CONTRACTOR. CONTRACTOR shall correct any violation of safety laws, standards, orders, rules, or regulations. Upon issuance of a citation or notice of violation by the California Division of Occupational Safety and Health, the violation shall be corrected immediately by CONTRACTOR at CONTRACTOR's expense.

C. In an emergency affecting safety of life, work, or adjoining property, CONTRACTOR is permitted to act at its discretion without special instruction or authorization from the Architect or OWNER to prevent any threatened loss or injury, and CONTRACTOR shall act if authorized or instructed by the Architect or OWNER. Any compensation claimed by CONTRACTOR for emergency work shall be determined according to the Contract Documents.

D. CONTRACTOR shall (unless waived by OWNER in writing):

1. Provide heat, covering, and enclosures necessary to protect all work, materials, equipment, appliances, and tools against damage by weather conditions;
2. Take adequate precautions to protect existing sidewalks, curbs, pavements, utilities, adjoining property, and structures, and avoid damage to them, and repair any damage caused by construction operations;
3. When performing new construction on existing sites, become informed and take into specific account the maturity of the students on the site, and perform work which may interfere with school routine before or after school hours; enclose the work area with a substantial barricade and arrange work to cause a minimum of inconvenience and danger to students and staff in their regular school activities;
4. Provide substantial barricades around any shrubs or trees to be preserved;
5. Deliver materials to the building area over the route designated by the Architect;
6. Take preventative measures to eliminate excessive dust;

7. Confine apparatus, storage of materials, and the operations of its workers within limits indicated by law, ordinances, permits, or directions of the Architect and not unreasonably encumber the premises with materials;
8. Enforce all instructions of OWNER and the Architect regarding signs, advertising, fires, danger signals, barricades, and smoking, and require that all persons employed on the Work comply with all regulations while on the construction site;
9. Exercise reasonable care to prevent disturbing or covering any survey markers, monuments, or other devices marking property boundaries or corners; if markers are disturbed, they shall be replaced by an approved civil engineer at no cost to OWNER.

ARTICLE 21 USE OF ASBESTOS OR LEAD MATERIALS/PRODUCTS

A. CONTRACTOR shall not use any asbestos or lead containing products or materials in performing the work under the Contract Documents. Upon completion of the Project, CONTRACTOR shall certify in writing to OWNER that no asbestos or lead containing materials or products were used by CONTRACTOR or any subcontractor in performing the work required by the Contract Documents.

B. Should asbestos containing materials be installed by CONTRACTOR in violation of this certification, or if removal of asbestos containing materials is otherwise a part of the Project, decontaminations and removals will meet the following criteria:

1. Decontamination and removal of work found to contain asbestos or work installed with asbestos containing equipment shall be done only under the supervision of a qualified consultant, knowledgeable in the field of asbestos abatement and accredited by Cal-OSHA.
2. Any asbestos removal contractor shall be a Cal-OSHA accredited contractor qualified in the removal of asbestos and shall be chosen and approved by the asbestos consultant who shall have sole discretion and final determination in this matter.
3. The asbestos consultant shall be chosen and approved by OWNER who shall have sole discretion and final determination in this matter.
4. The work will not be accepted until asbestos contamination is reduced to levels deemed acceptable by the asbestos consultant.

C. Cost of all asbestos removal, including but not limited to the cost of an asbestos removal contractor, the cost of the asbestos consultant, analytical and laboratory fees,

time delays, and additional costs as may be incurred by OWNER shall be borne entirely by CONTRACTOR.

D. Interface of work for the Project with work containing asbestos shall be executed by CONTRACTOR at CONTRACTOR's risk and at CONTRACTOR's discretion with full knowledge of the currently accepted standards, hazards, risks, and liabilities associated with asbestos work and asbestos containing materials. By execution of the Construction Agreement, CONTRACTOR acknowledges the above and agrees to hold harmless OWNER, its governing board, or other governing body, employees, agents, and the Architect and assigns for all asbestos liability which may be associated with this work. CONTRACTOR further agrees to instruct CONTRACTOR's employees with respect to the above standards, hazards, risks, and liabilities.

E. Should lead containing materials be installed by CONTRACTOR in violation of this certification, or if removal of lead containing materials is part of the Project, decontaminations and removals will meet the criteria approved by OWNER.

F. The cost of all removals or decontaminations resulting from the installation of materials in violation of this certification shall be at the sole expense of CONTRACTOR.

ARTICLE 22 LAYOUT AND FIELD ENGINEERING

All field engineering required for laying out this Work and establishing grades for earthwork operations shall be furnished by CONTRACTOR at its expense. The work shall be done by a qualified civil engineer approved by the Architect. "As-Built" drawings of site development and utilities' locations and inverts shall be prepared by an approved civil engineer.

ARTICLE 23 UTILITIES

A. All utilities, including but not limited to electricity, water, gas, and telephone used on the Work, shall be furnished and paid for by CONTRACTOR. CONTRACTOR shall furnish and install necessary temporary distribution systems, including meters if necessary, from distribution points to points on the site where the utility is necessary to perform the work. Upon completion of the Work, CONTRACTOR shall remove all temporary distribution systems.

B. If this Project is for an addition to an existing facility, CONTRACTOR may use existing OWNER utilities, with the written permission of OWNER, by making prearranged payments to OWNER for utilities used by CONTRACTOR for construction.

ARTICLE 24 UTILITIES: REMOVAL, RESTORATION

A. Pursuant to Government Code section 4215, OWNER assumes the responsibility for removal, relocation, and protection of utilities located on the construction site at the time of commencement of construction with respect to any main or trunkline utility facilities which are not identified in the Plans and Specifications. CONTRACTOR shall not be assessed any delay in completion of the Project caused by OWNER's failure to provide for removal or relocation of utility facilities. OWNER shall compensate CONTRACTOR for the costs of locating, repairing damage not due to CONTRACTOR's failure to exercise reasonable care, and removing or relocating any utility facilities not indicated in the Plans and Specifications with reasonable accuracy, and for equipment necessarily idle during the work, using the provisions of the Contract Documents on changes in the Work.

B. This article shall not be construed to preclude assessment against CONTRACTOR for any other delays in completion of the Work. Nothing in this article shall be deemed to require OWNER to indicate the presence of existing service laterals or appurtenances whenever the presence of those utilities on the construction site can be inferred from the presence of other visible facilities, such as buildings or meter junction boxes on or adjacent to the construction site.

C. If while performing work under the Contract Documents, CONTRACTOR discovers utility facilities not identified by OWNER in the contract Plans or Specifications, CONTRACTOR shall immediately notify OWNER and the utility in writing.

D. As part of the work to be performed, CONTRACTOR shall provide the notices and proceed in accordance with Government Code Sections 4216.2, 4216.3, and 4216.4, and pay all fees charged pursuant to Government Code Section 4216, et seq.

ARTICLE 25 SANITARY FACILITIES

CONTRACTOR shall provide temporary sanitary toilet facilities as required by law and additional facilities as directed by the Project Inspector for the use of all workers. The facilities shall be maintained in a sanitary condition and left at the site until removal is directed by the Project Inspector. Use of toilet facilities contained in the Work under construction shall not be permitted except with the approval of the Project Inspector.

ARTICLE 26 LABOR—FIRST AID

CONTRACTOR shall maintain emergency first aid treatment on the Project for all workers of CONTRACTOR or any subcontractors on the Project, and shall ensure compliance with the Federal Occupational Safety and Health Act of 1970 (29 U.S.C.A., Section 651 et seq.).

ARTICLE 27 CHANGES AND EXTRA WORK

A. As used in this article, the following definitions shall apply:

1. "Labor" means any amount(s) paid directly to non-supervisory workers (up to and including general foreman) in the form of employee wages and benefits in order to perform the Work. These costs shall include documented payroll cost (wages, payroll taxes, fringe benefits, workers compensation) and general liability insurance as submitted and approved by OWNER.

2. "Material" means all products, equipment, and devices that are physically incorporated into the work to be performed. Any costs or equipment, facilities, or services not physically incorporated in the work to be performed but necessary for its completion shall be considered "overhead." Cash or trade discounts available to the purchaser shall be credited to OWNER. Material costs secured by other than direct purchase and billing will be the price paid to the actual supplier as determined by OWNER. Markup will not be allowed. If cost of materials is deemed excessive, the price will be determined to be the lowest current wholesale price delivered to the site, less cash or trade discount.

3. "Equipment" costs shall include transportation and setup costs, if CONTRACTOR can substantiate that the Work could not have been performed economically with equipment already at the site. Rental costs shall not exceed rates set forth in the then-current "Rental Rate Blue Book," published by Dataquest, Inc., Palo Alto, California, as adjusted to this region. Owned equipment costs shall not exceed rates set forth in the then-current "Cost Reference Guide for Construction Equipment," published by Dataquest. Hours of usage must be documented by CONTRACTOR in order to be the basis for equipment utilization charges for Change Orders. CONTRACTOR will not be allowed to charge for idle equipment.

4. "Overhead" means any necessary costs and expenses incurred in the performance of the Work excluding "labor," "materials," and "equipment" as defined above.

B. Without invalidating the Contract Documents, OWNER may order extra work or make changes by altering, adding to, or deducting from the Work, and the contract sum shall be adjusted accordingly. All the work shall be subject to the conditions of the Contract Documents, except that any claim for extension of time caused by changes shall be adjusted at the time of ordering the change, with adjustments to time being made after CONTRACTOR has justified, through documentation, the impact on the critical path of the Project.

C. In giving instructions, the Architect shall have authority to make minor changes in the Work not involving a change in cost and not inconsistent with purposes of the Project, subject to DSA approval. If so authorized by OWNER, OWNER's Representative, if one has been identified, may authorize changes in work involving a change in cost that does not exceed \$15,000. Otherwise, except in an emergency endangering life or property, no extra work or change shall be performed unless pursuant to a written order from OWNER, and no claim for any addition to the contract amount or time shall be valid unless by written order of OWNER. A Change Order will not be officially approved until ratified by OWNER's Board of Trustees or other governing body.

D. If the Architect determines that the work required to be done constitutes extra work outside the scope of the Contract Documents, the Architect shall send a request for a detailed proposal to CONTRACTOR. CONTRACTOR will respond with a detailed proposal within five calendar days of receipt of the request for proposal. If the work is to be performed by a subcontractor, CONTRACTOR's proposal must include a bid from the subcontractor.

E. If the Architect determines the work required does not constitute extra work, or work for which CONTRACTOR may recover additional compensation, the Architect shall so notify CONTRACTOR. If CONTRACTOR is not in agreement with the determination by the Architect, CONTRACTOR shall immediately give notice of any claim as provided in the Contract Documents. CONTRACTOR shall perform the required work in timely fashion.

F. At the discretion of OWNER, the value of any extra work, change, or deduction shall be determined in one or more of the following ways:

1. By acceptable lump sum proposal from CONTRACTOR, a total sum for the changed work may be mutually determined by OWNER and CONTRACTOR. CONTRACTOR shall furnish a breakdown of the proposed lump sum cost satisfactory to OWNER, which shall be full and final compensation for the change, including time adjustment.

2. By contract unit prices contained in CONTRACTOR's original bid and incorporated in the Contract Documents, or fixed by subsequent agreement between OWNER and CONTRACTOR. Where payment for Change Orders is based on unit prices stipulated in CONTRACTOR's bid, those unit prices shall constitute the total equitable adjustment due for the change. If a change is ordered in an item or work covered by a contract unit price, and the change does not involve a substantial change in the character of the work from that shown on the Plans or included in the Specifications, an adjustment in payment will be made based upon the increase or decrease in quantity and the contract unit price. In the case of such an increase or decrease in a major bid item, the use of

this basis for the adjustment of payment will be limited to that portion of the change which, together with all previous changes to that item, is not in excess of 25 percent of the total cost of such item based on the original quantity and contract unit price. If a change is ordered in an item of work covered by a contract unit price, and the change does involve a substantial change in the character of the work from that shown on the Plans or included in Specifications, an adjustment in payment will be made in accordance with other sections of this article. Should any contract item be deleted in its entirety, payment will be made only for actual costs incurred prior to notification of such deletion.

3. Stipulated contract unit prices are those established by OWNER in the Contract Documents, as distinguished from contract unit prices submitted by CONTRACTOR, and may be used for the adjustment of contract changes. Whether set forth in the Contract Documents or subsequently agreed upon, all contract unit prices shall include overhead, profit, and increased premium on the Surety Bonds.

4. By cost of labor, material, equipment, and subcontract, plus a percentage for overhead and profit. If the value is determined by this method the following requirements shall apply:

a. Daily reports by CONTRACTOR, as follows:

(i) General. At the close of each working day, CONTRACTOR shall submit a daily report to the Architect and the Project Inspector on forms approved by OWNER, together with applicable delivery tickets listing all labor, materials, and equipment involved for that day, and for other services and expenditures, when authorized, concerning extra work items. An attempt shall be made to reconcile the report daily, and it shall be signed by the Architect and CONTRACTOR. In the event of disagreement, pertinent notes shall be entered by each party to explain points which cannot be resolved immediately. Each party shall retain a signed copy of the report. Reports by subcontractors or others shall be submitted through CONTRACTOR.

(ii) Labor. The report shall show names of workers, classifications, and hours worked and hourly rate. Project supervision expenses, including for foremen and above, are not allowed.

(iii) Materials. The report shall describe and list quantities of materials used and unit cost.

(iv) Equipment. The report shall show the type of equipment, size, identification number, and hours of operation, including loading and transportation, if applicable, and hourly/daily costs.

(v) Other Services and Expenditures. Other services and expenditures shall be described in such detail as OWNER may require.

b. Basis for Establishing Costs

(i) Labor. The costs of labor will be the actual cost for wages prevailing locally for each craft classification or type of worker at the time the extra work is done, plus employer payments of payroll taxes and insurance, health and welfare, pension, vacation, apprenticeship funds, and other direct costs resulting from federal, state, or local laws, as well as assessments or benefits required by lawful collective bargaining agreements. The use of labor classifications which would increase the extra work cost will not be permitted unless CONTRACTOR establishes the necessity for such additional costs. Labor costs for equipment operators and helpers shall be reported only when such costs are not included in the invoice for equipment rental.

(ii) Materials. The cost of materials reported shall be at invoice or lowest current price at which such materials are locally available and delivered to the work site in the quantities involved, plus sales tax, freight, and delivery. OWNER reserves the right to approve materials and sources of supply, or to supply materials to CONTRACTOR if necessary for the progress of the work. No markup shall be applied to any material provided by OWNER.

(iii) Tool and Equipment Rental. No payment will be made for the use of tools which have a replacement value of \$100 or less or where an invoice is not provided. Regardless of ownership, the rates to be used in determining equipment rental costs shall not exceed listed rates prevailing locally at equipment rental sources or distributors at the time the work is performed. The rental rates paid shall include the cost of fuel, oil, lubrication, supplies, small tools, necessary attachments, repairs and maintenance of any kind, depreciation, storage, insurance, and all incidentals. Necessary loading and transportation costs for equipment used on the extra work shall be included. If equipment is used intermittently, and when not in use could be returned to its rental source at less expense to OWNER than holding it at the work site, it shall be

returned, unless CONTRACTOR elects to keep it at the work site at no expense to OWNER. All equipment shall be acceptable to the Architect in good working condition, and suitable for the purpose for which it is to be used. Manufacturer's ratings and manufacturer's approved modifications shall be used to classify equipment and it shall be powered by a unit of at least the minimum rating recommended by the manufacturer.

(iv) Other Items. OWNER may authorize other items which may be required on the extra work. These items include labor, services, material, and equipment which are different in their nature from those required by the work and which are of a type not ordinarily available from CONTRACTOR or any of the Subcontractors. Detailed invoices covering all such items shall be submitted with the request for payment.

(v) Invoices. Vendors' invoices for material, equipment rental, and other expenditures shall be submitted with the request for payment. If the request for payment is not substantiated by invoices or other documentation, OWNER may establish the cost of the item involved at the lowest price which was current at the time of the report.

c. The following form shall be used by OWNER and CONTRACTOR as applicable to communicate proposed additions and deductions to the Contract Documents.

EXTRA CREDIT

- (i) Material (attached itemized quantity and unit cost plus sales tax
- (ii) Labor (attached itemized hours and rates)
- (iii) Subtotal
- (iv) If Subcontractor performed work, add Subcontractor's overhead and profit to portions performed by it, not to exceed 10% of Item (iii) above
- (v) Subtotal
- (vi) CONTRACTOR's Overhead and Profit, including any increased bond costs, not to exceed 10% of Item (v)
- (viii) Total

5. IT IS EXPRESSLY UNDERSTOOD THAT THE VALUE OF SUCH EXTRA WORK OR CHANGES AS DETERMINED BY ANY OF THESE METHODS EXPRESSLY INCLUDES ANY AND ALL OF CONTRACTOR'S COSTS AND EXPENSES, BOTH DIRECT AND INDIRECT, RESULTING FROM DELAYS OR ADDITIONAL TIME REQUIRED ON THE PROJECT, OR RESULTING FROM ACCELERATED WORK TO AVOID DELAYS TO THE PROJECT.

G. For changes that increase the contract price, CONTRACTOR may include amounts for overhead and profit. CONTRACTOR's overhead (general and administrative) and profit shall include, but not be limited to additional bond costs, additional job site facilities costs, additional home and field office costs, additional administrative costs, additional cleaning, and additional project supervision costs (which includes but is not limited to a Project Manager and any and all additional personnel necessary to maintain the project progress within the approved contract schedule).

H. CONTRACTOR'S overhead, profit, and additional bond costs on the cost of work performed by CONTRACTOR shall be a total sum not exceeding 10 percent of the cost of work.

I. CONTRACTOR'S overhead, profit, and additional bond costs on the cost of work performed by Subcontractors of all tiers shall be a total sum not exceeding 10 percent of those costs.

J. Subcontractors' (all tiers) overhead and profit on the cost of work performed by Subcontractor shall be a total sum not exceeding 10 percent of the cost of labor, materials, rentals, etc.

K. Overhead and profit shall not be applied to taxes, delivery charges, and insurance by CONTRACTOR or its subcontractors or sub-subcontractors.

L. Before CONTRACTOR is authorized to proceed with extra work or changes on the basis set forth in this Article, OWNER and CONTRACTOR shall be in complete agreement on what the term "costs" shall include and the percentage amount of fixed fee CONTRACTOR is to charge.

M. If CONTRACTOR should claim that any instruction, request, drawing, specification, action, condition, omission, default, or other situation constitutes a change, extra work, or otherwise obligates OWNER to pay additional compensation to CONTRACTOR or to grant an extension of time, or constitutes a waiver of any provision in the Contract Documents, CONTRACTOR shall notify OWNER in writing of such claim within five calendar days from the date CONTRACTOR has actual or constructive notice of the factual basis supporting the claim. The notice shall state the factual basis for the

claim and cite in detail the Contract Documents (including plans and specifications) upon which the claim is based. CONTRACTOR's failure to notify OWNER within the five-day period shall be deemed a waiver and relinquishment of such a claim. If the notice is given within the specified time, the procedure for its consideration shall be as stated in these General Conditions. In the event of failure to agree, the matter shall be treated as a claim following the claims procedures in the Contract Documents.

N. Costs which shall not be paid in Change Orders under the Contract Documents include but are not limited to interest costs of any type, claim preparation or filing costs, costs in preparing or reviewing proposed change orders or proposals, CQR's, ASI's, etc., lost revenue, lost profit, lost income or earnings, rescheduling costs, costs of idled equipment, lost earnings or interest on unpaid retainage, claims consulting costs, costs of corporate officers or staff visiting the site, fluctuation of foreign currency conversion or exchange rate costs, or loss of other business.

O. Notwithstanding any other provision in the Contract Documents, the adjustment in the contract price, if any, and the adjustment in the contract time, if any, set out in a change order shall constitute the entire compensation and/or adjustment in the contract time due CONTRACTOR arising out of the change in the work covered by the change order, including any extensions of time, unless otherwise expressly stated in the change order. The amount of any compensation due CONTRACTOR shall be calculated pursuant to this Article. The compensation shall not include any additional charges not set forth in this Article and shall not include delay damages due to processing a change order or refusal to sign a change order, or any indirect, consequential, or incidental costs, including any project management costs, extended home office and field office overhead, administrative costs, or profit except as such matters may be authorized under this Article.

P. In furtherance of the intent to settle all change orders fully and finally at the issuance date of the change order, the following shall be expressly incorporated in writing and deemed incorporated in all change orders:

THE COMPENSATION (TIME AND COST) SET FORTH IN THIS CHANGE ORDER COMPRISES THE TOTAL COMPENSATION DUE CONTRACTOR FOR THE CHANGE DEFINED IN THE CHANGE ORDER, INCLUDING IMPACT ON UNCHANGED WORK. ACCEPTANCE OF THIS CHANGE ORDER CONSTITUTES A FULL AND COMPLETE ACCORD AND SATISFACTION OF ANY AND ALL CLAIMS BY CONTRACTOR ARISING OUT OF OR RELATING TO THE CHANGE ORDER, INCLUDING BUT NOT LIMITED TO CLAIMS FOR CONTRACT BALANCE AND RETENTION, TIME, EXTENDED FIELD OR HOME OFFICE, OR OTHER OVERHEAD, ALL ACCELERATION, IMPACT, DISRUPTION AND DELAY DAMAGES, ANY AND ALL OTHER DIRECT AND/OR INDIRECT COSTS, CLAIMS BY

SUBCONTRACTORS AND SUPPLIERS, AND ANY AND ALL OTHER CLAIMS AGAINST OWNER FOR TIME OR MONEY, FROM ANY SOURCE AND UNDER ANY LEGAL THEORY WHATSOEVER, AS TO THE SUBJECT OF THIS CHANGE ORDER. NO SIGNATURE UNDER PROTEST OR ACCOMPANIED BY RESERVATION OF RIGHTS OR PROTEST LANGUAGE, OR ANY OTHER ATTEMPTS TO AVOID SUCH WAIVER SHALL BE OF ANY FORCE OR EFFECT WHATSOEVER. NO ADDITIONS OR DELETIONS TO THIS CHANGE ORDER SHALL BE ALLOWED, EXCEPT WITH WRITTEN PERMISSION OF OWNER.

Q. Within 10 days of the notice to proceed, CONTRACTOR shall submit a detailed list of the field office overhead cost components which are time related and which represent costs incurred as a direct result of time extensions. No allowance for overhead costs and no profit allowance will be allowed on the extended daily field overhead cost component of the change Order. The deviation of an extended home office overhead rate and its application to contract time extensions shall not be allowed.

ARTICLE 28 CORRECTION OF WORK BEFORE FINAL PAYMENT

A. CONTRACTOR shall promptly remove from the premises all work identified by OWNER as failing to conform to the Contract Documents, whether incorporated or not. CONTRACTOR shall promptly replace and repair its own work to comply with the Contract Documents, without additional expense to OWNER, and shall bear the expense of making good all work of other contractors destroyed or damaged by that removal or replacement, including compensation for the Architect's additional services.

B. If CONTRACTOR does not remove work within a reasonable time following written notification, OWNER may remove and store the material at CONTRACTOR'S expense. If CONTRACTOR does not pay the expenses of removal within 10 days, OWNER may sell the materials at auction or private sale upon 10 days' written notice, and shall account for any net proceeds after deducting all costs and expenses that should have been borne by CONTRACTOR.

ARTICLE 29 DEDUCTIONS FOR UNCORRECTED WORK

A. If CONTRACTOR defaults or neglects to carry out the Work in accordance with the Contract Documents, or fails to perform any provision of the Contract Documents, after 10 days' written notice to CONTRACTOR, OWNER may make good such deficiencies without prejudice to any other remedy it may have.

B. OWNER shall reduce the total contract price by the cost of making good such deficiencies.

C. If OWNER deems it inexpedient to correct work not performed in compliance with the Contract Documents, an equitable deduction from the contract price shall be made.

ARTICLE 30 CLEANING UP

A. CONTRACTOR shall at all times keep the work site free from debris such as waste, rubbish, and excess materials and equipment caused by this Work. CONTRACTOR shall not leave debris under, in, or about the work site, but shall promptly remove all items.

B. Upon completion of the Work, CONTRACTOR shall clean the interior and exterior of each building, including fixtures, equipment, walls, floors, ceilings, roofs, window sills and ledges, horizontal projections, and any areas where debris has collected. CONTRACTOR shall clean and polish all glass, plumbing fixtures, and finish hardware and similar finish surfaces and equipment, and remove temporary fencing, barricades, planking, sanitary facilities, and similar temporary facilities from the site.

C. If CONTRACTOR fails to clean up at the completion of the Work, OWNER may do so and the cost for such cleanup shall be charged back to CONTRACTOR and may be deducted from future progress or final payments.

D. CONTRACTOR shall not include cleaning as an additional line item for change order payments. Cleaning is included in the overhead expenses included in the CONTRACTOR's and/or Subcontractor's overhead and profit percentage.

ARTICLE 31 ACCESS TO WORK

OWNER and its representatives shall at all times have access to the Work wherever it is in preparation or progress. CONTRACTOR shall provide safe and proper facilities for access so OWNER's representatives may perform their functions under the Contract Documents.

ARTICLE 32 GUARANTEE

A. CONTRACTOR warrants that the Work, including any equipment furnished by CONTRACTOR, shall be:

1. Free from defects in workmanship and material;
2. Free from defects in any design performed by CONTRACTOR;
3. New, and conform and perform to the requirements stated in the Specifications, and where detail requirements are not so stated, shall conform to applicable industry standards; and

4. Suitable for the use stated in the Specifications.

B. The warranty period for discovery of defective work shall commence on the date stamped on the Notice of Completion to verify recording with the County, and shall continue for the period set forth in the Specifications or for one year if not so specified. If during the warranty period the Work is not available for use due to defective work, such time of unavailability shall not be counted as part of the warranty period. The warranty period for corrected defective work shall continue for a duration equivalent to the original warranty period.

C. OWNER shall give CONTRACTOR prompt written notice after discovery of any defective work. CONTRACTOR shall correct any such defective work, as well as any damage to any other part of the Work resulting from such defective work, and provide repair, replacement, or reimbursement, at its sole expense, in a manner approved by OWNER and with due diligence and dispatch as required to make the Work ready for use by OWNER, ordinary wear and tear, unusual abuse, or neglect excepted. Such corrections shall include but not be limited to any necessary adjustments, modifications, changes of design (unless of OWNER's design), removal, repair, replacement, or reinstallation, and shall include all necessary parts, materials, tools, equipment, transportation charges, and labor as may be necessary, and cost of removal. Replacement shall be performed at a time and in such a manner so as to minimize the disruption to OWNER's use of the Work.

D. In the event CONTRACTOR or Surety fails to commence and pursue with diligence any replacements or repairs within one week after being notified in writing, OWNER is authorized to proceed to have any defects repaired at the expense of CONTRACTOR and Surety, and CONTRACTOR and Surety agree to pay the costs and charges immediately on demand.

E. If defective work creates a dangerous condition, in the opinion of OWNER, or requires immediate correction or attention to prevent further loss to OWNER or to prevent interruption or operations of OWNER, OWNER shall attempt to give the notice required by this Article. If CONTRACTOR or Surety cannot be contacted or neither complies with OWNER's request for correction within a reasonable time, as determined by OWNER, without regard to the provisions of this Article, OWNER may proceed to make the correction or provide the attention, and the costs of correction or attention shall be charged against CONTRACTOR. Any action by OWNER shall not relieve CONTRACTOR of the guarantees provided in this Article or elsewhere in the Contract Documents.

F. This article does not in any way limit the guarantee on any items for which a longer guarantee is specified, or any items for which a manufacturer gives a guarantee

for a longer period. CONTRACTOR shall furnish OWNER with all appropriate guarantee or warranty certificates upon completion of the Project.

G. All guarantees required under this Article shall be considered to be in writing on the guarantee provided by CONTRACTOR, and CONTRACTOR shall use the form included in the Contract Documents unless otherwise agreed by OWNER.

H. OWNER may collect its reasonable costs and attorneys' fees in any action to enforce this Article.

ARTICLE 33 SURVEYS

OWNER shall furnish all surveys describing the physical characteristics, legal limitations, and utility locations for the site of the Project and a legal description of the site. Surveys to determine locations of construction, grading, and site work shall be provided by CONTRACTOR.

ARTICLE 34 SOILS INVESTIGATION REPORT

A. When a soils investigation report has been obtained from test holes at the site, that report is available for CONTRACTOR's use in preparing its bid and work under the Contract Documents. Any information obtained from the report or any information given on drawings as to subsurface soil conditions or as to elevations of existing grades or elevations of underlying rock, is approximate only, is not guaranteed, and **is not part of the Contract Documents**. CONTRACTOR is required to make a visual examination of the site and must make whatever tests it deems appropriate to determine the actual underground condition of the soil.

B. CONTRACTOR agrees that it will make no claim against OWNER for damages in the event that during progress of the Work, CONTRACTOR encounters subsurface or latent conditions at the site materially different from those shown on drawings or indicated in Specifications or soils reports, or for unknown conditions of an unusual nature which differ materially from those ordinarily encountered in work of the type provided for in the Plans and Specifications.

C. If during the course of work under the Contract Documents CONTRACTOR encounters subsurface or latent conditions which differ materially from those indicated in the soils investigation report, or drawings, or Specifications, CONTRACTOR shall notify OWNER of same within five working days of discovery of the condition.

WARNING: OWNER does not warrant the soils at the project site. A soils investigation report is provided for CONTRACTOR'S information only. CONTRACTOR represents it has conducted an independent investigation of the project site and the soil conditions of the site. CONTRACTOR is solely

responsible to ascertain site conditions for the purposes of determining construction means and methods before commencing construction.

ARTICLE 35 PERMITS AND LICENSES

- A. All necessary permits and licenses shall be secured and paid for by CONTRACTOR unless otherwise provided in the Contract Documents.
- B. All permits, licenses, and certificates shall be delivered to the Architect before demand is made for the certificate of final payment.
- C. CONTRACTOR shall, and shall require subcontractors to, maintain appropriate contractor's licenses in effect as required by law throughout the entire Project.
- D. Easements for permanent structures or permanent changes in existing facilities shall be secured and paid for by OWNER unless otherwise specified.
- E. Permits and charges for installation and inspection of utility services by serving utilities shall be secured and paid for by OWNER.

ARTICLE 36 CUTTING AND PATCHING

- A. CONTRACTOR shall do all cutting, fitting, or patching of the Work as required to make its several component parts come together properly, and fit it to receive or be received by any work of other contractors indicated on, or reasonable implied by, the drawings and Specifications, and shall follow all directions given by the Architect.
- B. Any cost caused by defective or ill-timed work shall be borne by CONTRACTOR.
- C. CONTRACTOR shall not endanger any work by cutting, excavating, or otherwise altering work, and shall not cut or alter work of any other contractor except with the written consent of the Architect.
- D. 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.
- E. When modifying existing work or installing new work adjacent to existing work, CONTRACTOR shall match the finishes, textures, and colors of the original work as closely as conditions of site and materials will allow, refinishing existing work as required, at no additional cost to OWNER.
- F. CONTRACTOR is aware that this Project may be split into several phases. If the Project is split into phases, CONTRACTOR has made allowances for any delays or

damages which may arise from coordination with contractors for other phases. If any delays should arise from a contractor working on a different phase, CONTRACTOR's sole remedy for damages, including delay damages, shall be against the contractor who caused such damage and not against OWNER. CONTRACTOR shall provide access to contractors for other phases as necessary to prevent delays and damages to contractors working on other phases of construction.

ARTICLE 37 TESTS AND INSPECTIONS

A. If the Contract Documents, OWNER's instructions, laws, ordinances, or any public authority requires any work to be specially tested or approved, CONTRACTOR shall give notice, in accordance with requirements of such authority, of CONTRACTOR's readiness for observation or inspection. Such notice shall be given at least two working days prior to being tested or covered up. If inspection is by authority other than OWNER, CONTRACTOR shall inform OWNER's Inspector of the date fixed for such inspection. Required certificates of inspection shall be secured by CONTRACTOR. Observations by OWNER shall be promptly made, and where practicable, at the source of supply. If any work is covered up without approval or consent of OWNER, if required by OWNER, it must be uncovered for examination and satisfactorily reconstructed at CONTRACTOR's expense, in compliance with the Contract Documents. The cost of inspection or testing of any materials which are not in compliance with the Contract Documents shall be borne by CONTRACTOR. If the inspection or testing was paid for by OWNER, it will be charged back to and paid by CONTRACTOR. Other costs for tests and inspection of materials shall be paid by OWNER, unless otherwise provided in the Contract Documents.

B. Where the inspection and testing will be conducted by an independent laboratory or agency, the materials or samples of materials to be tested shall be selected by the laboratory or agency, or OWNER's representative, and not by CONTRACTOR.

C. CONTRACTOR shall notify OWNER in writing a sufficient time in advance of the manufacture of any materials to be supplied to CONTRACTOR under the Contract Documents, which materials must be tested according to the terms of the Contract Documents, in order that OWNER may arrange for testing at the source of supply. Materials shipped by CONTRACTOR from the source of supply without having satisfactorily passed testing and inspection, or prior to receipt of notice from OWNER that testing and inspection will not be required, shall not be incorporated into the Work without the prior approval of OWNER and subsequent testing and inspection.

D. Reexamination or retesting of questioned work may be ordered by OWNER, and if so ordered any work must be uncovered by CONTRACTOR. If the work is determined to be in accordance with the Contract Documents, OWNER shall bear the costs of reexamination or retesting and replacement. If the work is not in accordance with the Contract Documents, CONTRACTOR shall bear the costs.

ARTICLE 38 EXCAVATION DEEPER THAN FOUR FEET

A. CONTRACTOR shall provide adequate sheeting, shoring, and bracing, or equivalent method, for the protection of life and limb in trenches and open excavation. Any such method used shall conform to applicable safety standards.

B. If the Contract Documents involve the excavation of any trench or trenches more than four feet in depth, in advance of excavation CONTRACTOR shall submit to OWNER, or to whomever OWNER designates, a detailed plan showing the design of shoring, bracing, sloping, or other provisions to be made for worker protection from the hazard of caving ground during the excavation of any trench or trenches. If the plan varies from the Shoring System Standards established by the Construction Safety Orders of the Division of Industrial Safety of the Department of Industrial Relations, the plan shall be prepared by a registered civil or structural engineer employed by CONTRACTOR, and all costs of the plan shall be included in the contract price. In no case shall the plan be less effective than that required by the Construction Safety Orders. No excavation of any trench or trenches shall be commenced until the plan has been accepted by CAL-OSHA and a CAL-OSHA permit for the plan is delivered to OWNER.

C. If the Contract Documents involve digging trenches or excavations that extend deeper than four feet below the surface, the following shall apply:

1. Before the following conditions are disturbed, CONTRACTOR shall promptly notify OWNER in writing of any:

a. Material that CONTRACTOR believes may be hazardous waste, as defined in Health and Safety Code Section 25117, that is required to be removed to a Class I, Class II, or Class III disposal site in accordance with provisions of existing law.

b. Subsurface or latent physical conditions at the site different from those indicated.

c. Unknown physical conditions at the site of any unusual nature, different materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents.

2. OWNER shall promptly investigate the conditions, and if it finds that the conditions do so materially differ, or do involve hazardous waste, and cause a decrease or increase in CONTRACTOR's cost or the time required for

performance of any part of the Work, shall issue a change order under the procedures described in the Contract Documents.

3. In the event of a dispute between OWNER and CONTRACTOR concerning whether or not the conditions materially differ or involve hazardous waste, or cause a decrease or increase in CONTRACTOR's cost or time required for performance of any part of the Work, CONTRACTOR shall not be excused from any scheduled completion date provided for by the Contract Documents, but shall proceed with all the work to be performed. CONTRACTOR shall retain any and all rights provided either by contract or by law which pertain to the resolution of disputes and protests between the contracting parties.

ARTICLE 39 WORKERS

A. At all times, CONTRACTOR shall enforce strict discipline and good order among its employees, shall not employ any unfit person or anyone not skilled in the work assigned, and shall require the same of all subcontractors of all tiers. It shall be the responsibility of CONTRACTOR to ensure subcontractor compliance with this Article.

B. Any person in the employ of CONTRACTOR or subcontractors whom OWNER may deem to be incompetent, unfit, troublesome, or otherwise undesirable, shall be excluded from the work site and shall not again be employed on it except with written consent of OWNER.

ARTICLE 40 FINGERPRINTING WORKERS

A. CONTRACTOR shall comply with the applicable requirements of Education Code sections 45125.1 and 45125.2 with respect to fingerprinting CONTRACTOR's employees and pupil safety. CONTRACTOR shall also ensure that each of its subcontractors on the Project complies with the applicable requirements of sections 45125.1 and 45125.2. To this end, CONTRACTOR must complete and submit to OWNER the certification form included in the Contract Documents for itself and its subcontractors prior to commencing work on the Project. At CONTRACTOR's expense, CONTRACTOR shall comply with any directive from OWNER specifying measures to ensure the safety of pupils, including but not limited to one or more measures described in Education Code section 45125.2(a).

B. Should CONTRACTOR or any subcontractor feel its employees will have limited or less contact with OWNER's pupils, application shall be made to OWNER for a determination on that question. The determination by OWNER shall be final. In the event OWNER makes a determination of limited or less contact with pupils, CONTRACTOR shall comply with any directive by OWNER to ensure the safety of pupils, at CONTRACTOR's expense.

C. Use of Education Code section 45125.2(a)(1), (2), or (3) for compliance with these fingerprinting requirements is subject to prior OWNER approval. The determination by OWNER on the application of any of these sections shall be final.

D. In no event shall any employee of CONTRACTOR or its subcontractors come into contact with OWNER's pupils before the certification is completed and approved by OWNER.

ARTICLE 41 WAGE RATES AND PAYROLL RECORDS

A. Pursuant to the provisions of Article 2 (commencing at Section 1770), Chapter 1, Part 7, Division 2, of the California Labor Code, OWNER has ascertained the general prevailing rate of per diem wages for each craft, classification, or type of worker needed to execute the work of the Project in the locality in which this public work is to be performed. The general prevailing rates of per diem wages are available at OWNER's office. CONTRACTOR is responsible to pay those rates determined to be applicable by the Director of the Department of Industrial Relations and OWNER shall not be responsible for any damages arising from the error.

B. When permitted by law, holiday and overtime work shall be paid at a rate of at least one and one-half times the specified rate of per diem wages, unless otherwise specified.

C. CONTRACTOR shall pay and shall cause to be paid to each worker engaged in work on the Project not less than the general prevailing rate of per diem wages, regardless of any contractual relationship which may exist between CONTRACTOR or any Subcontractor and such workers.

D. Pursuant to Labor Code Section 1775, CONTRACTOR shall forfeit and OWNER shall withhold from payments to CONTRACTOR not more than \$200 for each calendar day any worker is paid less than the established prevailing wage rates for the work or craft in which the worker is employed by CONTRACTOR on the Project. The difference between the established prevailing wage rates and the amount paid to each worker for each whole or partial calendar day for which each worker was paid less than the established prevailing wage rates shall be paid to each worker by CONTRACTOR.

E. Any worker employed to perform work on the Project which is not covered by any classification available in OWNER's office, shall be paid not less than the minimum rate of wages specified for the classification which most nearly corresponds with work to be performed by him, and that minimum wage rate shall be retroactive to the time of initial employment of the person in the classification.

F. Pursuant to Labor Code Section 1773.1, per diem wages are deemed to include employer payments for health and welfare, pension, vacation, travel, subsistence, apprenticeship, and similar purposes.

G. At appropriate conspicuous points on the site of the Project, CONTRACTOR shall post job site notices prescribed by the Department of Industrial Relations, including but not limited to, a schedule showing all determined minimum wage rates and all authorized deductions, if any, from unpaid wages actually earned.

H. CONTRACTOR shall submit a breakdown of all labor costs for this Project by trade. This breakdown shall be for all labor that CONTRACTOR or any subcontractor supplies to the Project. This information shall be provided to OWNER before the **first payment request** after the Notice to Proceed has been issued. Failure to provide the labor cost breakdown will result in delay in processing the payment request until the complete cost breakdown is provided by CONTRACTOR and received and approved by OWNER. No other labor expenses will be considered unless approved in writing by OWNER.

I. Pursuant to the provisions of Labor Code Section 1776, CONTRACTOR shall keep and shall cause each Subcontractor performing any portion of the work on the Project to keep an accurate payroll record, showing the name, address, social security number, work classification, straight time, and overtime hours worked each day and week, and the actual per diem wages paid to each journeyman, apprentice, worker, or other employee employed by CONTRACTOR in connection with the Work. Each payroll record shall contain or be verified by a written declaration that it is made under penalty of perjury, stating that (1) the information contained in the payroll record is true and correct, and (2) the employer has complied with the requirements of Sections 1771, 1811, and 1815 for any work performed by the employer's employees on the Project.

J. The payroll records required under this article shall be certified and shall be available for inspection at all reasonable hours at CONTRACTOR's principal office on the following basis:

1. A certified copy of an employee's payroll record shall be made available for inspection or furnished to the employee or his or her authorized representative on request;

2. A certified copy of all required payroll records shall be made available for inspection or furnished upon request to a representative of OWNER, the Division of Labor Standards Enforcement, and/or the Division of Apprenticeship Standards of the Department of Industrial Relations;

3. A certified copy of all payroll records required under this article shall be made available for inspection or copies made upon request by the public;

provided, however, that a request by the public shall be made through either OWNER, the Division of Apprenticeship Standards, or the Department of Industrial Relations. If the requested payroll records have not been provided pursuant to Paragraph 2 above, prior to being provided the records, the requesting party shall reimburse the costs of preparation by CONTRACTOR, Subcontractors, and the entity through which the request was made. The public shall not be given access to the records at CONTRACTOR's principal office.

4. The form of certification shall be as follows:

I, _____ (*printed name*), the undersigned, am the _____ (*position in business*) with the authority to act for and on behalf of _____ (*name of business and/or CONTRACTOR*), and certify under penalty of perjury that the records or copies submitted _____ and _____ consisting _____ of (*description, number of pages*) are the originals or true, full, and correct copies of the originals which depict the payroll record(s) of the actual disbursements by way of cash, check, or whatever form to the individual or individuals named.

Dated: _____ Signature: _____

K. CONTRACTOR shall file a certified copy of the required payroll records with the entity requesting the records within 10 days after receipt of a written request. In the event CONTRACTOR fails to comply within the 10-day period, as a penalty to OWNER CONTRACTOR shall forfeit \$100 for each calendar day, or portion of each calendar day, for each worker until strict compliance is effectuated. Upon request by the Division of Apprenticeship Standards or the Division of Labor Standards Enforcement, these penalties shall be withheld from progress payments then due.

L. Payroll records made available for inspection as copies and furnished upon request to the public by OWNER, the Division of Apprenticeship Standards, or the Division of Labor Standards Enforcement shall be marked or obliterated to prevent disclosure of an individual's name, address, and social security number. Payroll records furnished to agencies that are included in the Joint Enforcement Strike Force on the Underground Economy and other law enforcement agencies investigating violations of law shall be unredacted. The name and address of CONTRACTOR shall not be marked or obliterated in either case.

M. CONTRACTOR shall inform OWNER of the location of the payroll records, including the street address, city, and county, and within five working days shall provide a written notice of a change of location and address.

N. It shall be CONTRACTOR's responsibility to ensure compliance with the provisions of this article and the provisions of Labor Code Section 1776.

O. This project is subject to prevailing wage monitoring and enforcement by the Department of Industrial Relations. CONTRACTOR and all subcontractors shall be subject to the requirements of Subchapter 4.5 of Chapter 8 of Title 8 of the California Code of Regulations. Contractor and all subcontractors must furnish electronic certified payroll records to the DIR on the frequency specified in the Notice Calling for Bids using the DIR's eCPR system. To enroll in the eCPR system or obtain additional information and assistance, CONTRACTOR is directed to the DIR website at www.dir.ca.gov/Public-Works/Certified-Payroll-Reporting.html. CONTRACTOR shall comply with all requirements of the Labor Code and attendant regulations pertaining to prevailing wage monitoring and compliance as indicated in the Contract Documents, and/or as required by the DIR. CONTRACTOR shall permit OWNER, the DIR or their designee to interview CONTRACTOR's employees concerning compliance with prevailing wage, apprenticeship, and related matters, whether or not during work hours, and shall require each subcontractor to provide OWNER, the DIR or their designee with such access to its employees.

ARTICLE 42 APPRENTICES

A. CONTRACTOR acknowledges and agrees that the Contract Documents are governed by the provisions of Labor Code Section 1777.5 where applicable. It shall be CONTRACTOR's responsibility to ensure compliance with this article and with Labor Code Section 1777.5 for all apprenticing occupations.

B. Apprentices of any crafts or trades may be employed, and when required by Labor Code Section 1777.5, shall be employed provided they are properly registered in full compliance with the provisions of the Labor Code.

C. Every apprentice shall be paid the prevailing rate of per diem wages for apprentices in the trade to which the apprentice is registered, and shall be employed only at the work of the craft or trade to which the apprentice is registered.

D. Only apprentices as defined in Labor Code Section 3077 who are in training under apprenticeship standards that have been approved by the Chief of the Division of Apprenticeship Standards, and who are parties to written apprentice agreements under Chapter 4 (commencing at Section 3070), Division 3, of the Labor Code, are eligible to be employed on public works. The employment and training of each apprentice shall be in accordance with either (1) the apprenticeship standards and apprentice agreements under which the apprentice is in training, or (2) the rules and regulations of the California Apprenticeship Council.

E. Pursuant to Labor Code Section 1777.5, CONTRACTOR and any subcontractors employing workers in any apprenticeship craft or trade performing any work under the Contract Documents shall employ apprentices in at least the ratio set forth in Labor Code Section 1777.5, and may apply to any apprenticeship program in the craft or trade

that can provide apprentices to the project site for a certificate approving CONTRACTOR or Subcontractor under the applicable apprenticeship standards for the employment and training of apprentices in the area of industry affected.

F. Prior to commencing work on the Project, CONTRACTOR shall submit contract award information to an applicable apprenticeship program that can supply apprentices to the project site. The information submitted shall include an estimate of journeyman hours to be performed on the Project, the number of apprentices proposed to be employed, and the approximate dates the apprentices would be employed. A copy of this information shall also be submitted to OWNER if requested. Within 60 days after concluding work on the Project, CONTRACTOR and all Subcontractors shall submit a verified statement of the journeyman and apprentice hours performed on the Project to the awarding body, if requested, and to the apprenticeship program. This information shall be public.

G. If in performing any of the Work, CONTRACTOR employs journeymen or apprentices in any apprenticeable craft or trade, CONTRACTOR shall contribute to the California Apprenticeship Council the same amount that the Director of Industrial Relations determines is the prevailing amount of apprenticeship training contributions in the area of the Project, subject to any credits permitted by law.

H. If CONTRACTOR or any Subcontractor is determined by the Chief of the Division of Apprenticeship Standards to have knowingly violated Labor Code Section 1777.5, it shall:

1. Forfeit as a civil penalty an amount not exceeding \$100 (\$300 for knowing subsequent violations) for each full calendar day of noncompliance. Notwithstanding Labor Code Section 1727, upon receipt of a determination that a civil penalty has been imposed by the Labor Commissioner, OWNER shall withhold the amount of the civil penalty from contract progress payments then due or to become due.

2. In lieu of the monetary penalty, for a first-time violation and with the concurrence of a specified apprenticeship program, the Labor Commissioner may order CONTRACTOR or any Subcontractor to provide apprentice employment equivalent to the work hours that would have been provided for apprentices during the period of noncompliance.

3. In the event CONTRACTOR or any Subcontractor is determined by the Labor Commissioner to have knowingly committed a serious violation of any provision of Section 1777.5, the Labor Commissioner may also deny CONTRACTOR or any Subcontractor, and their responsible officers, the right to bid on or be awarded or perform work as a subcontractor on any public works

contract for a period of up to one year for the first violation and up to three years for a subsequent violation.

CONTRACTOR or any Subcontractor (or responsible officer) shall have the right to obtain a review of the determination imposing a debarment or civil penalty as provided by law.

I. CONTRACTOR and all Subcontractors shall comply with Labor Code Section 1777.6, which forbids certain discriminatory practices in the employment of apprentices.

J. CONTRACTOR shall become fully acquainted with the law regarding apprentices prior to commencement of the work. Special attention is directed to Labor Code Sections 1777.5, 1777.6, and 1777.7, and Title 8, California Code of Regulations, Section 200 et seq. Questions may be directed to the State Division of Apprenticeship Standards, 455 Golden Gate Avenue, San Francisco, California.

ARTICLE 43 HOURS OF WORK

A. CONTRACTOR shall furnish, and shall require all Subcontractors to furnish, sufficient forces to ensure the Work is prosecuted in accordance with the detailed project schedule without payment of overtime wage rates whenever possible.

B. As provided in Article 3 (commencing at Section 1810), Chapter 1, Part 7, Division 2 of the Labor Code, eight hours of labor shall constitute a legal day of work. The time of service of any worker employed at any time by CONTRACTOR, or by any subcontractor, upon the Work or upon any part of the work contemplated by the Contract Documents is limited and restricted to eight hours per day and 40 hours during any one week. Upon completion of all hours worked in excess of eight hours per day, work shall be permitted upon this Project at not less than one and one-half times the basic rate of pay.

C. CONTRACTOR shall keep, and shall cause all subcontractors to keep, an accurate record showing the name and actual hours worked each calendar day and each calendar week by each worker employed in connection with the Work or any part of the Work contemplated by the Contract Documents. The record shall be kept open at all reasonable hours to the inspection of OWNER and to the Division of Labor Standards Enforcement, Department of Industrial Relations.

D. Saturdays, Sundays, holidays (including all OWNER designated holidays), and any day with work hours before 7:30 a.m. and/or after 4 p.m. shall be considered overtime for OWNER's representatives, consultants, and inspectors, and shall be compensated as such by CONTRACTOR per OWNER's submitted invoice. Such cost shall be billed to CONTRACTOR and deducted from subsequent progress payments or the final payment.

E. As a penalty, CONTRACTOR shall pay \$25 to the Department of Industrial Relations or OWNER for each worker employed by CONTRACTOR or by any subcontractor in the performance of the Contract Documents for each calendar day during which the worker is required or permitted to work more than eight hours in any calendar day and 40 hours in any one calendar week in violation of the provisions of Article 3 (commencing at Section 1810), Chapter 1, Part 7, Division 2 of the Labor Code.

F. Any work performed before or after regular working hours or on Saturdays, Sundays, or holidays (including all OWNER designated holidays) shall be performed without additional expense to OWNER. Should inspection or testing services be necessary on a Saturday, Sunday, or holiday (including all OWNER designated holidays), CONTRACTOR shall pay all additional expenses incurred. Such cost shall be billed to CONTRACTOR and deducted from the next payment.

G. CONTRACTOR shall anticipate work that would occur outside the normal work hours of 7:30 a.m. to 4 p.m. Such activities would include but are not limited to early morning concrete pours (because of hot weather), early or late material deliveries, required off-site inspections, or any other activity that would require the Project Inspector or OWNER personnel to work longer than an eight-hour day.

H. The Project Inspector cannot be asked to leave the Project after eight hours of work so CONTRACTOR would not have to pay overtime. If the extended work day is a result of CONTRACTOR'S work, the Project Inspector will perform its DSA assigned work as necessary to assure the Project is kept on schedule and CONTRACTOR is responsible to pay all costs associated with fulfilling these DSA assignments, including the Project Inspector's overtime. These costs shall be billed to CONTRACTOR and deducted from subsequent progress payments or the final payment.

ARTICLE 44 NONDISCRIMINATION

In the performance of the terms of the Contract Documents, CONTRACTOR agrees that it will not engage in or permit any Subcontractor it may employ to engage in unlawful discrimination in employment of persons because of the race, religious creed, color, national origin, ancestry, physical handicap, medical condition, marital status, or sex of such persons.

ARTICLE 45 COST BREAKDOWN AND PERIODICAL ESTIMATES

A. On forms approved by OWNER, CONTRACTOR shall furnish the following:

1. Within 10 calendar days of award of contract, a detailed estimate giving a complete breakdown of contract price for each Project or site, which shall include

all Subcontractor/supplier agreements showing dollar amounts of these agreements to justify the schedule of values; and

2. A periodical itemized estimate of work done for the purpose of making partial payments; and

3. A schedule of estimated monthly payments due CONTRACTOR within 10 days of request by OWNER.

B. Values employed in making up any of these schedules are subject to the Architect's written approval and will be used only for determining basis of partial payments and will not be considered as fixing a basis for additions to or deductions from contract price unless OWNER in its sole discretion so elects.

ARTICLE 46 PAYMENTS

A. Unless otherwise specified in writing, each month within 30 days after receipt by OWNER of the monthly progress schedule and the certification of application for payment by the Architect, OWNER shall pay to CONTRACTOR a sum equal to 95 percent of the value of work performed and materials delivered subject to or under the control of OWNER and unused up to the last day of the previous month, less aggregate previous payments. In its sole discretion, OWNER may also deduct from these payments any amounts deemed due from CONTRACTOR.

B. Monthly payments shall be made only on the basis of monthly estimates which shall be prepared by CONTRACTOR on a form approved by OWNER and filed before the fifth day of the month during which payment is to be made.

C. Before consideration of a request for payment, a certificate in writing shall be obtained from the Architect stating that the work for which the payment is demanded has been performed in accordance with the terms of the Contract Documents and that the amount stated in the certificate is due under the terms of the Contract Documents. The certificate shall be attached to and made a part of the payment request filed with OWNER. The certificate of the Architect shall not be conclusive upon OWNER, but advisory only.

D. If within three days after written demand the Architect fails to deliver such certificate, CONTRACTOR may file its payment request with OWNER without the certificate, but the request shall be accompanied by a statement that demand was made for the certificate and was refused. OWNER will then either allow the payment request as presented or shall by an order entered on the minutes of OWNER state the reasons for refusing to make payment.

E. Work completed as estimated shall be an estimate only and no inaccuracy or error in an estimate shall operate to release CONTRACTOR or Surety from any damages arising from such work or from enforcing each and every provision of the Contract Documents, and OWNER shall have the right to subsequently correct any error made in any estimate for payment.

F. CONTRACTOR SHALL NOT BE ENTITLED TO HAVE ANY PAYMENT REQUESTS PROCESSED OR ANY PAYMENT FOR WORK PERFORMED SO LONG AS CONTRACTOR HAS FAILED TO COMPLY WITH ANY LAWFUL OR PROPER DIRECTION CONCERNING THE WHOLE OR ANY PORTION OF THE WORK GIVEN BY OWNER OR THE ARCHITECT.

G. OWNER has discretion to require from CONTRACTOR any of the following information with the application for payment: (1) certified payroll covering the period of the prior application for payment, (2) unconditional waivers and releases from all Subcontractors/suppliers for which payment was requested under the prior application for payment, (3) receipts or bills of sale for any items. In addition, upon submittal of the first payment request, a complete per diem wage rate breakdown for all trades must be submitted in order for the payment request to be processed.

H. PAYMENT BY OWNER OF ANY PAYMENT REQUEST IS NOT AN INDICATION THAT OWNER HAS INSPECTED, APPROVED, OR ACCEPTED ANY PART OF THE WORK, NOR SHALL PAYMENT CONSTITUTE A WAIVER IN ANY RESPECT OF ANY OWNER RIGHTS.

I. The final payment of 5 percent of the value of the work done under the Contract Documents, if unencumbered, may be made 35 days after the Notice of Completion is recorded by OWNER. ACCEPTANCE WILL BE MADE ONLY BY ACTION OF THE GOVERNING BOARD OR OTHER GOVERNING BODY OF OWNER IN ACCORDANCE WITH THE PROVISIONS ON "COMPLETION."

J. Unless otherwise agreed in writing, on or before making request for final payment of the undisputed amount due under the Contract Documents, CONTRACTOR shall submit to OWNER the following in writing:

1. Information on CONTRACTOR's results in attaining compliance with the OWNER's three percent participation goal for Disabled Veterans Business Enterprises;

2. A summary of all claims for compensation under or arising out of the Contract Documents, stating whether the claims are settled or unsettled and the amounts of the claims, and further specifying the date(s) upon which any required protest and/or notice was given to OWNER;

3. A written release of all claims against OWNER arising by virtue of the Project, the Work, and the Contract Documents. Payment of undisputed amounts is contingent upon receipt of this waiver.

ARTICLE 47 PAYMENTS BY CONTRACTOR

CONTRACTOR shall pay:

A. All transportation and utility services not later than the 20th day of the calendar month following the month in which the services are rendered;

B. Ninety-five percent of the cost of all materials, tools, and other expendable equipment, not later than the 20th day of the calendar month following the month in which the materials, tools, and equipment are delivered to the project site, and the balance of the cost not later than the 30th day following completion of that part of the work in which the materials, tools, and equipment are incorporated or used; and

C. To each of its subcontractors the respective amounts allowed CONTRACTOR on account of work performed by each subcontractor not later than the fifth day following each payment to CONTRACTOR.

ARTICLE 48 PAYMENTS WITHHELD

A. In addition to any amount(s) which OWNER may retain under the article entitled "PAYMENTS," OWNER may withhold sufficient amount(s) of any payment(s) otherwise due to CONTRACTOR, as in its judgment may be necessary to cover the following:

1. Payments which may be past due and payable for claims against CONTRACTOR or any Subcontractors at any level for labor or materials furnished in the performance of work under the Contract Documents.
2. Defective work not remedied.
3. Failure of CONTRACTOR to make proper payments to its subcontractor(s) or material suppliers for materials or labor.
4. Completion of work if there exists a reasonable doubt that the work can be completed for the balance then unpaid.
5. Damage to another contractor.
6. All costs and expenses associated with OWNER having to acquire alternate educational facilities if CONTRACTOR fails to complete the Project within the period of time required by the Contract Documents.

7. Project schedule not up-to-date with the current payment request.
8. Overtime charges due consultants, Project Inspectors, the Architect, and OWNER or others as a result of extra services that were provided at CONTRACTOR's request or as a result of actions of CONTRACTOR or those employed by CONTRACTOR, including subcontractors, material suppliers, or others will be withheld from current payment requests.
9. CONTRACTOR agrees that OWNER may withhold 150 percent of the estimated cost of any additional testing or retesting required as a result of the fault or negligence of CONTRACTOR, or Subcontractors, vendors, or suppliers, until such time as OWNER receives confirmation that payment for such additional testing or retesting has been made.
10. Failure to maintain a current record set of drawings. The drawings shall be updated to the date when the payment request is submitted.
11. Failure to submit daily reports.
12. Failure to submit items required to accompany payment requests at initial and final completion.
13. Failure to submit and keep current any construction schedule required by the Contract Documents.
14. Failure to compensate the Architect for substitution review within the required time period.
15. Failure to compensate OWNER for overtime charges for OWNER representatives and employees incurred as a result of services provided during the current payment period.
16. Failure to compensate OWNER and/or the Architect for the cost of review time to evaluate CONTRACTOR'S proposed solutions to effect repair of work not in accordance with Contract Documents.
17. Failure to submit per diem wage rates for all trades pursuant to appropriate provisions of the General Conditions.
18. Penalties for violation of labor laws.
19. Cost of site clean-up.

20. Required payments to indemnify, hold harmless, or defend OWNER.

21. Compensation for unpaid extra services for the Architect caused by CONTRACTOR.

22. Compensation for unpaid extra services for the Project Inspector, including but not limited to reinspection required due to CONTRACTOR's failed tests, installation of unapproved or defective materials, or CONTRACTOR's requests for inspection and failure to attend the requested inspection.

23. Any liquidated damages, forfeiture of fees, or other damages assessed against CONTRACTOR by reason of failure to complete the Project on time.

B. OWNER may apply the withheld amount(s) to the payment of any claims or obligations at its discretion. In so doing, OWNER shall be deemed the agent of CONTRACTOR and any payment made by OWNER shall be considered to be a payment made under the Contract Documents by OWNER to CONTRACTOR, and OWNER shall not be liable to CONTRACTOR for the payments made in good faith. The payments may be made without prior judicial determination of the claim or obligations. OWNER shall submit to CONTRACTOR an accounting of the funds disbursed on behalf of CONTRACTOR.

ARTICLE 49 SUBSTITUTION OF SECURITIES

A. Pursuant to the provisions of Public Contract Code section 22300, CONTRACTOR may substitute certain securities for any funds withheld by OWNER to ensure its performance under the Contract Documents. At the request and expense of CONTRACTOR, securities equivalent to any amount withheld shall be deposited, at the discretion of OWNER, with either a state or federally chartered bank as the escrow agent, who shall then pay any funds otherwise subject to retention to CONTRACTOR. Upon satisfactory completion of the Project, the securities shall be returned to CONTRACTOR.

B. Securities eligible for investment under this article shall include those listed in Government Code section 16430, bank and savings and loan certificates of deposit, interest bearing demand deposit accounts, standby letters of credit, or any other security mutually agreed to by CONTRACTOR and OWNER.

C. CONTRACTOR shall be the beneficial owner of any securities substituted for funds withheld and shall receive any interest.

D. All expenses relating to the substitution of securities under Public Contract Code section 22300 and this article, including but not limited to OWNER's overhead and administrative expenses and expenses of escrow agent, shall be CONTRACTOR's responsibility.

E. Should the value of the substituted security at any time fall below the amount for which it was substituted, or any other amount which OWNER determines to withhold, CONTRACTOR shall immediately and at CONTRACTOR'S expense deposit additional security qualifying under Public Contract Code section 22300 until the total security deposited is no less than equivalent to the amount subject to withholding under the Contract Documents.

F. In the alternative, under Public Contract Code section 22300, at its own expense, CONTRACTOR may request OWNER to make payment of earned retention funds directly to the escrow agent.

G. All escrow agreements shall be in conformance with the Escrow Agreement for Security Deposits in Lieu of Retention set forth in Public Contract Code section 22300, and shall be in the form of agreement provided by OWNER unless otherwise agreed in advance.

ARTICLE 50 PROGRESS SCHEDULE

A. Immediately after being awarded the Construction Agreement, CONTRACTOR shall prepare an estimated progress schedule and submit it to OWNER for review. The schedule shall indicate the beginning and completion dates of all phases of construction.

B. The schedule shall be updated at reasonably required intervals throughout the Project, unless specifically required to be updated at more frequent intervals.

C. Additional scheduling requirements may be contained in the attached Supplemental General Conditions.

D. While OWNER does not discourage efforts by CONTRACTOR to accomplish an early completion of the Project, CONTRACTOR is directed to utilize and schedule the entire construction period set forth in the Construction Agreement. Any portion of the construction period not so scheduled shall be considered "float" and used the same as other float under the Contract Documents.

ARTICLE 51 EXTENSION OF TIME—LIQUIDATED DAMAGES

A. The parties understand and agree that the goodwill, educational process, and other business of OWNER will be damaged if the Project is not completed within the time limits required. The parties have further agreed that the exact amount of damages for failure to complete the Work within the time specified is, in some cases, extremely difficult, impractical, or impossible to determine. As to those damages that are difficult, impractical, or impossible to determine, CONTRACTOR shall be assessed the sum set

forth in the Contract Documents per day as liquidated damages for each and every calendar day until the work required under the Contract Documents is complete. CONTRACTOR will pay to OWNER or OWNER may retain such damages from amounts otherwise payable to CONTRACTOR. For purposes of this article, the Work shall be considered "complete" in accordance with the provisions of the article on "COMPLETION," except that the work may be considered complete without formal acceptance by the OWNER's governing board or other governing body so long as the governing board, at its next regularly scheduled meeting, accepts the work.

B. Providing CONTRACTOR has protested and/or given notice of delays on the Project as required by these Contract Documents, CONTRACTOR shall not be charged for liquidated damages as set forth above because of any delays in completion of work which are not the fault or negligence of CONTRACTOR, including but not restricted to acts of God. CONTRACTOR shall provide documentation and justification to substantiate the delay and its relation to the Project's critical path. OWNER shall ascertain the facts and extent of delay and grant extension of time for completing work when, in its judgment, the facts justify an extension. OWNER's findings of fact shall be final and conclusive on the parties. Extension of time shall apply only to that portion of work affected by the delay, and shall not apply to other portions of work not so affected. Any dispute pertaining to a request for time or assessment of liquidated damages shall be resolved pursuant to the provisions on resolution of construction claims in the Contract Documents.

C. In addition to any liquidated damages which may be assessed, if CONTRACTOR fails to complete the Project within the time period provided in the Contract Documents, and if as a result OWNER finds it necessary to incur any costs and/or expenses, or if OWNER receives any claims by other contractors, subcontractors, or third parties claiming time or other compensation by reason of CONTRACTOR's failure to complete work on time, CONTRACTOR shall pay all those costs and expenses incurred by OWNER. These costs and expenses may include but are not limited to such items as rental payments, inspection fees, and additional architectural fees, whether related to the acquisition of facilities or caused by the delay in completion. These costs and expenses may be retained by OWNER from any payments otherwise due to CONTRACTOR.

D. Within 10 days of the beginning of any delay (unless OWNER grants in writing a further period of time to file notice prior to the date of final completion of the Project), CONTRACTOR shall notify OWNER in writing of the causes for the delay. Failure to give the required notice in writing within the time provided shall be interpreted as a failure by CONTRACTOR to properly administer the Contract Documents, Project, and Work, and shall constitute a waiver by CONTRACTOR of all claims of any kind and nature, without limitation, arising from the delay. In addition to this notice, in any instance where CONTRACTOR claims delay was caused by OWNER, the Architect or Architect's consultants, Inspector of Record, Division of State Architect, or anyone

claimed to be an agent of them, and as a precondition to any right to claim additional time, prior to making any request for time, CONTRACTOR shall have satisfied the obligation of the Contract Documents to protest the delay.

E. Extensions of time shall be based solely upon the effect of delays to the work as a whole and will not be granted unless CONTRACTOR can demonstrate through analysis of the current updated schedule that the delay was caused by one of the causes for which an extension is authorized. A time extension will not be granted unless CONTRACTOR submits a Time Impact Analysis which utilizes networking techniques (fragments) and a written analysis of the facts which are alleged to have caused the delay. Time extensions will not be allowed for delays to parts of the work not on the critical path of the currently approved monthly updated construction schedule. Time extensions will not be granted until all available float, slack, or contingency time on the Project is used and the end date of the Work is moved beyond the current adjusted contract completion date. CONTRACTOR's sole remedy for delay or extensions of time in all cases except those due to unanticipated or unreasonable delay caused by OWNER shall be an extension of the contract time at no cost to OWNER. Additional scheduling requirements in cases of delay or requests for time may be included in supplementary conditions.

ARTICLE 52 OCCUPANCY

OWNER reserves the right to occupy buildings and/or portions of the site at any time before completion, and occupancy shall not constitute final acceptance of any part of the Work covered by the Contract Documents, nor shall such occupancy extend the date specified for completion of the Work. Beneficial occupancy of building(s) does not commence any warranty period or entitle CONTRACTOR to any additional compensation due to such occupancy, or affect in any way or amount CONTRACTOR's obligation to pay liquidated damages for failure to complete the Project on time.

ARTICLE 53 CONTRACT CLOSEOUT

A. Utility Connections: The building and/or buildings shall be connected to water, gas, sewer, and electric services, complete and ready for use. Service connections shall be made and existing services reconnected.

B. Record Drawings:

1. CONTRACTOR shall keep the following:

a. One complete set of blue line prints of all drawings which form a part of the Project in good order and available on the job site. They shall be used only for the purpose intended. Drawings shall be kept up-to-date as the Work progresses and shall be available at all times for inspection.

b. One set of annotated Specifications reflecting any and all changes to the original documents from change orders, substitutions, or any other deviations from the original specifications.

2. 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:

a. Any work not installed as indicated on drawings.

b. The exact locations and elevations of all covered utilities, including valves, cleanouts, etc.

3. CONTRACTOR shall certify to OWNER the accuracy of the record drawings and annotated Specifications and is liable and responsible for inaccuracies in as-built and/or record drawings and the annotated Specifications, even if they do not become evident until a future date.

4. Upon completion of the Work and correction of all punch list items and as a condition precedent to approval of final payment, CONTRACTOR shall obtain the Architect's review of the marked up record set of prints and annotated Specifications and employ an appropriately trained individual to transfer the as-built information to a form of electronic media, acceptable to the Architect and OWNER, containing the original Drawings. CONTRACTOR shall provide the electronic as-built drawings to the Architect. When as-built information has been transferred to the acceptable electronic medium and the record drawings have been reviewed by the Architect, CONTRACTOR shall pay for a duplicate set of contract drawings to be used for CONTRACTOR's record drawings. Those final corrected record drawings shall also be saved on electronic media, in a format designated by OWNER, and shall be given to OWNER. Reproduction expenses for the drawings shall be paid for by CONTRACTOR out of the allowance and any difference returned to OWNER.

5. CONTRACTOR shall deliver to the Architect three complete sets of operating manuals, repair parts lists, and service instructions for all electrical and mechanical equipment, together with equipment warranties.

C. Maintenance Manuals: At least 30 days prior to final inspection, three copies of complete operational and maintenance manuals shall be submitted for review. All installation, operating, and maintenance information and drawings shall be bound in 8½ x 11" binders, indexed with tabs, and include tables of contents. Each manual shall also contain a list of subcontractors, with their addresses and the names of persons to

contact in case of emergencies. Identifying labels shall provide names of manufacturers, their addresses, ratings, and capacities of equipment and machinery.

D. Inspection Requirements:

1. Before calling for final inspection, CONTRACTOR shall determine that the following work has been performed:

- a. General construction has been completed;
- b. Mechanical and electrical work complete, fixtures in place, connected and ready for tryout and test;
- c. Electrical circuits scheduled in panels and disconnect switches labeled;
- d. Painting and special finishes complete;
- e. Doors complete with hardware, cleaned of protective film, in good working order without sticking or binding;
- f. Tops and bottoms of doors stained/painted and sealed;
- g. Floors waxed and polished as specified;
- h. Broken glass replaced and glass cleaned;
- i. Grounds cleared of CONTRACTOR'S equipment, raked clean of debris, and trash removed from site;
- j. Work cleaned, free of stains, scratches, and other foreign matter, replacement of damaged and broken material;
- k. Finished and decorative work shall have marks, dirt, and superfluous labels removed;
- l. All flatwork shall have all stains removed including but not limited to oil, gas, rust, paint, etc.

2. Final inspection will be made by the Architect and specified OWNER personnel upon written notification from CONTRACTOR that work has been completed. CONTRACTOR must prearrange a final inspection with OWNER and Project Inspector. There should be a minimum of seven days' notice to OWNER and Project Inspector before the final inspection is scheduled. CONTRACTOR

shall receive a list (punch list) of items found unacceptable and shall promptly correct them. Upon written notification from CONTRACTOR that all items have been corrected the Architect and Project Inspector or OWNER will reinspect for final acceptance of the Project. Failure of CONTRACTOR to complete punch list items will necessitate further reinspection by the Architect and Project Inspector or OWNER. Cost of reinspection will be deducted from the amounts owing to CONTRACTOR.

3. Deliver keys (labeled) to OWNER's representative. Master keys shall be accounted for in writing.

4. Furnish a letter to OWNER stating that a responsible representative of OWNER (give name and position) has been instructed in working characteristics of mechanical and electrical equipment.

E. Guarantee: Upon completion of final inspection, CONTRACTOR is to submit the guarantee to OWNER as specified in the Contract Documents.

F. Manufacturer Warranties: CONTRACTOR shall deliver 10 days prior to final inspection, original manufacturer warranties for all materials, equipment and/or supplies purchased and/or installed under the Contract Documents.

G. Equipment Training: Prior to final inspection, CONTRACTOR is responsible for providing the appropriate training for a minimum of two personnel of OWNER for each trade for the newly installed mechanical and electrical equipment required under the Contract Documents.

H. Contract Closeout Items Specified Within this Article are Mandatory: The parties agree that, should the required items not be furnished to OWNER, as stated or within 30 days of completion of all other work, OWNER will suffer damage which damage will be difficult, impossible or impractical to assess. For that reason, in accordance with Government Code Section 53069.85, the parties agree the following sums shall be assessed as fixed and liquidated damages and not as a penalty:

1. Record Drawings—\$25,000 or 10 percent of contract price, whichever is less;

2. Maintenance Manuals—\$5,000 or 10 percent of contract price, whichever is less;

3. Guarantee—\$25,000 or 10 percent of contract price whichever is greater;

4. Manufacturer Warranties—\$5,000 for each product or 10 percent of contract price whichever is greater;

5. Equipment Training—\$10,000 for each system or 10 percent of contract price whichever is greater.

I. In addition, the Notice of Completion will not be filed until either such amounts are paid or the items are provided. However, OWNER may also elect to file the Notice of Completion and pay retention after deducting such amounts. If CONTRACTOR disputes the amounts or OWNER's right to withhold these amounts, OWNER may withhold up to 150 percent of the disputed amount.

ARTICLE 54 COMPLETION

A. OWNER shall accept the completion of the Project when all of the following conditions have been met:

1. The entire Work or Project (including all phases if a project is phased) including minor corrective items is completed to the satisfaction of OWNER;
2. The final DSA report has been filed with the State;
3. By action of its governing board or other governing body, OWNER has accepted the Project to be complete.
4. The Notice of Completion for the entire Project has been filed and recorded.

B. A final walk-through of the Project to determine completion of the Work and to record the Notice of Completion shall occur only upon a valid claim by CONTRACTOR that the Project is complete, including minor corrective items.

1. CONTRACTOR's Project Manager and Superintendent(s) shall attend the final walk-through. A representative(s) of OWNER shall also attend.
2. Should OWNER incur any costs by reason of an erroneous or premature claim of completion by CONTRACTOR that results in a premature walk-through, OWNER may withhold such costs from any money due or to become due to CONTRACTOR.
3. Any incomplete or corrective items shall be identified in the final walk-through of the Project.
4. Incomplete and corrective items identified in any walk-through shall be completed before CONTRACTOR calls for a subsequent walk-through, which

shall be treated as and bear the same consequences as the initial call for a walk-through.

C. Alternative Process: OWNER shall have the option in its sole discretion to accept completion of the Work and have the Notice of Completion recorded when the entire Work is completed to OWNER's satisfaction, except for minor corrective items as distinguished from incomplete items.

1. Should OWNER elect to accept the Work as complete prior to completion of the entire Work or Project, it shall be on the following conditions:

a. The entire Work or Project (including all phases if a project is phased), excluding minor corrective items, is complete to OWNER's satisfaction;

b. The final DSA report shall be filed with the State as soon as appropriate;

c. By action of its governing board or other governing body, OWNER has accepted the Project to be complete.

d. The Notice of Completion for the entire project has been filed and recorded.

2. Should OWNER elect to accept the Work as complete prior to completion of the entire Work or Project, there shall be a final walk-through of the Project, as follows:

a. Final walk-through shall be made upon a valid claim by CONTRACTOR that the Project is complete, excepting only minor corrective items;

b. CONTRACTOR's Project Manager and Superintendent(s) shall attend the final walk-through. OWNER may be represented by anyone designated by OWNER's Representative, including but not limited to the Project Inspector, management, and/or representatives from Maintenance and Operations;

c. Should OWNER incur any costs by reason of an erroneous or premature claim of completion by CONTRACTOR that results in a premature walk-through, OWNER may withhold such costs from any money due or to become due to CONTRACTOR.

d. All remaining work, including minor incomplete or corrective items, shall be identified in the final walk-through of the Project;

e. Incomplete and corrective items identified in any walk-through shall be completed before CONTRACTOR calls for a subsequent walk-through, which shall be treated as, and bear the same consequences as, the initial call for a walk-through.

3. Should OWNER elect to accept the Work as complete prior to completion of the entire Work or Project, and if CONTRACTOR fails to complete the minor corrective items prior to the expiration of a 35-day period immediately following recording of the Notice of Completion, OWNER shall withhold from the final payment an amount equal to 150 percent of the estimated cost, as determined by OWNER, of each incomplete or corrective item until such time as the item is completed.

4. If at the end of an additional 30-day period, there are items remaining to be corrected, OWNER may elect to:

a. Permit additional time for completion;

b. Complete the Work at the expense of CONTRACTOR, deducting the cost of work from any amounts being withheld.

5. CONTRACTOR shall have no claim or offset as against OWNER arising or in any way connected with an election by OWNER not to accept completion of the Work until the entire Work or Project, including minor corrective items, has been completed to OWNER's satisfaction. The time taken by CONTRACTOR to complete the Work or Project, including minor corrective items, shall be a basis for assessment of liquidated damages as provided in the Contract Documents, and is not affected by any decision by OWNER to occupy all or any portion of the Work prior to completion.

ARTICLE 55 CLAIMS FOR DAMAGES

A. Pursuant to Public Contract Code section 9204, CONTRACTOR shall make all claims for payment for 1) work done by or on behalf of contractor for which payment is not otherwise expressly provided for in the Contract, 2) damages allegedly sustained by reason of any acts or omissions of OWNER or its agents, 3) time extensions, 4) relief from damages or penalties for delay or, 5) an amount disputed by OWNER by registered mail or certified mail, return receipt requested. Such written claim shall be submitted, within 10 days after the claim has arisen, is discovered or reasonably should have been discovered. CONTRACTOR shall furnish reasonable documentation to support the claim.

IF CONTRACTOR FAILS TO COMPLY WITH ANY OF THE PROVISIONS OF THIS ARTICLE CONCERNING THE SUBMISSION OF CLAIMS, ITS CLAIM(S) SHALL BE FORFEITED AND INVALIDATED.

B. In no event shall CONTRACTOR be permitted to reserve rights to make or pursue claims of any kind, whether for compensation in any form, or for time extensions, without the OWNER's express written consent. Any attempt to make such reservation or otherwise avoid the effect of this Article shall be void and of no force or effect whatsoever.

C. Any change order executed by CONTRACTOR with such reservation or other language of qualified acceptance shall be read and interpreted as though such language did not exist. No action by OWNER is required to invalidate such language, and no oral communication or other act or omission by OWNER or anyone acting on OWNER's behalf, except OWNER's express written consent, shall be construed as acquiescence in or consent to such reservation or other qualified acceptance language.

D. CONTRACTOR shall diligently proceed with performance of the Work, and OWNER shall continue to make payment of undisputed amounts, during any time period while claims are pending.

ARTICLE 56 RESOLUTION OF CONSTRUCTION CLAIMS

A. Upon receipt of a claim, OWNER shall conduct a reasonable review of the claim, and, unless extended by mutual agreement of the parties, provide CONTRACTOR a written statement identifying what portion of the claim is disputed and what portion is undisputed within 45 days.

B. If OWNER needs approval from its governing body to provide CONTRACTOR a written statement identifying the disputed portion and the undisputed portion of the claim, and OWNER'S governing body does not meet within the 45 days or within the mutually agreed to extension of time following receipt of a claim sent by registered mail or certified mail, return receipt requested, OWNER shall have up to three days following the next duly publicly noticed meeting of its governing body after the 45-day period, or extension, expires to provide CONTRACTOR a written statement identifying the disputed portion and the undisputed portion.

C. Any payment due on an undisputed portion of the claim shall be processed and made within 60 days after OWNER issues its written statement. If OWNER fails to issue a written statement, paragraph H. (below) shall apply.

D. If CONTRACTOR disputes OWNER'S written response, or if OWNER fails to respond to a claim issued pursuant to this section within the time prescribed,

CONTRACTOR may demand in writing an informal conference to meet and confer for settlement of the issues in dispute. Upon receipt of a demand in writing sent by registered mail or certified mail, return receipt requested, OWNER shall schedule a meet and confer conference within 30 days for settlement of the dispute.

E. Within 10 business days following the conclusion of the meet and confer conference, if the claim or any portion of the claim remains in dispute, OWNER shall provide CONTRACTOR a written statement identifying the portion of the claim that remains in dispute and the portion that is undisputed. Any payment due on an undisputed portion of the claim shall be processed and made within 60 days after OWNER issues its written statement. Any disputed portion of the claim, as identified by the CONTRACTOR in writing, shall be submitted to nonbinding mediation, with OWNER and CONTRACTOR sharing the associated costs equally. OWNER and CONTRACTOR shall mutually agree to a mediator within 10 business days after the disputed portion of the claim has been identified in writing. If the parties cannot agree upon a mediator, each party shall select a mediator and those mediators shall select a qualified neutral third party to mediate with regard to the disputed portion of the claim. Each party shall bear the fees and costs charged by its respective mediator in connection with the selection of the neutral mediator. If mediation is unsuccessful, the parts of the claim remaining in dispute shall be subject to applicable procedures described in sections K through O (below).

F. For purposes of this Article, mediation includes any nonbinding process, including, but not limited to, neutral evaluation or a dispute review board, in which an independent third party or board assists the parties in dispute resolution through negotiation or by issuance of an evaluation. Any mediation utilized shall conform to the timeframes in sections D and E, (above).

G. Unless otherwise agreed to by OWNER and CONTRACTOR in writing, the mediation conducted pursuant to section E (above) shall excuse any further obligation under Public Contract Code section 20104.4 to mediate after litigation has been commenced.

H. Failure by OWNER to respond to a claim from a contractor within the time periods described in this subdivision or to otherwise meet the time requirements of this section shall result in the claim being deemed rejected in its entirety. A claim that is denied by reason of OWNER's failure to have responded to a claim, or its failure to otherwise meet the time requirements of this section, shall not constitute an adverse finding with regard to the merits of the claim or the responsibility or qualifications of the CONTRACTOR.

I. CONTRACTOR may present to OWNER a claim on behalf of a subcontractor or lower tier subcontractor. A subcontractor may request in writing, either on his or her own behalf or on behalf of a lower tier subcontractor, that the CONTRACTOR present a

claim for work which was performed by the subcontractor or by a lower tier subcontractor on behalf of the subcontractor. The subcontractor requesting that the claim be presented to OWNER shall furnish reasonable documentation to support the claim. Within 45 days of receipt of this written request, the CONTRACTOR shall notify the subcontractor in writing as to whether the CONTRACTOR presented the claim to OWNER and, if the CONTRACTOR did not present the claim, provide the subcontractor with a statement of the reasons for not having done so.

J. Except for tort claims, all claims or any portion of the claim(s) by CONTRACTOR remaining in dispute of \$375,000 or less shall be subject to the provisions of Public Contract Code Section 20104 et seq., except that the provisions of Public Contract Code section 20104.4 relating to mediation after litigation has commenced are excused, unless a written agreement to the contrary has been entered into between the parties.

Only claims, regardless of size, for which timely notice has been given, which have been subjected to the procedures specified in Public Contract Code section 9204, remaining "unresolved" may be pursued through litigation. All other CONTRACTOR claims are deemed waived.

K. The parties shall attempt to resolve all claims during the course of the Project using the procedures set forth in Articles 55 and 56. Pending resolution of a claim, CONTRACTOR shall diligently continue to work on the Project to completion. CONTRACTOR agrees it will neither rescind the Contract Documents nor stop the progress of the work, and CONTRACTOR'S sole remedy shall be the procedures set forth in Articles 55 and 56.

ARTICLE 57 PERFORMANCE/PAYMENT BOND

A. Unless otherwise specified in the Contract Documents, CONTRACTOR shall furnish a Performance Bond, and for any contract of \$25,000 or more, a Payment Bond, each in an amount equal to 100 percent of the price stated in the Contract Documents. All bonds shall be provided by a corporate surety admitted in California. Personal sureties and unregistered sureties are unacceptable. The Performance Bond shall remain in full force and effect through the guarantee period as specified in the Contract Documents and through such extended period as permissible to cover latent conditions.

B. All surety companies with a minimum rating of "A minus, VIII," ("A minus V" when the price stated in the Contract Documents is less than \$500,000) as rated by the current edition of Best's Key Rating Guide, published by A.M. Best Company, Oldwick, New Jersey, 08858, and admitted in California shall be presumed to be satisfactory to OWNER for the issuance of bonds. In the alternative, any admitted surety company which satisfies the requirements set forth in California Code of Civil Procedure Section 995.660 shall be accepted and approved for the issuance of bonds.

ARTICLE 58 INSURANCE REQUIREMENTS

A. CONTRACTOR shall provide the following insurance coverages, which shall remain in full force and effect during the Project:

1. Workers' Compensation;
2. Comprehensive General Liability;
3. Comprehensive Auto Liability;
4. Asbestos Abatement (on all modernization projects and on any other projects where asbestos-containing products may be affected by construction);
5. Course of Construction/Builder's Risk.

B. All insurance companies must meet the following criteria:

1. California admitted, as confirmed by the California Department of Insurance, or listed in the California Department of Insurance's List of Eligible Surplus Line Insurers ("LESLI list")
2. A minimum rating of "A-, VIII," as rated by the current edition of Best's Key Rating Guide, published by A.M. Best Company, Oldwick, New Jersey, 08858.

C. All CONTRACTOR'S insurance policies shall name OWNER's governing board or other governing body, OWNER's consultants, the Architect, and the Architect's consultants, their officers, agents and employees as additional insureds with regard to damages and defense of claims arising from:

1. Activities performed by or on behalf of the Named Insured;
2. Products and completed operations of Named Insured;
3. Premises owned, leased or used by the Named Insured;
4. The ownership, operation, maintenance, use, loading, or unloading of any auto owned, leased, hired, or borrowed by the Named Insured.

D. Should CONTRACTOR fail to provide insurance as required by the Contract Documents, OWNER may, at OWNER's option, take out and maintain at the expense of CONTRACTOR, insurance in the name of CONTRACTOR, or subcontractor, as OWNER may deem proper. OWNER may deduct the cost of taking out and maintaining

such insurance from any sums which are due or to become due to CONTRACTOR under the Contract Documents.

E. Insurance coverage shall not be less than the following:

1. WORKERS' COMPENSATION

a. In accordance with the provisions of Section 3700 of the California Labor Code, CONTRACTOR and every subcontractor shall be required to secure the payment of compensation to its employees.

b. In accordance with the provisions of Section 3700 of the California Labor Code, CONTRACTOR and every subcontractor shall be required to secure the payment of compensation to its employees.

c. CONTRACTOR shall at all times maintain workers' compensation insurance for all of its employees engaged in work under the Contract Documents, on or at the site of the Project. In case any of its work is sublet, CONTRACTOR shall require the subcontractor to similarly provide workers' compensation insurance for all of the subcontractors' employees. Any class of employee or employees not covered by a subcontractor's insurance shall be covered by CONTRACTOR's insurance. In case any class of employees engaged in work under the Contract Documents, on or at the site of the Project, is not protected under the workers' compensation statutes, CONTRACTOR shall provide or shall cause a subcontractor to provide adequate insurance coverage for the protection of such employees not otherwise protected before subcontractor commences work. CONTRACTOR shall file with OWNER certificates of its insurance protecting workers and a 30-day notice shall be provided to OWNER before the cancellation or reduction of any policy of CONTRACTOR or subcontractor. CONTRACTOR shall submit proof of insurance and provide endorsements on the forms provided by OWNER or on forms approved by OWNER.

d. The certificate shall reflect coverage in at least the following amounts:

(1) State workers' compensation statutory benefits policy—limits of not less than \$1,000,000.

(2) Employer's liability policy—limits of not less than \$1,000,000.

2. COMMERCIAL GENERAL LIABILITY

a. CONTRACTOR shall take out and maintain such commercial general liability insurance as shall protect CONTRACTOR and OWNER from all claims for personal injury, including accidental death, to any person (including, as to OWNER, injury or death to CONTRACTOR's or subcontractor's employees), as well as from all claims for property damage arising from operations under the Contract Documents, in amounts set forth in this article.

b. CONTRACTOR shall require its subcontractors, if any, to take out and maintain similar general commercial liability insurance in like amounts.

c. Coverage must be written on an occurrence versus a "claims made" form with policy limits not less than \$1,000,000 per occurrence and \$2,000,000 aggregate per project on bodily injury and property damage, and include coverage for the following:

- (1) Premises - operations;
- (2) Contractual liability;
- (3) Products;
- (4) Completed operations;
- (5) Broad form property damage including explosion, collapse, and underground coverages;
- (6) Personal injury;

d. In the event of any payment under the Commercial General Liability Policy, the insurer shall be subrogated to the extent of such payment to all the insured's rights of recovery, but the insurer shall have no rights of subrogation against OWNER, OWNER's consultants, the Architect, and the Architect's consultants, their elected or appointed officials, or employees, except as respects the negligence of OWNER, the Architect, and Architect's consultants.

3. COMPREHENSIVE AUTO LIABILITY INSURANCE

Such insurance shall have combined single limits of not less than \$1,000,000, bodily injury, property damage, including coverage for owned, non-owned and hired autos.

4. ASBESTOS ABATEMENT

- a. Must be occurrence coverage versus “claims made” coverage.
- b. \$1,000,000 per occurrence with not less than \$2,000,000 annual aggregates limits required.
- c. Certificates of insurance must specify “asbestos abatement.”

5. COURSE OF CONSTRUCTION (COC)/BUILDER’S RISK INSURANCE

a. When required by OWNER, on new school construction project, CONTRACTOR may be required to provide builders risk coverage with limits equal to 100 percent of the insurable value of the Project, including all items of labor and materials in or adjacent to the structure insured, all materials in place or to be used as part of the permanent construction, including surplus materials, shanties, protective fences, bridges, or temporary structures, miscellaneous materials and supplies incident to the work, and such scaffolding, staging, towers, forms, and equipment as are not owned or rented by CONTRACTOR, the cost of which are included in the cost of the Work. Such insurance shall be maintained for the life of the Contract.

b. If required by OWNER, CONTRACTOR shall maintain a Builder's Risk Completed Value Form providing all risk coverage, naming CONTRACTOR and OWNER as insureds and subcontractors to all levels as additional insureds, as their respective interests appear.

c. A maximum deductible of \$5,000 per occurrence will be allowed on projects. CONTRACTOR shall be responsible for any deductibles under the property insurance policy.

d. The builder's risk insurance limits shall initially be for the full amount of the Project price shown in the Agreement document and shall be maintained in full force and effect at all times between the signing of the contract and final acceptance of the completed work by OWNER at an amount equaling the estimated cost to OWNER of rebuilding.

F. CONTRACTOR shall be responsible for payment of any deductibles under any of the above named coverages.

ARTICLE 59 PROOF OF INSURANCE COVERAGE

A. CONTRACTOR shall deliver in triplicate proof of carriage of required insurance. This proof shall be presented with the required Payment and Performance Bonds and return of other Contract Documents.

B. CONTRACTOR shall not commence work or allow any subcontractor to commence work under this contract until CONTRACTOR has obtained all required insurance and certificates, which shall be delivered to and approved by OWNER.

C. Certificates and insurance policies shall include the following:

1. A clause stating:

"This policy shall not be canceled or reduced in required limits of liability or amount of insurance until notice has been mailed to certificate holder stating the date of cancellation or reduction. The date of cancellation or reduction may not be less than 30 days after the date of mailing the notice."

2. Transcripts from the policies authenticated by the proper office of the insurer evidencing, in particular, those insured, the extent of the insurance, the location of and the operations to which the insurance applies, expiration date, and cancellation and reduction notice.

3. A statement that OWNER is a named additional insured under the policy described and that the insurance policy shall be primary to any insurance or self-insurance maintained by OWNER.

E. OWNER shall be named as certificate holder and additional insured and all certificates with endorsements shall be forwarded in triplicate to OWNER.

F. In the event of modification or cancellation of the policy or policies during the periods of coverage stated in this article, 30 days' prior written notice of such cancellation shall be delivered or mailed by certified mail, return receipt requested, to OWNER.

G. Acceptance of the certificates of insurance shall not relieve or decrease CONTRACTOR's liability. Insurance coverage in the minimum amounts set forth in the Contract Documents shall not be construed to relieve CONTRACTOR of liability in excess of such coverage, nor shall it preclude OWNER from taking such other actions as are available to it under any other provisions of the Contract Documents or otherwise in law.

ARTICLE 60 INDEMNIFICATION

A. CONTRACTOR shall hold harmless, defend, and indemnify OWNER, the Architect, and Inspector of Record and the officials, officers, employees, volunteers, and agents, and each of them, from any and all claims, demands, causes of action, costs, expenses, liability, loss, damage or injury, in law or equity, to property or persons, including wrongful death, in any manner arising out of or incident to any acts, omissions, or willful misconduct of CONTRACTOR, its officials, officers, employees, agents, consultants, and subcontractors arising out of or in connection with the performance of the Work or the Contract Documents, including without limitation the payment of all consequential damages and attorneys fees and other related costs and expenses. At CONTRACTOR's own cost, expense, and risk and with counsel reasonably satisfactory to OWNER, CONTRACTOR shall defend any and all such suits, actions, or other legal proceedings of every kind that may be brought or instituted against OWNER, the Architect, Inspector of Record, and their directors, officials, officers, employees, agents, or volunteers. CONTRACTOR shall pay and satisfy any judgment, award, or decree that may be rendered against OWNER, the Architect, Inspector of Record or their directors, officials, officers, employees, agents, or volunteers, in any such suit, action, or other legal proceeding. CONTRACTOR shall reimburse OWNER, the Architect, Inspector of Record and their directors, officials, officers, employees, agents, and volunteers, for any and all legal expenses and costs incurred by each of them in connection with any suit, action, or legal proceeding, or in enforcing the indemnity provided under this Article.

B. CONTRACTOR shall require each subcontractor to hold harmless, defend, and indemnify OWNER, the Architect, Inspector of Record and their officials, officers, employees, volunteers and agents, from any and all claims, demands, causes of action, costs, expenses, liability, loss, damage, or injury, in law or equity, to property or persons, including wrongful death, in any manner arising out of or incident to any acts, omissions, or willful misconduct of subcontractor its officials, officers, employees, agents, consultants and subcontractors arising out of or in connection with the performance of the Work or the Contract Documents, including without limitation the payment of all consequential damages and attorneys' fees and other related costs and expenses. At subcontractor's own cost, expense and risk, subcontractor shall defend any and all such suits, actions, or other legal proceedings of every kind that may be brought or instituted against OWNER, the Architect, Inspector of Record, and their directors, officials officers, employees, agents or volunteers. Subcontractor shall pay and satisfy any judgment, award, or decree that may be rendered against OWNER, the Architect, Inspector of Record, or their directors, officials, officers, employees, agents or volunteers, in any such suit, action, or other legal proceeding. Subcontractor shall reimburse OWNER, the Architect, Inspector of Record, and their directors, officials, officers, employees, agents, and volunteers, for any and all legal expenses and costs incurred by each of them in connection with any suit, action, or legal proceeding, or in enforcing the indemnity provided under this article.

C. The obligations of this Article expressly include but are not limited to the obligations of indemnification and defense of OWNER, the Architect, Inspector of Record, and their directors, officials, officers, agents and employees arising in any manner out of any claims against them brought by other contractors, subcontractors, material suppliers, or other third parties alleging any of them owe the claimant either time, compensation, or damages due to any act, omission, or occurrence caused or contributed to in any degree by CONTRACTOR or any of its subcontractors.

ARTICLE 61 ASSIGNMENT

CONTRACTOR shall not assign any rights, delegate any duties, transfer, convey, sublet, or otherwise dispose of the Construction Agreement or of its rights, title, or interest in or to the Construction Agreement or any part of it. If CONTRACTOR assigns, transfers, conveys, sublets, or otherwise disposes of the Construction Agreement or its right, title, or interest in it, or any part of it, any attempted or purported assignment, transfer, conveyance, sublease, or other disposition, shall be null, void, and of no legal effect whatsoever, and at OWNER's option the Construction Agreement may be terminated, revoked, and annulled, and OWNER shall then be discharged from any and all liability and obligations to CONTRACTOR, and to its purported assignee or transferee, arising out of the Construction Agreement. This expressly includes but is not limited to any attempts to create "pass through" or similar rights for subcontractors to pursue claims directly against OWNER.

ARTICLE 62 SEPARATE CONTRACTS

A. OWNER reserves the right to let other contracts in connection with this Work. CONTRACTOR shall afford other contractors reasonable opportunity for introduction and storage of their materials and execution of their work, and shall coordinate its work with those other contractors.

B. If any part of CONTRACTOR's work depends upon work of any other contractor for proper execution of results, CONTRACTOR shall inspect and promptly report in writing to the Architect any defects in the other contractor's work that render it unsuitable for proper execution or results. CONTRACTOR's failure to inspect and report shall constitute its acceptance of any other contractor's work as fit and proper for reception of its work except as to defects which may develop in another contractor's work after execution of CONTRACTOR's work.

C. To ensure proper execution of CONTRACTOR's subsequent work, CONTRACTOR shall measure and inspect work already in place and shall report in writing to the Architect any discrepancy between executed work and the Contract Documents.

D. CONTRACTOR shall ascertain to CONTRACTOR's satisfaction the scope of the Project and nature of any other contracts that have been or may be awarded by OWNER in connection with the Project, in order that CONTRACTOR may perform the work in light of any other contracts. Nothing contained in the Contract Documents shall be interpreted as granting to CONTRACTOR exclusive occupancy of the Project site. CONTRACTOR shall not cause any unnecessary hindrance or delay to any other contractor working on the Project. If simultaneous execution of any contract for the Project is likely to cause interference with performance of some other contract or contracts, OWNER shall decide which contractor shall cease work temporarily and which contractor shall continue or whether work can be coordinated so that the contractors may proceed simultaneously. OWNER shall not be responsible for any damage suffered or extra costs incurred by CONTRACTOR resulting directly or indirectly from the award or performance or attempted performance of any other contract or contracts on the Project, or caused by any decision or omission of OWNER regarding the order in performing or coordinating the contracts.

ARTICLE 63 OWNER'S RIGHT TO TERMINATE CONTRACT

Termination for Cause:

A. OWNER may serve upon CONTRACTOR and its surety written notice of OWNER's intention to terminate the Construction Agreement, without prejudice to any other right or remedy, upon the occurrence of any of the following circumstances:

1. If CONTRACTOR refuses or fails to pursue the Work or any part with sufficient diligence to ensure its completion within the time specified, or any extension of time;
2. If CONTRACTOR refuses or fails to complete the Work within the time required;
3. If CONTRACTOR is adjudged a bankrupt, or makes a general assignment for the benefit of its creditors;
4. If a receiver is appointed on account of CONTRACTOR's insolvency;
5. If CONTRACTOR persistently or repeatedly refuses or fails to supply enough properly skilled workers or proper materials to complete the Work in the time specified, except in cases for which extension of time is provided;
6. If CONTRACTOR fails to make prompt payment to subcontractors or for material or labor;

7. If CONTRACTOR persistently disregards laws, ordinances, or instructions of OWNER;

8. If CONTRACTOR or its SUBCONTRACTORS violates any of the provisions of the Contract Documents.

B. The notice of intent to terminate shall contain the reasons for termination.

C. Unless the identified condition(s) or violation(s) ceases and arrangements satisfactory to OWNER for correction are made within 10 days after service of the notice, the Construction Agreement may be terminated, in the total discretion of OWNER. In that event, CONTRACTOR shall not be entitled to receive any further payment until the Work is completed.

D. In the event of OWNER's election to terminate, OWNER shall immediately serve written notice of termination upon CONTRACTOR and upon surety on CONTRACTOR's Performance Bond, and the surety shall then have the right to take over and perform this contract; provided however that if within seven days after service upon the surety of the notice of election to terminate, the surety does not give OWNER written notice of its intention to take over and perform the Construction Agreement, or does not commence performance within 15 days after the date of service of the notice of termination by OWNER on surety, OWNER may take over and complete the Work by contract or by any other method it deems advisable.

E. CONTRACTOR and its surety shall be liable to OWNER for any excess cost or other damages incurred by OWNER. If OWNER takes over the Work as provided above, OWNER may exclude CONTRACTOR and the surety from the premises, or any portion of the premises, and take control of the premises without liability and without affecting the liability of CONTRACTOR and the surety for completion of the Work. In addition, OWNER may take possession of and utilize in completing the Work any materials, appliances, equipment, and other property belonging to CONTRACTOR on the work site necessary for completion of the Project, without liability.

F. If the unpaid balance of the contract price exceeds the expense of finishing the Work, including without limitation compensation for additional architectural, managerial, inspection, and administrative services, the excess shall be paid to CONTRACTOR. If the expense exceeds the unpaid balance, CONTRACTOR shall pay the difference to OWNER. Any expenses incurred by OWNER, and any damage incurred through CONTRACTOR's default, shall be certified by the Architect.

G. These provisions are in addition to and not a limitation on any other rights or remedies available to OWNER.

Termination for Convenience:

H. OWNER has discretion to terminate this Agreement at any time and require CONTRACTOR to cease all work on the project by providing CONTRACTOR written notice of termination specifying the desired date of termination. Upon receipt of written notice from OWNER of such termination for OWNER's convenience, CONTRACTOR shall:

1. Cease operations as directed by OWNER in the notice;
2. Take any actions necessary, or that OWNER may direct, for the protection and preservation of the Work; and
3. Maintain any insurance provisions required by the Contract Documents.

In case of termination for OWNER's convenience, CONTRACTOR shall be entitled to receive payment from OWNER for work satisfactorily executed and for proven loss with respect to materials, equipment, and tools, including overhead and profit for that portion of the work completed. In the case of termination for convenience, OWNER shall have the right to accept assignment of subcontractors. The foregoing provisions are in addition to and not in limitation of any other rights or remedies available to OWNER.

ARTICLE 64 NO WAIVER

The failure of OWNER in any one or more instances to insist upon strict performance of any of the terms of the Contract Documents, or to exercise any option conferred in them, shall not be construed as a waiver or relinquishment to any extent of the right to assert or rely upon any such terms or option on any future occasion.

ARTICLE 65 EXCISE TAXES

If any transaction under the Contract Documents constitutes a sale on which a federal excise tax is imposed under federal excise tax law, and the sale is exempt from the excise tax because it is a sale to a state or local government for its exclusive use, upon request OWNER will execute a certificate of exemption which will certify that (1) OWNER is a political subdivision of the State for the purpose of such exemption, and (2) the sale is for the exclusive use of OWNER. No excise tax for such materials shall be included in any bid price.

ARTICLE 66 NOTICE OF TAXABLE POSSESSORY INTEREST

The terms of the Contract Documents may result in the creation of a possessory interest. If a possessory interest is vested in a private party to the Contract Documents, the private party may be subjected to the payment of property taxes levied on such interest.

ARTICLE 67 ASSIGNMENT OF ANTITRUST ACTIONS

A. Public Contract Code Section 7103.5(b) provides:

“In entering into a public works contract or a subcontract to supply goods, services, or materials pursuant to a public works contract, the contractor or subcontractor offers and agrees to assign to the awarding body (OWNER) 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. Sect. 15) or under the Cartwright Act (Chapter 2 (commencing with Section 16700) of Part 2 of Division 7 of the Business and Professions Code), arising from purchases of goods, services, or materials pursuant to 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 contractor, without further acknowledgment by the parties.”

B. For itself and all subcontractors, CONTRACTOR agrees to assign to OWNER all rights, title, and interest in and to all such causes of action CONTRACTOR and all subcontractors may have under the Contract Documents. This assignment shall become effective at the time OWNER tenders final payment to CONTRACTOR, and CONTRACTOR shall require assignments from all SUBCONTRACTORS to comply with this requirement.

ARTICLE 68 PATENTS, ROYALTIES, AND INDEMNITIES

CONTRACTOR shall hold harmless OWNER and its governing board or other governing body, officers, agents, and employees 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 Work of the Contract Documents, including its use by OWNER, unless otherwise specifically provided in the Contract Documents and unless such liability arises from the sole negligence, active negligence, or willful misconduct of OWNER.

ARTICLE 69 STATE AUDIT

Pursuant to and in accordance with the provisions of Government Code Section 8546.7, CONTRACTOR and any subcontractor connected with the performance of the Contract

Documents involving the expenditure of public funds in excess of \$10,000, including, but not limited to the cost of administration of the Contract Documents, shall be subject to examination and audit by the State of California, either at the request of OWNER or as part of any audit of OWNER, for a period of three years after final payment is made under the Contract Documents.

ARTICLE 70 PROVISIONS REQUIRED BY LAW DEEMED INSERTED

Every provision of law and clause required by law to be inserted in the Contract Documents shall be deemed to be inserted, and the Contract Documents shall be read and enforced as though it were included. If through mistake or otherwise any provision is not inserted or is not correctly inserted, upon application of either party the Contract Documents shall be amended to make the insertion or correction. All references to statutes and regulations shall include all amendments, replacements, and enactments on the subject which are in effect as of the date of the Contract Documents and any later changes which do not materially and substantially alter the positions of the parties.

ARTICLE 71 NOTICE AND SERVICE

A. Any notice from one party to the other under the Contract Documents shall be in writing and shall be dated and signed by the party giving the notice or by a duly authorized representative of the party. Any notice shall not be effective for any purpose unless served in one of the following ways:

B. If notice is given to OWNER, by personal delivery to OWNER or by depositing the notice in the United States mail, enclosed in a sealed envelope addressed to OWNER and sent by registered or certified mail with postage prepaid.

C. If notice is given to CONTRACTOR, by personal delivery to CONTRACTOR or to CONTRACTOR's superintendent at the Project Site, or by depositing the notice in the United States mail, enclosed in a sealed envelope addressed to CONTRACTOR at its regular place of business or at such address as may have been established for the conduct of work under the Contract Documents, and sent by registered or certified mail with postage prepaid.

D. If notice is given to surety or other persons, by personal delivery or by depositing the notice in the United States mail, enclosed in a sealed envelope addressed to the surety or person at the address last communicated by the surety or other person to the party giving notice, and sent by registered or certified mail with postage prepaid.

ARTICLE 72 DISABLED VETERAN BUSINESS ENTERPRISE COMPLIANCE

A. In accordance with Education Code Section 17076.11, OWNER has a participation goal for disabled veteran business enterprises of at least three percent per

year of the overall dollar amount of funds allocated to OWNER 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 school district.

B. Prior to, and as a condition precedent for final payment under any contract for such project, CONTRACTOR shall provide appropriate documentation to OWNER identifying the amount paid to disabled veteran business enterprises in conjunction with the Contract Documents, so that OWNER can assess its success at meeting this goal.

12-PAYMENT BOND

KNOW ALL PERSONS BY THESE PRESENTS:

WHEREAS, the _____, (referred to as "Owner"), has awarded to _____ (referred to as the "Contractor/ Principal") a contract for the work described as follows: _____.

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

NOW, THEREFORE, we, the Contractor/Principal and _____ as Surety, are held firmly bound unto Owner in the penal 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 the Contractor/Principal, his/her or its heirs, executors, administrators, successors, or assigns, or a subcontractor, shall fail to pay any person or persons named in Civil Code Section 9100 or fail to pay for any materials or other supplies used in, upon, for, or about the performance of the work contracted to be done, or for any work or labor thereon of any kind, or for amounts due under the Unemployment Insurance Code with respect to work or labor thereon of any kind, or shall fail to deduct, withhold, and pay over to the Employment Development Department any amounts required to be deducted, withheld, and paid over by Section 13020 of the Unemployment Insurance Code with respect to work and labor thereon of any kind, then said Surety will pay for the same, in or to an amount not exceeding the amount set forth above, and in case suit is brought upon this bond Surety will also pay such reasonable attorney's fees as shall be fixed by the court, awarded and taxed as provided in Division 4, Part 6, Title 3, Chapter 5 (commencing at Section 9550) of the California Civil Code.

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 person or their assigns in any suit brought upon this bond.

It is further stipulated and agreed that the Surety of this bond shall not be exonerated or released from the obligation of the 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 described above or pertaining or relating to the furnishing of labor, materials, or equipment therefor, nor by any change or modification of any terms of payment or extension of the time for any payment pertaining or relating to any scheme or work of improvement described above, nor by any rescission or attempted rescission of the contract, agreement, or bond, nor by any conditions precedent or subsequent in the bond attempting to limit the right of recovery of claimants otherwise entitled to recover under any such contract or agreement or under the 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 and original contractor or on the part of any obligee named in such bond, but the sole conditions of recovery shall be that claimant is a person described in Section 8400 and 8402 of the California Civil Code and has not been paid the full amount of his/her or its claim and that Surety does hereby waive notice of any such change, extension of time, addition, alteration, or modification.

Any claims under this bond may be addressed to:

Name & address of Surety

Name & address of agent or representative in California, if different than above

Telephone # of Surety, or agent or representative in California

IN WITNESS WHEREOF, we have hereto set our hands and seals on this _____ day of _____, 20____.

[SEAL]

Contractor/Principal

By: _____
Signature

Print Name Above

Print Title Above

Surety:

By: _____
Signature

Print Name Above

Print Title Above

[SEAL AND NOTARIAL ACKNOWLEDGMENT OF SURETY]

13-PERFORMANCE BOND

KNOW ALL PERSONS BY THESE PRESENTS:

WHEREAS, the _____ (referred to as "Owner"), has awarded to _____ (referred to as "Contractor/Principal") a contract for the work described as follows: _____.

NOW, THEREFORE, we, the Contractor/Principal and _____, as Surety, are held firmly bound unto Owner in the penal 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 CONDITIONS OF THIS OBLIGATION IS SUCH THAT, if the hereby bonded Contractor/Principal, its heirs, executors, administrators, successors, or assigns, shall in all things stand to and abide by and well and truly keep and perform all the undertakings, terms, covenants, conditions, and agreements in the said contract and any alteration thereof, made as therein provided, including but not limited to the provisions regarding contract duration, indemnification, and liquidated damages, all within the time and in the manner therein designated in all respects according to their true intent and meaning, then this obligation shall become null and void; otherwise, it shall be and remain in full force and effect.

As a condition precedent to the satisfactory completion of the contract, the above obligation shall hold good for a period of _____ year(s) after the acceptance of the work by the Owner, during which time if Contractor/Principal shall fail to make full, complete, and satisfactory repair and replacements and totally protect the Owner from loss or damage made evident during the period of _____ year(s) from the date of completion of the work, and resulting from or caused by defective materials or faulty workmanship, the above obligation in penal sum thereof shall remain in full force and effect. The obligation of Surety under this bond shall continue so long as any obligation of Contractor/Principal remains.

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

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

Surety expressly agrees that the Owner may reject any contractor or subcontractor which may be proposed by Surety in fulfillment of its obligations in the event of default by the Contractor/Principal.

Surety shall not utilize Contractor/Principal in completing the contract nor shall Surety accept a bid from Contractor/Principal for completion of the work if the Owner, when declaring the Contractor/Principal in default, notifies Surety of the Owner's objection to Contractor/Principal's further participation in the completion of the work.

No right of action shall accrue on this bond to or for the use of any person or corporation other than the Owner named herein or the successors or assigns of the Owner. Any suit under this bond must be instituted within the applicable statute of limitations period.

FURTHER, for value received, the Surety hereby stipulates and agrees that no change, extension of time, alternation, or modification of the Contract Documents, or of the work to be performed under them, shall in any way affect its obligations on this bond; and it does hereby waive notice of any change, extension of time, alteration, or modification of the Contract Documents or of work to be performed under them.

Contractor/Principal and Surety agree that if the Owner is required to engage the services of an attorney in connection with the enforcement of this bond, each shall pay Owner's reasonable attorney's fees incurred, with or without suit, in addition to the above amount.

Any claims under this bond may be addressed to:

Name and address of Surety:

Name and address of agent or representative in California, if different than above:

Telephone number of Surety, or agent or representative in California:

IN WITNESS WHEREOF, we have hereto set our hands and seals on this _____ day of _____, 20____.

[SEAL]

CONTRACTOR/PRINCIPAL

By _____
Signature

Type or Print Name Above

Type of Print Title Above

SURETY

By _____
Signature

Type or Print Name Above

Type of Print Title Above

[SEAL AND NOTARIAL ACKNOWLEDGMENT OF SURETY]

14-WORKERS' COMPENSATION CERTIFICATE

PROJECT TITLE: BID #: CAMPUS HVAC SYSTEM UPGRADE
OWNER: BAKERSFIELD CITY SCHOOL DISTRICT

Labor Code Section 3700 provides:

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

"(a) By being insured against liability to pay compensation in one or more insurers duly authorized to write compensation insurance in this state.

"(b) By securing from the Director of Industrial Relations a certificate of consent to self-insure either as an individual employer, or as one employer in a group of employers, which may be given upon furnishing proof satisfactory to the Director of Industrial Relations of ability to self-insure and to pay any compensation that may become due to his or her employees.

"(c) For any county, city, city and county, municipal corporation, public district, public agency, or any political subdivision of the state, including each member of a pooling arrangement under a joint exercise of powers agreement (but not the state itself), by securing from the Director of Industrial Relations a certificate of consent to self-insure against workers' compensation claims, which certificate may be given upon furnishing proof satisfactory to the Director of Industrial Relations of ability to administer workers' compensation claims properly, and to pay workers' compensation claims that may become due to its employees. On or before March 31, 1979, a political subdivision of the state which on December 31, 1978, was uninsured for its liability to pay compensation, shall file a properly completed and executed application for a certificate of consent to self-insure against workers' compensation claims. The certificate shall be issued and be subject to the provisions of Section 3702."

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 provisions before commencing and during the performance of the work on this Project.

Print Name of Contractor Above

By: _____

Date:

Print Name Above

Title:

[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 the contract.]

15-GUARANTEE

PROJECT TITLE: BID #: CAMPUS HVAC SYSTEM UPGRADE
OWNER: BAKERSFIELD CITY SCHOOL DISTRICT

We guarantee that the construction work described above has been performed in accordance with, and complies with, the Contract Documents. We agree to repair or replace any or all of the work, together with any other adjacent work which may be required in connection with it, that may prove to be defective in workmanship or material within a period of one year from the date of acceptance of the project by Owner and the filing of the final verified report with the Division of State Architect (DSA), ordinary wear and tear excepted.

In the event of our failure to comply with these conditions within the applicable time frame as determined by Owner pursuant to the Contract Documents, in no event later than one week after being notified in writing by Owner, we authorize Owner to proceed to have the defects repaired at our expense, for which we will pay the costs and charges upon demand.

Date:

Name of Contractor

By: _____

Signature

Print Name:

Title:

Representative of Contractor
to be Contacted for Service:

Name:

Address:

Telephone number of Contact:

16-FINGERPRINTING CERTIFICATION BY CONTRACTORS

(referred to as "Owner")
(Project Identification)

I, _____, am an
[type or print name]

- [check one]
- Owner of the company named below
 - Partner of the partnership named below
 - President or CEO of the corporation named below
 - Principal of the joint venture named below
 - Other [specify]

The contracting entity named below is a contractor on the referenced project and as such hereby certifies:

- [check one or more]
- [For compliance with Education Code Section 45125.2(a)(1)]
That a physical barrier will be erected at the workplace to limit employee contact with Owner's pupils.
 - [For compliance with Education Code Section 45125.2(a)(2)]
That the contracting entity named below will provide continual supervision and monitoring of the employees of the entity and its subcontractors through its employee _____. It has been ascertained by the Department of Justice that the named employee has not been convicted of a violent or serious felony. Contractor has requested subsequent arrest information from the Department of Justice concerning such employee and will immediately notify District and remove the employee from the Project if subsequent arrest information indicates the employee has been convicted of a serious or violent felony.
 - [For compliance with Education Code Section 45125.2(a)(3)]
That the contracting entity named below has contracted with Owner for reimbursement of Owner expense incurred in providing surveillance by school personnel of the employees of the entity and its subcontractors on the Project.
 - [For compliance with Education Code Section 45125.1(g).
Note: We believe this section may still be applicable to construction contractors where 45125.2(a) is insufficient to ensure pupil safety, e.g., where workers will be simultaneously working at various locations on a school site.]

That neither myself nor any employees of the contracting entity named below or its subcontractors on the Project who are required by law to submit or have their fingerprints submitted to the Department of Justice, and who may come in contact with pupils, have been convicted of a felony defined in Education Code Section 45122.1.

- [For compliance where there is limited contact or less with pupils] That the contracting entity named below is exempt from fingerprinting requirements as the Owner has determined the employees of the entity and its subcontractors will have no more than limited contact with Owner's pupils during the Project.

[name of contracting entity]

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

DATE:

SIGNATURE _____

17-DAVIS BACON COMPLIANCE CERTIFICATION

PROJECT TITLE/ BID #: CAMPUS HVAC SYSTEM UPGRADE

OWNER: BAKERSFIELD CITY SCHOOL DISTRICT

I hereby certify that I will conform to the Davis Bacon Act regarding wages, on-site audits with 48-hour notice, payroll records, submittals of weekly certified payrolls to the Owner, and apprentice and trainee employment requirements.

Date:

Name of Contractor Above

By: _____
Signature

Print Name:

Print Title:

[THIS FORM IS TO BE USED ON CONSTRUCTION PROJECTS UNDER CONTRACTS ENTERED INTO OR FINANCED BY OR WITH THE ASSISTANCE OF THE FEDERAL GOVERNMENT.]

18-ESCROW AGREEMENT FOR SECURITY DEPOSITS IN LIEU OF RETENTION

This Escrow Agreement is made and entered into by and between Owner _____, whose address is _____, and Contractor _____, whose address is _____, and Escrow Agent _____, whose address is _____.

For the consideration set forth in this Agreement, 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 Agreement entered into between the Owner and Contractor for _____ in the amount of \$ _____, dated _____ (referred to as the "Construction Agreement"). Alternatively, on written request of Contractor, Owner shall make payments of the retention earnings directly to the Escrow Agent. When Contractor deposits the securities as a substitute for retention 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 Construction Agreement between the Owner and Contractor. Securities shall be held in the name of _____ and shall designate the Contractor as the beneficial owner.
2. Owner shall make progress payments to Contractor for those funds which otherwise would be withheld from progress payments under the provisions of the Construction Agreement, provided the Escrow Agent holds securities in the form and amount specified above.
3. When Owner makes payments of retentions earned directly to the Escrow Agent, the Escrow Agent shall hold them for the benefit of Contractor until the time the escrow created under this Escrow Agreement is terminated. Contractor may direct 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 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 Owner. These expenses and payment terms shall be determined by 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 Owner to Escrow Agent that Owner consents to withdrawal of the amount sought to be withdrawn by Contractor.

7. Owner shall have a right to draw upon the securities in the event of default by Contractor. Upon seven days' written notice of the default to the Escrow Agent from Owner, Escrow Agent shall immediately convert the securities to cash and distribute the cash as instructed by Owner.

8. Upon receipt of written notification from Owner certifying that the work under the Construction Agreement is final and complete, and that Contractor has complied with all requirements and procedures applicable to the Construction Agreement, 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 monies and securities on deposit and payment of fees and charges.

9. Escrow Agent shall rely on the written notifications from Owner and Contractor pursuant to Sections 6 to 8, inclusive, of this Escrow Agreement and 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 Owner and on behalf of Contractor in connection with the foregoing, and exemplars of their respective signatures, are as follows:

On behalf of Owner:

On behalf of Contractor:

Title

Title

Name Above [typed or printed]

Name Above [typed or printed]

Signature

Signature

Address:

Address:

On behalf of Escrow Agent:

Title

Name Above [typed or printed]

Signature

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

Title Above

Title Above

Name Above [typed or printed]

Name Above [typed or printed]

Signature

Signature

Escrow Agent

Title Above

Name Above [typed or printed]

Signature

19-SHOP DRAWING TRANSMITTAL

PROJECT TITLE/ BID #: CAMPUS HVAC SYSTEM UPGRADE
OWNER: BAKERSFIELD CITY SCHOOL DISTRICT

The procedure governing shop drawing submittals is contained in the Contract Documents. All requirements must be followed by the Contractor. Failure to comply with all requirements will constitute grounds for return of the shop drawing for proper resubmittal. The Contractor shall sequentially number each submittal, using this form.

Date: _____ Submittal No. _____

From: _____ To: _____

This is: an original submittal
 a 2nd submittal
 a [] submittal

Subject of Submittal:

Material or Equipment Designation:

Specification Section(s):

Check either (a) or (b)

- (a) We have verified that the material or equipment contained in this submittal meets all the requirements specified or shown (no exceptions).
- (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 attached sheet).

The Contractor has reviewed and approved not only the field dimensions but 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 Contractor and this duty of coordination has not been delegated to subcontractors, material suppliers, the architect, or the engineers on this project.

Signature of Contractor or Supplier

20-DRUG-FREE WORKPLACE CERTIFICATION

PROJECT TITLE/BID #: CAMPUS HVAC SYSTEM UPGRADE
OWNER: BAKERSFIELD CITY SCHOOL DISTRICT

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

Pursuant to Government Code Section 8355, every person or organization awarded a contract 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;
 - 4. The penalties that may be imposed upon employees for drug abuse violations;
- C. Requiring that each employee engaged in the performance of work on the Project be given a copy of the statement required by subdivision (a), and that as a condition of employment on the Contract the employee agrees to abide by the terms of the statement.

I, the undersigned, agree to fulfill the terms and requirements of Government Code

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

I also understand that if the Owner determines that I have either (a) made a false certification or (b) violated this certification by failing to carry out the requirements of Section 8355, the contract awarded is subject to suspension of payments, termination, 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 Section 8350 and following sections.

I acknowledge that I am aware of the provisions of Government Code Section 8350 and following sections, and hereby certify that I will adhere to the requirements of the Drug-Free Workplace Act of 1990.

Name of Contractor

Signature

Print Name Above

Print Title Above

Date:

21-CHANGE ORDER NO.

**PROJECT TITLE/BID #: CAMPUS HVAC SYSTEM UPGRADE
OWNER: BAKERSFIELD CITY SCHOOL DISTRICT**

To:

**YOU ARE HEREBY DIRECTED TO PROVIDE THE EXTRA WORK
NECESSARY TO COMPLY WITH THIS CHANGE ORDER.**

DESCRIPTION OF CHANGE:

AGREED COST (This cost shall not be exceeded): \$

ADJUSTMENTS TO CONTRACT PRICE:

Original Contract Price: \$

Prior Change Order Totals: \$

This Change Order Amount: \$

New Contract Price: \$

ADJUSTMENTS TO TIME FOR COMPLETION:

Original completion date:

Prior adjustments previously agreed:

Time for completion of this Change Order:

New completion date:

THE COMPENSATION (TIME AND COST) SET FORTH IN THIS CHANGE ORDER COMPRISES THE TOTAL COMPENSATION DUE THE CONTRACTOR FOR THE CHANGE DEFINED IN THE CHANGE ORDER, INCLUDING IMPACT ON UNCHANGED WORK. ACCEPTANCE OF THIS CHANGE ORDER CONSTITUTES A FULL AND COMPLETE ACCORD AND SATISFACTION OF ANY AND ALL CLAIMS BY CONTRACTOR ARISING OUT OF OR RELATING TO THE CHANGE ORDER, INCLUDING BUT NOT LIMITED TO CLAIMS FOR CONTRACT BALANCE AND RETENTION, TIME, EXTENDED FIELD OR HOME OFFICE, OR OTHER OVERHEAD, ALL ACCELERATION, IMPACT, DISRUPTION, AND DELAY DAMAGES, ANY AND ALL OTHER DIRECT AND/OR INDIRECT COSTS, CLAIMS BY SUBCONTRACTORS AND SUPPLIERS, AND ANY AND ALL OTHER CLAIMS AGAINST THE OWNER FOR TIME OR MONEY, FROM ANY SOURCE AND UNDER ANY LEGAL THEORY WHATSOEVER, AS TO THE SUBJECT OF THIS CHANGE ORDER. NO SIGNATURE UNDER PROTEST OR ACCOMPANIED BY RESERVATION OF RIGHTS OR PROTEST LANGUAGE, OR ANY OTHER ATTEMPTS TO AVOID SUCH WAIVER SHALL BE OF ANY FORCE OR EFFECT WHATSOEVER. NO ADDITIONS OR DELETIONS TO THIS CHANGE ORDER SHALL BE ALLOWED, EXCEPT WITH WRITTEN PERMISSION OF OWNER.

This Change Order is hereby agreed to, accepted, and approved.

On behalf of Owner:

On behalf of Contractor:

Print Title Above

Print Title Above

Signature

Signature

APPROVED AS TO FORM AND CONTENT:

On behalf of Architect:

Print Title Above

Signature

Date

22-CERTIFICATE OF ATTENDANCE AT MANDATORY JOB WALK

On projects including a mandatory job walk, this form must be submitted with the bid or bidder will be declared "non-responsive"

**PROJECT TITLE/ BID #: CAMPUS HVAC SYSTEM UPGRADE
OWNER: BAKERSFIELD CITY SCHOOL DISTRICT**

It is the Owner's intention to provide all contractors with equal access to information regarding this project. Further, the Owner has issued plans and specifications to bidders and has allowed bidders the opportunity to inspect the site with knowledgeable personnel at the job walk. Therefore it is understood that the Owner may declare the bid non-responsive for any of the following conditions:

1. If a bidder attends the entire mandatory job walk but fails to complete this form;
2. If a bidder fails to attend the entire mandatory job walk;
3. If a bidder fails to attend the entire mandatory job walk but certifies that he was in attendance. *[NOTE: This may also lead to a determination that the bidder is non-responsive.]*

Please check one of the following:

- I attended the entire mandatory job walk
-OR-
 I did not attend the entire mandatory job walk.

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

Executed at _____, California, on _____, 20_____.

Firm Name:

By:
Print Name Above

Signed _____

Print Title:

23-CONTRACTOR'S QUALIFICATIONS QUESTIONNAIRE

TO BE SUBMITTED WITH THE BID WHEN THERE HAS BEEN NO PREQUALIFICATION PROCESS

PROJECT TITLE/BID #: CAMPUS HVAC SYSTEM UPGRADE
OWNER: BAKERSFIELD CITY SCHOOL DISTRICT

The prospective Bidder shall furnish all the following information accurately and completely. Failure to fully and completely comply with this requirement may result in rejection of any bid submitted. Additional sheets may be attached if necessary. "You" or "your" as used in this questionnaire refers to the Bidder's firm and any of its owners, officers, directors, shareholders, parties, or principals. Owner has discretion to request additional information depending on the project.

—WARNING—

Certain information may lead to a determination of non-responsibility and rejection of the bid.

(1) Firm name and address:

(2) Telephone:

(3) Type of firm: (check one) Individual Partnership Corp.

(4) License No.:

Class:

DIR Registration No.

Name of license holder:

(5) Have you or any of your principals ever been licensed under a different name or different license number? Response must include information pertaining to principals' association outside of the firm bidding this Project. If yes, give name and license number: .

(6) Names and titles of all principals of the firm:

(7) Number of years as contractor. Include only years in this type of construction and only the years with the current entity in its current form: Years

(8) Person who inspected work site for your firm:

Name:

Title:

Date of Inspection:

(9) Years of experience your firm has in public school construction work:

As general contractor: Years

As subcontractor: Years

(10) In the last five years has your firm or any of its principals defaulted so as to cause a loss to a surety? Response must include information pertaining to principals' associations outside of the firm bidding this Project. If the answer is yes, give date, name, and address of surety and details:

(11) In the last five years have you or any of your principals been assessed liquidated damages for any project? Response must include information pertaining to principals' associations outside of the firm bidding this Project. If yes, explain:

(12) In the last five years have you or any of your principals been in litigation or arbitration or a dispute of any kind on a question or questions relating to a public construction project? Response must include information pertaining to principals' association outside of the firm bidding this Project. If yes, provide name of public agency and details of the dispute. Attach additional pages as necessary.

(13) In the last five years have you or any of your principals ever failed to complete a project? Response must include information pertaining to principals' association outside of the firm bidding this Project. If yes, provide owner's name and details. Attach additional pages as necessary.

(14) In the last five years have you or any of your principals been assessed back-charges on any public works construction project? If so, explain, including the

identity of the public entity, the basis for their claims, and the final result. Attach additional pages as necessary.

(15) In the last five years have you or any of your principals ever failed to complete a project within the time frame originally set for completion, plus any extension of time granted for weather delays? An extension of time for any reason other than weather delays requires an explanation. Response must include information pertaining to principals' association outside of the firm bidding this Project. If yes, provide owner's name and details. Attach additional pages as necessary.

(16) List names, addresses, and telephone numbers of three architects or engineers with whom you have worked on a public works project in the last five years:

Project One:

Project Two:

Project Three:

(17) Conflicts of Interest: Do you now or have you in the last five years had any direct or indirect business, financial, or other connection with any official, employee, or consultant of the OWNER or architect? If yes, describe. Attach additional pages as necessary.

(18) In the last five years have you or any of your principals filed a claim for additional compensation from a public entity on a construction project? If yes, explain and include the identity of the public entity, the basis for the claim, the response by the public entity, and the final result. Attach additional pages as necessary.

(19) In the last five years have you or any of your principals ever failed to pre-qualify, or been deemed unqualified, on any public works construction project? If yes, explain and include the identity of the public entity, the basis for their claims, and the final result. Attach additional pages as necessary.

(20) In the last five years have you or any of your principals ever been declared a “non-responsible” bidder on any public works construction project? If yes, explain and include the identity of the public entity, the basis for their claims, and the final result. Attach additional pages as necessary.

(21) Staff/Roster Functions: List all members of your staff who will be assigned or responsible for work as a team member on this Project (except clerical) and show job titles, functions, years with firm, and projects completed for company. Include company officers, responsible managing employee (RME), project manager, and superintendent. Provide the following information for each individual (copy this page as many times as required).

Name and Title:

Function:

Years with firm:

Has the individual had prior exposure as a team member on one of your projects?

Yes No

List of all school projects this person has completed for you:

Provide an organizational chart reflecting your proposed project team for the Project, including all persons on your project team.

(22) Surety: Indicate the names of all surety companies utilized by you in the last 10 years. Attach additional pages as necessary.

Surety Name & Address Period Covered

Surety Name & Address Period Covered

Surety Name & Address Period Covered

Surety Name & Address Period Covered

(23) Attach a notarized statement from surety company(ies) proposed to be utilized on this Project, indicating your total bonding capacity and certifying that:

A. Currently available bonding capacity exceeds the value of your contract, as estimated by the OWNER, and;

B. Surety(ies) will provide bonding of the project in the event you are awarded Project.

(24) Insurance: Provide a notarized statement from your workers' compensation carrier specifying your current "Experience Modification Rate" for workers' compensation for the State of California. Provide a list of above-referenced ratings and corresponding companies for the last five years.

(25) Safety:

A. Does your firm have a written Safety Program:

Yes No (If yes, attach copy.)

B. Does your firm have personnel permanently assigned to safety?

Yes No (If yes, provide names and duties.)

(26) Give the public entity's name, telephone number, and the name of the contact person for the three largest public works projects performed for a public entity, other than a school/college/university, that you have completed in the last five years: Attach additional sheets as necessary.

(27) List of References: Provide information on the three largest projects performed for a public school, college, or university in the last five years.

Contract 1:

Name:

Address:

Telephone:

Contact Person:

Type of construction project:

Dates of commencement and completion of construction project:

Contract amount:

Architect:

Architect's address:

Telephone:

DSA or public agency inspector:

Address:

Telephone:

Contract 2:

Name:

Address:

Telephone:

Contact Person:

Type of construction project:

Dates of commencement and completion of construction project:

Contract amount:

Architect:

Architect's address:

Telephone:

DSA or public agency inspector:

Address:

Telephone:

Contract 3:

Name:

Address:

Telephone:

Contact Person:

Type of construction project:

Dates of commencement and completion of construction project:

Contract amount:

Architect:

Architect's address:

Telephone:

DSA or public agency inspector:

Address:

Telephone:

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

Executed this day of , 20 , at (City, County), State of
.

Signature

Print Name Above

Print Title Above

24-ATTACHMENT TO FORM NO.

**PROJECT TITLE/ BID #: CAMPUS HVAC SYSTEM UPGRADE
OWNER: BAKERSFIELD CITY SCHOOL DISTRICT**

**SCHOOL DISTRICT
PREQUALIFICATION QUESTIONNAIRE
FOR
GENERAL CONTRACTOR
AND
MECHANICAL, ELECTRICAL, PLUMBING, FIRE PROTECTION
AND UNDERGROUND PIPELINE SUBCONTRACTOR LICENSEES
(License Classifications A, B, C-4, C-7, C-10, C-16, C-20, C-34, C-36,
C-38, C-42, C-43 and C-46)
FOR PROJECTS ELIGIBLE FOR STATE FUNDING
PURSUANT TO PUBLIC CONTRACT CODE SECTION 20111.6**

January 2014

**SCHOOL DISTRICT
PREQUALIFICATION QUESTIONNAIRE**

INTRODUCTION

REQUEST FOR PREQUALIFICATION OF BIDDERS

Each contractor wishing to bid as a general contractor or a mechanical, electrical or plumbing subcontractor for certain projects at _____ School District must fully complete this questionnaire and provide all materials requested herein. A contractor's prequalification status will remain current for 12 months from the notice of qualification. A contractor may choose to bid any or all of the projects for which it is prequalified.

Answers to questions contained in the attached Contractor's Prequalification Questionnaire are required, including a complete statement of prospective bidder's financial ability and experience in performing public works. These documents will be the basis of rating bidders in respect to the size and scope of contracts upon which each bidder is qualified to bid.

In addition to disqualification for failure to meet the District's criteria, a Contractor may be automatically disqualified for any one of the following: (1) omission of requested information; (2) falsification of information; (3) excessive stop notices and/or prevailing wage violations; (4) debarment from the Division of Labor Standards Enforcement.

The questionnaire responses and financial statements are not open to public inspection. All information provided will be kept confidential to the extent permitted by law. The District reserves the right to reject any and all Prequalification Questionnaires and to waive any irregularities in the information contained therein.

Each questionnaire must be signed under penalty of perjury by an individual who has the legal authority to bind the contractor on whose behalf that person is signing. If any information provided by a contractor becomes inaccurate, the contractor must immediately notify the awarding body and provide updated accurate information in writing and under penalty of perjury.

The District reserves the right to:

- Request that Contractor(s) update prequalification forms;
- Certify a Contractor only up to a specific contract size or dollar amount based on the size of Contractor's previous projects;
- Revoke, rescind, and/or reuse the prequalification status of a Contractor;
- Use some or all of the information provided in this form for evaluation purposes;
- Check other sources.

SUBMISSION OF COMPLETED STATEMENTS

Mail completed Prequalification Questionnaires and supporting documents to:

School District
Attention:
Facilities and Planning Department

, CA

Or e-mail to:

**PLEASE MARK ENVELOPE
"CONFIDENTIAL"**

PREQUALIFICATION QUESTIONNAIRE

CONTACT INFORMATION:

Firm Name:
(As it appears on License)

Check one: Corporation
 Partnership
 Sole Prop.
 LLC

Contact Person:

Position:
(e.g., owner, partner, sole proprietor, shareholder, managing member)

Address:

Phone: Fax:

Owner(s) of Company:

Contractor's License Number(s): DIR Registration No.

Requesting Prequalification as:

- General Contractor
- MEP Subcontractor
- Both

SECTION 1. THRESHOLD QUESTIONS

Applicant will be immediately disqualified if the answer to any of the questions below is "Yes." Refusal to answer or omission of a response to any question on this form will result in disqualification of Applicant.

1. Is your firm's license currently **SUSPENDED** or **INACTIVE** as recorded by the California Contractor's State License Board (CSLB)?
 Yes No
2. Is your firm's bonding capacity **LESS THAN** the value of the contract that your firm intends to bid on?
 Yes No

PREQUALIFICATION QUESTIONNAIRE

3. Has your firm completed FEWER THAN five (5) public works construction projects within the last five (5) years?
- Yes No
4. Has your firm completed FEWER THAN two (2) school (K-12, community college or higher education) construction projects within the last five (5) years, with single contract values greater than:
- General Contractor - \$500,000
- Yes No
- MEP Subcontractor - \$125,000
- Yes No
5. Is your firm currently INELIGIBLE to bid on public works projects in accordance with Section 1777.1 of the California Labor Code?
- Yes No
6. Has your firm's Worker's Compensation Experience Modification Rate, as averaged over the past three (3) years, EXCEEDED 1.00?
- Yes No
7. In the last five (5) years, has your firm had MORE THAN five (5) serious violations* as defined by Cal-OSHA?
- Yes No
8. In the last five (5) years, has your firm had MORE THAN two (2) repeat violations* as defined by Cal-OSHA?
- Yes No
9. In the last five (5) years, has your firm had ANY willful violations of any occupational safety or health standard, order, or Section 25910 of the California Health and Safety Code?
- Yes No

PREQUALIFICATION QUESTIONNAIRE

10. An Injury and Illness Prevention Program (IIPP) in accordance with California Labor Code Sections 3201 or 6401.7 is required for firms seeking to prequalify. Has your firm FAILED to implement an IIPP?

Yes No

*Violation definitions/classifications can be found at the following website:

<http://www.dir.ca.gov/DOSH/>

11. In the last five (5) years, has your firm, or any key Person in your firm (RMO, RME, Principal, Owner, or Project Manager), had any license revoked by the California Contractor's State License Board (CSLB)?

Yes No

12. Worker's Compensation Insurance (as required by the California Labor Code) or adequate Self Insurance (in accordance with California Labor Code 3700 et seq.) is required for firms seeking to prequalify. Does your firm currently FAIL to meet these requirements?

Yes No

13. In the last five (5) years, has your firm, or any key Person in your firm, been convicted of a crime involving the awarding of a contract on a government (local, state or federal) construction project, or the bidding or performance of a government contract?

Yes No

14. In the last five (5) years, has your firm, or any key Person in your firm, been "defaulted" or "terminated" by an owner (other than for convenience of the project owner) or has your surety completed a contract for your firm?

Yes No

15. Has your firm, or any key Person in your firm, ever been found guilty in a criminal action, for making any false claim or material misrepresentation to any public agency or entity?

Yes No

16. In the last ten (10) years, has your firm, or any key Person in your firm, ever been convicted of a crime involving any federal, state or local contracts?

Yes No

PREQUALIFICATION QUESTIONNAIRE

17. In the last five (5) years, has your firm been involved in more than one (1) construction-related litigation with any school district in which you were not the prevailing party; filed more than one (1) claim against any school district that did not result in a recovery; or had more than one (1) substantiated (in whole or in part) claim filed against it by any school district resulting in an award in excess of \$ 50,000?
- Yes No
18. In the last five (5) years, has your firm been assessed damages (liquidated or actual) by any owner on any public works project?
- Yes No
19. According to your firms most recent financial review or audit (must be dated within the past 12 months), is your firm's Asset to Liability Ratio LESS THAN 1:1?
- Yes No
20. In the last five (5) years, has your firm declared or filed for bankruptcy?
- Yes No

If the answer to ALL of the above questions is NO, please proceed with completion of this Questionnaire.

PREQUALIFICATION QUESTIONNAIRE

SECTION 2. RATING QUESTIONS

Highest Possible Rate = 100 Points. A score less than 75 points will disqualify you from this prequalification process. "You" or "Your" refer to the Applicant listed in Section 1.

Question	Response	Points (For office use Only)
<p>1. How many years has your organization been in business in California as a contractor under your present business name and license number?</p> <p>(5 yrs. or less = 0 pts., 6-15 yrs. = 3 pts., >15 = 6 pts.)</p>	Years	_____ Pts.
<p>2. How many years' experience does your RMO/RME have as a licensed contractor?</p> <p>(5 yrs. or less = 0 pts., 6-10 yrs. = 3 pts., >10 = 6 pts.)</p>	Years	_____ Pts.
<p>3. Has your firm or the RMO/RME ever had their contractor's licenses suspended, or put on probation? (Check One)</p> <p>(Probation = 3 pts., Suspended = 2 pts., never suspended or on probation = 6 pts.)</p>	<input type="checkbox"/> Never Suspended or on Probation <input type="checkbox"/> Suspended <input type="checkbox"/> Probation	_____ Pts.
<p>4. How many years has your firm performed construction work for public agencies under the California Division of State Architect (DSA) rules and regulations?</p> <p>(5 yrs. or less = 1 pt., 6-15 yrs. = 3 pts., >15 = 6 pts.)</p>	Years	_____ Pts.
<p>5. How many times in the last ten (10) years has your company been declared a "Non-responsible" bidder on public works contracts?</p> <p>(≥ 2 = 0 pts., 1 = 2 pts., 0 = 5 pts.)</p>	Notices	_____ Pts.

PREQUALIFICATION QUESTIONNAIRE

Question	Response	Points (For office use Only)
<p>6. Within the last five (5) years has your company requested to be released from a bid on public works contract?</p> <p>($\geq 2 = 0$ pts., $1 = 2$ pts., $0 = 5$ pts.)</p>	Requests	_____ Pts.
<p>7. Within the last five (5) years, how many times has your company filed two (2) or more Requests for Substitution of Listed Subcontractors that were denied?</p> <p>($\geq 2 = 0$ pts., $1 = 2$ pts., $0 = 5$ pts.)</p>	Requests	_____ Pts.
<p>8. Within the last five (5) years, what percentage of your public contracts have resulted in lawsuits brought by suppliers, subcontractors, prime contractors, or owners against your firm?</p> <p>Example: If your firm has engaged in 100 public contracts in the past five (5) years, and has had seven (7) lawsuits brought by any of the above-mentioned parties, the proper response would be 7/100 or .07.</p> <p>(>0.10 = 0 pts., .01-.09 = 3 pts., Less than .01 = 10 pts.)</p>	Ratio	_____ Pts.
<p>9. Within the last ten (10) years, how many times has your company been awarded a public works contract in which you “failed to execute” a contract? Note: “Failure to Execute” is any of the following: (1) Refusal to pick up, sign, and/or return contract documents; (2) Inability to obtain insurance and/or bond requirements.</p> <p>($\geq 2 = 0$ pts., $1 = 3$ pts., $0 = 7$ pts.)</p>	Times	_____ Pts.
<p>10. Within the last five (5) years, how many legal proceedings (including arbitration, mediation, or other dispute resolution proceedings) have you initiated against an owner, regardless of outcome?</p> <p>(>3 = 0 pts., 1-3 = 3 pts., 0 = 6 pts.)</p>	Proceedings	_____ Pts.
<p>11. Within the last five (5) years, how many legal proceedings (including arbitration, mediation, or other dispute resolution proceedings) has an owner initiated against you, regardless of outcome?</p> <p>(>3 = 0 pts., 1-3 = 3 pts., 0 = 6 pts.)</p>	Proceedings	_____ Pts.
<p>12. Has an owner ever made a demand on your performance bond?</p> <p>(Yes = 0 pts., No = 10 pts.)</p>	<input type="checkbox"/> Yes <input type="checkbox"/> No	_____ Pts.

PREQUALIFICATION QUESTIONNAIRE

Question	Response	Points (For office use Only)
<p>13. Has your firm ever had insurance terminated by a carrier in the past five (5) years due to an excessive claims history and/or nonpayment of premium?</p> <p>(Yes = 0 pts., No = 10 pts.)</p>	<input type="checkbox"/> Yes <input type="checkbox"/> No	_____ Pts.
<p>14. Within the past five (5) years, have any of your employees or another entity (including an Owner) filed a complaint against your firm with the California State License Board? If yes, how many complaints were filed?</p> <p>(>3 = 0 pts., 3 = 2 pts., 2 = 3 pts., 1 = 4 pts., No = 6 pts.)</p>	<input type="checkbox"/> Yes <input type="checkbox"/> No <p style="text-align: center;">Complaints</p>	_____ Pts.
<p>15. Within the past five (5) years, have there been any findings against your firm based on complaints by any of your employees or subcontractor employees filed with the DIR, Division of Labor Standards Enforcement? If yes, how many findings?</p> <p>(>3 = 0 pts., 3 = 2 pts., 2 = 3 pts., 1 = 4 pts., No = 6 pts.)</p>	<input type="checkbox"/> Yes <input type="checkbox"/> No <p style="text-align: center;">Findings</p>	_____ Pts.

PREQUALIFICATION QUESTIONNAIRE

SECTION 3. PERFORMANCE

1. List the two (2) largest school public works contracts completed in the State of California in the past five (5) years and provide the requested information for each project listed:

	Owner	Contact & Phone No.	Project Name	Contract \$	Year Completed
Project A					
Project B					
				Project A	Project B
Original contract value:					
Change orders – total value:					
Owner-initiated change orders - % of total:					
Change orders due to differing site conditions - % of total:					
Other change orders - % of total:					
Final contract value:					
Original contract duration – calendar days:					
Final contract duration – calendar days:					
Original contract completion date:					
Actual contract completion date:					
Time extensions voluntarily resolved with owner – calendar days:					
Time extensions involuntarily resolved by mediation, arbitration or litigation – calendar days:					

2. List the next three (3) largest school public works contracts completed in the State of California in the past five (5) years:

Owner	Contact & Phone #	Project Name	Contract \$	Year Completed

PREQUALIFICATION QUESTIONNAIRE

3. List all projects completed for school districts, including community college districts, in the last five (5) years not listed in #2 or #3 above: (Attach separate sheet(s) as needed.)

Owner	Contact & Phone # Inspector & Phone #	Job Description	Contract \$	Year Completed

4. List two (2) current Trade Suppliers and three (3) current Trade Subcontractors that you principally work with:

Company	Material or Service Provided	Contact	Phone #

PREQUALIFICATION QUESTIONNAIRE

Reference Interview Questions

At the discretion of the district, the following questions will be used to interview randomly selected contacts from previously completed projects. *No action on your part is necessary.* These questions are for your information only. Highest Possible Rating for these questions is 140 Points per Project. A score less than 100 points from any reference disqualifies you from bidding projects proposed by the district.

Questions

1. Are there any outstanding stop notices or liens currently unresolved on contracts that have had notices of completion recorded? (Max. 10 pts.)
2. Did the contractor provide adequate personnel? (Max. 10 pts.)
3. Did the contractor provide adequate supervision? (Max. 10 pts.)
4. Was there adequate equipment provided on the job? (Max. 10 pts.)
5. Was the contractor timely in providing reports and other paperwork, including change order paperwork? (Max. 10 pts.)
6. Was the contractor timely in completing the project? (Max. 10 pts.)
7. Were there excessive change orders on the job that can be faulted to the contractor or subcontractors? (Max. 10 pts.)
8. When a change order was issued, did the contractor perform the work well, and did it integrate into the existing work easily? (Max. 10 pts.)
9. How has the contractor been performing in the area of taking care of warranty items? (Max. 10 pts.)
10. Did you have difficulty with claims? (Max. 10 pts.)
11. How would you rate the contractor's overall performance? (Max. 10 pts.)
12. Would you want to work with them again? (Max. 10 pts.)
13. Describe any significant safety issues on the Project. (Max. 10 pts.)
14. Subcontractor/supplier question: Does this contractor pay their bills on time? (Max. 10 pts.)

PREQUALIFICATION QUESTIONNAIRE

SECTION 4. SURETY AND INSURANCE INFORMATION

1. Is your current bonding company "California admitted?"

Yes No

2. Has your company ever been unable to obtain a bond or been denied a bond for a contract?

Yes No

3. What is your bonding capacity?

Single Job: \$ Total work in progress: \$

Please provide a notarized statement from an admitted surety insurer (approved by the California Department of Insurance) and authorized to issue bonds in the State of California, which states: (a) your current total bonding capacity (b) your current available single job bonding capacity?

<i>Name of present surety(ies) (List Company(ies) that issued the payment/performance bond, not agent or broker)</i>			
	Company	Address	Largest Bond Value
1.			
2.			

4. Do you currently have a liability insurance policy with a policy limit of AT LEAST \$1,000,000 per occurrence and \$2,000,000 aggregate?

Yes No

If no, what policy limits do you maintain? \$ Occurrence \$ Aggregate

<u>Please provide Certificates of Insurance for General Liability and Workers Compensation as verification</u>			
AMOUNT OF INSURANCE	\$	Insurance Company Information	
General Liability	\$	Name	
Builder's Risk	\$	Address	
Additional Insured	\$	Phone Number	
Workers' Compensation	\$	Contact	
Years with Insurance Co.		Expiration Date	
<i>Note: Please list all insurance companies for the past five (5) years on a separate page including phone numbers and contact name.</i>			

PREQUALIFICATION QUESTIONNAIRE

SECTION 5. FINANCIAL INFORMATION

Reviewed or audited statements are required. A compilation is not acceptable.

Financial Capacity:

Please fill in the following blanks based on your attached financial statement:

Current Assets:	\$	
Current Liabilities:	\$	
Total Net Worth:	\$	
Current Ratio (Assets/Liabilities):		*
Working Capital (Current Assets - Current Liabilities):	\$	

*Contractor MUST have a working capital (current assets to current liabilities) ratio of at least 1:1 in order to qualify.

PREQUALIFICATION QUESTIONNAIRE

ACCOUNTANT'S RELEASE LETTER

By signing the form below, I authorize this prequalifying agency to contact our company's licensed accounting firm to verify our most recent audited or reviewed financial statement. I understand the financial statement is confidential information and is not open to public inspection.

Name

Contractor's Signature

Title

Company Name

Date:

PREQUALIFICATION QUESTIONNAIRE

SECTION 6. LABOR COMPLIANCE AND WORKERS' COMPENSATION INFORMATION

Labor Compliance

1. Do any projects you have completed for any school district more than six (6) months ago have any outstanding Labor Compliance issues?

 Yes No

2. Has there been any occasion during the last five (5) years in which your firm was required to pay either back wages or penalties for your own firm's violation of prevailing wage laws?

 Yes No

3. At any time during the last five (5) years has your firm been found to have violated any provision of California Apprenticeship laws or regulations pertaining to apprentices on public works?

 Yes No

If yes to 1, 2 or 3, list all projects on which have outstanding Labor Compliance issues, on which you paid back wages or penalties, or on which you were found to have violated apprenticeship laws.			
Question #	Project Name	Completion Date	Dollar Amount Withheld
If any projects are listed, please attach a detailed explanation of the steps taken to date to clear the issues. Include results of prevailing wage audit(s).			

PREQUALIFICATION QUESTIONNAIRE

Workers' Compensation

1. Please obtain from your insurance agent/broker/carrier your intrastate EMRs for the last three rating periods. If you do not have an intrastate rating, obtain your interstate EMRs. Then, complete the following data and check the appropriate box for interstate or intrastate EMR.			
	Policy Year	Modification Rate	Experience Rating Type <input type="checkbox"/> Intrastate <input type="checkbox"/> Interstate
Current EMR			
1 Year Ago			
2 Years Ago			
3 Years Ago			
<p>By initialing here, I certify that this firm does not have an EMR.* _____</p> <p><i>*You must submit a copy of your firm's Loss Runs for the last three years if your firm does not have an EMR.</i></p> <p>Is your firm self-insured for Workers' Compensation Claims? <input type="checkbox"/> Yes* <input type="checkbox"/> No</p> <p><i>* If yes, please attach a copy of the latest Annual Report to the State of California Department of Industrial Relations and/or State of California of Self-Insurance.</i></p>			
2. Anniversary Rating Date:		Rating Bureau File #:	
3. Name of your firm's Workers' Compensation carrier:			

PREQUALIFICATION QUESTIONNAIRE

SECTION 7. APPEAL OF PREQUALIFICATION RATING

1. Project Specific Prequalification

Where a timely and completed application results in a rating below that necessary to pre-qualify, an appeal can be made. An appeal is begun by the Contractor delivering notice to district of its appeal of the decision with respect to its pre-qualification rating, no later than seven (7) business days prior to the closing time for the receipt of bids for this public works project. Without a timely appeal, the Contractor waives any and all rights to challenge the decision of district, whether by administrative process, judicial process or any other legal process or proceeding.

If the Contractor gives the required notice of appeal and requests a hearing, the hearing shall be conducted so that it is concluded no later than five (5) business days prior to the last date for the receipt of bids on the project. The hearing shall be an informal process conducted by a panel or individual to whom the district has delegated responsibility to hear such appeals. At or prior to the hearing, the Contractor will be advised of the basis for district's pre-qualification determination. The Contractor will be given the opportunity to present information and present reasons in opposition to the rating. Within one day after the conclusion of the hearing, the district will render its decision. It is the intention of district that the date for the submission and opening of bids will not be delayed or postponed to allow for completion of an appeal process.

2. Annual Prequalification

A contractor who has submitted a completed application form, and who receives a rating of "not qualified" from district may appeal that determination. There is no appeal from a finding that a contractor is not pre-qualified because of a failure to submit required information, but re-application during is permitted. A contractor may appeal district's decision with respect to its request for pre-qualification, and request a hearing, by giving notice to district no later than ten (10) business days after receipt of notice of its qualification status. Unless a Contractor files a timely appeal, the Contractor waives any and all rights to challenge the qualification decision of district, whether by administrative process, judicial process or any other legal process or proceeding.

If the Contractor gives the required notice of appeal and requests a hearing, the hearing shall be conducted so that it is concluded no later than ten (10) business days after district's receipt of its Notice of Appeal. The hearing so provided shall be an informal process conducted by an individual or panel to whom the district has delegated responsibility to hear such appeals. At or prior to the hearing, the Contractor will be advised of the basis for district's pre-qualification determination. The Contractor will be given the opportunity to present information and present reasons in opposition to the pre-qualification determination. At the conclusion of the hearing or no later than one (1) day after completion of the hearing, the district will render its decision. The date for submission and opening of bids for a specific project will not be delayed or postponed to allow for completion of an appeal process.

Note: A contractor may be found not pre-qualified for bidding on a specific public works contract to be let by district, or on all contracts to be let by district until the contractor meets district's requirements. In addition, a contractor may be found not pre-qualified for either:

PREQUALIFICATION QUESTIONNAIRE

- (1) Omission of requested information or
- (2) Falsification of information

District reserves the right to waive minor irregularities and omissions in the information contained in the prequalification application submitted, to make all final determinations.

SECTION 8. PREQUALIFICATION CERTIFICATION FORM

A copy of this certification must be completed and signed by the preparer and by at least one general partner, owner, principal or officer authorized to legally commit the Applicant, and submitted with the Application.

The Applicant recognizes that the information submitted in the questionnaire herein is for the express purpose of inducing the district to receive and consider Applicant's bid. The Applicant has read and understands the requirements of this Prequalification Application and process, and has read and understands the instructions for completing this form. The Applicant acknowledges that he/she is duly authorized to provide the information contained in this Application and that answering the questions in this Application is entirely within his/her control.

DECLARATION

I, _____ (*printed name*) , am the _____ (*title*) of Applicant. I certify that I have read and understood the questions contained in the attached Application, and that to the best of my knowledge and belief all information contained herein and submitted concurrently or in supplemental documents with this Application is complete, current, and true. I further acknowledge that any false, deceptive or fraudulent statements on the Application will result in denial of Prequalification. I authorize the district to contact any entity named herein, or any other internal or outside resource, for the purpose of verifying information provided in the questionnaire or to develop other information deemed relevant by the district.

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

Signature of Preparer or Officer of the Applicant

Date: _____

Signature of Preparer or Officer of the Applicant

Date: _____

NOTICE TO APPLICANTS

A material false statement, omission or fraudulent inducement made in connection with this Prequalification Application is sufficient cause for denial of the Application or revocation of a prior approval, thereby precluding the Applicant from doing business with, or performing work for, the district, either as a vendor, prime contractor, subcontractor, or supplier for a period of three (3) years. In addition, such false submission may subject the person and/or entity making the false statement to criminal charges. (Title 18 USC 1001, false statements; California Penal Code Section 132, offering altered or antedated or forged documents or records; and Section 134, preparing false documentary evidence.)

PREQUALIFICATION QUESTIONNAIRE

SECTION 9. PREQUALIFICATION VALIDATION FORM (Retain and Submit with Bid)

This Validation Form must be submitted for each bid or proposal. The Validation Form must be completed and signed by at least one General Partner, Owner, Principal or Officer authorized to legally commit the Applicant. For Applicants who provide additional and/or updated information as indicated below, submission of this Validation Form in advance of the bid or proposal date is encouraged. An evaluation of the new information could result in the change in Prequalification status of the Applicant and if the Prequalification status is denied, bidder may be considered non-responsive.

Bid Name and Number:

DECLARATION

I, _____ (*printed full name*), hereby declare that I am the _____ (*position or title*) of (*Applicant*), and that I am duly authorized to execute this Validation Statement on behalf of this entity.

I acknowledge that any false, deceptive or fraudulent statements on this validation will result in denial of Prequalification. I hereby state: (*Check One*)

The Prequalification Application dated _____ on file with district is correct and current as submitted.

OR

The Prequalification Application dated _____ on file with district is correct and current as submitted, except as modified by the attached changed pages and/or attachments to said Application.

(Applicant may attach additional sheets to describe changes.) Attach recent financial statements if previous are more than one year old.

Signature of Person Certifying for Applicant

Date: _____

Name of Applicant:

Tax ID No. or SSN:

DIR Registration No.

26 - PREQUALIFICATION QUESTIONNAIRE VALIDATION
(Retain and Submit with Bid)

This Validation Form must be submitted for each bid or proposal. The Validation Form must be completed and signed by at least one General Partner, Owner, Principal or Officer authorized to legally commit the Applicant. For Applicants who provide additional and/or updated information as indicated below, submission of this Validation Form in advance of the bid or proposal date is encouraged. An evaluation of the new information could result in the change in Prequalification status of the Applicant and if the Prequalification status is denied, bidder may be considered non-responsive.

Bid Name and Number:

DECLARATION

I, _____ (*printed full name*), hereby declare that I am the _____ (*position or title*) of _____ (*Applicant*), and that I am duly authorized to execute this Validation Statement on behalf of this entity.

I acknowledge that any false, deceptive or fraudulent statements on this validation will result in denial of Prequalification. I hereby state: (*Check One*)

The Prequalification Application dated _____ on file with district is correct and current as submitted.

OR

The Prequalification Application dated _____ on file with district is correct and current as submitted, except as modified by the attached changed pages and/or attachments to said Application.

(Applicant may attach additional sheets to describe changes.) Attach recent financial statements if previous are more than one year old.

Signature of Person Certifying for Applicant

Date: _____

Name of Applicant:

Tax ID No. or SSN:

**27 - IRAN CONTRACTING ACT CERTIFICATION
(Public Contract Code Section 2200 et seq.)**

District Project Name:
District Project Number:
District Contract Number:
Contractor Name:

Subject to the penalties for perjury in the state of California, I (the person identified below and who has signed this certification) hereby certify that: (i) I have inherent authority or have been duly authorized by the Contractor to execute this certification on behalf of the Contractor; and (ii) the option checked below relating to the Contractor's status in regard to the Iran Contracting Act of 2010 (Public Contract Code Section 2200 et seq.) is true and correct:

- The Contractor is not:
 - (i) Identified on the current list of persons and entities engaging in investment activities in Iran prepared by the California Department of General Services in accordance with subdivision (b) of Public Contract Code Section 2203; or
 - (ii) A financial institution that extends for 45 days or more credit in the amount of \$20,000,000 or more to any other person or entity identified on the current list of persons and entities engaging in investment activities in Iran prepared by the California Department of General Services in accordance with subdivision (b) of Public Contract Code Section 2203, if that person or entity uses or will use the credit to provide goods or services in the energy sector in Iran.

- The District has exempted the Contractor from the requirements of the Iran Contracting Act of 2010 after making a public finding that, absent the exemption, the District will be unable to obtain the goods and/or services to be provided pursuant to the Contract

- The price payable to the Contractor for the Project as of the date of this certification does not exceed \$1,000,000.

Certifier Signature: _____

Printed Name:

Title:

Executed at: _____, California

Date Executed:

Note: In accordance with Public Contract Code Section 2205, false certification of this form may result in civil penalties equal to the greater of \$250,000 or twice the contract amount, termination of the contract, and/or ineligibility to bid on contracts with a public entity for three years.

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division 0 & 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes, but not limited to the following:

1. Project information.
2. Work covered by Contract Documents.
3. Phased construction.
4. Work by Owner.
5. Work under separate contracts.
6. Future work.
7. Purchase contracts.
8. Owner-furnished products.
9. Contractor-furnished, Owner-installed products.
10. Access to site.
11. Coordination with occupants.
12. Work restrictions.
13. Specification and drawing conventions.
14. Miscellaneous provisions.

- B. Related Requirements:

1. Division 1 Section 012100 "Allowances": for purchase contracts.
2. Division 1 Section 015000 "Temporary Facilities" for limitations and procedures governing temporary use of Owner's facilities.

1.3 PROJECT INFORMATION

- A. Project Identification:

Campus HVAC System Upgrade
Fremont Elementary School
607 Texas St,
Bakersfield, CA 93307 Owner:

Bakersfield City School District
Robert Van Tassel
1300 Baker St,
Bakersfield, CA 93305

- B. Architect:

AP Architects
J. Patrick Fogarty
3434 Truxtun Avenue Suite 240,

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Bakersfield CA 93301

- C. Architect's Consultants: The Architect has retained the following design professionals who have prepared designated portions of the Contract Documents:

John A Martin & Associates
Shane Fitzgerald
950 South Grand Ave. 4th Floor
Los Angeles, CA 90015

JMPE
John Maloney
627 Olive Street
Santa Barbara, CA 93101

Baskin Mechanical Engineers
Mark Baskin, P.E., LEED AP
175 Fulton Street
Fresno, CA 93721

1.4 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Work consists of alterations to existing building, fire alarm system upgrade and site improvements as required. Hazardous material removal required.
- B. Type of Contract:
1. Project will be constructed under a single prime contract.

1.5 WORK UNDER OTHER CONTRACTS

- A. Owner furnished products:
1. Items indicated on documents.
 - a. HVAC equipment.
 - b. Electrical equipment.

1.6 WORK SEQUENCE

- A. The Work will be conducted in one phase to provide the least possible interference to the activities of the Owner's personnel and to permit an orderly transfer of personnel and equipment to the new facilities. Project completion is scheduled for specific number calendar days, (refer to Bid Proposal). Contractor shall review scope of work, and provide manpower, resources, etc., as required to complete project on or before the date required for project completion. Contractor shall allow in Proposal weekend workers, shifts of workers and additional productivity not limited to workers, materials, temporary facilities and equipment as required to meet project schedule with limited access times as indicated herein.

1.7 CONTRACTOR USE OF PREMISES

- A. General: Limit use of the premises to construction activities in areas indicated; allow for

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Owner occupancy and use by the public.

1. Confine operations to areas within Contract limits indicated. Portions of the site beyond areas in which construction operations are indicated are not to be disturbed.
 2. Keep driveways and entrances serving the premises clear and available to the Owner and the Owner's employees at all times. Do not use these areas for parking or storage of materials. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on site.
 3. When performing new construction on existing sites, become informed and take into specific account the maturity of the students on the site, and perform work which may interfere with educational facility routine before or after facility hours; enclose the work area with a substantial barricade and arrange work to cause a minimum of inconvenience and danger to students and staff in their regular facility activities.
- B. Use of the Existing Building: Maintain the existing buildings in a weathertight condition throughout the construction period. Repair damage caused by construction operations. Take all precautions necessary to protect the building and its occupants during the construction period.

1.8 OWNER OCCUPANCY

- A. Full Owner Occupancy: The Owner will occupy the site and existing building during the entire construction period. Cooperate with the Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with the Owner's operations.
- B. Partial Owner Occupancy: The Owner reserves the right to occupy and to place and install equipment in completed areas of the building, prior to Notice of Completion provided that such occupancy does not interfere with completion of the Work. Such placing of equipment and partial occupancy shall not constitute acceptance of the total Work.
1. Prior to partial Owner occupancy, mechanical and electrical systems shall be fully operational. Required inspections and tests shall have been successfully completed. Upon occupancy the Owner will provide operation and maintenance of mechanical and electrical systems in occupied portions of the building.
- C. All work shall be complete and approved prior to occupancy not limited to the following:
1. No portion of building may be occupied requiring impaired Required Fire Detection System unless system is installed and approved.
 2. All completed work shall be in compliance with CBC 901.5 and CFC 901.5.1 related to acceptance tests.

1.9 WORK RESTRICTIONS:

- A. Work Restrictions, General: Comply with restrictions on construction operations.
1. Comply with limitations on use of public streets and other requirements of authorities having jurisdiction.
 2. Smoking is not permitted within the building or within 25 feet (8 m) of entrances, operable windows, or outdoor air intakes.
 3. Use of controlled substances on the Project site is not permitted.
- B. On-Site Work Hours: Limit work in the existing building to normal business working hours of **<Insert time>** a.m. to **<Insert time>** p.m., Monday through Friday, except as otherwise indicated.

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1. Weekend Hours: **<Insert restrictions on times permitted for weekend work>.**
 2. Early Morning Hours: **<Insert restrictions or references to regulations by authorities having jurisdiction for restrictions on noisy work>.**
 3. Hours for Utility Shutdowns: Arranged and agreed to advance shutdown with Owner.
 4. Hours for **[Core Drilling]** **<Insert noisy activity>: <Insert Owner's restrictions>.**
- C. Construction work that generates noise beyond 90db that will disturb adjacent areas shall be scheduled around class schedule and office hours of occupied rooms within 125 feet of work to be done. This work may have to be done during after hours, evenings and Contractor shall verify class schedules when work will generate noise beyond 90db.
- D. Deliver materials to the building area over the route designated by the facility Maintenance and Operations department. Times of deliveries shall coincide not to be done during 5 minutes before class change time between classes and 5 minutes after if said deliveries path is thru any area students will occupy during class change times. If a delivery is overlapping class change times, cease work, provide temporary barricades and resume 5 minutes after classes resume.

PART 2 - PRODUCTS (Not applicable).

PART 3 - EXECUTION (Not applicable).

END OF SECTION 011000

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division 0 &1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements governing handling and processing allowances.
 - 1. Selected materials, services, equipment, related items and in some cases, their installation and related/non-related work are shown and specified in the Contract Documents by allowances herein. Allowances have been established in lieu of additional requirements and to defer selection of actual materials, miscellaneous additional work scope and equipment to a later date when additional information is available for evaluation.
 - 2. Special allowances have been established for unforeseen conditions, latent conditions and related item to be authorized by the Architect for use.
- B. Types of allowances required include the following:
 - 1. Lump sum allowances in Base Bid.
 - 2. Lump sum allowances in Alternate Bid.
- C. Related Requirements:
 - 1. Division 1 Section "Modification Procedures" for procedures for submitting and handling Change Orders.
 - 2. Division 1 Section "Summary of Work" for additional requirements on purchase contracts.

1.3 SUBMITTALS

- A. Submit proposals for purchase of products or systems included in allowances, in the form specified for Change Orders.
- B. Submit invoices or delivery slips to indicate actual quantities of materials delivered to the site for use in fulfillment of each allowance.

1.4 ALLOWANCES

- A. Use the allowance only as directed for the Owner's purposes, and only by Supplementary Instructions, which designate amounts to be charged to the allowance.
 - 1. The direct costs for products or equipment ordered by the Owner under the lump sum allowances, including delivery, installation, taxes, and similar costs are part of the allowance. Vendor shall provide insurance as required by the Owner. Contractor shall agree to accept insurance required by Owner for vendor for allowance item. If the contractor requires any special insurance, additional requirements and or bonding of any allowance vendor, contractor shall allow for this cost in his base bid or alternate bid if allowance is tied to an alternate.

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- a. In the event the work under allowance cannot be completed during the duration of the project as prescribed under “Project Summary”, contractor may elect to request additional extended overhead. Extended overhead will be determined by actual costs incurred by contractor specific to this project and verified by project schedule.
2. Supplementary Instructions (SI) authorizing use of funds from the lump sum allowance will not include the Contractor's related costs and reasonable overhead, supervision, profit margins and other related costs as these costs are already in the contractor's proposal/bid.
3. If any individual allowance contains surplus funds or contains deficient funds, Architect may transfer funds between allowances as necessary.
4. At Project closeout, credit unused amounts remaining in the allowance to Owner by Negative Change Order amount for unused amounts.
5. The contractor shall include in his base bid all overhead, profit, supervision, bonds, insurance and all other indirect costs for allowance items. None of these items will be added to lump sum and miscellaneous allowance as it is used by the Owner and directed by the architect. In the event the allowance is required in an Alternate, the contractor shall include in his alternate bid all overhead, profit, supervision, bonds, insurance and all other indirect costs for allowance items specific to that alternate.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 INSPECTION

- A. Inspect products covered by an allowance promptly upon delivery for damage or defects.

3.2 PREPARATION

- A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related construction activities.
- B. Coordinate scheduling of Owner selected Vendors. Obtain availability schedules from Vendors early in project to coordinate timing of special milestones and products necessary for implementation into overall construction activities.

3.3 SCHEDULE OF BASE BID ALLOWANCES

- A. Allowance No. 1: Include a lump sum allowance of \$200,000.00 for use upon the Architect's instructions.

END OF SECTION 012100

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division 0 & 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for Alternates.
- B. Definition: An Alternate is an amount proposed by Bidders and stated on the Bid Form for certain construction activities defined in the Bidding Requirements that may be added to the Base Bid amount if the Owner decides to accept a corresponding change in either the amount of construction to be completed, or in the products, materials, equipment, systems or installation methods described in Contract Documents. See each alternate in schedule of alternates below for construction duration impacts if any.
 - 1. Where items or portions of items are added or removed to the Base Bid by alternate, it shall be the responsibility of the Contractor to allow for any reduction or additional material or labor which may be required to finish items not so removed, thereby providing a complete and finished condition matching that of similar conditions which are a part of the Contract.
 - a. Add: Where alternates are noted as Add, Contractor shall allow for work indicated to be in alternate cost and shall be the amount that Base Bid would be increased.
 - 2. A bidder's un-awarded alternative bids remain open for a period of 180 calendar after award of contract or acceptance of completed project, whichever come first, as irrevocable offers to enter into either change orders or separate contracts for the stated price adjustment.
 - 3. The Construction time allotted for this project shall not be changed by the acceptance of any alternate unless indicated in the Alternate Schedule herein.
- C. Coordination: Contractor to coordinate related Work and modify or adjust adjacent Work as necessary to ensure that Work affected by each accepted Alternate is complete and fully integrated into the project.
 - 1. Coordination: Modify or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
 - 2. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.
 - 3. Refer to Allowance Section where Alternates are affected by Allowances.

1.3 SCHEDULE OF ALTERNATES:

- A. Alternate No. 1 (Add): TBD.
 - 1. Base Bid:
 - 2. Project duration: No change if alternate accepted.

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- B. Alternate No. 2 (Add): Reroofing of existing building including flashing replacement.
 - 1. Base Bid: Patch roofing where indicated. Flashing repair where indicated. Hazardous abatement via allowance, see Allowance section.
 - 2. Hazardous Abatement of remainder of roof via additional allowance, see allowance section.
 - 3. Project duration: Shall be increased 30 calendar days if this alternate is accepted.

- C. Alternate No. 3 (Add): Exterior painting and finish refurbishment of existing building including preparation work.
 - 1. Base Bid: Painting and finish work at tie-in of construction activities.
 - 2. Project duration: No change if alternate accepted.

- D. Alternate No 4 (Add): Cabinetry as follows:
 - 1. Change the following walls to VTS finish: 110-E,
 - 2. Include the following cabinets: 155 south, 351 east, 222 west, 270 west.
 - 3. Base Bid: Backing for future cabinet installation. Finishes to match adjacent behind removed cabinets.
 - 4. Project duration: No change if alternate accepted.

1.4 NOTIFICATION:

- A. Immediately following the award of the Contract, prepare and distribute to each party involved, notification of the status of each Alternate. Indicate whether Alternates have been accepted, rejected or deferred for consideration at a later date. Include a complete description of negotiated modifications to Alternates.
 - 1. Owner may defer the award of any alternates, refer to supplemental conditions and herein.

PART 2 - PRODUCTS (Not Applicable).

PART 3 - EXECUTION (Not Applicable).

END OF SECTION 012300

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division 0 & 1 Specification sections, apply to this section.

1.2 SUMMARY

- A. This section specifies administrative and procedural requirements for handling and processing Contract modifications.

1.3 MINOR CHANGES IN THE WORK and REQUEST FOR INFORMATION (RFI)

- A. Supplemental instructions authorizing minor changes in the Work, not involving an adjustment to the Contract Sum or Contract Time, will be issued by the Architect. The Architect may issue written Supplemental Instructions, (SI), which interpret the Contract Documents or which order minor changes in the work without change in Contract sum or Contract time. The Contractor shall carry out such Supplemental Instructions promptly.
 - 1. Unless otherwise noted, SI, (Supplemental Instructions) does not warrant a cost or time impact to the Contract cost or time. If Contractor does not agree, Contractor has 10 calendar days from date of receipt of SI to file a claim for adjustment in writing to the architect.
 - 2. The Architect shall use SI's for written order for usage of allowance funds for project if any allowances are indicated.
- B. Contractor shall be able to ask valid questions concerning items required to construct project. This shall be done by the following methods in order as follows: (1) Contractor to review plans and determine if information is prescribed therein; (2) Contractor to review question with Project Inspector and determine if information is indicated, intended and/or prescribed in construction documents; (3) Contractor place an informal inquiry with architect and discuss question: and if no answer is determined then (4) Contractor shall prepare a Request for Information (RFI) and deliver to architect for determination of answer and or direction from architect as prescribed herein.
 - 1. Contractor shall submit Request for Information (RFI) on enclosed form at end of this Section.
 - 2. Contractor shall attach to RFI what they consider to be answer to Request for Information. Failure to provide this information shall be grounds for Architect to Request for Clarification.
 - 3. An RFI is defined as a request for information for information that cannot be found in the construction documents and related submittals. Items not considered RFI's are as follows:
 - a. A request for a proposed alternative materials, products or colors.
 - b. Substitutions.
 - c. Coordination of Contractor changed/initiated field conditions.

1.4 CHANGES IN WORK

- A. The Owner, without invalidating the Contract may make changes by altering, adding to, or

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deducting from the work, the Contract sum and construction duration being adjusted accordingly. All such work shall be executed under the conditions of the original contract. Unless so authorized, the Contractor shall not deviate from nor alter the work as shown on the drawings or specifications. Additional work may be added to project by using project allowances as prescribed herein.

1. In the event additional work is added to the project via allowances the Contractor shall provide an analysis of the schedule impact if any. If additional work is shown to impact the construction schedule the Contractor shall be entitled additional time as agreed to by architect. If additional work is shown by schedule analysis to have no impact, no additional construction duration will added to project.
 2. Any changes in construction duration shall be documented by a Change Order to Contract.
- B. If Contractor should claim that any instruction, request, drawing, specification, action, condition, omission, default, or other situation constitutes a change, extra work, or otherwise obligates Owner to pay additional compensation to Contractor or to grant an extension of time, or constitutes a waiver of any provision in the Contract Documents, Contractor shall notify Owner in writing of such claim within ten calendar days from the date Contractor has actual or constructive notice of the factual basis supporting the claim. The notice shall state the factual basis for the claim and cite in detail the Contract Documents (including plans and specifications) upon which the claim is based. Contractor's failure to notify Owner and Architect within the ten-day period shall be deemed a waiver and relinquishment of such a claim. If the notice is given within the specified time, the procedure for its consideration shall be as stated in these General Conditions. In the event of failure to agree, the matter shall be treated as a claim following the claims procedures in the Contract Documents.
- C. No change shall be made without such authorization, signed by the Owner, and countersigned by the Architect, or signed by the Architect and stating that the Owner has authorized such changes.
1. Refer to Supplementary Conditions for Construction Change Directive (CCD) procedures.
 2. Refer to Supplementary Conditions for Supplemental Instructions (SI) procedures.
- D. Any changes processed by the Contractor or any work performed not in conformance with these plans and specifications which requires extra drawing, specifications, calculations, inspections and any other work by the Architect and/or Engineers shall be paid for by the Contractor. Payment shall be made to the Architect at current hourly rate on file due and payable upon presentation of invoice.

1.5 CHANGE ORDER PROCESS-(OWNER AND CONTRACTOR INITIATED PROPOSAL REQUEST, AND ALLOWANCES.)

- A. Owner-Initiated Proposal Requests: Proposed changes in the Work that will require adjustment to the Contract Sum or Contract Time will be issued by the Architect, with a detailed description of the proposed change and supplemental or revised Drawings and Specifications, if necessary.
1. Request for Proposal requests (RFP), issued by the Architect are for information only. Do not consider them an instruction either to stop work in progress, or to execute the proposed change.
 2. Unless otherwise indicated in the proposal request, within 20 calendar days of receipt of the proposal request, submit to the Architect for the Owner's review an estimate of cost necessary to execute the proposed change as well as Construction Duration impact.
 - a. Include a list of quantities of products to be purchased and unit costs, along with the total amount of purchases to be made. Where requested, furnish survey data to substantiate quantities.

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- b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - c. Include a statement indicating the effect the proposed change in the Work will have on the Contract Duration.
 - d. Before Contractor is authorized to proceed with extra work or changes on the basis set forth above, the Owner and the Contractor shall be in complete agreement on what the term "costs" shall include and the amount of overhead and profit the Contractor is to charge.
 - e. All unit prices, whether set forth in the Contract or subsequently agreed upon, shall include overhead, profit, supervision, increased premium on all Bonds, increased premium on all insurances and other indirect cost for all tiers of contractors and related material men unless said items are being paid thru an allowance where overhead, profit, supervision, bonds, insurance and related items are included in contractor's base bid.
 - f. If there has been no response within 20 calendar days to an Architect's Request for Proposal, the Architect may direct the change to be done Time and Material. Under no circumstance may the contractor increase cost or increase schedule time due to Owner not receiving proposal timely.
- B. Contractor-Initiated Change Order Proposal Requests: When latent or other unforeseen conditions require modifications to the Contract, the Contractor may propose changes by submitting a request for a change to the Architect.
1. Include a statement outlining the reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and Contract Time.
 2. Include a list of quantities of products to be purchased and unit costs along with the total amount of purchases to be made. Where requested, furnish survey data to substantiate quantities.
 3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 4. Comply with requirements in Supplementary Conditions Article 15 Substitutions if the proposed change in the Work requires the substitution of one product or system for a product or system specified.
 5. Claim submitted to the Architect for extensions of time and extra cost shall be made on forms carrying Contractor's letterhead and shall contain a complete breakdown of all costs and extension of Surety Bonds and Insurance impacts.
 6. Before Contractor is authorized to proceed with extra work or changes on the basis set forth above, the Owner and the Contractor shall be in complete agreement on what the term "costs" shall include and the amount of overhead and profit the Contractor is to charge as any Contract Duration impacts.
- C. All CCDs to be submitted to DSA per IR A-6.
- D. For changes that increase or decrease the contract price, or being paid by allowance item, the Contractor shall include the following amounts for overhead and profit:
1. Contractor's overhead and profit on the cost of work excluding work by Contractor shall be a total sum not exceeding ten percent (10%) of cost of such work. (See below for allowances)
 2. Contractor's overhead and profit on the cost of work performed by contractor without subcontractor shall be a total sum not exceeding ten percent (10%) of the cost of labor, materials, rentals, etc. (See below for allowances)
 3. Subcontractor's overhead and profit on the cost of work performed by subcontractor shall be a total sum not exceeding ten percent (10%) of the cost of labor, materials, rentals, etc.
 4. Subcontractor's overhead and profit on the cost of work performed by sub-contractors (one lower tier) shall be a total sum not exceeding five percent (5%) of such work.

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5. Allowances: The contractor shall include in his base bid all overhead, profit, supervision, bonds, insurance and all other indirect costs for allowance items. None of these items will be added to lump sum and miscellaneous allowance as it is used by the Owner and directed by the Architect. In the event the allowance is required in an Alternate, the Contractor shall include in his alternate bid all overhead, profit, supervision, bonds, insurance and all other indirect costs for allowance items specific to that alternate.
- E. Time and Material basis as changes in the work. For changes that increase the contract price and work is authorized based upon the cost of labor, material, equipment and subcontract prices, plus a percentage for overhead and profit the following requirements shall apply. In the event the costs for changes in the work are not agreed to by the Architect and Contractor the work may be authorized to move forward on a time and material basis. If a Time and Material basis is used and scope of work is being paid thru an allowance overhead and profit are to be included in base bid and alternates where occur.
1. Daily reports by Contractor, as follows:
 - a. General. At the close of each working day, Contractor shall submit a daily report to the Architect and the Project Inspector on forms approved by Owner, together with applicable delivery tickets listing all labor, materials, and equipment involved for that day, and for other services and expenditures, when authorized, concerning extra work items. An attempt shall be made to reconcile the report daily, and it shall be signed by the Architect and Contractor. In the event of disagreement, pertinent notes shall be entered by each party to explain points which cannot be resolved immediately. Each party shall retain a signed copy of the report. Reports by subcontractors or others shall be submitted through Contractor.
 - b. Labor. The report shall show names of workers, classifications, and hours worked and hourly rate. Project supervision expenses, including for foremen and above, are not allowed. (iii) Materials. The report shall describe and list quantities of materials used and unit cost.
 - c. Equipment. The report shall show the type of equipment, size, identification number, and hours of operation, including loading and transportation, if applicable, and hourly/daily costs.
 - d. Other Services and Expenditures. Other services and expenditures shall be described in such detail as Owner may require.
 2. Basis for Establishing Costs
 - a. Labor. The costs of labor will be the actual cost for wages prevailing locally for each craft classification or type of worker at the time the extra work is done, plus employer payments of payroll taxes and insurance, health and welfare, pension, vacation, apprenticeship funds, and other direct costs resulting from federal, state, or local laws, as well as assessments or benefits required by lawful collective bargaining agreements. The use of labor classifications which would increase the extra work cost will not be permitted unless Contractor establishes the necessity for such additional costs. Labor costs for equipment operators and helpers shall be reported only when such costs are not included in the invoice for equipment rental.
 - b. Materials. The cost of materials reported shall be at invoice or lowest current price at which such materials are locally available and delivered to the work site in the quantities involved, plus sales tax, freight, and delivery. Owner reserves the right to approve materials and sources of supply, or to supply materials to Contractor if necessary for the progress of the work. No markup shall be applied to any material provided by the Owner.
 - c. Tool and Equipment Rental. No payment will be made for the use of tools which have a replacement value of \$100 or less or where an invoice is not provided. Regardless of ownership, the rates to be used in determining equipment rental

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costs shall not exceed listed rates prevailing locally at equipment rental sources or distributors at the time the work is performed. The rental rates paid shall include the cost of fuel, oil, lubrication, supplies, small tools, necessary attachments, repairs and maintenance of any kind, depreciation, storage, insurance, and all incidentals. Necessary loading and transportation costs for equipment used on the extra work shall be included. If equipment is used intermittently, and when not in use could be returned to its rental source at less expense to Owner than holding it at the work site, it shall be returned, unless Contractor elects to keep it at the work site at no expense to Owner. All equipment shall be acceptable to the Architect in good working condition, and suitable for the purpose for which it is to be used. Manufacturer's ratings and manufacturer's approved modifications shall be used to classify equipment and it shall be powered by a unit of at least the minimum rating recommended by the manufacturer.

- d. Other Items. Owner may authorize other items which may be required on the extra work. These items include labor, services, material, and equipment which are different in their nature from those required by the work and which are of a type not ordinarily available from Contractor any of the Subcontractors. Detailed invoices covering all such items shall be submitted with the request for payment. (v) Invoices. Vendors' invoices for material, equipment rental, and other expenditures shall be submitted with the request for payment. If the request for payment is not substantiated by invoices or other documentation, Owner may establish the cost of the item involved at the lowest price which was current at the time of the report.
3. Daily worker time sheets shall be approved by the Project Inspector as well as copies of all materials invoices delivered to project site for this specific change. Time sheets and copies of all material costs shall be provided with pay request for this specific change with daily approvals by Project Inspector
- F. The following form shall be used by Contractor as applicable to communicate proposed additions and deductions to the Contract Documents and use of allowances:

#	Description	Extra	Credit
a	Materials (attached itemized quantity and unit costs including any sales tax.	_____	_____
b	Labor (attached itemized hours and rates)	_____	_____
c	\$ Subtotal	_____	_____
d	Subcontractor's overhead and profit on the cost of work performed by sub-contractors (one lower tier) shall be a total sum not exceeding five percent (5%) of such work.	_____	_____
e	\$ Subtotal	_____	_____
f	Subcontractor's overhead and profit on the cost of work performed by subcontractor shall be a total sum not exceeding ten percent (10%) of the cost of labor, materials, rentals, etc.	_____	_____
g	\$ Subtotal	_____	_____
h	Contractor's overhead and profit on the cost of work excluding work by Contractor shall be a total sum not exceeding ten percent (10%) of cost of such work.	_____	_____
	(Refer to project manual "Allowances" where overhead and profit are included in base bid and alternates where occur)	_____	_____

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i	Contractor's overhead and profit on the cost of work performed by contractor without subcontractor shall be a total sum not exceeding ten percent (10%) of the cost of labor, materials, rentals, etc. .		
	(Refer to project manual "Allowances" where overhead and profit are included in base bid and alternates where occur)		
j	Bond Premium (Submit invoice from Bonding provider) .		
	(Refer to project manual "Allowances" where bond premium are included in base bid and alternates where occur)		
k	Insurance (Submit invoice from Insurance provider) (Refer to project manual "Allowances" where bonds and insurance are included in base bid and alternates where occur)		
l	\$ Total		
m	Number of additional days time extension requested due to this time and material change. (Submit as built critical path schedule validating time extension for review and approval)		
	Total Days		
	Subcontractor's labor, material, overhead and profit shall be submitted with documentation in original form as submitted to General Contractor.		
	(Refer to project manual "Allowances" where overhead and profit are included in base bid and alternates where occur)		

G. It is expressly understood that the value of such extra work or changes as determined by any of the methods herein expressly includes any and all of the contractors' costs and expense, both direct and indirect, resulting from delays or additional time required on the project, or resulting from accelerated work to avoid delays to the project.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 012600



CONSTRUCTION REQUEST FOR INFORMATION

DATE: _____ RFI # _____

ATTN: _____ PROJECT: _____
3434 Truxtun Avenue Ste 240 _____
Bakersfield CA 93301 _____
PROJECT#: _____

Subject: _____ Section #: _____
Sheet #: _____

Description: _____

- Clarification Unforeseen Condition Owner Change Others

Requesting Sponsor: _____ Approved by: _____
Total number of pages: _____ Contractor: _____

RFI has been reviewed with Project Inspector without resolution

The Architect has 15 business days after written request is received to respond to Request for Information. No delay will be recognized on account of failure of Architect to furnish such interpretations within that period. Partial response or request for clarification of Request for Information constitutes response by Architect. Claims for adjustment shall be made within 10 calendar days after occurrence of the event giving rise to such claim in writing. Date received at Architect's office of signed original claim shall constitute date received. Architect shall be reimbursed by Contractor for time at current hourly rates prevailing to respond to Request for Information that are found to be substantially answered in Construction Documents.

ARCHITECT'S RESPONSE: RFI not valid RFI valid
Issued RFI Response #: _____

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Divisions 0 & 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section specifies administrative and supervisory requirements necessary for Project coordination including, but not necessarily limited to:
 - 1. Coordination.
 - 2. Administrative and supervisory personnel.
 - 3. General installation provisions.
 - 4. Cleaning and protection.
 - 5. Coordination of allowance items and impacts with base bid scope of work.
 - 6. Coordination of alternate(s) scope of work and impacts with base bid scope of work.
- B. Progress meetings, coordination meetings and pre-installation conferences are included in Section "Project Meetings".
- C. Requirements for the Contractor's Construction Schedule are included in Division 1, Section "Submittals" and Division 1 Section "Progress Schedules and Reports".

1.3 COORDINATION

- A. Coordination: Coordinate construction activities included under various Sections of these Specifications to assure efficient and orderly installation of each part of the Work. Coordinate construction operations included under different Sections of the Specifications that are dependent upon each other for proper installation, connection, and operation.
 - 1. Where installation of one part of the Work is dependent on installation of other components, either before or after its own installation, schedule construction activities in the sequence required to obtain the best results.
 - 2. Where availability of space is limited, coordinate installation of different components to assure maximum accessibility for required maintenance, service and repair.
 - 3. Make adequate provisions to accommodate items scheduled for later installation.
- B. Where necessary, prepare memoranda for distribution to each party involved outlining special procedures required for coordination. Include such items as required notices, reports, and attendance at meetings.
 - 1. Prepare similar memoranda for the Owner and separate Contractors where coordination of their Work is required.
- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

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1. Preparation of schedules.
 2. Installation and removal of temporary facilities.
 3. Delivery and processing of submittals.
 4. Progress meetings.
 5. Project Close-out activities.
- D. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials provided by Owner.
1. Salvage materials and equipment involved in performance of, but not actually incorporated in, the Work. Refer to other sections for disposition of salvaged materials that are designated as Owner's property.

1.4 SUBMITTALS

- A. Coordination Drawings: Prepare and submit coordination Drawings.
1. Show the interrelationship of components shown on separate Shop Drawings.
 2. Indicate required installation sequences.
 3. Comply with requirements contained in Section "Submittals."
 4. Refer to Division-21 "Fire Suppression", 22 "Plumbing", 23 HVAC" and Division 26 "Electrical" for specific coordination Drawing requirements for mechanical and electrical installations.
 5. Attic/Ceiling coordination drawings.
 - a. Provide attic/ceiling coordination drawings that utilize the available space for efficient installation of the following building components. Coordination meetings shall be held at the project site as the work progresses and adjustments made to coordination drawings with as-built conditions. All Contractors shall coordinate layouts with other disciplines/systems.
 - 1) Mechanical Systems.
 - 2) Plumbing Systems.
 - 3) Electrical Systems.
 - 4) Ceiling Systems.
 - 5) Structural Systems.
 - 6) Fire Sprinkler Systems.
 - 7) Data Cabling Systems.
 - 8) Security Systems.
 - 9) Other Systems.
 6. Provide site utility coordination drawings. Refer to project manual Section "Utility Materials" for additional requirements.
 7. Roof openings: Provide coordination drawings that verify locations and sizes of roof openings with structural, mechanical, plumbing and electrical drawings as well as actual equipment to be provided.
- B. Staff Names: Within 15 days of Notice to Proceed, submit a list of the Contractor's principal staff assignments, including the Superintendent and other personnel in attendance at the site; identify individuals, their duties and responsibilities; list their addresses and telephone numbers.
1. Post copies of the list in the Project meeting room, the temporary field office, and each temporary telephone.

PART 2 - PRODUCTS (Not Applicable).

PART 3 - EXECUTION

3.1 GENERAL INSTALLATION PROVISIONS

- A. Inspection of Conditions: Require the Installer of each major component to inspect both the substrate and conditions under which Work is to be performed. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.
- B. Manufacturer's Instructions: Comply with manufacturer's installation instructions and recommendations, to the extent that those instructions and recommendations are more explicit or stringent than requirements contained in Contract Documents.
- C. Inspect materials or equipment immediately upon delivery and again prior to installation. Reject damaged and defective items.
- D. Provide attachment and connection devices and methods necessary for securing Work. Secure Work true to line and level. Allow for expansion and building movement.
- E. Visual Effects: Provide uniform joint widths in exposed Work. Arrange joints in exposed Work to obtain the best visual effect. Refer questionable choices to the Architect for final decision.
- F. Recheck measurements and dimensions, before starting each installation.
- G. Install each component during weather conditions and Project status that will ensure the best possible results. Isolate each part of the completed construction from incompatible material as necessary to prevent deterioration.
- H. Coordinate temporary enclosures with required inspections and tests, to minimize the necessity of uncovering completed construction for that purpose.
- I. Mounting Heights: Where mounting heights are not indicated, install individual components at standard mounting heights recognized within the industry for the particular application indicated. Refer questionable mounting height decisions to the Architect for final decision. Confirm all handicapped mounting heights are in compliance with Title 24 prior to any rough-in work.

3.1 CLEANING AND PROTECTION

- A. During handling and installation, clean and protect construction in progress and adjoining materials in place. Apply protective covering where required to ensure protection from damage or deterioration at final acceptance.
- B. Clean and maintain completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- C. Limiting Exposures: Supervise construction activities to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious

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exposure during the construction period. Where applicable, such exposures include, but are not limited to, the following:

1. Excessive static or dynamic loading.
2. Excessive internal or external pressures.
3. Excessively high or low temperatures.
4. Thermal shock.
5. Excessively high or low humidity.
6. Air contamination or pollution.
7. Water or ice.
8. Solvents.
9. Chemicals.
10. Light.
11. Radiation.
12. Puncture.
13. Abrasion.
14. Heavy traffic.
15. Soiling, staining and corrosion.
16. Bacteria.
17. Rodent and insect infestation.
18. Combustion.
19. Electrical current.
20. High speed operation.
21. Improper lubrication.
22. Unusual wear or other misuse.
23. Contact between incompatible materials.
24. Destructive testing.
25. Misalignment.
26. Excessive weathering.
27. Unprotected storage.
28. Improper shipping or handling.
29. Theft.
30. Vandalism.

END OF SECTION 013000

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 0 & 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for project meetings including but not limited to:
 - 1. Pre-Construction Conference.
 - 2. Pre-Installation Conferences.
 - 3. Progress Meetings.
 - 4. Project Coordination Meetings.
- B. Related sections include the following construction schedules are specified in another Division-1 Section.
 - 1. Division 1 Section "Submittals" for construction schedules and related items.
 - 2. Division 1 Section "Progress Schedule and Reports" for construction schedules.

1.3 PRE-CONSTRUCTION CONFERENCE

- A. Schedule a pre-construction conference and organizational meeting at the Project site or other convenient location no later than 15 days after Notice to Proceed and prior to commencement of construction activities. Conduct the meeting to review responsibilities and personnel assignments.
- B. Attendees: The Owner, Architect, the Contractor and its superintendent, major subcontractors, manufacturers, suppliers and other concerned parties shall each be represented at the conference by persons familiar with and authorized to conclude matters relating to the Work.
- C. Agenda: Discuss items of significance that could affect progress including such topics as:
 - 1. Tentative construction schedule.
 - 2. Critical Work sequencing.
 - 3. Designation of responsible personnel.
 - 4. Procedures for processing field decisions and Change Orders.
 - 5. Procedures for processing Applications for Payment.
 - 6. Distribution of Contract Documents.
 - 7. Submittal of Shop Drawings, Product Data and Samples.
 - 8. Preparation of record documents.
 - 9. Use of the premises.
 - 10. Office, Work and storage areas.
 - 11. Equipment deliveries and priorities.
 - 12. Safety procedures.
 - 13. First aid.
 - 14. Security.

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15. Housekeeping.
16. Working hours.
17. TRPA compliance.

1.4 PRE-INSTALLATION CONFERENCES

- A. Conduct a pre-installation conference at the site before each construction activity that requires coordination with other construction. The Installer and representatives of manufacturers and fabricators involved in or affected by the installation, and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise the Architect of scheduled meeting dates.
 1. Review the progress of other construction activities and preparations for the particular activity under consideration at each pre-installation conference, including requirements for:
 - a. Contract Documents.
 - b. Deliveries.
 - c. Shop Drawings, Product Data and quality control Samples.
 - d. Possible conflicts.
 - e. Compatibility problems.
 - f. Time schedules.
 - g. Weather limitations.
 - h. Manufacturer's recommendations.
 - i. Compatibility of materials.
 - j. Acceptability of substrates.
 - k. Temporary facilities.
 - l. Space and access limitations.
 - m. Governing regulations.
 - n. Safety.
 - o. Inspection and testing requirements.
 - p. Required performance results.
 - q. Protection.
 2. Record significant discussions and agreements and disagreements of each conference, along with the approved schedule. Distribute the record of the meeting to everyone concerned, promptly, including the Owner and Architect.
 3. Do not proceed if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of Work and reconvene the conference at the earliest feasible date.

1.5 PROGRESS MEETINGS

- A. Conduct progress meetings at the Project site at periodic scheduled intervals. Coordinate schedules with the Owner and Architect of proposed meeting dates in advance of meetings. Discuss at Pre-construction meeting. Coordinate dates of meetings with preparation of the payment request such Architect and Project Inspector can discuss any issue with Contractor on project site.
- B. Attendees: In addition to representatives of the Owner and Architect, each subcontractor, supplier or other entity concerned with current progress or involved in planning, coordination or performance of future activities shall be represented at these meetings by persons familiar with the Project and authorized to conclude matters relating to progress.
- C. Agenda: Review and correct or approve minutes of the previous progress meeting. Review

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other items of significance that could affect progress. Include topics for discussion as appropriate to the current status of the Project.

1. Contractor's Construction Schedule: Review progress since the last meeting. Determine where each activity is in relation to the Contractor's Construction Schedule, whether on time or ahead or behind schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
 2. Review the present and future needs of each entity present, including such items as:
 - a. Interface requirements.
 - b. Time.
 - c. Sequences.
 - d. Deliveries.
 - e. Off-site fabrication problems.
 - f. Access.
 - g. Site utilization.
 - h. Temporary facilities and services.
 - i. Hours of Work.
 - j. Hazards and risks.
 - k. Housekeeping.
 - l. Quality and Work standards.
 - m. Safety of Students and Staff.
 - n. Documentation of information for payment requests.
 - o. HCP Impacts on project and work schedules.
- D. Reporting: No later than 3 business days after each progress meeting date, distribute copies of minutes of the meeting to each party present and to other parties who should have been present. Include a brief summary, in narrative form, of progress since the previous meeting and report.
1. Schedule Updating: Revise the construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue the revised schedule concurrently with the report of each meeting.
 2. Send Architect, Construction Manager, Project Inspector, and Owner digital files of meeting report and revised schedules.
 3. Architect shall provide a copy of field report made during visit to Contractor within 10 days of site visit.

1.6 PROJECT COORDINATION MEETINGS

- A. Conduct coordination meetings at the site before each construction activity that requires coordination with other construction. The various Contractors involved in or affected by the installation, and its coordination or integration with other materials and installations shall attend the meeting. Advise the Architect of scheduled meeting dates.
1. Coordination Meetings Schedule (Minimum):
 - a. Ceiling/Attic Contractors: The following Contractors shall attend and coordinate construction activities and space requirements:
 - 1) Mechanical Systems.
 - 2) Plumbing Systems.
 - 3) Electrical Systems.

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- 4) Ceiling Systems.
 - 5) Structural Systems.
 - 6) Fire Sprinkler Systems.
 - 7) Data Cabling Systems.
 - 8) Other Systems.
- b. Site/Building Utilities Contractors: The following Contractors shall attend the coordination construction activities and space requirements:
- 1) All Site/Building Utilities Systems.
 - 2) All Site/Building Electrical Systems.
 - 3) All Site/Building Mechanical Systems.
 - 4) All Site/Building Fire Protection Systems.
 - 5) All Site/Building Data Cabling Systems.
 - 6) Other Site/Building Systems.
 - 7) Landscape/Irrigation Site Systems and Requirements Leaching.
2. Record significant discussions and agreements and disagreements of each meeting, along with the approved coordination drawings. Distribute the record of the meeting to everyone concerned, promptly, including the Owner and Architect.
 3. Do not proceed if the coordination meeting cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of Work and reconvene the coordination meeting at the earliest feasible date.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 013100

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division 0 & 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. General: This Section specifies administrative and procedural requirements for the critical path method (CPM) of scheduling and reporting progress of the Work.
 - 1. Refer to General Conditions, Supplementary Conditions and the Agreement, for definitions and specific dates of Contract Time.
 - 2. A Contract Schedule using CPM, with all the elements specified in this Section, is a fundamental and basic requirement for the review and monitoring of the Contractor's successful and timely progress on the Project. The Contract Schedule specified herein shall be provided by the Contractor. The Contractor shall comply with the number of days specified for the Contractor's submission of the Preliminary Contract Schedule consisting of a preliminary precedence diagram, the final Contract Schedule, and the periodic updates during the progress of the Work.
- B. Contractors superintendent daily logs, submit weekly as scanned documents.
- C. Related Sections:
 - 1. Division 1 Section "Submittals" for submitting schedules and reports.
 - 2. Division 1 Section "Quality Control Services" for submitting a schedule of tests and inspections.

1.3 DEFINITIONS

- A. Critical path method (CPM) is a construction scheduling technique using Precedence Diagram Method (PDM) to plan and organize construction activities in an orderly manner and to establish the critical path of Work for the timely completion of the Project.
- B. Network: A precedence diagram is a graphic representation showing the relationship of activities and events in the correct sequences required to complete the Work within the Contract Time.
- C. Activity: An activity is any single identifiable step in the performance of the Work. It is dependent on other activities, and the interrelationship between all activities is the basis of the network analysis and calculation of the critical path.
 - 1. Critical activities are activities with no (zero or negative) total float time and are, therefore, operations that determine the critical path and control completion of the Work.
- D. Event: An event is the starting or ending point of an activity and occurs only when all preceding activities have been completed.
- E. Float time is the amount of time available for a given activity in excess of its estimated duration. It represents the amount of leeway available in scheduling an activity. Neither Contractor nor

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Owner shall have an exclusive right to the use of float. The effects of used float shall be documented by the Contractor on the updated Contract Schedule. Since float time is not for the exclusive use of either party, but is jointly owned, it is a resource available to and shared by both parties as needed to meet the Contract completion date.

1. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the following activity.
2. Total float is the amount of time an activity can be delayed without adversely affecting overall time for completion of the Work.
3. The earlier time difference from the date of completion of the project as established by the Contractors Schedule and the later time indicated in the Contract Documents shall be considered float time that can be used by either or both Owner and Contractor. While the Contractor may schedule completion of the Project earlier than the date established by the Contract Documents, no additional compensation shall become due the Contractor for the use of float time between the Contractor's projected early completion date and the completion date established by the Contract Documents. The Owner may use this float time for additional work due to Change Orders, use of Allowance funds and Contractors Change Orders that impact the project schedule.

1.4 QUALITY ASSURANCE AND SUBMITTALS

- A. Submit references, resume and samples of CPM Consultant's work to the Architect within ten (10) days from date of receipt of Notice of Award.
 1. The Consultant shall be a recognized specialist, acceptable to Architect, who is expert in the critical path methods (CPM) of scheduling and reporting.
- B. In-House Option: The requirement to retain a Consultant may be waived if the Contractor can demonstrate to the Architect's satisfaction that:
 1. It employs skilled personnel who are experienced in CPM scheduling and reporting techniques, and it has the computer equipment required to produce the diagrams.
- C. The Contractor or Consultant shall have successfully performed computerized CPM and shall include as evidence at least two projects valued at not less than three-fourths the value of this Project of which at least one project was controlled throughout the duration of the project by means of a computerized, periodic systematic review of the CPM schedule.
 1. The Contractor or Consultant shall have computer facilities available that are capable of delivering detailed network diagrams within 48 hours of request.
- D. Program: Use latest version of computer software program or approved equal computer software program for network analysis that has been developed specifically to manage CPM construction schedules. Approved programs:
 1. Microsoft Project
 2. Primavera
 3. Prolog
- E. Standards: Comply with procedures contained in "CPM in Construction - A Manual for General Contractors", published by the Associated General Contractors of America, Inc. Where procedures listed in this Section are more stringent, comply with the procedures specified in this Section.
- F. Designated Representative: Designate the individual responsible for direct control of the Work who has complete authority to act on behalf of the Contractor in fulfilling requirements for the

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CPM schedules.

1. Submit, in writing, the individual's qualifications and experience.

1.5 PRELIMINARY PRECEDENCE DIAGRAM

- A. Preliminary Precedence Diagram: Within fifteen (15) days of the date of the "Notice to Proceed", submit a preliminary precedence diagram outlining activities for the first ninety (90) days of construction. Include a skeleton diagram for the remainder of the Work with the preliminary precedence diagram.
 1. Include each significant construction activity. Coordinate each activity in the network with other activities. Schedule each construction activity in proper sequence.
 2. Each activity shall have a start date and a finish date.
 3. Include implementation of temporary utilities.
- B. Cash Requirement Prediction: With submittal of the preliminary precedence diagram, include a preliminary cash requirement prediction based on all indicated activities.
- C. Tabulation of Submittals: With submittal of the preliminary precedence diagram, include a tabulation by date of submittals (Submittal Schedule) required during construction. List those required to maintain orderly progress of the Work, and those required early because of long lead time for manufacture or fabrication. Refer to Division 1 Section "Submittals," for list of products and manufacturers.
- D. Distribution: Distribute the preliminary network diagram and Submittal Schedule to all parties that need to know about construction activities that are scheduled early, including the Architect and Owner.
 1. Submit seven (7) copies to the Architect.
 2. The Architect will review preliminary network diagram and accept or reject it within twenty one (21) days. Submit required revisions within seven (7) days.
 3. Submit full software CPM database in format requested by the Architect.

1.6 CONTRACT SCHEDULE

- A. General: Prepare a complete Contract CPM Schedule. Proceed with preparation immediately following receipt of Notice to Proceed.
 - 1 Follow the steps necessary to complete development of the Contract Schedule in sufficient time so that the Contract Schedule can be submitted no later than forty-five (45) days after receipt of Notice to Proceed. Upon receipt from Contractor, Architect will review CPM schedule and accept or reject it within twenty-one (21) days. Submit required revisions within seven (7) days.
 - 2 Conduct educational workshops to train and inform key Project personnel, including Installer's personnel, in proper methods of providing data and using CPM scheduling information.
 - 3 Establish procedures for monitoring and updating the Contract Schedule and for reporting progress; coordinate procedures with progress meetings and payment request dates.
 - 4 Provide a network consisting of a logic diagram indicating logical sequencing, duration, overlap factors, and interdependencies of each aspect of the Work.
 - 5 The costs/resources for activities which are to be performed by multiple trades or Installers shall be appropriated and assigned on that basis to each discipline involved.
 - 6 The costs/resources for activities which are to be performed by multiple trades or Installers

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shall be appropriated and assigned on that basis to each discipline involved.

- B. Contract Schedule Preparation: Prepare a listing of all activities involved in the Work; include every activity having a bearing on the time required to complete the Work. Provide the best data available for generation of the precedence diagram and Contract Schedule.
1. Indicate the time duration, sequence requirements and relationship of each activity in relation to other activities.
 2. Indicate times for the following activities to be performed.
 - a. Major Contractor-furnished equipment, materials, and building elements, and scheduled activities requiring submittals or Architect's prior approval. Show dates for the submission, review, and approval of each submittal. Dates shall be shown for the procurement, fabrication, delivery and installation of major equipment, materials and building elements, and for scheduled activities designated by the Owner. The Contract Schedule shall include twenty-one (21) days to be allotted for Architect to review each submittal, and twenty-eight (28) days for review by Architect of submittal substitutions.
 - b. Scheduled overtime Work.
 - c. Dates Contractor requests designated working spaces, storage areas, access and other facilities to be provided by Owner.
 - d. Dates Contractor requests orders and decisions from Owner on designated items, including color selections.
 - e. Dates Contractor requests Owner-furnished and Owner-procured equipment and utilities.
 - f. Implementation of temporary utilities.
 - g. Connection and relocation of existing utilities.
 - h. Connecting to or penetrating existing structures.
 - i. Removal and replacement of movable items, if any.
 - j. Demolition.
 - k. On-Site samples and mockups.
 - l. Inspections and testing.
 - m. Calibrations and instrumentations of equipment and included systems.
 - n. Corrections of Work, equipment and systems.
 - o. Submission and approval of operation and maintenance manuals, record documents and warranties.
 - p. Instructions to Owner's personnel in operation and maintenance.
 - q. Required activities of Architect.
 - r. Restoration of site.
 - s. Project closeout procedures.
 3. Treat each Phase, each sitework activity, each building, each story, separate area, or Work activity as a separate numbered activity for principal elements, as best fits the Project.
 4. Using the preliminary precedence diagram, prepare a skeleton network to identify probable critical paths.
 5. A Schedule extending beyond the Contract Time will not be acceptable.
 6. A Schedule showing the Work completed in less than the Contract Time may be rejected by Architect if found to be unreasonable.
 7. A Schedule showing the Work completed in less than the Contract Time and found by Architect to be reasonable shall be considered to have float, the value of which shall be the difference between the scheduled completion and the Contract completion date. Comply with Article 8 of the General Conditions and Supplementary Conditions.
 8. Code the activities in a manner which allows organization of the schedule, and the ability to perform separate sorts for the following areas and for the phases included in Division 1, section - "Summary of Work":

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- a. Submittals and Procurement.
 - b. Sitework.
 - c. By trades.
 - d. Owner-furnished and Owner-procured items.
9. Any changes to the approved Contract Schedule shall be accompanied by a written explanation as to the impacted portion of the CPM schedule for Architect's review and approval. Additionally, the Contractor shall submit revised precedence diagrams, reports, and other information as deemed necessary by Architect for review.
10. No activity shall be greater than twenty-one (21) days excluding non-construction activities such as procurement, submittals and approvals.
- C. Processing: Enter prepared data on the processing system. Process data to produce a computer-generated time-scaled network. Update data, reorganize activity sequences and reproduce as often as necessary to produce the best possible Contract Schedule within the limitations of Contract Time.
- D. Format: Display the full network on a stable transparency, or other reproducible media, showing data clearly for the entire construction period.
1. Mark the critical path to clearly distinguish it from non-critical activities.
 2. Group activities by area as described in 1.05 B-8.
 3. Sheet size: 24" x 36".
 4. Provide an executive summary on a single sheet.
- E. Initial Issue: Prepare the initial issue of the CPM precedence diagram from a listing of straight "early start-total float" sort. Identify critical activities. Prepare tabulated reports to show the following:
1. Contractor or Installer and Work or activity;
 2. Principal events of that activity;
 3. Early and late start dates;
 4. Early and late finish dates;
 5. Activity duration in working days;
 6. Total float or slack;
 7. Size of workforce for each activity, average total size of workforce; and number of work
 8. Activity number, description, predecessors, successors, relationship type and lags (if used).
- F. Value Summaries: Prepare two (2) cumulative value listings, sorted by finish dates.
1. In first listing, tabulate the following:
 - a. Activity number;
 - b. Early finish date;
 - c. Dollar value;
 - d. Cumulative dollar value.
 2. In the second listing, tabulate the following:
 - a. Activity number;
 - b. Late finish date;
 - c. Dollar value;
 - d. Cumulative dollar value.
 3. The cumulative value listings will be used by Architect to assist in determining approval of payment requests. Architect will review and accept or reject cumulative value listings. If rejected, resubmit within seven (7) days.

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- G. In subsequent issues of both listings, substitute actual finish dates for activities completed as of date of listing.
Prepare listing for ease of comparison with payment requests; coordinate timing with Progress Meetings.
1. In both value summary listings, tabulate "actual percent complete", and "cumulative value completed" with summary totals, as directed by Architect.
- H. Submittal and Distribution: Submit the initial issue of the tabulations and network for acceptance. When authorized, distribute copies to the Architect (6 copies), Project Inspector, principal Installers and suppliers or fabricators, College, District, and suppliers or fabricators, and others identified by the Contractor with a need-to-know schedule responsibility.
1. Post copies in the Project Meeting rooms and temporary field office.
 2. When updates are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.
 3. Submit six (6) copies of each computer-generated report and time-scaled logic diagram plot, and one (1) reproducible copy of time-scaled logic diagram plot to Architect.
 4. Submit full software CPM database in format requested by Architect on digital media with one (1) copy to Construction Manager (if applicable) and one (1) copy to Architect.
- I. Schedule Updating: Review the Contract Schedule with Construction Manager, if applicable, at each Progress Meeting to incorporate in Contract Schedule all changes in the progress, sequence, and Scope of Work activities.
1. Prepare and submit to Architect an updated Contract Schedule whenever the critical path slips fourteen (14) days, but not less than once a month.
 - a. The updated Contract Schedule shall accurately represent the as-built condition of all completed and in-progress Work activities as of the date of the updated Contract Schedule.
 - b. The updated Contract Schedule shall incorporate all changes mutually agreed upon by Contractor and the Owner during preceding periodic reviews and all changes resulting from Change Orders and Field Orders.
 - c. Contractor shall perform the Work in accordance with the updated Contract Schedule. Contractor may change the Contract Schedule to modify the order or method of accomplishing the Work only with prior acceptance by Construction Manager.
 - d. Submit narrative report with each schedule update, which shall include, but not be limited to, a description of activities completed and progress made during the past month, a description of problem areas, current and anticipated delaying factors and their impacts, and an explanation of corrective action taken and any proposed revisions for a recovery plan.
 - e. Submit updated database on acceptable digital media as specified in H-4 above.
- J. Contractor shall submit the updated Contract Schedule, in the form acceptable to Architect, at least seven (7) days prior to submitting the Application for Payment.
- K. Architect will determine acceptability of the updated Contract Schedule within seven (7) days after its receipt.
- L. Progress payments are contingent upon acceptance of the CPM Contract Schedule and its update.
1. Acceptance of the Contract Schedule is a condition precedent to the making of progress payments for Work performed beyond sixty (60) days from receipt of the Notice to

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Proceed.

- M. The Owner, in their discretion, may deduct the following amounts from each Application for Payment and reduce the Contract Sum for the late submittal of an updated Contract Schedule accepted by the Architect.
 - 1. An amount of \$500 for each day it is late.
- N. The accepted, updated Contract Schedule shall be the Contract Schedule of record for the period it is current.

1.7 ADJUSTMENT OF CONTRACT TIME

- A. In addition to provisions of the General Conditions and Supplementary Conditions, the Contract Time of the Work will be adjusted in accordance with the following procedures.
- B. Any request for an adjustment of the Contract Time for Completion submitted by Contractor for changes or alleged delays shall be accompanied by a complete Time Impact Analysis, which shall be submitted for review within twenty (20) days after the request by Contractor. Time extensions will not be granted unless substantiated by the CPM Schedule, and then not until the CPM Project float becomes zero.
 - 1. Failure to submit the required Time Impact Analysis within the specified time will be deemed as conclusive evidence of the Contractor's waiver of the requested time extension.
- C. Each Time Impact Analysis shall provide information justifying the request and stating the extent of the adjustment requested for each specific change or alleged delay. Each Time Impact Analysis shall be in form and content acceptable to Architect, and shall include, but not be limited to, the following:
 - 1. A fragmentary CPM type network (Fragnet) illustrating how Contractor proposes to incorporate the change or alleged delay into the current updated Contract Schedule; and
 - 2. Identification of activities in the current updated Contract Schedule which are proposed to be amended due to the change or alleged delay, together with engineering estimates, worker staffing calculations and other appropriate data justifying the proposal.
- D. The Time Impact Analysis shall be determined on the basis of the date or dates when the change or changes were implemented or issued, or the date or dates when the alleged delay or delays occurred.
- E. If Architect finds after review of the Time Impact Analysis that Contractor is entitled to an extension of Contract Time, the Contract Time will be adjusted accordingly by Construction Manager, and Contractor shall then update the Contract Schedule accordingly.

1.8 COMPLIANCE WITH SCHEDULE

- A. The Contractor and all entities or firms employed by or under the control of the Contractor shall meet the Contract Schedule. The Architect will review the progress of the Work at least once a month. If any Work falls behind the schedule more than ten (10) days for any stage of the Work, the Contractor shall regain the scheduled position within thirty (30) days.
 - 1. The Contractor shall supply more workers and equipment when necessary to meet the Schedule. Include overtime, weekend, and extra shifts as necessary, without extra cost to the Owner.

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2. The Contractor has the responsibility to conduct the Work in accordance with the Contract Schedule and to maintain the accuracy, updating, enforcement and distribution of the Contract Schedule.
 3. If the Contractor does not regain the schedule position within the thirty (30) days, the Architect may assess interim liquidated damages.
 - a. The maximum amount assessed will be the number of days over the schedule, times the amount of liquidated damages as noted in the "Instruction to Bidders".
 - b. If the Owner elects to assess interim liquidated damages, they shall be deducted immediately from the current progress payment, in addition to the amount of the normal retention. The number of days assessed will equal the difference in days between the contractual completion date and the completion date that is projected by the current update of the Contractor's CPM progress schedule or the Architect's forecasted completion date.
 - c. If, subsequent to the withholding of such interim liquidated damages, the Contractor is able to proceed so that the projected and contractual dates coincide, the withheld amount will be released to the Contractor.
- B. If Contractor is behind schedule by more than ten (10) days for any stage of the Work, based on the updated Contract Schedule after incorporating all approved time extensions, Contractor shall submit to Architect within five (5) days of notification of such delay, a "recovery plan". The recovery plan shall be based on proposed revisions to Contract Schedule for the next sixty (60) day period and shall show how the Contractor intends to bring the Work back on schedule. Recovery plan shall also include a written description of how the measures that the Contractor intends to take without additional cost to Owner shall regain Schedule compliance. The recovery plan activities shall be identified according to their relationship to activities on the accepted Contract Schedule.
1. Should Contractor fail to submit and execute such recovery plan, the Owner shall have the option to direct Contractor to employ any or all measures that the Owner may deem fit to regain schedule compliance without additional cost to the Owner.
 2. Recovery plan submitted by Contractor, upon acceptance by the Architect, shall be incorporated into the Contract Schedule during the next update.
 3. Contractor will be required to submit a recovery plan for each update that indicated that the Work progress is more than ten (10) days behind schedule.
 4. Should Contractor dispute the determination of the Architect regarding the status on Contract delay, such dispute shall not relieve him/her of the responsibility to comply with the requirements of this Section and other related sections until the dispute is resolved in accordance with the Contract Documents.

1.9 THE OWNER'S DISCLAIMER OF SCHEDULE

- A. Acceptance of the Contract Schedule by Architect or the Owner is for general conformity with the requirements of the Contract Documents. Acceptance of the Schedule does not relieve Contractor of responsibility for including all elements of the Work, for the reasonableness of the Schedule, or for the accuracy or suitability of the Schedule to meet the agreed completion or milestone dates.

1.10 THREE WEEK LOOK-AHEAD SCHEDULE

- A. Prepare weekly, for the weekly Project Meeting, a computer-generated Three (3) Week Look-Ahead Schedule (barchart) which is consistent with the CPM schedule and depicts daily labor activities. The Three-Week Schedule will consist of the prior week, current week and the following week.

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1.11 DAILY CONSTRUCTION REPORTS

- A. Prepare a Daily Construction Report in a form acceptable to the Architect.
 - 1. Provide the information requested.
 - 2. Submit two (2) copies at weekly intervals.

- B. Contractor's daily diary.
 - 1. Provide copy of any Daily Diaries related to this project by Contractor. Submit at weekly intervals, on digital media to the Architect.

PART 2 - PRODUCTS (Not Applicable).

PART 3 - EXECUTION (Not Applicable).

END OF SECTION 013200

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division 0 & 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for submittals required for performance of the Work, including, but not limited to,;

- 1. Contractor's construction project schedule.
- 2. Submittal schedule.
- 3. List of products/manufacturers.
- 4. Shop Drawings.
- 5. Product Data.
- 6. Samples.
- 7. Miscellaneous Submittals.
- 8. Construction Schedule and updates required for each payment request.
- 9. Coordination Drawings, specified in Division 1 Section "Project Coordination".
- 10. Test reports.

- B. Administrative Submittals: Refer to other Division-1 Sections and other Contract Documents for requirements for administrative submittals. Such submittals include, but are not limited to:

- 1. Permits/Public Works.
- 2. Applications for payment.
- 3. Performance and payment bonds.
- 4. Insurance certificates.
- 5. List of Subcontractors.
- 6. Schedule of Values.
- 7. DSA Verified Reports.
- 8. Electronic certified payroll records directly to the Labor Commissioner.
- 9. Preliminary notices (20-day notice).
- 10. Procedures for substitutions.
- 11. TRPA documents

- C. Inspection and test reports are included in Section "Quality Control Services."

- D. Other submittals:

- 1. See Division 1 Section "Governing Agency" for DSA Verified Reports to be filed.
- 2. See Division 1 Section "Project Schedule and Reports," for additional schedule and report requirements

1.3 SUBMITTAL PROCEDURES

- A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.

- 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals and related activities that require sequential activity.

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2. Coordinate transmittal of different types of submittals for related elements of the Work so processing will not be delayed by the need to review submittals concurrently for coordination.
 - a. The Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
 - b. No color selections will be made until all color samples for entire project have been received by the Architect and determined to be acceptable.
3. Processing: Allow sufficient review time so that installation will not be delayed as a result of the time required to process submittals, including time for re-submittals.
 - a. Allow three weeks for initial review (21 calendar days). Allow additional time if processing must be delayed to permit coordination with subsequent submittals. The Architect will promptly advise the Contractor when a submittal being processed must be delayed for coordination.
 - b. If an intermediate submittal is necessary, process the same as the initial submittal.
 - c. Allow two weeks (14 calendar days) for reprocessing each submittal.
 - d. No extension of Contract Time or claims for additional costs will be approved or authorized because of failure to transmit submittals to the Architect sufficiently in advance of the Work and Critical Path Schedule to permit processing requirements indicated herein. Submittals covering component items and forming an interrelated system of items must be coordinated and submitted concurrently rather than individual submittals for review.
 - e. Time is defined as calendar days, starting from date item is received in architect's office and end with date of transmittal to General Contractor as last day of review.
 - 1) Where Submittal is required to be reviewed by consulting Engineer, time to review will be increased by seven (7) calendar days for review.
 - 2) Where Submittal is required to be reviewed by two parties--i.e., Architect-Engineer, Engineer-Engineer--add fourteen (14) calendar days for review.
 - 3) The Architects' office is closed from December 16 through January 2 of each calendar year. Submittals received less than 21 calendar days before office closing may not be processed before office closed dates noted herein. The balance of the 21 calendar days will resume after January 2 of each closing for submittals and related items. It is the contractor's responsibility to have critical submittals received by the architect 21 calendar days prior to above closing for timely processing.
 - a). Consulting engineering related submittals and re-review items will add time as indicated herein above to the amount of time indicated due to office closing.
 - f. Shop drawings, submittals and related items shall be submitted at a time sufficiently early to allow review by the Architect and the Division of State Architect (DSA) if required, and to accommodate the rate of construction progress required under the Contract Documents. Contractor will be required to pay the Architect's reasonable and customary fees to expedite review of shop drawings which are not submitted in timely fashion.
 - g. Contractor shall have no claim for damages or extension of time due to any delay resulting from contractor having to make required revisions to shop drawings unless the Architect's review of the drawings is delayed beyond the time provided in the contract documents and contractor can establish that the Architect's delay is review actually resulted in a delay in Contractor's construction schedule. Contractor shall provide a record as built schedule as proof of delays within 10 days of the event that gives rise to a delay claim. Contractor shall not be entailed to any claim for damages resulting from DSA review beyond days allowed herein documents after submittal. However, owner may consider an extension of time due to any delay caused by DSA review.
4. All submittals shall be cross-referenced to contract documents to expedite checking. Use

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Project Manual's section designation and Working Drawing's sheet number(s).

B. Submittal Preparation: Place a permanent label or title block on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label or title block.

1. Provide a space approximately 4" x 4" on the label or beside the title block on Shop Drawings to record the Contractor's review and approval markings and the action taken. Provide on the label or beside the title block on Shop Drawings to record the Architect's review and approval markings and the action taken.
2. Include the following information on the label for processing and recording action taken.

- a. Project name.
- b. Date.
- c. Name and address of Architect.
- d. Name and address of Contractor.
- e. Name and address of subcontractor.
- f. Name and address of supplier.
- g. Name of manufacturer.
- h. Number and title of appropriate Specification Section.
- i. Drawing number and detail references, as appropriate.

3. Submittals shall be stamped and signed by the Prime Contractor to the effect that the contents have been reviewed and approved by him and meet the requirements for this project. Submittals will not be reviewed without this approval by Prime Contractor. Contractor's review and approval of shop drawings shall include the following stamp:

- a. "Contractor has reviewed and approved not only the field dimensions but 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 Contractor and this duty of coordination has not been delegated to subcontractors, material suppliers, the Architect, or the engineers on this Project.

Signature of Contractor"

C. Submittal Transmittal: Package each submittal appropriately for transmittal and handling. Transmit each submittal from Contractor to Architect using a transmittal form. Submittals received from sources other than the Contractor will be returned without action.

1. On the transmittal record relevant information and requests for data. On the form, or separate sheet, record deviations from Contract Document requirements, including minor variations and limitations. Include Contractor's certification that information complies with Contract Document requirements.

D. Failure to provide adequate and correct submittals: Contractor shall make a complete and acceptable submittal to the Architect by the second submission of submittals. Owner shall withhold funds due to Contractor to cover additional costs of the Architect's review beyond the second submission and any other costs incurred by Owner.

1. Architect shall be reimbursed for all time spent in reviewing and processing of re-submittals of any submittals after the second submission where items have not been addressed, corrected and/or providing a complete submittal as requested by architect in previous submissions of a submittal.

E. Submittal quantities:

1. Provide seven (7) copies of all submittals except as follows:
 - a. Shop Drawings: Provide 4 copies of shop drawings. Architect and Engineer will red line any corrections and retain 4 copies. Contractor will be sent a PDF file of black

and white scanned shop drawing for distribution and printing by Contractor. In the event of corrections and resubmittal contractor shall send 4 corrected copies of Shop Drawings at each resubmittal.

1.4 CONTRACTOR'S CONSTRUCTION PROJECT SCHEDULE

- A. Bar-Chart Schedule: Prepare a fully developed, horizontal bar-chart type Contractor's construction project schedule. Identify critical path items throughout project schedule. Submit within 15 days of the award of contract.
1. Provide a separate time bar for each significant construction activity. Provide a continuous vertical line to identify the first working day of each week. Use the same breakdown of units of the Work as indicated in the "Schedule of Values".
 2. Within each time bar indicate estimated completion percentage in maximum 10 percent increments. As Work progresses, place a contrasting mark in each bar to indicate Actual Completion.
 3. Prepare the schedule on a sheet, or series of sheets of sufficient width to show data for the entire construction period.
 4. Secure time commitments for performing critical elements of the Work from parties involved. Coordinate each element on the project schedule with other construction activities; include minor elements involved in the sequence of the Work. Show each activity in proper sequence. Indicate graphically sequences necessary for completion of related portions of the Work.
 5. Coordinate the Contractor's construction project schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests and other schedules.
 6. Indicate completion in advance of the date established for Final Completion. Indicate Final Completion on the schedule to allow time for the Architect's procedures necessary for certification of Final Completion.
- B. Phasing: Provide notations on the schedule to show how the sequence of the Work is affected by requirements for phased completion to permit Work by separate Contractors, partial occupancy by the Owner prior to Final Completion.
- C. Work Stages: Indicate important stages of construction for each major portion of the Work, including testing and installation.
- D. Weather Delays: Contractor shall show anticipated rain, sleet, snow, wind and other weather driven delays on initial project schedule, as separate line items for each weather delay type, based upon Contractor's proposed ways and means. Refer to Project Manual herein for additional requirements.
- E. Area Separations: Provide a separate time bar to identify each major construction area for each major portion of the Work. Indicate where each element in an area must be sequenced or integrated with other activities.
- F. Distribution: Following response to the initial submittal, print and distribute copies to the Architect, Owner, subcontractors, and other parties required to comply with scheduled dates. Post copies in the Project meeting room and temporary field office.
- G. Submit with each payment request an updated construction project schedule with the above item plus the following items:
1. As-built project schedule of worked performed to date.
 2. Adjusted project schedule showing schedule to complete work.
 3. Number of weather delay days and audit of days used for each type of weather delay.
 4. Updated Final Completion project schedule dates.

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1.5 SUBMITTAL SCHEDULE

- A. Prepare a complete schedule of submittals. Submit the schedule within 15 days of Notice to Proceed.
 - 1. Coordinate submittal schedule with the list of subcontracts, schedule of values and the list of products as well as the Contractor's construction schedule.
 - 2. Prepare the schedule in chronological order. Provide the following information:
 - a. Scheduled date for each first submittal.
 - b. Related Section number.
 - c. Submittal category.
 - d. Name of subcontractor.
 - e. Description of the part of the Work covered.
 - f. Scheduled date for resubmittal.
 - g. Scheduled date the Architect's final release or approval.
- B. Distribution: Following response to initial submittal, print and distribute copies to the Architect, Owner, subcontractors, and other parties required to comply with submittal dates indicated. Post copies in the Project meeting room and field office.
 - 1. When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in construction activities.
- C. Schedule Updating: Revise the schedule after each meeting or activity, where revisions have been recognized or made. Issue the updated schedule concurrently with report of each meeting.

1.6 LIST OF PRODUCTS/MANUFACTURES

- A. Not later than 35 days from the date of the notice to proceed and prior to installation of items, whichever is less, the Contractor shall provide a list showing the name of the manufacturer proposed to be used for each of the products, proposed for installation, and not specified or named in the contract documents including the name of manufacturer of each, for review by the Owner and Architect. The list shall be tabulated by, and be complete for each specification section. Where applicable, subcontractor's names shall be included in such list.

1.7 SHOP DRAWINGS

- A. Submit newly prepared information, drawn to accurate scale. Highlight, encircle, or otherwise indicate deviations from the Contract Documents. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the Project is not considered Shop Drawings.
- B. Shop Drawings include fabrication and installation drawings, setting diagrams, schedules, patterns, templates, shop work manufacturing instructions, coordination drawings (for on-site use), design mix information, contractor's engineer calculations, and similar drawings. Include the following information:
 - 1. Dimensions.
 - 2. Identification of products and materials included.
 - 3. Compliance with specified standards.
 - 4. Notation of coordination requirements.
 - 5. Notation of dimensions established by field measurement.
 - 6. Sheet Size: Except for templates, patterns and similar full- size Drawings, submit Shop Drawings on sheets at least 8-1/2" x 11" but no larger than 36" x 48 (See herein for electronic submittals)".
 - 7. Initial Submittal: Submit one black-line print for the Architect's review; the reproducible print

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will be returned, (see herein for electronic submittals).

- a. Structural steel, metal deck and miscellaneous steel. Submit black line print and 3 copies for initial submittal.
 8. Final Submittal: Submit copies per enclosed requirements.
 9. Do not use Shop Drawings without an appropriate final stamp indicating action taken in connection with construction.
- C. Coordination drawings are a special type of Shop Drawing that show the relationship and integration of different construction elements that require careful coordination during fabrication or installation to fit in the space provided or function as intended.
1. Preparation of coordination Drawings include components previously shown in detail on Shop Drawings or Product Data.
 2. Submit coordination Drawings for integration of different construction elements. Show sequences and relationships of separate components to avoid conflicts in use of space.

1.8 PRODUCT DATA

- A. Collect Product Data into a single submittal for each element of construction or system. Product Data includes printed information such as manufacturer's installation instructions, catalog cuts, standard color charts, roughing-in diagrams and templates, standard wiring diagrams and performance curves. Where Product Data must be specially prepared because standard printed data is not suitable for use, submit as "Shop Drawings."
1. Mark each copy to show applicable choices and options. Where printed Product Data includes information on several products, some of which are not required, mark copies to indicate the applicable information. Include the following information:
 - a. Manufacturer's printed recommendations.
 - b. Compliance with recognized trade association standards.
 - c. Compliance with recognized testing agency standards.
 - d. Application of testing agency labels and seals.
 - e. Notation of dimensions verified by field measurement.
 - f. Notation of coordination requirements.
 2. Do not submit Product Data until compliance with requirements of the Contract Documents has been confirmed.
 3. Preliminary Submittal: Submit a preliminary single-copy of Product Data where selection of options is required.
 4. Submittals: Submit copies of each required submittal; submit hardcopies where required for maintenance manuals. The Architect will retain one, and will return the other marked with action taken and corrections or modifications required.
 - a. Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.
 5. Distribution: Furnish copies of final submittal to installers, subcontractors, suppliers, manufacturers, fabricators, and others required for performance of construction activities. Show distribution on transmittal forms.
 - a. Do not proceed with installation until an applicable copy of Product Data applicable is in the installer's possession.
 - b. Do not permit use of unmarked copies of Product Data in connection with construction.

1.9 MATERIALS SPECIFIED

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- A. The Contract is based on standards of quality established in the Contract Documents.
 - 1. In agreeing to the terms and conditions for the Contract, the Contractor has accepted the responsibility to verify that the specified products will be available and to place orders for all required materials in such a timely manner as needed to meet his agreed construction schedule.
 - 2. Neither the Owner nor the Architect has agreed to the substitution of materials or methods called for in the Contract Documents, except as they may specifically otherwise state in writing and when approved in advance of purchase and installation per requirements herein.

- B. Colors: Provide finish selections indicated in the Project Manual and Plans.
 - 1. Acceptable Manufacturers: The products and manufacturer's specified in the Project Manual and Plans are for purposes of establishing color selection options and quality.
 - 2. Manufacturer's Standard colors and Finishes: Where the Project Manual or Plans specifies a manufacturer's standard color or finish, the Architect makes no guarantee that matching colors or finishes are available as other non-listed manufacturer's "standard colors" from the listing of acceptable manufacturers. The Contractor shall be responsible for providing colors matching those indicated in the Project Manual of listed acceptable manufacturer in the Project Manual at no additional cost.
 - 3. Custom Colors: Where the Finish Schedule Project Manual and or Plan indicates a specific manufacturer's colors, other acceptable manufacturer shall provide matching custom colors where a standard color in not acceptable at no additional cost.

1.10 SAMPLES

- A. Submit full-size, fully fabricated Samples cured and finished as specified and physically identical with the material or product proposed. Samples include partial sections of manufactured or fabricated components, small cuts or containers of materials, color range sets, complete units of repetitively used materials, units of work to be used for independent inspection and testing, and swatches showing color, texture and pattern.
 - 1. Mount, display, or package Samples in the manner specified to facilitate review of qualities indicated. Prepare Samples to match the Architect's Sample. Include the following:
 - a. Generic description of the Sample.
 - b. Sample source.
 - c. Product name or name of manufacturer.
 - d. Compliance with recognized standards.
 - e. Availability and delivery time.
 - 2. Submit Samples for review of kind, color, pattern, and texture, for a final check of these characteristics with other elements, and for a comparison of these characteristics between the final submittal and the actual component as delivered and installed.
 - a. Where variation in color, pattern, texture or other characteristics are inherent in the material or product represented, submit multiple units (not less than 6), that show approximate limits of the variations.
 - b. Refer to other Specification Sections for requirements for Samples that illustrate workmanship, fabrication techniques, details of assembly, connections, operation and similar construction characteristics.
 - 3. Preliminary submittals: Where Samples are for selection of color, pattern, texture or similar characteristics from a range of full selection, submit three (3) full sets of choices for the material or product.
 - a. Color selection shall be done upon complete submittal of materials and/or products

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- needing color selection. It is the responsibility of the general contractor to see to it that required submittals for color selection shall be submitted to the Architect prior to time for implementation to not affect project schedule.
- b. Provide ninety (90) days time allowance for the Architect to work out preliminary schemes for College approval from receipt of complete color submittal of all items for this project.
4. Submittals: Except for Samples illustrating assembly details, workmanship, fabrication techniques, connections, operation and similar characteristics, submit 4 sets; one will be returned marked with the action taken.
 5. Maintain sets of Samples, as returned, at the Project site, for quality comparisons throughout the course of construction.
 - a. Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.
 - b. Sample sets may be used to obtain final acceptance of the construction associated with each set.
- B. Distribution of Samples: Prepare and distribute additional sets to subcontractors, manufacturers, fabricators, suppliers, installers, and others as required for performance of the Work. Show distribution on transmittal forms.
1. Field Samples specified in individual Sections are special types of Samples. Field Samples are full-size examples erected on site to illustrate finishes, coatings, or finish materials and to establish the standard by which the Work will be judged.
 - a. Comply with submittal requirements to the fullest extent possible. Process transmittal forms to provide a record of activity.

1.10 MISCELLANEOUS SUBMITTALS

- A. Miscellaneous submittals are work related submittals (non-administrative) including warranties, maintenance agreements, workmanship bonds, survey data and reports, quality testing and certifying reports, copies of industry standards, record drawings, field measurement data, operating and maintenance materials, overrun stock, and similar work related information and materials not process as shop drawings, product data or samples.
- B. Inspection and Test Reports: Classify and process each as either "shop drawing" or "product data", depending upon whether report is uniquely prepared for project or a standard publication.
- C. Warranties: Refer to "Products" section for specific general requirements on warranties, product/workmanship bonds, and maintenance agreements. In addition to copies desired for Contractor's use, furnish 2 executed copies, plus additional copies where required for maintenance manuals.
- D. Standards: Where submittal of a copy of standards is indicated, submit a single copy for Architect's/Engineer's use. Where workmanship at project site and elsewhere is governed by standard, furnish additional copies to fabricators, installers and others involved in performance of the work.
- E. Closeout Submittals: Refer to "Project Closeout" section for specific general requirements on submittal of closeout information, materials, tools, and similar items.
- F. Schedule of Values: Contractor shall submit Schedule of Values per Instructions to Bidders,. Refer to General Conditions for minimum list of items to be included in Schedule of Values. Changes in Schedule of Values will not be allowed after Notice to Proceed is issued, unless directed by Architect and/or Change Order items which shall carry their own value as a line item on Schedule of Values.

- G. Certified Payroll Records: Refer to “Prevailing wage rates and Apprenticeship Requirements” section for specific general requirements.
1. All contractors and subcontractors must furnish electronic certified payroll records directly to the Labor Commissioner (aka Division of Labor Standards Enforcement).
 2. General Contractor shall provide certification that all requirements for prevailing wage have been made with each application for payment, not limited to paying prevailing wage, documentation of prevailing wage and furnishing electronically to Labor Commissioner.

1.12 ARCHITECT'S ACTION

- A. Except for submittals for record, information or similar purposes, where action and return is required or requested, the Architect will review each submittal, mark to indicate action taken, and return.
1. Compliance with specified characteristics is the Contractor's responsibility.
 2. Numerous serious corrections, or incomplete submittals, will necessitate resubmittal, in which case, only one copy will be returned with notations. Contractor shall resubmit required number of sets with corrections made with original mark-up submittal for review.
- B. Conditions of Review: Architect's review is for general conformance with the design concept and contract documents. Review action on a submittal by the Architect does not in any way constitute a change order. Markings or comment shall not be construed as relieving the Contractor from compliance with the project plans and specifications, nor departures therefrom. The Contractor remains responsible for details and accuracy, for conforming and correlating all quantities and dimensions, for selecting fabrication processes for techniques of assembly, and for performing his work in a safe manner.
1. The Contractor is responsible for coordination of his work with and between that of all subcontractors and trades.
 2. Absolutely no deviation from the Contract Documents will be permitted without written acknowledgement from Architect of receipt and Review of Written Notification from the Contractor to the Architect accompanying this submittal of all deviations contained in this submittal.
 3. The Architect's review is not the final stage of acceptance for any part of the project, nor does it relieve the Contractor responsibilities.
 4. Contractor shall submit an itemized list of changes of items different than specified/indicated herein and on construction documents. List shall include items that are different and omitted. In the event items are not included on list, omitted from submittal and/or different than specified; Contractor shall be responsible for providing specified item(s). Liabilities subsequent to items omitted/or different shall be the responsibility of Contractor and shall be warranted a minimum of five (5) years or greater as prescribed by law. If no list is included with Shop Drawings, Architect assumes all items are as specified. Items discovered within five (5) years of Notice of Completion shall be corrected and provided by Contractor and Subcontractor at no cost to Owner.
- C. Action: The Architect will identify each submittal with a uniform, self-explanatory action sheet. The sheet will be appropriately marked, as follows, to indicate the action taken:
1. No Exceptions Taken: If this box is marked, the work covered by the submittal may proceed provided it complies with the requirements of the contract documents; acceptance of the work will depend upon that compliance.
 2. Make Corrections Noted: If box is marked, the work covered by the submittal may proceed provided it complies with both the Architect's/Engineer's notations or corrections to the submittal and with the requirements of the contract documents; acceptance of the work will depend on that compliance. Submit corrected copy for record if requested by the Architect.
 3. Revise and Resubmit: If this box is marked, do not proceed with the work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise the submittal in

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- accordance with the Architect's/Engineer's notations and resubmit without delay. Repeat if necessary.
4. Rejected: If this box is marked, do not proceed with the work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise the submittal or prepare a new submittal in accordance with the Architect's/Engineer's notations and resubmit to Architect.
 - a. Do not permit submittals marked "Rejected" or, "Revise and Resubmit" to be used at the Project site, or elsewhere where Work is in progress.
 5. Action Not Required: Where a submittal is primarily for information or record purposes, special processing or other activity, the submittal will be returned, marked "Action Not Required".
 6. Remarks: The review has occasioned comments that have been attached to the submittal. Process these comments as if they had been written on the submittal itself.
 7. Requires Intermediate Submittal: Submittal does not meet all requirements for a complete approval. Submittal requires additional information for processing.

1.13 SUBSTITUTIONS

A. Substitution Request:

1. Cost to Contractor or Bidder for review of Substitution Request.
 - a. Each review of a Substitution Request by the Architect will be billed to the submitter (Contractor or Bidder) at the current hourly rate on file at Architect's office, two hour minimum for each review, whether approved or rejected.
 - b. The Contractor will have a thirty-five (35) day period from the contract award date, in which to review the total contract documentation and issue any substitution or clarification requests to the Architect free of any financial charge.
 - c. The Contractor will be expected to identify any omissions, anomalies, divergence or discrepancies in the Contract Documents within this time period and so inform the Architect, in writing.
 - d. Any such omissions, anomalies, divergence or discrepancies not identified to the Architect within this period shall be deemed to be included within the bid sum and not subject to a Change Order by the Architect.
 - 1) The Architect may waive the review cost if, in his sole opinion, the submittal was complete and the time involved in the review was not substantial, and it was in the best interest of the Owner.
2. Content of Request:
 - a. Complete the attached Substitution Request Form (at the end of this Section), substantiating compliance of proposed substitution with Contract Documents.
 - b. For products, attach to the Substitution Request Form:
 - 1) Product identification, including manufacturer's name and address.
 - 2) Manufacturer's literature including product description, performance and complete test data and reference standards.
 - 3) Samples.
 - c. For construction methods, attach to the Substitution Request Form:
 - 1) Detailed description of proposed methods.
 - 2) Drawings illustrating methods.
 - d. Attach to the Substitution Request Form an itemized comparison of proposed substitution with product or method specified.

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- e. Provide long-term serviceability data comparing side by side analysis with specified materials.
 - f. Provide manufacturer's experience in years with product with specific product formulation that is to be substituted.
 - g. Provide certified warranty issued for this specific project including application--precisely.
 - h. Provide system component analysis and statement the product is certified by Contractor to be compatible with all other items of assemblies where product/material/method is specified.
3. In making request for substitution, Contractor attests that:
- a. Contractor has personally investigated proposed product or method, and determined that it is equal or superior in all respects to that specified.
 - b. Contractor will provide the same guarantee or warranty for substitution as for product or method specified.
 - c. Contractor will coordinate installation of accepted substitution into Work, making such changes as may be required for Work to be complete in all respects.
 - d. Contractor waives all claims for additional costs related to substitution which subsequently become apparent.
 - e. Contractor will pay all cost of Consultant to interpret physical properties to compare substitution with specified product, if requested by Architect.
 - f. Colors: The Contractor will match the color and/or finish available for the acceptable manufacturers listed in the Project Manual and/or Plans as a custom color and at no additional cost to the Owner.
4. Submit three (3) copies of Substitution Request prior to submittals required.

B. Acceptance of Substitutions

1. Procedures:
 - a. The Contract is based on materials, equipment and methods described in the Contract Documents.
 - b. Architect will consider proposals submitted in accordance with the Substitution Request.
 - c. Substitutions will be considered when submitted within 35 days after date of Contract.
 - d. Architect is solely responsible for judging the acceptance of substitutions.
 - e. Substitute materials, equipment or methods shall not be used unless such substitution has been specifically approved for this Work by the Architect and DSA.
 - f. Substitutions will not be considered if:
 - 1) They are indicated or implied on product submittals without formal request submitted in accordance with Substitution Request.
 - 2) Acceptance will require substantial revision of Contract Documents.
 - 3) They are submitted more than 35 days after date of Contract, unless the specified or drawing item has been verified to be discontinued or is otherwise unavailable, or the Owner desires a cost savings for the product or system.
 - g. Substitutions may be subject to DSA approval if Structural Safety, Fire/Life Safety or Accessibility is impacted.
2. Time to review: Architect shall be allowed twenty-eight (28) calendar days to review each substitution submittal. In the event review cannot be completed and more information is requested by the Architect to complete this review, upon receipt of requested information, twenty-eight (28) calendar days will be allowed for additional review after receipt of requested and complete information.

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PART 2 - PRODUCTS

2.1 SUBSTITUTION REQUEST FORM

See the form attached to the end of this Section.

PART 3 - EXECUTION

3.1 GENERAL

The attached form will be reproduced by the Contractor or any of his Subcontractors for any and all proposed substitutions. No other forms will be accepted.



SUBSTITUTION REQUEST

DATE: _____ Substitution Request # _____

ATTN: _____ **PROJECT:** _____

PROJECT#: _____ **NOA DATE:** _____

We hereby submit for your consideration the following product/ manufacturer instead of the one(s) specified in the Project Manual/ Plans:

Item: _____ Section #: _____

Manufacturer: _____ Sheet #: _____

A. Reason for not providing specified product: _____

B. Proposed Substitution: _____

C. Cost shall be shouldered by the undersigned for changes to the building design, including engineering and detailing costs caused by the requested substitution. (Negative response may cause for rejection.)

Yes No Explain: _____

D. Provide the following with Substitution Request Package:	*NI –Not Indicated; N/A – Not Applicable	Checklist for Architect			
		Yes	No	N/A	NI
1 Attached data includes product data, specifications, photographs, samples, code approvals and laboratory test data adequate for evaluation of request. All test data shall be complete with relevant test(s).		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2 Attach data includes description of change to contract documents that proposed substitution will have. Include complete information on changes to drawing and/ or project manual which proposed substitution will require for proper installation.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3 Does proposed substitution affect dimensions shown on contract documents?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4 Does proposed substitution affect other trades and is it clear on the request form? Provide system component compatibilities.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5 Does proposed substitution affect local availability of service and maintenance including where nearest service representative is located and travel time to project site?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6 Attached cost data with detail breakdown of differential, either plus or minus.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7 If substitution is of higher quality, will this impact future replacement cost?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8 What is the impact of substitution on construction schedule?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9 Provide long term serviceability data compared with specified material.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10 Provide manufacturing experience in years with product with specified material product formation substituted.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11 Provide certified product warranty equal or greater to what is required for this project.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12 Is a consultant required to integrate physical properties to compare material/product?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13 Will the Substitute Manufacturer provide colors matching color selection of listed manufacturers in Project Manual?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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

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1. The undersigned will compensate the Architect, Architect's staff, and consulting engineers at Architect's rate per hour for changes required to the building design, including engineering design, detailing, and construction costs caused by the requested substitution. The Architect is herein defined as any of those firms or individuals listed by reference on the Directory, including all Consultants identified herein.
2. Attach all cost data with explanations if different from Specified or Drawing item. Include in that explanation a discussion on quality or proposed substitution and cost differential.
3. Attach all cost data with explanations if different from Specified or Drawing item. Include in that explanation a discussion on quality or proposed substitution and cost differential.
The undersigned will pay for any subsequent changes in incorporating the proposed substitution that were not apparent at the time of approval into the Work, including compensation to the Architect and consulting agent(s) as described in item 2 above.
4. The undersigned certifies that the substituted material/product/method is compatible with all the items in the system application's specified use in this project.
5. Failure to provide complete substitution package per above requirements are ground for rejection.

The undersigned states that the function, appearance and quality are equivalent or superior to the construction document item. The undersigned agrees to waive all claims for additional costs related to accepted substitution, including cost associated with changes to building design, engineering, or details, which may subsequently become apparent. (Negative response maybe cause for rejection.)

Submitted by: _____	Approved by General Contractor: _____
	Signature _____
Signature: _____	Signed by: _____ Date: _____
Address: _____	Address: _____
Phone: _____ Fax: _____	Phone: _____ Fax: _____

ARCHITECT'S RESPONSE:

Date: _____	Substitution Request #: _____
Reviewed by: _____	<input type="checkbox"/> Accepted – Submit as construction submittal
	<input type="checkbox"/> Accepted as noted – Submit as construction submittal
	<input type="checkbox"/> Rejected – Use specified material
Remarks: _____	<input type="checkbox"/> Received too late – Use specified material

END OF SECTION 013300

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division 0 & 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for quality control services.
- B. Quality control services include inspections and tests and related actions including reports, performed by independent agencies, governing authorities, and the Contractor. They do not include periodic surveillance activities performed by the Architect.
- C. Inspection and testing services are required to verify compliance with requirements specified or indicated. These services do not relieve the Contractor of responsibility for compliance with Contract Document requirements.
 - 1. Inspections, test and related actions specified are not intended to limit the Contractor's quality control procedures that facilitate compliance with Contract Document requirements.
 - 2. Requirements for the Contractor to provide quality control services required by the Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.
 - 3. Refer to Structural Test and Inspection requirements.
 - a. Requirements at end of this Section for specific test required for this project.
- D. Soil Testing: Inspection of subgrade improvement operations, compacted fill and field density.
- E. Concrete Work: Testing and certification of concrete ingredients, compression cylinders, reinforcing steel and placement inspections.
- F. Structural Steel: Sampling and testing of all unidentified steel members, inspection of structural fabrication, shop welding and field welding as required, testing and inspection of high strength bolts.
- G. Related work specified elsewhere:
 - 1. Division 31 Section "Earthwork" for requirements and related earthwork testing.
 - 2. Division 3 Section "Cast-in-Place Concrete" for requirements and related concrete testing & inspection.
 - 3. Division 5 Section "Structural Steel" for requirements and related steel testing.
 - 4. Division 5 Section "Cold-Form Metal Framing" for requirements and related steel testing.
- H. Drill-in (expansion and chemical adhesive) Anchors: Inspection of installation and tension testing.

1.3 COOPERATION

- A. Laboratory shall cooperate with all trades whose work affects or is affected by the tests and inspections.
- B. Cooperation: Contractor to cooperate with and provide testing laboratory opportunity and assistance in taking samples, making field tests and making inspections.

1.4 SPECIAL PROVISIONS

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- A. Governing Agency: Shall be as specified in Section 014300.
- B. Laboratory: To be approved by Owner, Architect, Structural Engineer and DSA. Laboratory shall be in the employ of the Owner.
- C. Duties of Testing Laboratory: Inspect stock, mark identified stock, select and mark test specimens, perform required tests, inspections as specified, furnish required reports and certificates.
- D. Reports: To be executed immediately upon conclusion of each procedure and forwarded to:
Architect - Structural Engineer - Contractor - Owner - Subcontractor - Job Inspector - Governing Agency
 - 1. The Division of the State Architect is the Governing Agency for this project, one copy of all test reports shall be forwarded to that Office by the testing agency. Such reports shall include all tests made, regardless of whether such tests indicate that the material is satisfactory or unsatisfactory. Samples taken but not tested shall also be reported. The reports shall show that the material or materials were sampled and tested in accordance with the requirements of Title 24 and with the approved specifications. Test reports shall show the specified design strength. They shall also state definitely whether or not the material or materials tested comply with requirements.
 - 2. Verification of Test Reports: Each testing agency shall submit to the Division of the State Architect a verified report in duplicate covering all of the tests which are required to be made by that agency during the progress of the project. 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, covering all tests.
- E. Payment: The Owner shall pay for all tests, except costs of concrete mix design. When, in the opinion of the Architect or the Division of the State Architect, additional tests are required, then such tests and inspection shall be paid for by the Owner but the amount paid shall be deducted from the Contract Price. Examples of such additional tests are: Tests of material substituted for previously accepted materials, unidentified materials, retests made necessary by the failure of materials to comply with the requirements of the specifications and load tests necessary because certain portions of the structure have not fully met specification or plan requirements.
 - 1. Travel to Shop Fabrication Facility: Where fabrication facility is more than 200 driving miles one way, using AAA maps, from project site, Contractor shall pay for all excess mileage charges over 200 miles one way, subsistence, lodging and drive time of Owner's inspection and testing team to do testing and inspection at fabrication facility.
 - 2. All testing and inspection work provided by Laboratory shall be done during normal working hours, (none premium). In the event over time and or premium time is required by the Laboratory, field and or laboratory time, due to contractor request and or contractor scheduling, all costs over normal time shall be paid by contractor. Laboratory shall identify costs as a separate invoice and all costs tracked for reimbursement to Owner by Contractor. Laboratory shall identify who approved premium costs and reason for each line item on invoice.
- F. Selection of Samples: All samples and specimens for testing shall be selected by the inspector or by the testing laboratory, but not by the Contractor. The Contractor shall, at his own expense, furnish, package, mark and deliver all samples to be tested, when so directed by the inspector, testing laboratory, or as required by the Specifications. Delivery of samples to the testing laboratory shall be made in ample time to allow tests to be made without delaying construction. No extra time will be allowed for the completion of the work by reason of delay in testing samples. The Contractor shall allow free access at all times to the representatives of the testing laboratory to the sources from which samples are taken.
- G. Preparation of Specimens: Taken by and at expense of fabricator under direction of testing laboratory and machined or prepared to conform to appropriate ASTM specification. Cost of machining specimens is considered part of the testing.
- H. Architect and Structural Engineer reserve(s) the right to demand for test and special examination any

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materials or part thereof to insure compliance with Specifications, and may reject for satisfactory replacement, any material or part judged defective as a result thereof. Applies also to materials or sources of the same substituted for those previously approved. Such tests or examinations, even though not specified, shall be performed as and when required. Costs paid for by Owner, but the amount paid shall be deducted from the Contract.

- I. Owner's Right to Waive Tests and Inspections: The Owner reserves the right to waive any part or all of the tests and inspections, subject to the approval of the Architect, Structural Engineer and DSA in writing.

1.5 OWNER'S INSPECTOR OF RECORD (PROJECT INSPECTOR)

- A. An inspector employed by the Owner and approved by DSA in accordance with the requirements of the State of California Code of Regulation, Title 24, Part 1, Administrative Code, will be assigned to the work. His duties are specifically defined in Sec 4-342.

- B. The work of construction in all stages of progress shall be subject to the personal continuous observation of the inspector. He shall have free access to any or all parts of the work at any time. 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. Inspection of the work shall not relieve the Contractor from any obligation to fulfill this Contract.

1. Associated Services: The Contractor shall cooperate with agencies performing required inspections, tests and similar services and provide reasonable auxiliary services as requested. Notify the agency sufficiently in advance of operations to permit assignment of personnel. Auxiliary services required include but are not limited to:

- a. Providing access to the Work and furnishing incidental labor and facilities necessary to facilitate inspections and tests.
- b. Taking adequate quantities of representative samples of materials that require testing or assisting the agency in taking samples.
- c. Providing facilities for storage and curing of test samples.
- d. Providing the agency with a preliminary design mix proposed for use for materials mixes that require control by the testing agency.
- e. Security and protection of samples and test equipment at the Project site.

2. One or more Inspectors, including specialty Inspectors as required, employed by Owner in accordance with the requirements of the California Code of Regulations will be assigned to the work. All work shall be performed under the observation of or with the knowledge of the Project Inspector. The Project Inspector shall have free access to all parts of the Work at any time. Contractor shall furnish the Project Inspector with such information as may be necessary to keep the Project Inspector fully informed regarding the progress and manner of work and the character of materials.
3. Observations by the Project Inspector shall not in any way relieve Contractor from responsibility for full compliance with all terms and conditions of the Contract Documents, or be construed to lessen to any degree Contractor's responsibility for providing efficient and capable superintendence.

1.6 DUTIES OF THE TESTING AGENCY

- A. The independent testing agency approved by DSA engaged to perform inspections, sampling and testing of materials and construction specified in individual Specification Sections shall cooperate with the Architect and Contractor in performance of its duties, and shall provide qualified personnel to perform required inspections and tests.

1. The agency shall notify the Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.

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2. The agency is not authorized to release, revoke, alter or enlarge requirements of the Contract Documents, or approve or accept any portion of the Work.
 3. The agency shall not perform any duties of the Contractor.
- B. Coordination: The Contractor and each agency engaged to perform inspections; tests and similar services shall coordinate the sequence of activities to accommodate required services with a minimum of delay. In addition the Contractor and each agency shall coordinate activities to avoid the necessity of removing and replacing construction to accommodate inspections and tests.
1. The Contractor is responsible for scheduling times for inspections, tests, taking samples and similar activities during normal working hours, none premium time for Laboratory of Record including field, office and off site laboratory time.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 REPAIR AND PROTECTION

- A. General: Upon completion of inspection, testing, sample-taking and similar services, repair damaged construction and restore substrates and finishes to eliminate deficiencies, including deficiencies in visual qualities of exposed finishes. Comply with Contract Document requirements for "Cutting and Patching."
- B. Protect construction exposed by or for quality control service activities, and protect repaired construction.
- C. Repair and protection is the Contractor's responsibility, regardless of the assignment of responsibility for inspection, testing or similar services.

3.2 CONCRETE WORK (REFER TO SECTION 033000)

- A. Inspections:
1. Notification: The Contractor shall notify the following people, giving advance notice prior to commencing the designated work:

<u>Person Notified</u>	<u>Advance Notice</u>	<u>Prior to Commencing</u>	<u>For Inspection</u>
Architect/Project Inspector	24 hours	Form Work	Excavation
Architect/Project Inspector	48 hours	Pouring Conc.	Forms & Steel
Structural Engineer	7 days	Casting Concrete	Forms & Steel
 2. No concrete shall be poured except in the presence of the Owner's Inspector and only after the forms and reinforcing steel have been approved by the Project Inspector. A record shall be kept on the site of the time and date of placing the concrete in each portion of the structure. Such record shall be kept until the completion of the structure and shall be open to the inspection of the enforcement agency.
 3. Batch Plant Inspections: Batch plant inspections shall be per CBC Sec. 1704A.4.2 & 1704A.4.3. When transit mixed concrete is used, continuous inspection shall be maintained at the plant by a qualified concrete technician who shall issue tickets certifying that quantities and quality of all materials used in the concrete are in accordance with these specifications and the approved

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design mix. The Owner will pay the costs of this inspection. This inspection will not be required for non-structural concrete (as defined in Paragraph (4) following).

4. Bonded Weighmaster Certificates: Non-structural concrete such as walks, curb and gutter, etc., shall not require continuous batch plant inspection, but instead, a bonded weighmaster shall furnish notarized affidavits certifying that quantities and quality of all materials used in the concrete are in accordance with these Specifications and the approved mix design. Comply with CBC 1916A and 1704A.4.3.
 - a. Copies of Bonded Weighmaster Certificates shall be submitted to the Architect along with pay requests for work done. Payment will not be made on non-structural concrete items poured requiring Bonded Weighmaster Certificates without receipt of Certificates of items poured requesting payment.
- B. Tests: All concrete materials to be tested and reported prior to any use of same.
1. Portland cement shall be tested in accordance with CBC, 1916A.1, 1704A.4.1 and ASTM C-150. The concrete supplier shall submit to the Architect, Structural Engineer, Project Inspector, Project Testing Laboratory and Division of State Architect certification of compliance based on required testing.
 2. Aggregate: Shall be in conformance with CBC Sec. 1704A.4.1, 1903A.5, ACI 318, Section 3.3.2 and, where the source is determined to be questionable by the Structural Engineer or by DSA, shall be tested in accordance with ASTM C289. Test samples shall be obtained from the source for both coarse and fine aggregate; a minimum of one sample shall be retrieved and tested for each 200 Tons of aggregate to be used in the project concrete. A qualified Laboratory that is certified by the Cement and Concrete Reference Laboratory shall perform the testing.
 3. Reinforcing Steel: To be tested prior to use for compliance with CBC Sections 1916A.2, 1704A.4.1 and ASTM A-615/706 requirements.
 - a. Samples: To be selected by representative of testing laboratory from material at the building site or place of distribution, to consist of two (2) pieces, each eighteen inches (18") long of each size, furnished, cut and prepared for testing by Contractor, marked and delivered by representative of testing laboratory.
 - b. Tests: One (1) tension and one (1) bend test shall be made of each size of reinforcing steel including wire fabric. One (1) series of tests shall be made for each ten (10) tons or fraction thereof of each size of reinforcing steel if the bundles, as delivered, can be identified as to heat number and the mill analysis, accompany the report. If they cannot be identified as to heat number, then one (1) series of tests shall be made from each two and one-half (2½) tons or fraction thereof.
 4. Cylinder Tests shall comply with CBC Sec. 1905A.1 and 1905A.6.
 - a. Four (4) cylinders of concrete shall be made for each fifty (50) cubic yards of each grade concrete, or not less than once for each 2000 sq.ft. of slab or fraction thereof, being placed each day. Each cylinder shall be dated, given a number, the point in the structure from which the sample was taken noted thereon, and the slump noted thereon. Comply with CBC 1905A.
 - b. Test cylinders shall be made at the job and stored in the testing laboratory in accordance with ASTM C-31. At the end of twenty-four (24) hours after making, the cylinders shall be stored under moist curing conditions at approximately 70 degrees F. and maintained therein until tested. The cylinders shall be tested in accordance with CBC 1905A.6 and ASTM C-39.
 - c. If the strengths of the first two cylinder tests are satisfactory, the third cylinder shall not be tested, but destroyed. The third cylinder shall be tested if the strengths of the first two cylinders are not satisfactory.

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- d. If the strength of the cylinders does not meet the minimum as mentioned above, core tests of the hardened concrete shall be made in accordance with CBC 1905A.6 and ASTM C-42. If the core tests show the concrete strength to be deficient, the concrete shall be deemed defective and removed. The Contractor shall reimburse all costs of these core tests with a negative Change Order.
- C. Laboratory-Designed Mixes: See Paragraph 2.5, Proportioning and Design of Mixes, Section 033000 and CBC 1905A.2, 1905A.3 and 1905A.4.

3.3 STRUCTURAL STEEL (REFER TO SECTION 051200)

- A. Inspections: All structural welding, both shop and field welding shall be done under the review of a certified welding inspector, qualified in accordance with DSA I.R.17-3, the American Welding Society, as approved by the Architect, Structural Engineer and the Governing Agency. The inspector shall furnish the Architect, Structural Engineer and Governing Agency a report on forms supplied that the welding, which is required to be inspected, is proper and has been done in conformity with AWS D1.1 and the Plans and Specifications. He shall check the material, equipment and procedure as well as the welds and the ability of the welder. The welding inspector shall be employed by the testing laboratory. Inspection of welding shall be according to DSA I.R.17-3 and CBC Section 1704A.3.1.
- B. Tests:
 - 1. Unidentified structural steel shall be tested and approved by the testing laboratory prior to fabrication or delivery to the site.
 - 2. If the steel can be identified in accordance with ASTM A-6 (and CBC Sec. 2203A.1 Structural Steel and CBC Sec. 2203A.3 Steel Deck) and is accompanied by mill analysis and test reports for each heat, it may be used without testing. Identification of the steel at the fabricator's plant shall be made by a representative of the testing laboratory.
 - 3. When the steel cannot be identified or its source is questionable, one set of tension and bend tests shall be made for each five (5) tons or fractional part thereof for each size to be used. Contractor shall be back-charged for all required testing resulting from insufficient documentation of materials; tests shall comply with the appropriate ASTM specifications in accordance with T.24 Sec. 2212A.1.
 - 4. Ultrasonic Testing: All full penetration butt welds of beams to columns and of columns to base plates shall be tested ultrasonically in accordance with procedures for testing and acceptance criteria established in the "Structural Welding Code, AWS D1.1", latest edition and CBC Sec. 1704A.3.1.

3.4 FASTENERS (REFER TO SECTION 061000)

- A. Powder Driven Concrete Anchors:

Powder Driven and Gas Actuated Concrete Anchors: The operator, tool, and fastener shall be pre-qualified by the project inspector. He shall observe the testing of the first ten (10) fastener installations. A test "pull-out" 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 (1 in 10) pins. Should failure occur on any pin tested, all installations must be tested and failing pins replaced.

- B. Expansion Anchors: (Refer to Section 061000)

Expansion Anchors: Expansion anchors shall only be used for equipment anchorage, sill trackbolting and non-structural applications. Expansion anchors shall be installed in accordance with the ICC ES Report for the specific product and T.24 Sec 1916A.8. Expansion anchors used for sill tracks and for

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non-structural applications shall have 50% of the bolts (alternate bolts in any group arrangement) proof tested in tension to twice the allowable tension load. If any failures occur, all anchors not previously tested shall be tested until 20 consecutive anchors pass the test requirements. For all other structural applications, test 100% of anchors.

1. All expansion anchors shall be proof tested in tension to the values on the construction documents.
 2. Anchor diameter refers to the thread size for the WEDGE & SHELL categories and to the anchor outside diameter for the SLEEVE category.
 3. Apply proof test loads to WEDGE & SLEEVE anchors without removing the nut if possible. If not, remove nut & install a threaded coupler to the same tightness of the original nut using a torque wrench apply load.
 4. For SLEEVE/SHELL internally threaded categories, verify that the anchor is not prevented from withdrawing by a baseplate or other fixtures. If restraint is found, loosen and shim or remove fixture(s) prior to testing.
 5. Reaction loads from test fixtures may be applied close to the anchor being tested, provided the anchor is not restrained from withdrawing by the fixture(s).
 6. SHELL type anchors should be tested as follows:
Visually inspect 25% for full expansion as evidenced by the location of the expansion plug in the anchor body. Plug location of a fully expanded anchor should be as recommended by the manufacturer, or, in the absence of such recommendation, as determined on the job site following the manufacturer's installation instructions, and; proof load 5% as indicated in the table above, but not less than three anchors per day for each different person or crew installing anchors, or; test 50% of the installed anchors per CBC Sec. 1916A.8.
 7. Test equipment is to be calibrated by an approved testing laboratory in accordance with standard recognized procedures.
 8. Torque test values for SHELL type anchors are omitted due to lack of data. Torque testing can occur on an individual basis when test procedures are submitted and approved by the enforcement agency. Tabulated values may be forthcoming once the enforcement agency has more data to evaluate the feasibility of standard torque values.
 9. The following criteria apply for the acceptance of installed anchors:
HYDRAULIC RAM METHOD: The anchor should have no observable movement at the applicable test load. For wedge and sleeve type anchors, a practical way to determine observable movement is that the washer under the nut becomes loose.
TORQUE WRENCH METHOD: The applicable test torque must be reached within the following limits;
Wedge or Sleeve type: One-half (1/2) turn of the nut.
One-quarter (1/4) turn of the nut for the 3/8 in. sleeve anchor only. If the anchor fails testing, test all anchors of the same category not previously tested until twenty (20) consecutive pass, then resume the initial testing frequency.
 10. Testing should occur 24 hours minimum after installation of the subject anchors.
- C. Automatic End-Welded Studs: Inspection, in accordance with Title 24, Section 1704A.3.3 of all the shop and field welding operations for the automatic end welded studs shall be made by a qualified welding inspector (approved by the Division of the State Architect). The type and capacity of the welding equipment shall be in accordance with the manufacturer's recommendations and shall be checked and approved by a welding inspector.

At the beginning of each day's work, a minimum of two test stud welds shall be made with the equipment to be used to metal, which is the same as the actual work piece. The test studs shall be subjected to a 90% bend test by striking them with a heavy hammer. After the above test, the weld section shall not exhibit any tearing out or cracking.

Testing of end-welded studs shall be in accordance with Section 2212A.3, Part 2, Title 24.

- D. Adhesive Anchors:

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1. Inspection: Special inspection, in accordance with the product's specific ICC –ES Report, is required for all adhesive anchors. Such inspection shall include but not be limited to verification of the following:
 - a. Drill-bit compliance.
 - b. Hole depth and cleanliness.
 - c. Product description, including name.
 - d. Rod diameter, length, embedment, material and condition.
 - e. Adhesive shelf life not expired and packaging in good condition.
 - f. Anchor installation in accordance with the manufacturer's published instructions, the ICC report, and the project drawings and specifications.
 - g. Ambient temperature restrictions not exceeded.
2. Testing: All adhesive anchors, unless otherwise noted, shall be direct-tension tested to 200% of their allowable loads.

3.5 TEST AND INSPECTION REQUIREMENTS PER DSA (WHERE APPLICABLE COORDINATE WITH DSA-103)

TITLE 24,PART 2 (2019 CBC) VOLUME 1 TESTS AND INSPECTION REQUIREMENTS

EXTERIOR WALL COVERINGS CHAPTER 14A

ROOFING & ROOF STRUCTURES CHAPTER 15

TITLE 24,PART 2 (2019 CBC) VOLUME 2 TESTS AND INSPECTION REQUIREMENTS

FOUNDATIONS CHAPTER 17A & 18A

CONCRETE CHAPTER 17A & 18A

MATERIALS:

- | | |
|------------------------|--------------------|
| 1. PORTLAND CEMENT | 1704A.4.1, 1916A.1 |
| 2. CONCRETE AGGREGATES | 1704A.4.1, 1903A.1 |
| 3. REINFORCING BARS | 1704A.4.1, 1916A.2 |

QUALITY:

- | | |
|-------------------------------|---------------------------|
| 1. PROPORTIONS OF CONCRETE | 1905A.2, 1905A.3, 1905A.4 |
| 2. STRENGTH TESTS OF CONCRETE | 1905A.6,1905A.1.1 |
| 3. SPLITTING TENSILE TESTS | 1905A |

INSPECTION:

- | | |
|-------------------------------------|---------------------------------------|
| 1. JOB SITE | 1905A.7 |
| 2. BATCH PLANT | 1704A.4.2 |
| 3. WAIVER OF BATCH PLANT INSPECTION | 1704A.4.3 |
| 4. REINFORCING BAR WELDING | 1903A.7, 1704A.3.1.3 &
1704A.3.1.4 |

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STEEL
CHAPTER 22A

MATERIALS:

- | | |
|--|--------------------------|
| 1. STRUCTURAL STEEL, COLD FORMED STEEL | 2205A.1,2209A.1, 2210A.1 |
| 2. IDENTIFICATION | 2203A.1 |

QUALITY:

- | | |
|--|---------|
| 1. TESTS OF STRUCTURAL AND COLD FORMED STEEL | 2212A.1 |
|--|---------|

INSPECTION:

- | | |
|---------------------|-----------|
| 1. SHOP FABRICATION | 1704A.3.2 |
| 2. WELDING | 1704A.3.1 |

END OF SECTION 014000

DSA 103-19: LISTING OF STRUCTURAL TESTS & SPECIAL INSPECTIONS, 2019 CBC

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IMPORTANT: This form is only a summary list of structural tests and some of the special inspections required for the project. Generally, the structural tests and special inspections noted on this form are those that will be performed by the Geotechnical Engineer of Record, Laboratory of Record, or Special Inspector. The actual complete test and inspection program must be performed as detailed on the DSA approved documents. The appendix at the bottom of this form identifies work NOT subject to DSA requirements for special inspection or structural testing. The project inspector is responsible for providing inspection of all facets of construction, including but not limited to, special inspections not listed on this form such as structural wood framing, high-load wood diaphragms, cold-formed steel framing, anchorage of non-structural components, etc., per Title 24, Part 2, Chapter 17A (2019 CBC).

****NOTE:** Undefined section and table references found in this document are from the CBC, or California Building Code.

KEY TO COLUMNS

1. TYPE	2. PERFORMED BY
<p>Continuous – Indicates that a continuous special inspection is required</p> <p>Periodic – Indicates that a periodic special inspection is required</p> <p>Test – Indicates that a test is required</p>	<p>GE – Indicates that the special inspection shall be performed by a registered geotechnical engineer or his or her authorized representative.</p> <p>LOR – Indicates that the test or special inspection shall be performed by a testing laboratory accepted in the DSA Laboratory Evaluation and Acceptance (LEA) Program. See CAC Section 4-335.</p> <p>PI – Indicates that the special inspection may be performed by a project inspector when specifically approved by DSA.</p> <p>SI – Indicates that the special inspection shall be performed by an appropriately qualified/approved special inspector.</p>

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Table 1705A.3; ACI 318-14 Sections 26.12 & 26.13

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C1. CAST-IN-PLACE CONCRETE				
	Test or Special Inspection	Type	Performed By	Code References and Notes
<input checked="" type="checkbox"/>	a. Verify use of required design mix.	Periodic	SI	Table 1705A.3 Item 5, 1910A.1.
<input checked="" type="checkbox"/>	b. Identify, sample, and test reinforcing steel.	Test	LOR	1910A.2; ACI 318-14 Section 26.6.1.2; DSA IR 17-10. (See Appendix for exemptions.)
<input checked="" type="checkbox"/>	c. During concrete placement, fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete.	Test	LOR	Table 1705A.3 Item 6; ACI 318-14 Sections 26.5 & 26.12.
<input checked="" type="checkbox"/>	d. Test concrete (f'c).	Test	LOR	1905A.1.15; ACI 318-14 Section 26.12.
<input type="checkbox"/>	e. Batch plant inspection:	See Notes	SI	Default of 'Continuous' per 1705A.3.3. If approved by DSA, batch plant inspection may be reduced to 'Periodic' subject to requirements in Section 1705A.3.3.1, or eliminated per 1705A.3.3.2. See IR 17-13. (See Appendix for exemptions.)
<input type="checkbox"/>	f. Welding of reinforcing steel.	Provide special inspection per STEEL, Category S/A4(d) & (e) and/or S/A5(g) & (h) below.		

C2. PRESTRESSED / POST-TENSIONED CONCRETE (IN ADDITION TO SECTION C1):				
	Test or Special Inspection	Type	Performed By	Code References and Notes
<input type="checkbox"/>	a. Sample and test prestressing tendons and anchorages.	Test	LOR	1705A.3.4, 1910A.3
<input type="checkbox"/>	b. Inspect placement of prestressing tendons.	Periodic	SI	1705A.3.4, Table 1705A.3 Items 1 & 9.

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Table 1705A.3; ACI 318-14 Sections 26.12 & 26.13

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	Test or Special Inspection	Type	Performed By	Code References and Notes
<input type="checkbox"/>	c. Verify in-situ concrete strength prior to stressing of post-tensioning tendons.	Periodic	SI	Table 1705A.3 Item 11. Special inspector to verify specified concrete strength test prior to stressing.
<input type="checkbox"/>	d. Inspect application of post-tensioning or prestressing forces and grouting of bonded prestressing tendons.	Continuous	SI	1705A.3.4, Table 1705A.3 Item 9; ACI 318-14 Section 26.13

C3. PRECAST CONCRETE (IN ADDITION TO SECTION C1):				
	Test or Special Inspection	Type	Performed By	Code References and Notes
<input type="checkbox"/>	a. Inspect fabrication of precast concrete members.	Continuous	SI	ACI 318-14 Section 26.13.
<input type="checkbox"/>	b. Inspect erection of precast concrete members.	Periodic	SI*	Table 1705A.3 Item 10. * May be performed by PI when specifically approved by DSA.

C4. SHOTCRETE (IN ADDITION TO SECTION C1):				
	Test or Special Inspection	Type	Performed By	Code References and Notes
<input type="checkbox"/>	a. Inspect shotcrete placement for proper application techniques.	Continuous	SI	1705A.19, Table 1705A.3 Item 7, 1908A.6, 1908A.7, 1908A.8, 1908A.9, 1908A.11, 1908A.12. See ACI 506.2-13 Section 3.4, ACI 506R-16.
<input type="checkbox"/>	b. Sample and test shotcrete (f'_c).	Test	LOR	1908A.5, 1908A.10.

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Table 1705A.3; ACI 318-14 Sections 26.12 & 26.13

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C5. POST-INSTALLED ANCHORS:				
	Test or Special Inspection	Type	Performed By	Code References and Notes
<input checked="" type="checkbox"/>	a. Inspect installation of post-installed anchors	See Notes	SI*	1617A.1.19, Table 1705A.3 Item 4a (Continuous) & 4b (Periodic), 1705A.3.8 (See Appendix for exemptions). ACI 318-14 Sections 17.8 & 26.13. * May be performed by the project inspector when specifically approved by DSA.
<input checked="" type="checkbox"/>	b. Test post-installed anchors.	Test	LOR	1910A.5. (See Appendix for exemptions.)

C6. OTHER CONCRETE:				
	Test or Special Inspection	Type	Performed By	Code References and Notes
<input type="checkbox"/>	a.			

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1705A.2.1, Table 1705A.2.1; AISC 303-16, AISC 341-16, AISC 358-16, AISC 360-16; AISI S100-16; RCSC 2014; AWS D1.1, AWS D1.2, AWS D1.3, AWS D1.4, AWS D1.8

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S/A1. STRUCTURAL STEEL, COLD-FORMED STEEL AND ALUMINUM USED FOR STRUCTURAL PURPOSES				
	Test or Special Inspection	Type	Performed By	Code References and Notes
<input checked="" type="checkbox"/>	a. Verify identification of all materials and: • Mill certificates indicate material properties that comply with requirements. • Material sizes, types and grades comply with requirements.	Periodic	*	Table 1705A.2.1 Item 3a 3c. 2202A.1; AISI S100-16 Section A3.1 & A3.2, AISI S240-15 Section A3 & A5, AISI S220-15 Sections A4 & A6. * By special inspector or qualified technician when performed off-site.
<input checked="" type="checkbox"/>	b. Test unidentified materials	Test	LOR	2202A.1.
<input checked="" type="checkbox"/>	c. Examine seam welds of HSS shapes	Periodic	SI	DSA IR 17-3.
<input checked="" type="checkbox"/>	d. Verify and document steel fabrication per DSA-approved construction documents.	Periodic	SI	Not applicable to cold-formed steel light-frame construction, except for trusses (1705A.2.4).
<input type="checkbox"/>	e. Buckling restrained braces.	Test	LOR	Testing and special inspections in accordance with IR 22-4.

S/A2. HIGH-STRENGTH BOLTS:				
	Test or Special Inspection	Type	Performed By	Code References and Notes
<input type="checkbox"/>	a. Verify identification markings and manufacturer's certificates of compliance conform to ASTM standards specified in the DSA-approved documents.	Periodic	SI	Table 1705A.2.1 Items 1a & 1b, 2202A.1; AISC 360-16 Section A3.3, J3.1, and N3.2; RCSC 2014 Section 1.5 & 2.1; DSA IR 17-8 & DSA IR 17-9.
<input type="checkbox"/>	b. Test high-strength bolts, nuts and washers.	Test	LOR	Table 1705A.2.1 Item 1c, 2213A.1; RCSC 2014 Section 7.2; DSA IR 17-8.
<input type="checkbox"/>	c. Bearing-type ("snug tight") connections.	Periodic	SI	Table 1705A.2.1 Item 2a, 1705A.2.6, 2204A.2; AISC 360-16 J3.1, J3.2, M2.5 & N5.6; RCSC 2014 Section 9.1; DSA IR 17-9.
<input type="checkbox"/>	d. Pretensioned and slip-critical connections.	*	SI	Table 1705A.2.1 Items 2b & 2c, 1705A.2.6, 2204A.2; AISC 360-16 J3.1, J3.2, M2.5 & N5.6; RCSC 2014 Sections 9.2 & 9.3; DSA IR 17-9. * "Continuous" or "Periodic" depends on the tightening method used.

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1705A.2.1, Table 1705A.2.1; AISC 303-16, AISC 341-16, AISC 358-16, AISC 360-16; AISI S100-16; RCSC 2014; AWS D1.1, AWS D1.2, AWS D1.3, AWS D1.4, AWS D1.8

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S/A3. WELDING:				
	Test or Special Inspection	Type	Performed By	Code References and Notes
<input checked="" type="checkbox"/>	a. Verify weld filler material identification markings per AWS designation listed on the DSA-approved documents and the WPS.	Periodic	SI	1705A.2.5, Table 1705A.2.1 Items 4 & 5; AWS D1.1 and AWS D1.8 for structural steel; AWS D1.2 for Aluminum; AWS D1.3 for cold-formed steel; AWS D1.4 for reinforcing steel; DSA IR 17-3.
<input checked="" type="checkbox"/>	b. Verify weld filler material manufacturer's certificate of compliance.	Periodic	SI	DSA IR 17-3.
<input checked="" type="checkbox"/>	c. Verify WPS, welder qualifications and equipment.	Periodic	SI	DSA IR 17-3.

S/A4. SHOP WELDING (IN ADDITION TO SECTION S/A3):				
	Test or Special Inspection	Type	Performed By	Code References and Notes
<input type="checkbox"/>	a. Inspect groove welds, multi-pass fillet welds, single pass fillet welds > 5/16", plug and slot welds.	Continuous	SI	Table 1705A.2.1 Items 5a.1 4; AISC 360-16 (and AISC 341-16 as applicable); DSA IR 17-3.
<input type="checkbox"/>	b. Inspect single-pass fillet welds ≤ 5/16", floor and roof deck welds.	Periodic	SI	1705A.2.2, Table 1705A.2.1 Items 5a.5 & 5a.6; AISC 360-16 (and AISC 341-16 as applicable); DSA IR 17-3.
<input type="checkbox"/>	c. Inspect welding of stairs and railing systems.	Periodic	SI	1705A.2.1; AISC 360-16 (and AISC 341-16 as applicable); AWS D1.1 & D1.3; DSA IR 17-3.
<input type="checkbox"/>	d. Verification of reinforcing steel weldability other than ASTM A706.	Periodic	SI	1705A.3.1; AWS D1.4; DSA IR 17-3. Verify carbon equivalent reported on mill certificates.
<input type="checkbox"/>	e. Inspect welding of reinforcing steel.	Continuous	SI	Table 1705A.2.1 Item 5b, 1705A.3.1, Table 1705A.3 Item 2, 1903A.8; AWS D1.4; DSA IR 17-3.

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1705A.2.1, Table 1705A.2.1; AISC 303-16, AISC 341-16, AISC 358-16, AISC 360-16; AISI S100-16; RCSC 2014; AWS D1.1, AWS D1.2, AWS D1.3, AWS D1.4, AWS D1.8

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	Test or Special Inspection	Type	Performed By	Code References and Notes
S/A5. FIELD WELDING (IN ADDITION TO SECTION S/A3):				
	Test or Special Inspection	Type	Performed By	Code References and Notes
<input checked="" type="checkbox"/>	a. Inspect groove welds, multi-pass fillet welds, single pass fillet welds > 5/16", plug and slot welds.	Continuous	SI	Table 1705A.2.1 Items 5a.1 4; AISC 360-16 (AISC 341-16 as applicable); DSA IR 17-3.
<input checked="" type="checkbox"/>	b. Inspect single-pass fillet welds ≤ 5/16".	Periodic	SI	Table 1705A.2.1 Item 5a.5; AISC 360-16 (AISC 341-16 as applicable); DSA IR 17-3.
<input type="checkbox"/>	c. Inspect end-welded studs (ASTM A-108) installation (including bend test).	Periodic	SI	2213A.2; AISC 360-16 (AISC 341-16 as applicable); AWS D1.1; DSA IR 17-3.
<input type="checkbox"/>	d. Inspect floor and roof deck welds.	Periodic	SI	1705A.2.2, Table 1705A.2.1 Item 5a.6; AISC 360-16 (AISC 341-16 as applicable); AWS D1.3; DSA IR 17-3.
<input type="checkbox"/>	e. Inspect welding of structural cold-formed steel.	Periodic	SI*	1705A.2.5; AWS D1.3; DSA IR 17-3. The quality control provisions of AISI S240-15 Chapter D shall also apply. * May be performed by the project inspector when specifically approved by DSA.
<input type="checkbox"/>	f. Inspect welding of stairs and railing systems.	Periodic	SI*	1705A.2.1; AISC 360-16 (AISC 341-16 as applicable); AWS D1.1 & D1.3; DSA IR 17-3. * May be performed by the project inspector when specifically approved by DSA.
<input type="checkbox"/>	g. Verification of reinforcing steel weldability.	Periodic	SI	1705A.3.1; AWS D1.4; DSA IR 17-3. Verify carbon equivalent reported on mill certificates.
<input type="checkbox"/>	h. Inspect welding of reinforcing steel.	Continuous	SI	Table 1705A.2.1 Item 5b, 1705A.3.1, Table 1705A.3 Item 2, 1903A.8; AWS D1.4; DSA IR 17-3.

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1705A.2.1, Table 1705A.2.1; AISC 303-16, AISC 341-16, AISC 358-16, AISC 360-16; AISI S100-16; RCSC 2014; AWS D1.1, AWS D1.2, AWS D1.3, AWS D1.4, AWS D1.8

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	Test or Special Inspection	Type	Performed By	Code References and Notes
S/A6. NONDESTRUCTIVE TESTING:				
	Test or Special Inspection	Type	Performed By	Code References and Notes
<input type="checkbox"/>	a. Ultrasonic	Test	LOR	1705A.2.1, 1705A.2.5; AISC 341-16 J6.2, AISC 360-16 N5.5; ANSI/ASNT CP-189, SNT-TC-1A; AWS D1.1, AWS D1.8; DSA IR 17-2.
<input type="checkbox"/>	b. Magnetic Particle	Test	LOR	1705A.2.1, 1705A.2.5; AISC 341-16 J6.2, AISC 360-16 N5.5; ANSI/ASNT CP-189, SNT-TC-1A; AWS D1.1, AWS D1.8; DSA IR 17-2.
<input type="checkbox"/>	c.	Test	LOR	

S/A7. STEEL JOISTS AND TRUSSES:				
	Test or Special Inspection	Type	Performed By	Code References and Notes
<input type="checkbox"/>	a. Verify size, type and grade for all chord and web members as well as connectors and weld filler material; verify joist profile, dimensions and camber (if applicable); verify all weld locations, lengths and profiles; mark or tag each joist.	Continuous	SI	1705A.2.3, Table 1705A.2.3; AWS D1.1; DSA IR 22-3 for steel joists only. 1705A.2.4; AWS D1.3 for cold-formed steel trusses.

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1705A.2.1, Table 1705A.2.1; AISC 303-16, AISC 341-16, AISC 358-16, AISC 360-16; AISI S100-16; RCSC 2014; AWS D1.1, AWS D1.2, AWS D1.3, AWS D1.4, AWS D1.8

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Test or Special Inspection	Type	Performed By	Code References and Notes
S/A8. SPRAY APPLIED FIRE-PROOFING:			
Test or Special Inspection	Type	Performed By	Code References and Notes
<input type="checkbox"/> a. Examine structural steel surface conditions, inspect application, take samples, measure thickness and verify compliance of all aspects of application with DSA-approved documents.	Periodic	SI	1705A.14.
<input type="checkbox"/> b. Test bond strength.	Test	LOR	1705A.14.6.
<input type="checkbox"/> c. Test density.	Test	LOR	1705A.14.5.

S/A9. ANCHOR BOLTS AND ANCHOR RODS:			
Test or Special Inspection	Type	Performed By	Code References and Notes
<input type="checkbox"/> a. Anchor Bolts and Anchor Rods	Test	LOR	Sample and test anchor bolts and anchor rods not readily identifiable per procedures noted in DSA IR 17-11.
<input type="checkbox"/> b. Threaded rod not used for foundation anchorage.	Test	LOR	Sample and test threaded rods not readily identifiable per procedures noted in DSA IR 17-11.

S/A10. Other Steel			
Test or Special Inspection	Type	Performed By	Code References and Notes
<input type="checkbox"/> a.			

Appendix: Work Exempt from DSA Requirements for Structural Tests / Special Inspections

Application Number: 03-122640	School Name: Fremont Magnet Elementary School	School District: Bakersfield City School District
DSA File Number: 15-6	Increment Number:	Date Created: 2023-10-06 12:02:24

Exempt items given in DSA IR A-22 or the 2019 CBC (including DSA amendments) and those items identified below with a check mark by the design professional are NOT subject to DSA requirements for the structural tests / special inspections noted. **Items marked as exempt shall be identified on the approved construction documents.** The project inspector shall verify all construction complies with the approved construction documents.

	SOILS:
<input type="checkbox"/>	1. Deep foundations acting as a cantilever footing designed based on minimum allowable pressures per CBC Table 1806A.2 and having no geotechnical report for the following cases: A) free standing sign or scoreboard, B) cell or antenna towers and poles less than 35'-0" tall (e.g., lighting poles, flag poles, poles supporting open mesh fences, etc.), C) single-story structure with dead load less than 5 psf (e.g., open fabric shade structure), or D) covered walkway structure with an apex height less than 10'-0" above adjacent grade.
<input type="checkbox"/>	2. Shallow foundations, etc. are exempt from special inspections and testing by a Geotechnical Engineer for the following cases: A) buildings without a geotechnical report and meeting the exception item #1 criteria in CBC Section 1803A.2 supported by native soil (any excavation depth) or fill soil (not exceeding 12" depth per CBC Section 1804A.6), B) soil scarification/recompaction not exceeding 12" depth, C) native or fill soil supporting exterior non-structural flatwork (e.g., sidewalks, site concrete ramps, site stairs, parking lots, driveways, etc.), D) unpaved landscaping and playground areas, or E) utility trench backfill.

	CONCRETE/MASONRY:
<input type="checkbox"/>	1. Post-installed anchors for the following: A) exempt non-structural components (e.g., mechanical, electrical, plumbing equipment - see item 7 for "Welding" in the Appendix below) given in CBC Section 1617A.1.18 (which replaces ASCE 7-16, Section 13.1.4) or B) interior nonstructural wall partitions meeting criteria listed in exempt item 3 for "Welding."
<input type="checkbox"/>	2. Concrete batch plant inspection is not required for items given in CBC Section 1705A.3.3.2 subject to the requirements and limitations in that section.
<input type="checkbox"/>	3. Non-bearing non-shear masonry walls may be exempt from certain DSA masonry testing and special inspection items as allowed per DSA IR 21-1.16. Refer to construction documents for specific exemptions accordingly for each applicable wall condition.
<input type="checkbox"/>	4. Epoxy shear dowels in site flatwork and/or other non-structural concrete.

Appendix: Work Exempt from DSA Requirements for Structural Tests / Special Inspections

Application Number: 03-122640	School Name: Fremont Magnet Elementary School	School District: Bakersfield City School District
DSA File Number: 15-6	Increment Number:	Date Created: 2023-10-06 12:02:24

CONCRETE/MASONRY:	
<input type="checkbox"/>	5. Testing of reinforcing bars is not required for items given in CBC Section 1910A.2 subject to the requirements and limitations in that section.

WELDING:	
<input type="checkbox"/>	1. Solid-clad and open-mesh fences, gates with maximum leaf span of 10', and gates with a maximum rolling section of 10' all having an apex height less than 8'-0" above lowest adjacent grade. When located above circulation or occupied space below, these gates/fences are not located within 1.5x gate/fence height (max 8'-0") to the edge of floor or roof.
<input type="checkbox"/>	2. Handrails, guardrails, and modular or relocatable ramps associated with walking surfaces less than 30" above adjacent grade (excluding post base connections per the 'Exception' language in Section 1705A.2.1); fillet welds shall not be ground flush.
<input type="checkbox"/>	3. Non-structural interior cold-formed steel framing spanning less than 15'-0", such as in interior partitions, interior soffits, etc. supporting only self weight and light-weight finishes or adhered tile, masonry, stone, or terra cotta veneer no more than 5/8" thickness and apex less than 20'-0" in height and not over an exit way. Maximum tributary load to a member shall not exceed the equivalent of that occurring from a 10'x10' opening in a 15' tall wall for a header or king stud.
<input type="checkbox"/>	4. Manufactured support frames and curbs using hot rolled or cold-formed steel (i.e., light gauge) for mechanical, electrical, or plumbing equipment weighing less than 2000# (equipment only) (connections of such frames to superstructure elements using welding will require special inspection as noted in selected item(s) for Sections S/A3, S/A4 and/or S/A5 of listing above).
<input type="checkbox"/>	5. Manufactured components (e.g., Tolco, B-Line, Afcon, etc.) for mechanical, electrical, or plumbing hanger support and bracing (connections of such components to superstructure elements using welding will require special inspection as noted in selected item(s) for Sections S/A3, S/A4 and/or S/A5 of listing above).
<input type="checkbox"/>	6. TV Brackets, projector mounts with a valid listing (see DSA IR A-5) and recreational equipment (e.g., playground structures, basketball backstops, etc.) (connections of such elements to superstructure elements using welding will require special inspection as noted in selected item(s) for sections S/A3, S/A4 and/or S/A5 located in the Steel/Aluminum category).
<input type="checkbox"/>	7. Any support for exempt non-structural components given in CBC Section 1617A.1.18 (which replaces ASCE 7-16, Section 13.1.4) meeting the following: A) when supported on a floor/roof, <400# and resulting composite center of mass (including component's center of mass) ≤4' above supporting floor/roof, B) when hung from a wall or roof/floor, <20# for discrete units or <5 plf for distributed systems.

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Application Number: 03-122640	School Name: Fremont Magnet Elementary School	School District: Bakersfield City School District
DSA File Number: 15-6	Increment Number:	Date Created: 2023-10-06 12:02:24

Name of Architect or Engineer in general responsible charge:

Name of Structural Engineer (When structural design has been delegated):

SHANE FITZGERALD

Signature of Architect or Structural Engineer:  Date: 10/06/23

Note: To facilitate DSA electronic mark-ups and identification stamp application, DSA recommends against using secured electronic or digital signatures.

DSA STAMP

DSA 103-19: LIST OF REQUIRED VERIFIED REPORTS, CBC 2019

Application Number:
03-122640
DSA File Number:
15-6

School Name:
Fremont Magnet Elementary School
Increment Number:

School District:
Bakersfield City School District
Date Created:
2023-10-06 12:02:24

1. Structural Testing and Inspection: Laboratory Verified Report Form DSA 291

2. Post-installed Anchors: Laboratory Verified Report Form DSA 291, or, for independently contracting SI, Special Inspection Verified Report Form DSA 292

3. Shop Welding Inspection: Laboratory Verified Report Form DSA 291, or, for independently contracting SI, Special Inspection Verified Report Form DSA 292

4. Field Welding Inspection: Laboratory Verified Report Form DSA 291, or, for independently contracting SI, Special Inspection Verified Report Form DSA 292

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 0 & 1 Specification Sections, apply to this Section.

1.2 DEFINITIONS

- A. General: Basic contract definitions are included in the Conditions of the Contract.
- B. "Indicated": The term "indicated" refers to graphic representations, notes, or schedules on the Drawings; or to other paragraphs or schedules in the Specifications and similar requirements in the Contract Documents. Terms such as "shown," "noted," "scheduled," and "specified" are used to help the user locate the reference. Location is not limited.
- C. "Directed": Terms such as "directed," "requested," "authorized," "selected," "approved," "required," and "permitted" mean directed by the Architect, requested by the Architect, and similar phrases.
- D. "Approved": The term "approved," when used in conjunction with the Architect's action on the Contractor's submittals, applications, and requests, is limited to the Architect's duties and responsibilities as stated in the Conditions of the Contract.
- E. "Regulations": The term "regulations" includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work.
- F. "Furnish": The term "furnish" means to supply and deliver to the Project site, ready for unloading, unpacking, assembly, installation, and similar operations. New items unless noted otherwise in technical section.
- G. "Install": The term "install" describes operations at the Project site including the actual unloading, temporary storage at project site until required, unpacking, assembling, erecting, place secure and connect, anchoring, applying, working to dimension, furnish required appurtenances to complete installation, finishing, curing, protecting, cleaning, and similar operations.
- H. "Provide": The term "provide" means to furnish and install, complete and ready for the intended use, including required appurtenances to make a complete operating system/installation.
- I. "Installer": An installer is the Contractor or another entity engaged by the Contractor, either as an employee, subcontractor, or contractor of lower tier, to perform a particular construction activity, including installation, erection, application, or similar operations. Installers are required to be experienced in the operations they are engaged to perform.
 - 1. The term "experienced," when used with the term "installer," means having successfully completed a minimum of five previous projects similar in size and scope to this Project; being familiar with the special requirements indicated; and having complied with requirements of authorities having jurisdiction.
 - 2. Trades: Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to

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- tradespersons of the corresponding generic name.
3. Assigning Specialists: Certain Sections of the Specifications require that specific construction activities shall be performed by specialists who are recognized experts in those operations. The specialists must be engaged for those activities, and their assignments are requirements over which the Contractor has no option. However, the ultimate responsibility for fulfilling contract requirements remains with the Contractor.
 - a. This requirement shall not be interpreted to conflict with enforcing building codes and similar regulations governing the Work. It is also not intended to interfere with local trade-union jurisdictional settlements and similar conventions.
 - J. "Project site" is the space available to the Contractor for performing construction activities, either exclusively or in conjunction with others performing other work as part of the Project. The extent of the Project site is shown on the Drawings and may or may not be identical with the description of the land on which the Project is to be built.
 - K. "Testing Agencies": A testing agency is an independent entity engaged to perform specific inspections or tests, either at the Project site or elsewhere, and to report on and, if required, to interpret results of those inspections or tests.
 - L. Nominal/Net: Nominal dimensions shall be industry standard dimensions--i.e., 2x4 shall be 1-1/2" x 3-1/2" actual dimensions. Plans will not indicate (") marks for nominal dimensions--i.e., 3"x6" and plans will indicate (") after each number which means actual net dimension required for member(s) indicated.
 - M. Section: Refers to a section of this project manual.
 - N. Standards: The issue in effect as of the date of the project manual and construction documents. In the event of a conflict between either, the more restrictive date will prevail.

1.3 SPECIFICATION FORMAT AND CONTENT EXPLANATION

- A. Specification Format: These Specifications are organized into Divisions and Sections based on the 33-division format and CSI/CSC's "MasterFormat" numbering system.
- B. Specification Content: These Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
 1. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be interpolated as the sense requires. Singular words shall be interpreted as plural and plural words interpreted as singular where applicable as the context of the Contract Documents indicates.
 2. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by the Contractor. At certain locations in the Text, subjective language is used for clarity to describe responsibilities that must be fulfilled indirectly by the Contractor or by others when so noted.
 - a. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

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1.4 INDUSTRY STANDARDS

- A. **Applicability of Standards:** Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
- B. **Publication Dates:** Comply with the standards in effect as of the date of the Contract Documents.
- C. **Conflicting Requirements:** Where compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different but apparently equal to the Architect for a decision before proceeding.
1. **Minimum Quantity or Quality Levels:** The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of the requirements. Refer uncertainties to the Architect for a decision before proceeding.
- D. **Copies of Standards:** Each entity engaged in construction on the Project must be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.
1. Where copies of standards are needed to perform a required construction activity, the Contractor shall obtain copies directly from the publication source and make them available on request.
2. Current standards shall be standard in effect as of date of project manual.
- E. **Abbreviations and Names:** Trade association names and titles of general standards are frequently abbreviated. Where abbreviations and acronyms are used in the Specifications or other Contract Documents, they mean the recognized name of the trade association, standards-generating organization, authorities having jurisdiction, or other entity applicable to the context of the text provision. Refer to Gale Research's "Encyclopedia of Associations" or Columbia Books' "National Trade & Professional Associations of the U.S.," which are available in most libraries.
- F. **Abbreviations and Names:** Trade association names and titles of general standards are frequently abbreviated. The following abbreviations and acronyms, as referenced in the Contract Documents, mean the associated names. Names and addresses are subject to change and are believed, but are not assured, to be accurate and up-to-date as of the date of the Contract Documents.
- | | | |
|------|--|----------------|
| AA | Aluminum Association
900 19th St., NW, Suite 300
Washington, DC 20006 | (202) 862-5100 |
| AABC | Associated Air Balance Council
1518 K St., NW, Suite 503
Washington, DC 20005 | (202) 737-0202 |
| ACI | American Concrete Institute
P.O. Box 9094
Farmington Hills, MI 48333 | (810) 848-3700 |
| ACPA | American Concrete Pipe Association
222 West Las Colinas Blvd., Suite 641
Irving, TX 75039-5423 | (214) 506-7216 |

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ADC	Air Diffusion Council 11 South LaSalle St., Suite 1400 Chicago, IL 60603	(312) 201-0101
AGA	American Gas Association 1515 Wilson Blvd. Arlington, VA 22209	(703) 841-8400
AI	Asphalt Institute Research Park Dr. P.O. Box 14052 Lexington, KY 40512-4052	(606) 288-4960
AIA	The American Institute of Architects 1735 New York Ave., NW Washington, DC 20006-5292	(202) 626-7300
AISC	American Institute of Steel Construction One East Wacker Dr., Suite 3100 Chicago, IL 60601-2001	(312) 670-2400
AITC	American Institute of Timber Construction 7012 S. Revere Pkwy, Suite 140 Englewood, CO 80112	(303) 792-9559
ANSI	American National Standards Institute 11 West 42nd St., 13th Floor New York, NY 10036-8002	(212) 642-4900
APA	APA-The Engineered Wood Association (Formerly American Plywood Association) P.O. Box 11700 Tacoma, WA 98411-0700	(206) 565-6600
ARA	American Registered Architects 305 E. 46 th Street New York, NY 10017	(818) 995-6177
ARI	Air-Conditioning and Refrigeration Institute 4301 Fairfax Dr., Suite 425 Arlington, VA 22203	(703) 524-8800
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers 1791 Tullie Circle, NE Atlanta, GA 30329-2305	(800) 527-4723 (404) 636-8400
ASTM	American Society for Testing and Materials 100 Barr Harbor Dr. West Conshohocken, PA 19428-2959	(610) 832-9500
AWS	American Welding Society 550 LeJeune Rd., NW Miami, FL 33126	(305) 443-9353

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BHMA	Builders Hardware Manufacturers Association 355 Lexington Ave., 17th Floor New York, NY 10017-6603	(212) 661-4261
CEC	California Electrical Code (Available from NFPA)	
CRSI	Concrete Reinforcing Steel Institute 933 N. Plum Grove Rd. Schaumburg, IL 60195	(800) 465-2774
CTI	Ceramic Tile Institute of America 12061 West Jefferson Blvd. Culver City, CA 90230-6219	(310) 574-7800
DHI	Door and Hardware Institute 14170 Newbrook Dr. Chantilly, VA 22021-2223	(703) 222-2010
DSA	Division of the State Architect 1102 Q Street Suite 500 Sacramento, CA 95811	(916) 445-8100
DSA	Division of the State Architect 700 N. Alameda St. Suite 5-500 Los Angeles, CA 90012	(213) 897-0950 (SE) (213) 897-0744(AC) (213) 897-2891 (FLS)
DSA	Division of the State Architect 10920 Via Frontera Suite 300 San Diego, CA 92127	(858) 674-5435 (SE) (858) 674-5415 (AC) (858) 674-5439 (FLS)
EIMA	EIFS Industry Members Association 402 N. Fourth St., Suite 102 Yakima, WA 98901-2470	(509) 457-3500
FM	Factory Mutual 1151 Boston-Providence Tnpk. P.O. Box 9102 Norwood, MA 02062	(617) 762-4300
FS	Federal Specification Unit (Available from GSA) 470 East L'Enfant Plaza, SW, Suite 8100 Washington, DC 20407	(202) 755-0325
GA	Gypsum Association 810 First St., NE, Suite 510 Washington, DC 20002	(202) 289-5440
MFMA	Maple Flooring Manufacturers Association 60 Revere Drive Suite 500 Northbrook, IL 60062	(847) 480-9138
NECA	National Electrical Contractors Association 3 Bethesda Metro Center, Suite 1100	

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	Bethesda, MD 20814-5372	(301) 657-3110
NFPA	National Fire Protection Association One Batterymarch Park P.O. Box 9101 Quincy, MA 02269-9101	(617) 770-3000 (800) 344-3555
NRCA	National Roofing Contractors Association O'Hare International Center 10255 W. Higgins Rd., Suite 600 Rosemont, IL 60018-5607	(847) 299-9070
OSHA	Occupational Safety and Health Administration (U.S. Department of Labor) 200 Constitution Ave., NW Washington, DC 20210	(202) 219-8148
PCA	Portland Cement Association 5420 Old Orchard Rd. Skokie, IL 60077-1083	(847) 966-6200
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association, Inc. 4201 Lafayette Center Dr. P.O. Box 221230 Chantilly, VA 22022-1209	(703) 803-2980
SSPC	Steel Structures Painting Council 4400 Fifth Ave. Pittsburgh, PA 15213	(412) 281-2331
TCNA	Tile Council of North America, Inc. 100 Clemson Research Blvd. Anderson, SC 29625	(864) 646-8453
UL	Underwriters Laboratories Inc. 333 Pfingsten Rd. Northbrook, IL 60062	(847) 272-8800
WCLIB	West Coast Lumber Inspection Bureau P.O. Box 23145 Portland, OR 97281-3145	(503) 639-0651
WI	Woodwork Institute 3188 Industrial Blvd. West Sacramento, CA 95691	(916) 372-9943

1.5 SUBMITTALS

- A. Permits, Licenses, and Certificates: For the Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

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PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 014200

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 0 & 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes, but is not limited to, the following:
 - 1. DSA Reports.

1.3 GOVERNING (REVIEWING AND APPROVING) AGENCY

- A. The Governing (Reviewing and Approving) Agency for this project shall be:

BAKERSFIELD CITY SCHOOL DISTRICT
AND DIVISION OF THE STATE ARCHITECT
STRUCTURAL SAFETY SECTION (DSA/SSS)
ACCESS COMPLIANCE (DSA/ACS)
FIRE LIFE SAFETY (DSA/FLS)

- B. The Governing (Reviewing and Approving) Agency for offsite improvements:

CITY OF BAKERSFIELD

1.4 STATE LAWS AND REGULATIONS

- A. The project shall be constructed under the complete jurisdiction of all laws of the State of California governing the construction of public buildings, to wit:
 - 1. 2019 Title 24, Parts 1, 2, 3, 4, 5 & 9 of the California Code of Regulations.
 - 2. All laws governing the employment of labor, qualifications for employment, posting of minimum wage rates, hours of work, employment of aliens, payment for employees, convict-made materials, domestic and foreign materials and accident prevention.
 - 2. Public Health Code of California State Department, of Public Health.
 - 3. Title 19 of the California Code of Regulations entitled "Public Safety", Chapter 1, State Fire Marshal, Subchapter 1, "General Fire and Panic Safety".
 - 5. General Industrial Safety Orders: Each and every Contractor shall observe and conform to the provisions of Title 8, California Administrative Code bearing upon safe and proper use, construction, disposal, etc., of materials, machinery and building appurtenances as therein set forth.
 - 6. Code Rules and Safety Orders: All work and materials shall be in full accordance with the latest rules and regulations of the State Fire Marshal; the safety orders of the Division of Industrial Safety, Department of Industrial Relations, and any State

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Laws or Ordinances. Nothing in these plans and specifications is to be construed to permit work not conforming to these codes.

7. National Board of Fire Underwriters.
8. Occupational Health and Safety Act. (OSHA)

All of the above laws and regulations, through referral herein, are as much a part of the Contract as if they were incorporated in their entirety in this Section.

1.5 LAWS TO BE OBSERVED

- A. The Contractor shall keep himself fully informed of all existing and future State and Federal laws and county and municipal ordinances and regulations which in any manner affect those engaged or employed in the Work, or the materials used in the Work, and of all such orders and decrees of bodies or tribunals having any jurisdiction or authority over the Work. He shall at all times observe and comply with, and shall cause all his agents and employees to observe and comply with all existing and future laws, ordinances, regulations, orders and decrees of bodies or tribunals having any jurisdiction or authority over the Work.

Should the Contractor claim that additional cost is involved because of any change in the law, regulation, code or ordinance, he shall make a claim as provided herein.

1. Contractor shall be licensed and regulated by the Contractors' State License Board pursuant to Business and Professions Code S7000 et seq.
2. Each and every provision of law and clause required by law to be inserted in this Contract shall be deemed to be inserted herein and the Contract shall be read and enforced as though it were included herein and if through mistake or otherwise any such provision is not inserted, or is not correctly inserted, then upon the application of either party the Contract shall forthwith be physically amended to make such insertion or correction.
3. Contractor shall not be compensated for additional costs incurred due to changes in laws, regulation, code or ordinances made before date of project bid date, only those after bid date and approved by the Architect.

1.6 TESTS AND INSPECTIONS

- A. Tests and Inspections shall be in accordance with Title 24 Part 1 & 2 and as specified herein.
- B. The Architect or Structural Engineer in general responsible charge shall designate the testing of materials consistent with the needs of the project and shall issue specific instructions to the testing agency.

PART 2 - PRODUCTS (Not Applicable)

PART 3 – EXECUTION (Not Applicable)

END OF SECTION 014300

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 0 & 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section specifies requirements for temporary services and facilities, including utilities, construction and support facilities, security and protection.
- B. Temporary utilities required include but are not limited to:
 - 1. Water service and distribution
 - 2. Temporary electric power and light
 - 3. Telephone service
 - 4. Storm and sanitary sewer
 - 5. Temporary fire alarm
 - 6. Temporary security alarm
- C. Temporary construction and support facilities required include but are not limited to:
 - 1. Temporary heat
 - 2. Field offices and storage sheds
 - 3. Sanitary facilities, including drinking water
 - 4. Dewatering facilities and drains
 - 5. Temporary enclosures
 - 6. Temporary HVAC - fresh air
 - 7. Temporary Project identification signs and bulletin boards
 - 8. Waste disposal services
 - 9. Construction aids and miscellaneous services and facilities
 - 10. Temporary access to occupied buildings
 - 11. Temporary signs indicating building access during construction
 - 12. Temporary roof and envelope of building
 - 13. Temporary storage containers for Owner's use during construction
 - 14. Storm water prevention measures
 - 15. Temporary construction fence around buildings as required to secure and buildings and related work.
 - 16. Temporary access ramps to building
 - 17. Temporary access to buildings
 - 18. Dust control measures
- D. Security, protection and miscellaneous facilities required include but are not limited to:
 - 1. Temporary fire protection
 - 2. Barricades, warning signs, lights
 - 3. Enclosure fence at buildings

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4. Environmental protection
5. Enclosure fence at site work around each portion of site work
6. Temporary walls around rooms with Owner access during construction to keep Staff and students from entering construction area

E. Special Requirements:

1. Refer to section 011000 for HCP requirements and impacts on temporary measures and additional requirements.
2. Refer to Section 011000 for the following items that relate to the project:
 - a. Construction Activity Management Plans (SJVAPCD)
 - b. Dust Control Plan (SJVAPCD)
 - c. Storm Water Management Plan (State Water Resource Board)
 - d. Indirect Source Review Plan (SJVAPCD)

1.3 SUBMITTALS

- A. Temporary Utilities: Submit reports of tests, inspections, meter readings and similar procedures performed on temporary utilities.
- B. Implementation and Termination Schedule: Submit a schedule indicating implementation and termination of each temporary utility within 15 days of the date established for commencement of the Work.
- C. Temporary Facility Site Plan: Submit a scaled Site Plan indicating all locations of temporary offices, storage units, fences - both long and short-term - by phase.

1.4 QUALITY ASSURANCE

- A. Regulations: Comply with industry standards and applicable laws and regulations if authorities having jurisdiction, including but not limited to:
 1. California Building Code requirements – Chapter 33.
 2. Health and safety regulations.
 3. Utility company regulations.
 4. Police, Fire Department and Rescue Squad rules.
 5. Environmental protection regulations.
 6. California State Accessibility standards, Title 24.
 7. California Fire Code Chapters 5 & 14.
- B. Standards: Comply with NFPA Code 241, "Building Construction and Demolition Operations", ANSI-A10 Series standards for "Safety Requirements for Construction and Demolition", and NECA Electrical Design Library "Temporary Electrical Facilities."
 1. Refer to "Guidelines for Bid Conditions for Temporary Job Utilities and Services", prepared jointly by AGC and ASC, for industry recommendations.
 2. Electrical Service: Comply with NEMA, NECA and UL standards and regulations for temporary electric service. Install service in compliance with California Electric Code (CEC).

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- C. The Contractor shall maintain, at the site, one (1) copy of the California Building Code, Title 19 and Title 24 (parts 1-5 & 9) of the California Code of Regulations.

1.5 PROJECT CONDITIONS

- A. Temporary Utilities: Prepare a schedule indicating dates for implementation and termination of each temporary utility. At the earliest feasible time, when acceptable to the Owner, change over from use of temporary service to use of the permanent service.
- B. Conditions of Use: Keep temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner. Take necessary fire prevention measures. Do not overload facilities, or permit them to interfere with progress. Do not allow hazardous dangerous or unsanitary conditions, or public nuisances to develop or persist on the site.
- C. Site Access: Shall be coordinated with the Director of Maintenance and Operations. All areas damaged by construction work shall be remedied to his satisfaction. Access by persons with disabilities shall be maintained during construction. Architect shall approve all temporary persons with disabilities access to project area prior to implementing any work.
- D. Advertising Matter: No advertising matter of any kind will be allowed on any part of the work in the field unless approved by the Architect and the Owner. Contractor shall provide 36" x 48" bulletin board for required posted materials viewable by all workers.
- E. Drawings and Specifications at the Site: The Contractor shall maintain at the site for the Owner one copy of all Drawings, Specifications, Addenda, Approved Shop Drawings, Change Orders and other modifications, in good order and marked to record all changes made during construction. These shall be available to the Architect. The Drawings, corrected to record all changes during construction, shall be delivered to him for the Owner upon completion of the Work. See also Project Closeout, Section.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General: Provide new materials; if acceptable to the Architect, undamaged previously used materials in serviceable condition may be used. Provide materials suitable for the use intended.
- B. Lumber and Plywood: Comply with requirements in Division-6 Section "Rough Carpentry."
 - 1. For signs and directory boards, provide exterior type, Grade B-B High Density Concrete Form Overlay Plywood conforming to PS-1, of sizes and thickness indicated.
 - 2. For fences and vision barriers, provide exterior type, minimum 3/8" thick plywood.
 - 3. For safety barriers, sidewalk bridges and similar uses, provide minimum 5/8" thick exterior plywood.
- C. Paint: Comply with requirements of Division-9 Section "Painting."
 - 1. For sign panels and applying graphics, provide exterior grade alkyd gloss enamel over exterior primer.

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- D. Tarpaulins: Provide waterproof, fire-resistant, UL labeled tarpaulins with flame-spread rating of 15 or less. For temporary enclosures provide translucent nylon reinforced laminated polyethylene or polyvinyl chloride fire retardant tarpaulins.
- E. Water: Provide potable water approved by local health authorities.
- F. Open-Mesh Metal Fencing: Provide 11-gage, galvanized 2-inch, chain link fabric fencing 6-feet high with galvanized wire top strand and galvanized steel pipe posts, 1-1/2" I.D. for line posts and 2-1/2" I.D. for corner posts.
- G. Open-Mesh Plastic Fencing: Plastic 2-inch fabric fencing, 6 feet high with galvanized steel pipe post, 1-1/2" O.D. for line and corner post.

2.2 EQUIPMENT

- A. General: Provide new equipment; if acceptable to the Architect, undamaged, previously used equipment in serviceable condition may be used. Provide equipment suitable for use intended.
- B. Water Hoses: Provide 3/4" heavy-duty, abrasion-resistant, flexible rubber hoses 100 ft. long, with pressure rating greater than the maximum pressure of the water distribution system; provide adjustable shut-off nozzles at hose discharge.
- C. Electrical Outlets: Provide properly configured NEMA polarized outlets to prevent insertion of 110-120 volt plugs into higher voltage outlets. Provide receptacle outlets equipped with ground-fault circuit interrupters, reset button and pilot light, for connection of power tools and equipment.
- D. Electrical Power Cords: Provide grounded extension cords; use "hard-service" cords where exposed to abrasion and traffic. Provide waterproof connectors to connect separate lengths of electric cords, if single lengths will not reach areas where construction activities are in progress.
- E. Lamps and Light Fixtures: Provide general service incandescent lamps of wattage required for adequate illumination. Provide guard cages or tempered glass enclosures, where exposed to breakage. Provide exterior fixtures where exposed to moisture.
- F. Heating Units: Provide temporary heating units that have been tested and labeled by UL, FM or another recognized trade association related to the type of fuel being consumed.
- G. Temporary Offices: The General Contractor shall provide and maintain during progress of the work a field office building for the Inspector. Each office shall be equipped with one window and one door. The Inspector's office shall have a separate entrance to exterior. Inspector's office shall be separated from Contractor's office by full-height partition wall – STC 45.
 - 1. Each office shall be provided with six (6) electric outlets, data outlets, complete with wiring, fluorescent lights 3 watts/sf, and HVAC all of which shall be connected to service. Project Inspector and Architect shall have use of water, computer/internet, telephone, copier, and fax at no charge for items related to this project. Contractor shall provide a minimum 10'x10' field office for this project for inspector and 10' x 20' minimum field office for Contractor staff and project meetings.
 - 2. Furnish and equip offices as follows:

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	<u>General Contractor</u>	<u>Inspector</u>
Telephone	2 (1 w/hands-free function)	1
Plan Table 96 x 36	2	1
4 Drawer Files	1	1
6 Shelf Bookcase	1	1
Desk	2	1
Meeting Table 96 x 36	1	
Chairs	8	3
Bottle Water/Cooler	1	
Copier – Plain Paper	1	
Fax Machine	1	
Telephone Answering Machine	1	1
Computer with internet access	1	
Printer	1	
Telephone lines	2	2

- H. Temporary Toilet Units: Provide self-contained single-occupant toilet units of the chemical, aerated recirculation, or combustion type, properly vented and fully enclosed with a glass fiber reinforced polyester shell or similar nonabsorbent material. Provide a ratio of one (1) toilet per ten (10) workers on job site, but not less than two (2) toilets.
- I. First Aid Supplies: Comply with governing regulations.
- J. Fire Extinguishers: Provide hand-carried, portable UL-rated, class "A" fire extinguishers for temporary offices and similar spaces. In other locations provide hand-carried, portable, UL-rated, class "ABC" dry chemical extinguishers, or a combination of extinguishers of CCR recommended classes for the exposures.
 - 1. Comply with Title 19 CCR Division 1, Chapter 3 for classification, extinguishing agent and size required by location and class of fire exposure.
- K. Temporary Storage Units: Provide 8' x 8' x 40' storage units, weathertight with locking doors.
 - 1. Provide 2 units locate as directed by the Campus Maintenance Director.

PART 3 - EXECUTION

3.1 INSTALLATION

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

3.2 TEMPORARY UTILITY INSTALLATION

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- A. General: Engage the appropriate local utility company to install temporary service or connect to existing service. Where the company provides only part of the service, provide the remainder with matching, compatible materials and equipment; comply with the company's recommendations.
1. Arrange with the company and existing users for a time when service can be interrupted, where necessary, to make connections for temporary services.
 2. Provide adequate capacity at each stage of construction. Prior to temporary utility availability, provide trucked-in services.
 3. Use Charges: Cost or use charges for temporary facilities are not chargeable to the Owner or Architect, and will not be accepted as a basis of claims for a Change Order.
 4. The Contractor shall provide and pay for telephone services in the offices. The Architect, or his representative and inspector shall have unrestricted use of the phone for business purposes connected with this project.
- B. Water Service: Install water service and distribution piping of sizes and pressures adequate for construction until permanent water service is in use.
1. Sterilization: Sterilize temporary water piping prior to use.
 2. Provide temporary water meter where Owner's water will be used.
 3. Fire access per CFC 1410.1.
 4. Fire water service to be active prior to arrival of combustible materials on site per CFC Sections 501.4 and 1412.1.
- C. Temporary Electric Power Service: Provide weatherproof, grounded electric power service and distribution system of sufficient size, capacity, and power characteristics during construction period. Include transformers, overload protected disconnects, automatic ground-fault interrupters and main distribution switch gear.
1. Except where overhead service must be used, install electric power service underground.
 2. Where existing electrical power is available, owner will pay for usage of electrical power on site for contractor's use during period of construction. Contractor is responsible for all connection/disconnections and returning all items to original conditions.
- D. Temporary Lighting: Whenever overhead floor or roof deck has been installed, provide temporary lighting with local switching.
1. Install and operate temporary lighting that will fulfill security and protection requirements, without operating the entire system, and will provide adequate illumination for construction operations and traffic conditions.
- E. Temporary Telephones: Provide temporary telephone service for all personnel engaged in construction activities, throughout the construction period. Install telephone on a separate line for each temporary office and first aid station. Where an office has more than two occupants, install a telephone for each additional occupant or pair of occupants.
- F. Computer Access: Provide computer with internet access and job site email account. Provide computer and printer. Provide data continuous access for inspector.
- G. Web Cam: Provide continuous secure video of construction activities, recorded hourly at minimum.

3.3 TEMPORARY CONSTRUCTION AND SUPPORT FACILITIES INSTALLATION

- A. Locate field offices, storage sheds, sanitary facilities and other temporary construction and support facilities as directed by Architect.
 - 1. Maintain temporary construction and support facilities until completion.
- B. Temporary Heat: Provide temporary heat required by construction activities, for curing or drying of completed installations or protection of installed construction from adverse effects of low temperatures or high humidity. Select safe equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce the ambient condition required and minimize consumption of energy.
- C. Heating Facilities: Except where use of the permanent system is authorized, provide vented self-contained LP gas heaters with individual space thermostatic control.
 - 1. Use of gasoline-burning space heaters, open flame, or salamander type heating units is prohibited.
- D. Field Offices for General Contractor & Inspector: Keep the office clean and orderly for use for project meetings. Field Office shall be cleaned weekly.
- E. Storage Sheds: Install storage sheds, sized, furnished and equipped to accommodate materials and equipment involved, including temporary utility service.
 - 1. Provide (2) 8x40 roll off seatrain-type storage units, lockable and weather tight. Locate as directed by Owner. Both will remain property of Owner at close of project.
- F. Toilets: Use of the Owner's existing toilet facilities will not be permitted.
- G. Toilets: Install self-contained toilet units. Shield toilets to ensure privacy. Use of pit-type privies will not be permitted.
- H. Wash Facilities: Install wash facilities supplied with potable water at convenient locations for personnel involved in handling materials that require wash-up for a healthy and sanitary condition. Dispose of drainage properly. Supply cleaning compounds appropriate for each condition.
- I. De-watering Facilities and Drains: Maintain the site, excavations and construction free of water.
- J. Temporary Enclosures: Provide temporary enclosure for protection of construction in progress and completed, from exposure, foul weather, other construction operations and similar activities.
 - 1. Where heat is needed and the permanent building enclosure is not complete, provide temporary enclosures where there is no other provision for containment of heat. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions and effects.
 - 2. Install tarpaulins securely, with incombustible wood framing and other materials. Close openings of 25 square feet or less with plywood or similar materials.
 - 3. Close openings through floor or roof decks and horizontal surfaces with load-bearing wood-framed construction.
 - 4. Where temporary wood or plywood enclosure exceeds 100 square feet in area, use

- UL-labeled fire-retardant treated material for framing and main sheathing.
5. Temporary enclosure where existing doors, glazing and frames are removed. Provide for Owner occupancy of these spaces where this work occurs.
 6. Temporary roofing as required to preserve and protect work done and allow work to proceed without project being delayed.
- K. Project Identification and Temporary Signs: Prepare project identification and other signs of the size indicated; install signs where indicated to inform the public and persons seeking entrance to the Project. Support on posts or framing of preservative treated wood or steel. Do not permit installation of unauthorized signs.
1. Project Identification Signs: Engage an experienced sign painter to apply graphics. Comply with details indicated.
 2. Temporary Signs: Prepare signs to provide directional information to construction personnel and visitors.
 - a. Provide 48" x 48" sign indicating "Hard Hat Area", black/red on white.
 - b. Provide 24" x 24" sign at each project entrance indicating "Authorized Personnel Only--No Trespassing", white text on red background with 1" white border.
 - c. Provide temporary signs indicating disabled building access for each building during construction and allow for changes in access required by construction ways and means. Signs shall be 48" x 36", black/red text on white background with blue 1" border.
 - d. Provide a 24"x24" sign at each project entrance indicating "No Cats, Dogs or Pets Allowed", red text on white background with 1" red border.
- L. Collection and Disposal of Waste: Collect waste from construction areas and elsewhere daily. Comply with requirements of NFPA 241 for removal of combustible waste material and debris. Enforce requirements strictly. Do not hold materials more than 7 days during normal weather or 3 days when the temperature is expected to rise above 80 deg F (27 deg C). Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly. Dispose of material in a lawful manner.
- M. Refuse: Refuse barrels shall be provided for workmen's lunch boxes, papers and debris. All rubbish shall be removed from the premises.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Temporary Fire Protection: Until fire protection needs are supplied by permanent facilities, install and maintain temporary fire protection facilities of the types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 10 "Standard for Portable Fire Extinguishers," and NFPA 241 "Standard for Safeguarding Construction, Alterations and Demolition Operations." Comply with CFC Chapter 14 – Fire Safety during all phases of construction and demolition.
1. Locate fire extinguishers where convenient and effective for their intended purpose, but not less than one extinguisher per each 1000 square feet.
 2. Store combustible materials in containers in fire-safe locations.
 3. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire protection facilities, stairways and other access routes for fighting fires. Prohibit smoking in hazardous fire exposure areas.
 4. Provide supervision of welding operations, combustion type temporary heating units, and

similar sources of fire ignition.

- B. Barricades, Warning Signs and Lights: Comply with standards and code requirements for erection of structurally adequate barricades. Paint with appropriate colors, graphics and warning signs to inform personnel and the public of the hazard being protected against. Where appropriate and needed provide lighting, including flashing red or amber lights. The Contractor shall provide, install and maintain for the duration of the work, as required, all lawful or necessary barricades and railings, lights, warning signs and signals, and shall take all other precautions as may be required to safeguard persons, the site and adjoining property, including improvements thereon, against injuries and damages of every nature whatsoever. The Contractor shall not obstruct required exitways of adjacent structures.
- C. Enclosure Fence: When excavation begins, install an enclosure fence with lockable entrance gates. Locate where indicated, or enclose the entire site or the portion determined sufficient to accommodate construction operations. Install in a manner that will prevent people, dogs and other animals from easily entering the site, except by the entrance gates.
 - 1. Provide open-mesh, chain-link fencing with posts set in a compacted mixture of gravel and earth.
- D. Security Enclosure and Lockup: Install substantial temporary enclosure of partially completed areas of construction. Provide locking entrances to prevent unauthorized entrance, vandalism, theft and similar violations of security.
 - 1. Storage: Where materials and equipment must be stored, and are of value or attractive for theft, provide a secure lockup. Enforce discipline in connection with the installation and release of material to minimize the opportunity for theft and vandalism.
- E. Environmental Protection: Provide protection, operate temporary facilities and conduct construction in ways and by methods that comply with environmental regulations, and minimize the possibility that air, waterways and subsoil might be contaminated or polluted, or that other undesirable effects might result. Avoid use of tools and equipment, which produce harmful noise. Restrict use of noise making tools and equipment to hours that will minimize complaints from persons or firms near the site.
 - 1. Dust Control: The Contractor shall exercise precautionary measures to minimize dust emissions which will include, but shall not be limited to, periodic sprinkling or wetting of the site, minimum of every day except as allowed by Architect. The Contractor has the option if using a dust palliative as specified in Caltrans 1981 Edition, Section 18.
 - a. Fugitive dust shall be contained during earthwork activities by continuous sprinkling or wetting, as required, to bind soil to prevent fugitive dust. Roadways, walkways, construction areas and similar areas impacted by this project shall be maintained to prevent fugitive dust throughout the duration of project.
 - b. All unpaved haul roads shall be watered a minimum of twice per day, not limited to project site.
 - 2. Speed limit of vehicles on site shall not exceed 15 miles per hour and shall be under supervision of Contractor's Safety Representative, who shall evaluate field conditions and establish less speed as conditions change.
 - 3. Storm Water Prevention: Provide a Storm Water Prevention Plan as required by the required governing agency. Provide a Storm Water Prevention Plan for all construction activities of this project. Submit to governing agency and comply with all agency

requirements. Comply and provide all mitigation measures in the governing agency approved Storm Water Prevention Plan. Coordinate plan with required HCP measures.

- F. Enclosure fence of construction areas outside Contractor's staging area/main working compound, where construction activity is beyond enclosure of construction area and duration of work in that area is 30 days or less, provide open-mesh plastic fencing with post and barricades. Fencing shall be maintained equal to enclosure fence above with gated access.

3.5 OPERATION, TERMINATION AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. Limit availability of temporary facilities to essential and intended uses to minimize waste and abuse.
- B. Maintenance: Maintain facilities in good operating condition until removal. Protect from damage by freezing temperatures and similar elements.
 - 1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation and similar facilities on a 24-hour day basis where required to achieve indicated results and to avoid possibility of damage.
 - 2. Protection: Prevent water filled piping from freezing. Maintain markers for underground lines. Protect from damage during excavation operations.
- C. Environmental Condition: This project will be occupied during construction. The Contractor shall provide fresh air to construction space total 1500 cfm for work space. Temporary duct modifications shall be made to prevent discharge of construction air into occupied spaces and maintain HVAC to occupied spaces. HVAC at construction area shall have a negative balance to prevent infiltration of construction air into any occupied areas. Construction area shall be aired out for 96 hours continually after all construction is complete and no material will be added that will cause vapors. After being aired out Contractor shall refit changes made to occupied spaces during construction and re-balance system to engineer's requirements.
- D. Termination and Removal: Unless the Architect requests that it be maintained longer, remove each temporary facility when the need has ended, or when replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with the temporary facility. Repair damaged Work, clean exposed surfaces and replace construction that cannot be satisfactorily repaired.
 - 1. Materials and facilities that constitute temporary facilities are property of the Contractor. The Owner reserves the right to take possession of Project identification signs.
 - 2. At Substantial Completion, clean and renovate permanent facilities that have been used during the construction period, including but not limited to:
 - a. Replace air filters.
 - b. Replace significantly worn parts and parts that have been subject to unusual operating conditions. (Unusual conditions shall be defined as 10% of equipment life.)
 - c. Replace lamps that are burned out or noticeably dimmed by substantial hours of use (substantial shall be defined as 10% of bulb life of accepted industry average hours).

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END OF SECTION 015000

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division 0 & 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements governing the Contractor's selection of products for use in the Project.
- B. The Contractor's Schedule of Submittals is included under Section "Submittals."
- C. Standards: Refer to Section "Reference Standards and Definitions" for applicability of industry standards to products specified.
- D. Related Sections:
 - 1. Division 1 Section "Allowances" for products selected under an allowance.
 - 2. Division 1 Section "Alternates" for products selected under an alternate.

1.3 DEFINITIONS

- A. Definitions used in this Article are not intended to change the meaning of other terms used in the Contract Documents, such as "specialties," "systems," "structure," "finishes," "accessories," and similar terms. Such terms such are self-explanatory and have well recognized meanings in the construction industry.
 - 1. "Products" are items purchased for incorporation in the Work, whether purchased for the Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
 - a. "Named Products" are items identified by manufacturer's product name, including make or model designation, indicated in the manufacturer's published product literature, that is current as of the date of the Contract Documents.
 - 2. "Materials" are products that are substantially shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the Work.
 - 3. "Equipment" is a product with operational parts, whether motorized or manually operated, that requires service connections such as wiring or piping.

1.4 SUBMITTALS

- A. Product List Schedule: Prepare a schedule showing products specified in a tabular form acceptable to the Architect. Include generic names of products required. Include the manufacturer's name and proprietary product names for each item listed.
 - 1. Coordinate the product list schedule with the Contractor's Construction Schedule and the

Schedule of Submittals.

2. Initial Submittal: Within 35 days after date of commencement of the Work, submit 3 copies of an initial product list schedule. Provide a written explanation for omissions of data, and for variations from Contract requirements.
- B. Architect's Action: The Architect will respond in writing to the Contractor within 21 days of receipt of the completed product list schedule. No response within this time period constitutes no objection to listed manufacturers or products, but does not constitute a waiver of the requirement that products comply with Contract Documents. The Architect's response will include the following:
1. A list of unacceptable product selections, containing a brief explanation of reasons for this action.
- C. Colors: Provide finish selections indicated in the Project Manual and Plans.
1. Acceptable Manufacturers: The products and manufacturer's specified in the Project Manual and Plans are for purposes of establishing color and quality. Refer to each Specification Section for additional manufacturers and Project Manual Section "Submittals".
 2. Manufacturer's Standard colors and Finishes: Where the Project Manual or Plans specifies a manufacturer's standard color or finish, the Architect makes no guarantee that matching colors or finishes are available as other non-listed manufacturer's "standard colors" from the listing of acceptable manufacturers. The Contractor shall be responsible for providing colors matching those indicated in the Project Manual of listed acceptable manufacturer in the Project Manual at no additional cost.
 3. Custom Colors: Where the Finish Schedule Project Manual and or Plan indicates a specific manufacturer's colors, other acceptable manufacturer shall provide matching custom colors where a standard color in not acceptable at no additional cost.
 4. Substitutions: The Contractor will match the color and or finish available for the acceptable manufacturers listed in the Project Manual and/or Plans as a custom color and at no additional cost to the Owner.

1.5 QUALITY ASSURANCE

- A. Source Limitations: To the fullest extent possible, provide products of the same kind, from a single source.
- B. Compatibility of Options: When the Contractor is given the option of selecting between two or more products for use on the Project, the product selected shall be compatible with products previously selected, even if previously selected products were also options.
- C. Nameplates: Except for required labels and operating data, do not attach or imprint manufacturer's or producer's nameplates or trademarks on exposed surfaces of products which will be exposed to view in occupied spaces or on the exterior.
1. Labels: Locate required product labels and stamps on a concealed surface or, where required for observation after installation, on an accessible surface that is not conspicuous.
 2. Equipment Nameplates: Provide a permanent nameplate on each item of service-connected or power-operated equipment. Locate on an easily accessible surface which is inconspicuous in occupied spaces. The nameplate shall contain the following information and other essential operating data:
 - a. Name of product and manufacturer.

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- b. Model and serial number.
- c. Capacity.
- d. Speed.
- e. Ratings.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store and handle products in accordance with the manufacturer's recommendations, using means and methods that will prevent damage, deterioration and loss, including theft.
 - 1. Schedule delivery to minimize long-term storage at the site and to prevent overcrowding of construction spaces.
 - 2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft and other losses.
 - 3. Deliver products to the site in the manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting and installing.
 - 4. Inspect products upon delivery to ensure compliance with the Contract Documents, and to ensure that products are undamaged and properly protected.
 - 5. Store products at the site in a manner that will facilitate inspection and measurement of quantity or counting of units.
 - 6. Store heavy materials away from the Project structure in a manner that will not endanger the supporting construction.
 - 7. Store products subject to damage by the elements above ground, under cover in a weathertight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer's instructions.

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION

- A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, unused at the time of installation.
 - 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.
- B. Product Selection Procedures: Product selection is governed by the Contract Documents and governing regulations, not by previous Project experience. Procedures governing product selection include the following:
 - 1. Descriptive Specification Requirements: Where Specifications describe a product or assembly, listing exact characteristics required, with or without use of a brand or trade name, provide a product or assembly that provides the characteristics and otherwise complies with Contract requirements.
 - 2. Performance Specification Requirements: Where Specifications require compliance with performance requirements, provide products that comply with these requirements, and are recommended by the manufacturer for the application indicated. General overall performance of a product is implied where the product is specified for a specific application.

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- a. Manufacturer's recommendations may be contained in published product literature, or by the manufacturer's certification of performance.
3. Visual Matching: Where Specifications require matching an established Sample, the Architect's decision will be final on whether a proposed product matches satisfactorily.
4. Visual Selection: Where specified product requirements include the phrase "...as selected from manufacturer's standard colors, patterns, textures..." or a similar phrase, select a product and manufacturer that complies with other specified requirements. The Architect will select the color, pattern and texture from the product line selected.
5. Basis-of- Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturer(s), provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions and other characteristics that are based on the product named.
6. Products/Manufacturers:
 - a. Restricted list: Where specifications include a list of names of both/either manufacturers and products, provide one of the products listed that comply with requirements. Comparable products or substitutions for Contractor's convenience will not be considered, unless otherwise indicated.
7. Sole Sourcing: The Owner has made a finding that in order to meet the project requirements and properly match a particular existing installation, installation in the course of completion and/or of an item of intellectual nature on campus that a sole source specification will be required for those specific item(s). The Owner has on file a list of proprietary products, vendors, campus standards and services to be contracted as sole source items as prescribed in Public Contract Code sections. The Owner reserves the right to sole source these items as prescribed herein.

PART 3 - EXECUTION

3.1 INSTALLATION OF PRODUCTS:

- A. Comply with manufacturer's instructions and recommendations for installation of products in the applications indicated. Anchor each product securely in place, accurately located and aligned with other Work.
 1. Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of final acceptance.

END OF SECTION 016000

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division 0 & 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for cutting and patching.
- B. Refer to other Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.
 - 1. Requirements of this Section apply to mechanical and electrical installations. Refer to Division-22, 23 and 26 Sections for other requirements and limitations applicable to cutting and patching mechanical and electrical installations.
- C. Demolition of selected portions of the building for alterations is included in Division 2:
 - 1. Division 2 Section "Selective Demolition" for building demolition and related work.

1.3 SUBMITTALS

- A. Cutting and Patching: Submit a plan describing procedures well in advance of the time cutting and patching will be performed and request approval to proceed. Include the following information, as applicable, in the proposal:
 - 1. Describe the extent of cutting and patching required and how it is to be performed; indicate why it cannot be avoided.
 - 2. Describe anticipated results in terms of changes to existing construction; include changes to structural elements and operating components as well as changes in the building's appearance and other significant visual elements.
 - 3. List products to be used and firms or entities that will perform Work.
 - 4. Indicate dates when cutting and patching is to be performed.
 - 5. List utilities that will be disturbed or affected, including those that will be relocated and those that will be temporarily out-of-service. Indicate how long service will be disrupted.

1.4 QUALITY ASSURANCE

- A. Requirements for Structural Work: Do not cut and patch structural elements in a manner that would reduce their load-carrying capacity or load-deflection ratio.
 - 1. Obtain approval of the cutting and patching proposal before cutting and patching the following structural elements. Any changes from Contract Documents of cutting and patching shall be approved by DSA.
 - a. Foundation construction.
 - b. Bearing and retaining walls.
 - c. Structural steel.

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- d. Timber and primary wood framing.
 - e. Structural decking.
 - f. Miscellaneous structural metals.
 - g. Exterior curtain wall construction.
 - h. Equipment supports.
 - i. Piping, ductwork, vessels and equipment.
- B. Operational and Safety Limitations: Do not cut and patch operating elements or safety related components in a manner that would result in reducing their capacity to perform as intended, or result in increased maintenance, or decreased operational life or safety.
- 1. Obtain approval of cutting and patching before cutting and patching the following operating elements or safety related systems:
 - a. Shoring, bracing, and sheeting.
 - b. Primary operational systems and equipment.
 - c. Water, moisture, or vapor barriers.
 - d. Membranes and flashings.
 - e. Fire protection systems.
 - f. Control systems.
 - g. Communication systems.
 - h. Electrical wiring systems.
 - i. Security systems.
- C. Visual Requirements: Do not cut and patch construction exposed on the exterior or in occupied spaces, in a manner that would, in the Architect's opinion, reduce the building's aesthetic qualities, or result in visual evidence of cutting and patching. Remove and replace Work cut and patched in a visually unsatisfactory manner.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 INSPECTION

- A. Before cutting existing surfaces, examine surfaces to be cut and patched and conditions under which cutting and patching is to be performed. Take corrective action before proceeding, if unsafe or unsatisfactory conditions are encountered.
 - 1. Before proceeding, meet at the site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

3.2 PREPARATION

- A. Temporary Support: Provide temporary support of Work to be cut.
- B. Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of the Project that might be exposed during cutting and patching operations.

- C. Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
- D. Take all precautions necessary to avoid cutting existing pipe, conduit or ductwork serving the building, but scheduled to be removed or relocated until provisions have been made to bypass them.

3.3 PERFORMANCE

- A. General: Employ skilled workmen to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time and complete without delay.
 - 1. Cut existing construction to provide for installation of other components or performance of other construction activities and the subsequent fitting and patching required to restore surfaces to their original condition.
- B. Cutting: Cut existing construction using methods least likely to damage elements to be retained or adjoining construction.
 - 1. In general, where cutting is required use hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut holes and slots neatly to size required with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 - 2. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces.
 - 3. Cut through concrete and masonry using a cutting machine such as a carborundum saw or diamond core drill.
 - 4. Comply with requirements of applicable Sections of Division-2 where cutting and patching requires excavating and backfilling.
 - 5. By-pass utility services such as pipe or conduit, before cutting, where services are shown or required to be removed, relocated or abandoned. Cut-off pipe or conduit in walls or partitions to be removed. Cap, valve or plug and seal the remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after by-passing and cutting.
 - 6. Cut limit to be determined by access requirements, backing location, support spacing and standard modules of finish material. Intent is to restore finish to unbroken appearance.
 - 7. Bolts shall be cut to within 3/4" of nuts maximum at all threaded rods, hangers and similar applications. Architect shall confirm any exceptions to this requirement. Dress end of cut threads for removal/reinstallation. If bolts are galvanized, spray raw metal with galvalume touch up paint.
- C. Patching: Patch with durable seams that are as invisible as possible. Comply with specified tolerances, if none noted per standard of care of the industry.
 - 1. Where feasible, inspect and test patched areas to demonstrate integrity of the installation.
 - 2. Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
 - 3. Where removal of walls or partitions extends one finished area into another, patch and repair floor and wall surfaces in the new space to provide an even surface of uniform color and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary to achieve uniform color and appearance.
 - a. Where patching occurs in a smooth painted surface, extend final paint coat over entire unbroken item containing the patch, after the patched area has received primer and second coat.

3.4 CLEANING

- A. Thoroughly clean areas and spaces where cutting and patching is performed or used as access. Remove completely paint, oils, putty and items of similar nature. Thoroughly clean piping, conduit and similar features before painting or other finishing is applied. Restore damaged pipe covering and other items to its original condition.

END OF SECTION 017300

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division 0 & 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for project closeout, including but not limited to:
 - 1. Project Completion and Acceptance
 - 2. Inspection procedures.
 - 3. Project record document submittal(s).
 - 4. Operating and maintenance manual submittal(s).
 - 5. Submittal of warranties.
 - 6. Statement of extra materials delivered to Owner, accepted and signed by Owner
 - 7. Training attendees form
 - 8. Final cleaning.
- B. Closeout requirements for specific construction activities are included in the appropriate Sections in Divisions 0 through 33.
- C. See Division 1 Section "Governing Agency" for DSA Final Verified Reports to be filed.

1.3 PROJECT COMPLETION

- A. Contractor shall notify the Architect in writing when the project is acceptably completed; all work scope is done and ready for Project Inspector and Contractor to make a list of items to be corrected.
- B. The Project Inspector and Contractor shall make a list of items to be corrected and finish any items discovered incomplete. These items shall be completed and corrected prior to Architect and Consultants preparing a Final Inspection and Punch List Preparation. Contractor shall notify Architect in writing when all items are completed and corrected as well as items completed and corrected from Project Inspector and Contractor list of items previously prepared.
- C. Architect's field representatives (Architectural, Mechanical, Electrical, and other consultants) will make a field survey of the project to confirm that it has reached a state of completion, and items for "B" above have been done, in order to eliminate an unreasonably long Punch List on final inspection.
 - 1. All items in scope of work have been completed and accepted by Contractor and Project Inspector.
 - 2. All building systems are operational, tested and commissioned.
 - 3. Cleaning of building, grounds and related items completed except when approved by architect in writing in advance of field survey. Contractor's temporary measures may be left in place until final demobilization but a condition on removal for final

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4. payment processing.
 4. Contractor to provide a written status update of project closeout check list.
- D. If not ready, the Architect will give the Contractor a written brief summary of what must be done for the project to be considered complete, enough for the Punch List preparation.
- E. When, in the opinion of the Architect, the job is ready for the Punch List preparation, a Punch List of items requiring completion and/or correction will be prepared. (This Punch List will be made as specific and complete as possible, and will include the listing of all specified closing items required of the Contractor, such as Record Drawings, maintenance manuals, written guarantees, etc.) Any items observed or noted subsequent to Punch List preparation, shall also be corrected prior to re-inspection, unless the Architect determined, in writing, that any such items properly fall into the category of work to be corrected during the warranty/guarantee period.
1. Architect's Punch List preparation will be scheduled and respective contractors, sub-contractors and vendors shall be present during the Punch List inspection. Sub-Contractors, contractors and vendors will be required to show operational status of items in project scope of each respective discipline.
 2. Mechanical, Electrical, and other consultants Punch List preparation will be scheduled and respective sub-contractor, contractors and vendors shall be present during the Punch List inspection. Sub-Contractors, contractors and vendors will be required to show operational status of items in project scope of each respective discipline.
 3. All Punch List items shall be completed and/or corrected before Contractor calls for Punch List re-inspection.
 - a. Architect shall be notified in writing by Contractor when all Punch List items are complete and project is ready for punch list back check by architect and consultants. Architect shall schedule punch list back check with contractor within 10 calendar days from receipt of written notice from Contractor.
 - b. Architect will allow contractor two, (2), punch list back check visits of all items. Any additional site visits for items not completed and acceptable to Architect after second site visit will charged to the contractor as a negative change order for time spent by Architect to do re-inspections and office related work including reimbursable expenses incurred due to additional site visits.

1.4 PROJECT ACCEPTANCE AND NOTICE OF COMPLETION

- A Notice of Completion will not be prepared nor moved forward for Owner approval until all of the following are complete:
1. Project Closeout 100% complete.
 2. Punch list items 100% complete.
 3. Record documents approved and delivered.
 4. All warranties and guarantees have been delivered and accepted by Owner and Architect.
 5. Training complete.
 6. The contractor(s) final verified report is filed with the Division of State Architect of the Department of General Services.
 7. OWNER is able to occupy all portions of the project as intended on Construction Documents.
 8. Contractor in direct contract with the owner upon completion of work shall execute certifications as follows:

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- a. Asbestos Certification shall be used for documentation of non-asbestos materials used in project.
 - b. PCB Certification shall be used for documentation of non-PCB materials used in project.
 - c. Lead Certification shall be used for documentation of non-lead materials used in project.
 - d. In-Service Certification Forms shall be used for all documentation of in-service activities. Copies of forms shall be included in maintenance and operation manuals.
 - e. Prevailing Wage Certification shall be used for conformation/certification that prevailing wage were paid for this project.
 - f. Affidavit of Payment of Debts and Claims and Release of Stop Notices shall be notarized and submitted as part of the project closeout requirement.
 - g. Extra Materials Receipt shall be signed by College M&O Director.
 - h. Training Attendees Form shall be completed by College staff attendees and acknowledged by the Project Inspector.
- B. Notice of Completion shall be prepared and approved by Owner prior to recording. The official project acceptance date shall be the date of Owner acceptance of the project and authorization to filing of the Notice of Completion. Owner shall record Notice of Completion within 10 days of acceptance of project as being complete. All warranties start dates will be Date of recordation of Notice of Completion.
- C. The project shall be accepted by the Owner who shall authorize after acceptance of the project the subsequent filing of the Notice of Completion. The final payment shall be made thirty-five (35) days from the date of recordation of the Notice of Completion, provided that: The Contractor shall furnish satisfactory evidence that all claims for labor and materials have been paid and that no claims shall have been presented to the Owner by any person or persons based upon any act or omission of the Contractor, and no Stop Notices or claims shall have been filed against said work or the property whereon it was done.
1. The Contractor in direct contract with the Owner must record and file with the Owner an Affidavit of Payment of Debts and Claims and Release of Stop Notices prior to request for project acceptance is considered by the Board of Trustees. By this document, the contractor hereby certifies that on date of document recordation, he/she has been paid in full less retainage for all materials and equipment furnished, for all labor and services performed, and for all known indebtedness and claims against the undersigned for damages arising in any manner on or against the Project, its land, improvements, and equipment of any kind.
 2. All others not limited to sub-contractors, lower tier contractors, suppliers, vendors and others providing services, materials, equipment and related items must record their liens and serve owner stop notice within thirty (30) days of the date the Notice of Completion is recorded to place and person indicated in project manual herein. (Civil Code §3116).

1.5 RECORD DOCUMENT SUBMITTALS

- A. General: Do not use record documents for construction purposes; protect from deterioration and loss in a secure, fire-resistive location; provide access to record documents for the Architect's reference during normal working hours.
- B. Record Drawings: Maintain a clean, undamaged set of black line white-prints of Contract Drawings and Shop Drawings. Mark the set to show the actual installation where the installation varies substantially from the Work as originally shown. Mark whichever drawing is most capable of showing conditions fully and accurately; where Shop Drawings are used,

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record a cross-reference at the corresponding location on the Contract Drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date.

1. Mark record sets with erasable pencil.
 2. Mark new information that is important to the Owner, but was not shown on Contract Drawings or Shop Drawings.
 3. Note related Change Order numbers where applicable.
 4. Submit one copy of record drawing for Architect's review.
 - a. Show all underground utility locations and routings by horizontal and vertical dimensions.
 - b. Show all overhead utility locations and routings by horizontal and vertical dimensions.
 - c. Clearly indicate at each affected detail and other Drawings a full description of changes made during construction. Call attention to each entry by drawing a "cloud" around the area(s) affected.
 5. Once reviewed and approved by the Architect, organize record drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates and other identification on the cover of each set. Provide Owner with two (2) copies black and white, original (1), original red-lined with changes and two flash drives of scanned black and white copies.
- C. Record Product Data: Maintain one copy of each Product Data submittal. Mark these documents to show significant variations in actual Work performed in comparison with information submitted. Include variations in products delivered to the site, and from the manufacturer's installation instructions and recommendations. Give particular attention to concealed products and portions of the Work which cannot otherwise be readily discerned later by direct observation. Note related Change Orders and mark-up of record drawings and Specifications.
1. Upon completion of mark-up, submit one complete set of record Product Data to the Architect for the Owner's records.
- D. Record Sample Submitted: Immediately prior to the date or dates of Substantial Completion, the Contractor will meet at the site with the Architect and the Owner's personnel to determine which of the submitted Samples that have been maintained during progress of the Work are to be transmitted to the Owner for record purposes. Comply with delivery to the Owner's Sample storage area.
- E. Miscellaneous Record Submittals: Refer to other Specification Sections for requirements of miscellaneous record-keeping and submittals in connection with actual performance of the Work. Immediately prior to the date or dates of Substantial Completion, complete miscellaneous records and place in good order, properly identified and bound or filed, ready for continued use and reference. Submit to the Architect for the Owner's records.

1.6 PROJECT CLOSEOUT BINDER(S) SUBMITTAL

- A. Submit requirements per project manual section(s) one copy in a binder(s) and two (2) copies of scanned data in binders on flash drives. See Project Closeout form at the end of this section for additional requirements. Note that this form shall be updated with additional materials and sections once Contractor starts submitting closeout documents to include issued addenda, RFPs, FCDs and other items added in the bid document

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during construction. All required number of years for warranty shall be provided by the Contractor. In the event this conflicts with manufacturer's warrant, more restrictive will prevail. If manufacturer will not meet requirements, Contractor shall take full responsibility for additional warranty requirement above what manufacturer will provide.

1. Binder(s)
 - a. Part 1 - Technical Sections
 - 1) Organize sections items per CSI Format descending order.
 - b. Part 2 - General Requirement items
 - 1) Tab in order per project list herein at end of this section.
2. Binder(s) shall have cover sheet inserted in front face and side label. Cover sheet shall have the following information:
 - a. Project name
 - b. College name
 - c. Date of Notice of Completion
 - d. Labeled "Part 1", in the event of multiple binders for a Part, add volume number and list sub-binders on title sheet with name of each specific binder.
 - e. General Contractor's name.
 - f. Index of items in binder.
3. Labeled divider tabs shall be provided for each section as listed on index on cover.
4. Each applicable section will have the following documents in order:
 - a. Subcontractor's Warranty
 - b. Product data
 - c. Manufacturer's warranty
 - 1) Each installed equipment, especially for Divisions 21, 22, 23 and 26, shall have warranties from manufacturers with project name stated in the certificate. All forms submitted to the manufacturers to secure warranty shall be enclosed as part of project closeout.
 - d. Proposal for continuing services and/or post construction inspection dates – if applicable
 - e. Tests/ reports/ certifications/ agreement between Contractor/ Manufacturer/ Subcontractor to repair and replace
 - f. Shop drawings
 - g. Cleaning data
 - h. Receipt of extra material acceptance by the M & O director – see form at the end of section
 - i. Training attendees' form – see form at the end of section
 - j. Other document required:
 - 1) Maintenance data
 - 2) Emergency Instructions
 - 3) Spare parts lists
 - 4) Wiring diagram
 - 5) Inspection procedure

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- 6) Recommended “turn around cycles”
- 7) Lubricants, special tools
- 8) Control sequences
- 9) Hazards
- 10) Fixture lamping schedule
- 11) Proof of training for equipment operation with list of attendees from College staff

C. Submit general requirements in another binder.

1. Binder shall have a cover sheet and side label. Cover shall have the following information:
 - a. Project name
 - b. College name
 - c. Date of Notice of Completion
 - d. Labeled “Part 2”
 - e. General Contractor’s name
2. Binder shall have table of contents. This binder will contain the following:
 - a. Demobilization information with General Contractor’s Letterhead and signed by Project Manager.
 - 1) Indicate dated for the following information:
 - a) Removal of temporary office
 - b) Removal of temporary fence barricades
 - c) Disconnect/safing temporary utilities
 - d) Repair temporary staging to pre-construction or specified condition
 - e) Removal of temporary toilets
 - f) Removal of miscellaneous construction debris/ excess materials
 - g) Removal of project sign, deliver to Owner if requested
 - h) Removal of miscellaneous project signs
 - i) Removal of trash dumpster
 - b. Instructions for Operating equipment signed off by College Staff (see Project Closeout form) with General Contractor’s Letterhead and signed by Project Manager.
 - c. Certification of no asbestos used or substituted
 - d. Certification of no lead containing products used or substituted
 - e. Certification of no PCB containing products used or substituted
 - f. Certification of substitutions made on project, if none state so
 - g. All substitution products shall be listed and shall indicate substitution number and date approved by the Architect.
 - h. Notarized affidavit of payment of debts and claims and release of stop notices
 - i. Prevailing wage reports/ documents
 - j. Verified DSA report
 - k. Consent of surety to final payment
 - l. Statement of final liquidated damages settlement
 - m. Final utility meter readings signed by Project Inspector

1.7 PROJECT CLOSEOUT NOTIFICATION, SURETY NOTIFICATION

- A. If requested in writing, the contractor will be given a project Close-out check list of items to be completed prior to project being accepted as complete. Contractor shall start project closeout no later than 90% completion of project and be complete prior to project punch list preparation/walk. This is contractor's first notice. Notice of Completion will not be filled until project closeout is complete.
- B. The contractor will be given a 20 calendar day notification that the project closeout is incomplete and notification that owner will complete project closeout work incomplete and assess contractor additional architectural and engineering fees incurred completing work not complete and per construction documents. Copy will be sent to surety.
- C. The contractor will be given a final 10-day notice to complete all project closeout items. The estimated amount of costs will be indicated therein that the owner will be spending for completing the project closeout. Items done by the owner and additional architect's fees will be deducted from funds due contractor. Copy will be sent to surety.
- D. If project closeout is not complete after deadline in Item "C" above, the notice of completion will be filed listing incomplete items. Owner will complete project closeout and deduct cost incurred from funds held. Balance of funds will be distributed per Contract Documents. Surety will be notified of actions taken.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 CLOSEOUT PROCEDURES

- A. Operating and Maintenance Instructions: Arrange for each installer of equipment that requires regular maintenance to meet with the Owner's personnel to provide instruction in proper operation and maintenance. If installers are not experienced in procedures, provide instruction by manufacturer's representatives. Include a detailed review of the following items:
 - 1. Maintenance manuals.
 - 2. Record documents.
 - 3. Spare parts and materials.
 - 4. Tools.
 - 5. Lubricants.
 - 6. Fuels.
 - 7. Identification systems.
 - 8. Control sequences.
 - 9. Hazards.
 - 10. Cleaning.
 - 11. Warranties and bonds.
 - 12. Maintenance agreements and similar continuing commitments.
- B. As part of instruction for operating equipment, demonstrate the following procedures:
 - 1. Start-up.
 - 2. Shutdown.

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3. Emergency operations.
4. Noise and vibration adjustments.
5. Safety procedures.
6. Economy and efficiency adjustments.
7. Effective energy utilization.

3.2 FINAL CLEANING

- A. General: General cleaning during construction is required by the General Conditions and included in Section "Temporary Facilities".
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to the condition expected in a normal, commercial building cleaning and maintenance program. Comply with manufacturer's instructions.
 1. Complete the following cleaning operations before requesting inspection for Certification of Notice of Completion.
 - a. Remove labels that are not permanent labels.
 - b. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compound and other substances that are noticeable vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials.
 - c. Clean exposed exterior and interior hard-surfaced finishes to a dust-free condition, free of stains, films and similar foreign substances. Restore reflective surfaces to their original reflective condition. Leave concrete floors broom clean. Vacuum carpeted surfaces.
 - d. Wipe surfaces of mechanical and electrical equipment. Remove excess lubrication and other substances. Clean plumbing fixtures to a sanitary condition. Clean light fixtures and lamps.
 - e. Clean the site, including landscape development areas, of rubbish, litter and other foreign substances. Sweep paved areas broom clean; remove stains, spills and other foreign deposits. Rake grounds that are neither paved nor planted, to a smooth even-textured surface.
- C. Removal of Protection: Remove temporary protection and facilities installed for protection of the Work during construction.
- D. Compliance: Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the Owner's property. Do not discharge volatile, harmful or dangerous materials into drainage systems. Remove waste materials from the site and dispose of in a lawful manner.

3.3 FORMS

- A. In-Service Certification Forms shall be used for all documentation of in-service activities. Copies of forms shall be included in maintenance and operation manuals.
- B. Asbestos Certification shall be used for documentation of non-asbestos materials used in project.
- C. PCB Certification shall be used for documentation of non-PCB materials used in project.
- D. Lead Certification shall be used for documentation of non-lead materials used in project.

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- E. Prevailing Wage Certification shall be used for conformation/certification that prevailing wage were paid for this project.
- F. Affidavit of Payment of Debts and Claims and Release of Stop Notices shall be notarized and submitted as part of the project closeout requirement.
- G. Project Closeout Liquidated Damages Contract Sum-Days Calculation shall be used for liquidated damages computation.
- H. Extra Materials Receipt shall be used for documentation of extra materials required by construction document; to be submitted to College M&O Director.
- I. Training Attendees Form shall be used for documentation of College staff that participated in the training scheduled and coordinated by the Contractor.

IN-SERVICE CERTIFICATION

Specification Section No. _____

Project: _____

Date: _____

Owner: _____

Architect: _____

File No: _____

Contractor: _____

Project No: _____

Inspector: _____

DSA Application No: _____

In-Service Conducted By: _____

Materials Reviewed: (Check Applicable Boxes)

- | | | |
|---|---|--|
| <input type="checkbox"/> Record Drawings | <input type="checkbox"/> Safety Procedures | <input type="checkbox"/> Controls Manipulation |
| <input type="checkbox"/> Warranties | <input type="checkbox"/> Cleaning Procedures | <input type="checkbox"/> Emergency Procedures |
| <input type="checkbox"/> Maintenance Agreement | <input type="checkbox"/> Identification Systems | <input type="checkbox"/> Noise/Vibration |
| <input type="checkbox"/> Operation & Maintenance
Manuals | <input type="checkbox"/> Start-Up | Adjustment |
| <input type="checkbox"/> Special Tools and Parts | <input type="checkbox"/> Control Sequences | <input type="checkbox"/> Effective Energy |
| | <input type="checkbox"/> Shut Down | Utilization |

Attendees (Please print name and sign below)

1. District Facilities Representative _____

2. Site Representative _____

3. District Maintenance Representatives (Plumbing) _____

(Mechanical) _____

(Electrical) _____

(Grounds) _____

4. Others Present (P.I. General Contractor) _____

Meeting Date _____ Time of Start _____ Time of Completion _____

I certify that the above named in-service covered all aspects of the specialty for which it was convened.

Signature _____ Date _____

ASBESTOS CERTIFICATION

Specification Section No. _____

Project: _____

Date: _____

Owner: _____

Architect: _____

Contractor: _____

Inspector: _____

File No: _____

Project No: _____

DSA Application No: _____

To: _____

From: _____

Subject: **Asbestos Containing Building Materials Letter**

I hereby certify that, to the best of my knowledge, the materials furnished and/or installed

by _____ or its
(Name of Contractor)

subcontractor for _____ located at
(Name of Project)

_____ do not contain Asbestos-
(Project Address)

Containing Building Materials.

Signed: _____

Position: _____

Dated: _____

PCB CERTIFICATION

Specification Section No. _____

Project: _____ Date: _____

Owner: _____

Architect: _____ File No: _____

Contractor: _____ Project No: _____

Inspector: _____ DSA Application No: _____

To: _____

From: _____

Subject: **PCB-Containing Building Materials Letter**

I hereby certify that, to the best of my knowledge, the materials furnished and/or installed

by _____ or its
(Name of Contractor)

subcontractor for _____ located at
(Name of Project)

_____ do not contain PCB-
(Project Address)

Containing Building Materials.

Signed: _____

Position: _____

Dated: _____

LEAD CERTIFICATION

Specification Section No. _____

Project: _____

Date: _____

Owner: _____

Architect: _____

Contractor: _____

Inspector: _____

File No: _____

Project No: _____

DSA Application No: _____

To: _____

From: _____

Subject **Lead Containing Building Materials Letter**

I hereby certify that, to the best of my knowledge, the materials furnished and/or installed

by _____ or its
(Name of Contractor)

subcontractor for _____ located at
(Name of Project)

_____ do not contain Lead-
(Project Address)

Containing Building Materials.

Signed: _____

Position: _____

Dated: _____

PREVAILING WAGE CERTIFICATION

Project: _____ Date: _____
Owner: _____
Architect: _____ File No: _____
Contractor: _____ Project No: _____
Inspector: _____ DSA Application No: _____

To: _____

From: _____

Subject **Prevailing Wage Certification Letter**

I hereby certify that, all payments made to employees of Contractor and subcontractors are based on prevailing wage per Article 2 Chapter 1, Part 7, Division 2 of the California Labor Code and all contractors and subcontractors did furnished electronic certified payroll records directly to the Labor Commissioner (aka Division of Labor Standards Enforcement). Prevailing wage records for each pay request processed are on file and available upon request. Contact _____
(Name of Contact Person)

with _____ to request copies. Contact number is
(Contractor's Name)

_____ and office address is located at _____
(Office number)

(Contractor's Address)

Signed: _____

Position: _____

Dated: _____

AFFIDAVIT OF PAYMENT OF DEBTS AND CLAIMS AND RELEASE OF STOP NOTICES

Project: _____ Date: _____
Owner: _____
Architect: _____ File No: _____
Contractor: _____ Project No: _____
Inspector: _____ DSA Application No: _____

By this instrument, the undersigned hereby certifies that on this date, he/she has been paid in full less retainage for all materials and equipment furnished, for all labor and services performed, and for all known indebtedness and claims against the undersigned for damages arising in any manner on or against the PROJECT, its land, improvements, and equipment of any kind. Therefore, the undersigned does hereby waive and/or release any and all claims and/or stop notices against the PROJECT as of the _____ day of _____, in the year of 20_____.

COMPANY: _____

BY: _____

TITLE: _____

STATE OF _____

COUNTY OF _____

Before me the undersigned authority on this date personally appeared _____, Known to me to be the person whose name is subscribed to the foregoing instrument, and being first duly sworn, acknowledged to me that he executed the same for the purposes and consideration therein expressed and declared to me that the statements contained therein are true.

Sworn and subscribed to before me this _____ day of _____ year of 20_____.

Notary Public in and for said
State and County

My commission expires: _____

PROJECT CLOSEOUT LIQUIDATED DAMAGES CONTRACT SUM-DAYS CALCULATION

Project: _____ Date: _____
 Owner: _____
 Architect: _____ File No: _____
 Contractor: _____ Project No: _____
 Inspector: _____ DSA Application No: _____

Contract Days Actual			
	Original Contract Duration (Calendar Days)		
	Approved Change Orders (Calendar Days)		
	Adjusted Contract Days		
Liquidated Damages			
	Project Start Date		
	Project Completion Date		Actual Construction Days
	Liquidated Damages/Day		Difference Actual - Actual
	Liquidated Damages (Dollars)		
Contract Sum			
	Original Contract Sum (Dollars)		
	Approved Change Orders (Dollars)		
	Adjusted Contract Sum		
	Paid to Date		
	Retention withheld to date		
	Total Paid to date including Retention		
Adjusted Contract Sum			
	Balance Contract Sum less Total Paid to Date/Retention		
	Liquidated Damages		
	Testing/Inspections Back-Charges		
	Unused Allowances		
	Special Holdouts		
	Balance		
Stop Notices			
	Stop Notice amount x \$150%		
	Total		

EXTRA MATERIALS RECEIPT

Specification Section No. _____

Project: _____
Owner: _____
Architect: _____
Contractor: _____
Inspector: _____

Date: _____

File No: _____

Project No: _____

DSA Application No: _____

List of Materials to surrender to M&O office/Director:

Item #	Qty.	Description

I certify that the above extra materials are all in good condition and meet the required quantity per construction documents.

Submitted by:

Signature _____ Date _____

Received by:

Signature _____ Date _____

TRAINING ATTENDEES FORM

Specification Section No. _____

Project: _____ Date: _____

Owner: _____

Architect: _____ File No: _____

Contractor: _____ Project No: _____

Inspector: _____ DSA Application No: _____

Subject: _____

Location: _____

Description of Training: _____

List of Attendees:

Name	Department	Signature

Submitted by:

Signature _____ Date _____
Contractor

Acknowledged by:

Signature _____ Date _____
Project Inspector

PROJECT CLOSEOUT CHECKLIST

pub. rev. 04/05/04

PROJECT: _____
PROJECT NO: _____
CONTRACTOR: _____

DATE INITIAL REQUEST: _____
DATE DUE BACK: _____

STATUS: _____
 Initial request for documents
 Incomplete see below
 Accepted as complete
Date completed: _____

LEGENDS:
C - Contractor
S - Subcontractor
O - Owner
A - Architect
E - Engineer
PI - Project Inspector
M - Manufacturer

PROJECT CLOSEOUT

PART 1- General Closeout Items

Provide information as required in the Project Manual. See checklist below for items required. Tabulate each section and provide information required.

1. Project identification sheets
 - a. Project name, location, date of start/completion of construction
 - b. Copy of Completed Project Closeout Checklist
 - c. Copy of Notice of Completion
2. Project contacts, names, address, phone numbers, fax number, email and web sites.
 - a. General contractor
 - b. Sub-contractors/lower tier sub-contractors
 - 1) List by CSI format
 - c. Suppliers direct to Contractor
3. Project Warranties
 - a. List by CSI format
4. Maintenance Agreements
 - a. List by CSI format
5. Record Drawings flash drive
 - a. Plastic sleeve with record drawings scanned to flash drive.
6. Forms
 - a. In-Service Certification Forms shall be used for all documentation of in-service activities. Copies of forms shall be included in maintenance and operation manuals.
 - b. Asbestos Certification shall be used for documentation of non-asbestos materials used in project.
 - c. PCB Certification shall be used for documentation of non-PCB materials used in project.
 - d. Lead Certification shall be used for documentation of non-lead materials used in project.
 - e. Affidavit of Payment of Debts and Claims and Release of Stop Notices shall be notarized and submitted as part of the project closeout requirement.
 - f. Affidavit of Substitutions shall be notarized and submitted as part of the project closeout requirement.
 - g. Extra Materials Receipt shall be used for documentation of extra materials required by construction. document; to be submitted to M&O Director.
 - 1) Provide form for each material by Technical Section
 - h. Training Attendees Form shall be used for documentation of College staff that participated in the training scheduled and coordinated by the Contractor.
 - 1) Provide form for each material by Technical Section.

PART 2 - Technical Section Close out items

Provide information as required in technical section of the Project Manual. See checklist below for items required. Tabulate each section and provide information required. Warranty information will be provided in Binder one under tab 3 and also in each technical section. Information requested herein shall be the minimum requirements.

SECTION	SECTION NAME	BY	DATE COMPLETED
002113	INSTRUCTION TO BIDDERS Copy of Dust Control Plan Sections 1-6 (submitted to Region Office) Copy of submitted San Joaquin Valley Air Pollution form	<u>C</u> <u>C</u>	<u> </u> <u> </u>
014000	QUALITY CONTROL SERVICES Weigh Master Certificate	<u>S</u>	<u> </u>
018000	CONSTRUCTION WASTE REDUCTION/ DISPOSAL & RECYCLING Construction Waste Management Plan Construction Waste Management Worksheet(s) Construction Waste Management Acknowledgement	<u>C</u> <u>C</u> <u>C</u>	<u> </u> <u> </u> <u> </u>
033000	CAST-IN –PLACE CONCRETE Warranty – 15 years for concrete sealer/hardener/curing compound	<u>M</u>	<u> </u>
033020	EPOXY INJECTION REPAIR SYSTEMS Warranty - 5 year	<u>S</u>	<u> </u>
062000	FINISH CARPENTRY Cleaning and maintenance data	<u>S</u>	<u> </u>
064000	INTERIOR ARCHITECTURAL WOODWORK WI Certificate of Compliance for installation Cleaning and maintenance	<u>S</u>	<u> </u>
064100	SOLID POLYMER FABRICATION Cleaning and maintenance Warranty – 10 years	<u>S</u> <u>M</u>	<u> </u> <u> </u>
071100	SHEET MEMBRANE WATERPROOFING 5-year written warranty	<u>S</u>	<u> </u>
072410	EXTERIOR INSULATION AND FINISH SYSTEM Cleaning and maintenance data	<u>S</u>	<u> </u>
073113	ASPHALT SHINGLES Manufacturer's standard warranty - 20 year Roofing contractor warranty - 5 years Post construction inspection dates	<u>M</u> <u>S</u> <u>S</u>	<u> </u> <u> </u> <u> </u>
074114	MANUFACTURED ROOF PANELS Warranty manufacturer's finish - 20 years	<u>M</u>	<u> </u>

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	Weather tight warranty - 5 years	S	
	Post construction inspection dates	M	
075110	BUILT-UP ASPHALT ROOFING		
	Manufacturer's standard guarantee-10 years NDL	M	
	Roofing contractor warranty - 5 years	S	
	Maintenance data	S	
	Post construction inspection dates	M	
	Tentative schedule for annual roof walks for two (2) years	M	
075520	SBS-MODIFIED BITUMINOUS SHEET ROOFING		
	Manufacturer's standard guarantee-10 years NDL	M	
	Roofing contractor warranty - 5 years	S	
	Maintenance data	S	
	Post construction inspection dates	M	
075720	POLYURETHANE FOAM ROOFING		
	Manufacturer's standard guarantee-10 years NDL	M	
	Maintenance data	S	
	Post construction inspection dates	M	
075730	POLYMER MODIFIED PORTLAND CEMENT		
	Maintenance data	S	
	Warranty - 5 year	S	
075740	ELASTOMERIC, CRACK-BRIDGING, WATERPROOF TRAFFIC COAT		
	Maintenance data	S	
	Warranty - 5 year	S	
079200	JOINT SEALANTS		
	Warranty by installer - 5 years	S	
	Warranty manufacturer's-5 years	M	
081416	FLUSH WOOD DOORS		
	Warranty manufacturer lifetime from Contractor/Installer/Mfg.	S/C/M	
	Lifetime warranty from Door Manufacturer	M	
083323	OVERHEAD COILING DOORS		
	Maintenance data	S	
	Owner training	S	
083326	OVERHEAD COILING GRILLES		
	Maintenance data	S	
	Owner training	S	
084113	ALUMINUM ENTRANCES AND STOREFRONTS		
	Warranty manufacturer's-3 years	M	

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084500	INSULATED TRANSLUCENT WALL PANEL SYSTEM		
	Warranty – 5 years	M	_____
	Installation Warranty against leakage – 5 years	S	_____
	Special Warranty – 2 years (see Section 08950 item 1.7)	S	_____
087100	DOOR HARDWARE		
	Supplier written verification that all hardware is functioning properly and installed per manufacturer	S	_____
	Disc of final hardware list	S	_____
	Warranties:		
	Closers - 10 years	S	_____
	Exit devices - 3 years	S	_____
	Hinges - life of building	S	_____
	All other hardware - 2 years	S	_____
	Tools & instructions of each device/hardware item	S	_____
	Evidence for six month adjustment	S	_____
	Key transcript:		
	Owner instruction in adjustment/maintenance	S	_____
	Tentative date for 6-month 24-month adjustment of hardware/report	S	_____
086200	PLASTIC UNIT SKYLIGHTS		
	Warranty manufacturer's standard-10 year	M	_____
	Plastic warranty-5 year	S	_____
088000	GLASS AND GLAZING		
	Insulated glass warranty 5 year	M	_____
088300	MIRRORED GLASS		
	5-Year mirror glass warranty	M	_____
093013	TILE		
	Extra material 3% each type/color (see form)	S	_____
	Cleaning and maintenance data	S	_____
	Grout sealer 2-year warranty	S	_____
095113	ACOUSTICAL PANEL CEILINGS		
	Extra material 2% (three case minimum each type of ceiling) (see form)	S	_____
095123	ACOUSTIC TILE CEILING		
	Extra material 2% (see form)	S	_____
096466	WOOD ATHLETIC FLOORING ASSEMBLIES		
	Warranty – 3 years	M	_____
	Special warranty – 3 years (see section item 1.7)	M/S/C	_____
096513	RESILIENT WALL BASE AND ACCESSORIES		
	Extra material - see section item 1.7.A (see form)	S	_____
	Cleaning and maintenance data	S	_____

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096516	SHEET VINYL FLOOR COVERINGS Extra materials – see section item 1.7.A (see form)	S	
096519	RESILIENT TILE FLOORING Extra material 1/50 (see form) Cleaning and maintenance data	S S	
096536	STATIC-CONTROL RESILIENT FLOOR COVERINGS Extra material 1/50 (see form) Cleaning and maintenance data	S S	
096566	RESILIENT SPORTS FLOOR COVERING 5-year warranty for Mondo Super X 3-year warranty for Mondo Hijolt interlocking athletic mats 3-year warranty for Mondo Ramflex/Sports Impact 10-year warranty from Koster (bead-blasting) Extra material - see section item 1.7.A (see form) Cleaning and maintenance data	M M M M S S	
096613	TERRAZZO Cleaning and maintenance data	S	
096623	RESINOUS MATRIX TERRAZZO FLOORING Manufacturer & Installer's 3-year warranty for joints and moisture vapor barrier from moisture blistering and disbondment Cleaning and maintenance data	M/S S	
096723	EPOXY POLYMER FLOORING 10-year warranty from Koster (bead-blasting) Cleaning and maintenance data	M S	
096813	CARPET TILE Extra materials 5% full width of each color/type (see form) Rubber backing warranty Lifetime wear Lifetime edge panel 10-year Colorfastness to Light Warranty 5-year Warranty to Colorfastness to Atmospheric Contaminants Lifetime static Lifetime delamination and zippering Cleaning and maintenance data	S M M M M M M M M	
096816	BROADLOOM CARPET Extra materials 5% full width of each color/type (see form) Certification non-use of Phenylcyclohexene (4PC) Warranty from manufacture of each type of materials Lifetime wear	S S M M	

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	Lifetime edge panel	M	
	10 years texture retention	M	
	Lifetime static	M	
	Lifetime delamination and zippering	M	
	Cleaning and maintenance data	M	
097200	PRESENTATION DRY ERASE WALLCOVERING		
	5-Year warranty	M	
097100	WALL COVERINGS		
	Extra material 2% of each color/type full rolls minimum (see form)	S	
	Cleaning and maintenance data	S	
097115	FRAMED DECORATIVE PANEL SYSTEMS		
	Installer's 5-year warranty	S	
	Cleaning and maintenance data	S	
097723	FIBERGLASS REINFORCED PANELS (FRP)		
	Certification for Class A material	M	
	Extra materials 2% - minimum 2 full size sheets each color (see form)	S	
	Cleaning and maintenance data	S	
097723	VINYL COVERED TACK BOARD		
	Extra materials 2% - minimum 2 full size sheets each color (see form)	S	
	Cleaning and maintenance data	S	
098410	SOUND ABSORPTION PANELS		
	Extra materials 2% - minimum 2 full size sheets each color (see form)	S	
	Cleaning and maintenance data	S	
099000	PAINTING		
	Extra materials unopened containers - accepted and signed by M&O	S	
100000	MISCELLANEOUS ITEMS		
	Warranty for stair nosing – 3 years	S	
	Warranty for detectable warning mat – 5 years	S	
	Warranty for coated outdoor benches and tables – 5 years	S	
	Warranty for interlocking athletic mats – 3 years	S	
	Cleaning and maintenance data	S	
101100	VISUAL DISPLAY BOARDS		
	10-year warranty marker boards	M	
	Cleaning and maintenance data	S	
101423	SIGNS		
	Cleaning and maintenance data	S	
	Warranty - 5 years	S	

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101426	EXTERIOR POST AND PANEL SIGNS Cleaning and maintenance data Warranty 5 years	<u>S</u> <u>S</u>	<u> </u> <u> </u>
102113	TOILET COMPARTMENTS Cleaning and maintenance data Warranty – 15 years	<u>S</u> <u>M</u>	<u> </u> <u> </u>
102239	OPERABLE PANEL PARTITIONS Extra materials (see form) Cleaning and maintenance data	<u>S</u> <u>S</u>	<u> </u> <u> </u>
102600	IMPACT-RESISTANT WALL PROTECTION Cleaning and maintenance data Warranty – 5 years	<u>S</u> <u>M</u>	<u> </u> <u> </u>
102800	TOILET AND BATH ACCESSORIES Cleaning and maintenance data Mirror warranty 15 years Bobrick accessories – 3 years Changing station – 5 years	<u>S</u> <u>M</u> <u>M</u> <u>M</u>	<u> </u> <u> </u> <u> </u> <u> </u>
102819	SHOWER AND BATH ENCLOSURE Cleaning and maintenance data Glass warranty 15 years	<u>S</u> <u>M</u>	<u> </u> <u> </u>
103500	ACCESS FLOORING Adjust final Clean prior to final inspection Cleaning and maintenance data Extra material equal to 2% for each type/color (see form)	<u>S</u> <u>S</u> <u>S</u> <u>S</u>	<u> </u> <u> </u> <u> </u> <u> </u>
100562	MOBILE STORAGE SHELVING Cleaning and maintenance data Warranty executed by Contractor/Installer/Manufacturer 5-year warranty	<u>S</u> <u>M/C/S</u> <u>M</u>	<u> </u> <u> </u> <u> </u>
107516	FLAGPOLES Cleaning and maintenance data	<u>S</u>	<u> </u>
111319	LOADING DOCK EQUIPMENT Adjust final Cleaning and maintenance data Warranty 2 years Factory start up owner training	<u>S</u> <u>S</u> <u>S</u> <u>S/M</u>	<u> </u> <u> </u> <u> </u> <u> </u>
113150	APPLIANCES Cleaning and maintenance data	<u>S</u>	<u> </u>

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114000	FOOD SERVICE EQUIPMENT Cleaning and maintenance data	S	
115123	LIBRARY EQUIPMENT Cleaning and maintenance data	S	
115213	PROJECTION SCREENS Cleaning and maintenance data	S	
116653	GYMNASIUM DIVIDERS Cleaning and maintenance data	S	
117200	EMERGENCY RESPONSE STATIONS Warranty 5 years (2 years for electronic) Cleaning and maintenance data	S S	
122100	DRAPERIES Cleaning and maintenance data	S	
122110	WINDOW TREATMENT HARDWARE Cleaning and maintenance data	S	
122113	HORIZONTAL LOUVER BLINDS Cleaning and maintenance data	S	
122116	VERTICAL LOUVER BLINDS Cleaning and maintenance data	S	
122410	HORIZONTAL WINDOW SHADES Cleaning and maintenance data	S	
122413	ROLLER SUNSCREEN 5-year Warranty on motor and control system 10-year Non-depreciating warranty on EcoVeil Standard 25-year Non- depreciating limited warranty on hardware and shadecloth 1 year warranty on installation from date of Substantial Completion Cleaning and maintenance data	M M M S S	
122414	SHADES Cleaning and maintenance data	S	
115313	LABORATORY TOPS AND ACCESSORIES Cleaning and maintenance data	S	
126900	FLOOR MATS AND FRAMES Cleaning and maintenance data	S	
142100	ELECTRIC TRACTION ELEVATORS		

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	Cleaning and maintenance data	S	
	Warranty 1 year	S	
	Maintenance service - 3 years	S	
	Continuing Maintenance service proposal	S	
	Regulatory approval approving installation	S/C	
	Owner demonstration	S	
142400	HYDRAULIC ELEVATORS		
	Cleaning and maintenance data	S	
	Warranty 1 year	S	
	Maintenance service 1 year	S	
	Continuing Maintenance service proposal	S	
	Regulatory approval approving installation	S/C	
	Owner demonstration	S	
211313	WET-PIPE SPRINKLER SYSTEM		
	System written final test report	S	
	Extra materials/tools (see form)	S	
220000	PLUMBING		
	Operating instructions & maintenance procedure	S	
	Summary list of plumbing fixtures/ equipment	S	
	Servicing instructions	S	
	6-year warranty certificate of water heater with serial number	M	
	5-year warranty certificate of expansion tank with serial number	M	
	3-year warranty of circulation pump with serial number	M	
230000	HVAC		
	Operating instructions & maintenance procedure	S	
	Servicing instructions	S	
	10-year warranty certificate of boiler with serial number	S	
	Air Handlers' warranty with serial number	S	
	Test & Balance report approved by Mechanical Engineer	S	
	Complete wiring and control diagrams for all equipment	S	
	Hydronic piping tests approved by the Project Inspector	S	
230900	INSTRUMENTATION AND CONTROL FOR HVAC		
	Operating instructions & maintenance procedure	S	
	Training Schedule (see form)	S	
	Servicing instructions	S	
	3-year installer's warranty	S	
	Statement of Owner's acceptance and approval by Mechanical Engineer	S	
260000	ELECTRICAL		
	Operating instructions & maintenance procedure	S	
	Field Test Reports approved by Electrical Engineer	S	
	Servicing instructions	S	

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161380	UNDERFLOOR RACEWAYS FOR ELECTRICAL SYSTEM		
	Extra materials (see Section item 1.6) (see form)	S	_____
	Operating instructions & maintenance procedure	S	_____
	Field quality control test reports	S	_____
261219	MEDIUM-VOLTAGE TRANSFORMERS		
	Operating instructions & maintenance procedure	S	_____
262413	SWITCHBOARD		
	Operating instructions & maintenance procedure	S	_____
262416	PANELBOARDS		
	Operating instructions & maintenance procedure	S	_____
164610	DRY-TYPE TRANSFORMERS		
	Operating instructions & maintenance procedure	S	_____
265100	INTERIOR LIGHTING		
	Special warranty on rechargeable batteries for exit signs	M/S	_____
	Special warranty on fluorescent ballasts	M/S	_____
	5-year special warranty on electronic ballasts	M/S	_____
265600	EXTERIOR LIGHTING		
	Warranty – 3 years (see section item 1.7)	M/S	_____
165210	FIRE ALARM SYSTEM		
	Fire alarm system record of completion	S	_____
165210	VOICE AND DATA CABLING		
	Map & test result	S	_____
281601	ACCESS CONTROL AND SECURITY SYSTEM		
	3-year warranty	S/M	_____
	Extra materials (see form)	S	_____
	Owner training (see form)	S	_____
	Written final test report for all systems	S	_____
282300	VIDEO SURVEILLANCE SYSTEM		
	3-year warranty	S/M	_____
	Extra materials (see form)	S	_____
	Owner training (see form)	S	_____
	Written final test report for all systems	S	_____
263100	PHOTOVOLTAIC ENERGY EQUIPMENT		
	25- year warranty on photovoltaic array	M	_____
	5-year warranty on inverters	M	_____
	Extra materials (see form)	C	_____
	Owner training (see form)	C	_____

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	Final test report	<u>C</u>	<u> </u>
328400	UNDERGROUND IRRIGATION SYSTEM		
	Extra materials accepted and signed by M&O (see form)	<u>S</u>	<u> </u>
	Owner instructions and training (see form)	<u>S</u>	<u> </u>
	Maintenance instructions	<u>S</u>	<u> </u>
	Valve station charts - photocopy of laminated	<u>S</u>	<u> </u>
	Sprinkler central computer controller system service plan – 3 years	<u>S</u>	<u> </u>
329000	LANDSCAPE WORK		
	Chemical analysis certified report	<u>S</u>	<u> </u>
	Maintenance procedures for 1-year cycle	<u>S</u>	<u> </u>
	Maintenance period scope - start/completion dates	<u>S</u>	<u> </u>
312000	EARTHWORK		
	Soils engineer's written statement confirming substantial completion of earthwork operations and construction documents	<u>E</u>	<u> </u>
313116	TERMITE CONTROL		
	Warranty - 5 years, special	<u>S</u>	<u> </u>
	Proposal for continuing services - service agreement	<u>S</u>	<u> </u>
331000	WATER DISTRIBUTION		
	Water sample test results	<u>S</u>	<u> </u>
	Report of purging and disinfecting report	<u>S</u>	<u> </u>
	Maintenance Data	<u>S</u>	<u> </u>
	Manufacturer's Certificate	<u>S</u>	<u> </u>
	Meter Test Report	<u>S</u>	<u> </u>
	Hydrostatic Test Report	<u>S</u>	<u> </u>
	Disinfection's Report	<u>S</u>	<u> </u>
	Bacteriological Report	<u>S</u>	<u> </u>
333000	SANITARY SEWERAGE		
	Piping test for leaks/defects, document time, date, results	<u>S</u>	<u> </u>
334000	STORM DRAINAGE		
	Piping test for leaks/defects, document time, date, results	<u>S</u>	<u> </u>
334100	PRECAST TRENCH DRAIN AND CATCH BASIN SYSTEM		
	Warranty - Signed jointly by Installer, Manufacturer and Contractor	<u>S/M/C</u>	<u> </u>
335000	NATURAL GAS DISTRIBUTION		
	Piping pressure test results, document time, date, results	<u>S</u>	<u> </u>

PART 3 - Specific Close out items

RECORD DRAWINGS –Full size drawings.

Provide original red lined record drawings, full size and one (1) black and white copy, full size. Provide two copies,

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(2) on flash drive of digitally color scanned record drawings.

CONTRACTOR DSA CLOSE OUT REQUIREMENTS:

Weigh master certificates for Concrete
Verified DSA Reports

 C _____
 C _____

PREVAILING WAGE CERTIFICATION:

Prevailing Wage Certification: Statement shall be used for
conformation/certification that prevailing wage were paid for this project.

 C _____

PART 4 – Final Payment

FINAL PAYMENT:

The following items shall be completed and accepted prior to acceptance of final pay request and consideration for payment by owner. All the above items shall be complete and accepted by Architect and Owner

Affidavit of Payment of Debts and Claims and Release of Stop Notices
Consent of Surety to Final Payment
Final Liquidated Damages settlement statement
Final Pay Request
File Notice of Completion

 C _____
 C _____
 C _____
 C _____
 O _____

END OF SECTION 017700

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division 0 & 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section specifies general administrative and procedural requirements for warranties and bonds required by the Contract Documents, including manufacturer's standard warranties on products and special warranties.
 - 1. Refer to the General Conditions for terms of the Contractor's special warranty of workmanship and materials.
 - 2. General closeout requirements are included in Section "Project Closeout."
 - 3. Specific requirements for warranties for the Work and products and installations that are specified to be warranted, are included in the individual Sections of Divisions 2 through 33.
 - 4. Certifications and other commitments and agreements for continuing services to Owner are specified elsewhere in the Contract Documents.
 - 5. Items that are omitted and/or different than specified/indicated herein and on Construction Documents and items not indicated as a change on Submittals, shall be warranted as required in Sections 006002 and 013300.
- B. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products, nor does it relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.
- C. Notwithstanding any tests, approvals, certificates, commissioning, inspection or otherwise by the Owner, Architect or any other consultant employed by or on behalf of the employer, the Contractor shall be and remain fully and exclusively responsible and liable for ensuring that his works, and all goods and materials therein are in every respect and detail in accordance with the Contract Documents, and no such tests, approval certificates, commissioning, inspection or otherwise shall in any way diminish or negate the Contractor's responsibility or liability as foresaid.

1.3 WARRANTY REQUIREMENTS

- A. Related Damages and Losses: When correcting warranted Work that has failed, remove and replace other Work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted Work.
- B. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.
- C. Replacement Cost: Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefited from use of the Work through a portion of its anticipated useful service life.
- D. Owner's Recourse: Written warranties made to the Owner are in addition to implied warranties, and shall

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not limit the duties, obligations, rights and remedies otherwise available under the law, nor shall warranty periods be interpreted as limitations on time in which the Owner can enforce such other duties, obligations, rights, or remedies.

1. Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selections to products with warranties not in conflict with requirements of the Contract Documents.
- E. The Owner reserves the right to refuse to accept Work for the Project where a special warranty, certification, or similar commitment is 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.

1.4 SUBMITTALS

- A. Submit written warranties to the Architect prior to the date certified for Notice of Completion. If the Architect's Certificate of Notice of Completion designates a commencement date for warranties other than the date of Notice of Completion for the Work, or a designated portion of the Work, submit written warranties upon request of the Architect.
1. When a designated portion of the Work is completed and occupied or used by the Owner, by separate agreement with the Contractor during the construction period, submit properly executed warranties to the Architect within fifteen days of completion of that designated portion of the Work.
- B. When a special warranty is required to be executed by the Contractor, or the Contractor and a subcontractor, supplier or manufacturer, prepare a written document that contains appropriate terms and identification, ready for execution by the required parties. Submit a draft to the Owner through the Architect for approval prior to final execution.
1. Refer to individual Sections of Divisions 2 through 33 for specific content requirements, and particular requirements for submittal of special warranties.
- C. Bind warranties and bonds in heavy-duty, commercial quality, durable 3-ring vinyl covered loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2" by 11" paper.
1. Provide heavy paper dividers with celluloid covered tabs for each separate warranty. Mark the tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product, and the name, address and telephone number of the installer.
 2. Identify each binder on the front and the spine with the typed or printed title "WARRANTIES AND BONDS, the Project title or name, and the name of the Contractor.
 3. When operating and maintenance manuals are required for warranted construction, provide additional copies of each required warranty, as necessary, for inclusion in each required manual.

PART 2 - PRODUCTS (Not Applicable).

PART 3 – EXECUTION

3.1 FORMS

- A. Project Warranty Form, see attached.
- B. Subcontractor Warranty Form, see attached.

END OF SECTION 017800

PROJECT WARRANTY

Project: XX
XX College
Owner: XX Community College District
Architect: AP Architects
Contractor:
Inspector:

Date:

File No:
Project No:
DSA Appl No:

_____(Contractor) hereby warrants to the Owner that materials and equipment furnished under the Contract in the _____ (Name of Project) are of good quality and new unless otherwise required or permitted by the Contract Documents, that the Work is free from defects not inherent in the quality required or permitted, and that the Work conforms with the requirements of the Contract Documents. Work not conforming to these requirements, including substitution not properly approved and authorized, may be considered defective. This warranty excludes remedy for damage or defect caused by abuse, modifications not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear under normal usage.

If, within ___ year(s) after the date of Notice of Completion of the Work or designated portion thereof, or by terms of an applicable special warranty required by the Contract Documents extending this time period, and of the Work is found to be not in accordance with the requirements of the Contract Documents or proves to be defective in materials or workmanship, the Contractor expressly agrees to correct it, without expense to the Owner, promptly after receipt of written notice from the Owner or his agent to do so unless the Owner has previously given the Contractor written acceptance of the condition. This period of ___ year(s) shall be extended with respect to portions of the Work first performed after Notice of Completion by the period of time between Notice of Completion and the actual performance of Work. This obligation of the Contractor to correct the Work shall survive acceptance of the Work under the Contract and termination of the Contract. The Owner shall give such notice promptly after discovery of the condition.

Nothing contained in this warranty shall be construed to establish a period of limitation with respect to other obligations which the Contractor might have under the Contract Documents. Establishment of the time period of ___ year(s), or special extended time periods required by the Contract Documents, for correction of the Work as described above relates only to the specific obligation of the Contractor to correct the work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

In the event of the Contractor's failure to comply with the conditions of this warranty within 5 days after being notified in writing by the Owner or his agent, the Contractor hereby authorizes the Owner to proceed to have said defects repaired and made good at the Contractor's expense and the Contractor will honor and pay the costs and charges therefore upon demand.

The term "Work" means the construction and services required by the Contract Documents and includes all other labor, materials, equipment and services provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or part of the total construction performed under the Contract Documents.

Date _____

Contractor

Address

Telephone

Signature of Contractor

Title

SUBCONTRACTOR WARRANTY

Project: XX
XX College
Owner: XX Community College District
Architect: AP Architects
Contractor:
Inspector:

Date:

File No:
Project No:
DSA Appl No:

_____ (Subcontractor) hereby warrants to _____ (General Contractor) that materials and equipment furnished under the Contract, pursuant to Specifications Section(s) _____ in the _____ (Name of Project) are of good quality and new unless otherwise required or permitted by the Contract Documents, that the Work is free from defects not inherent in the quality required or permitted, and that the Work conforms with the requirements of the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. This warranty excludes remedy or damage or defect caused by abuse, modifications not executed by the Subcontractor, improper or insufficient maintenance, improper operation, or normal wear and tear under normal usage.

If, within ___ year(s) after the date of Notice of Completion of the Work or designated portion thereof, or by terms of an applicable special warranty required by the Contract Documents extending this time period, and of the Work is found to be not in accordance with the requirements of the Contract Documents or proves to be defective in materials or workmanship, the Subcontractor expressly agrees to correct it, without expense to the Owner, promptly after receipt of written notice from the Contractor to do so unless the Owner has previously given the Contractor written acceptance of the condition. This period of ___ year (s) shall be extended with respect to portions of the Work first performed after Notice of Completion by the period of time between Notice of Completion and the actual performance of Work. This obligation of the Subcontractor to correct the Work shall survive acceptance of the Work under the Contract and termination of the Contract. The Contractor shall give such notice promptly after discovery of the condition.

Nothing contained in this warranty shall be construed to establish a period of limitation with respect to other obligations which the Subcontractor might have under the Contract Documents. Establishment of the time period of ___ year(s), or special extended time periods required by the Contract Documents, for correction of the Work as described above relates only to the specific obligation of the Subcontractor to correct the work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Subcontractor's liability with respect to the Subcontractor's obligations other than specifically to correct the Work.

In the event of the Subcontractor's failure to comply with the conditions of this warranty within 5 days after being notified in writing by the Contractor, the Subcontractor, hereby authorizes the Contractor to proceed to have said defects repaired and made good at the Subcontractor's expense and the Subcontractor will honor and pay the costs and charges therefore upon demand.

The term "Work" means the construction and services required by the Contract Documents and includes all other labor, materials, equipment and services provided by the Subcontractor to fulfill the Subcontractor's obligations. The Work may constitute the whole or part of the total construction performed under the Contract Documents.

Date _____

Contractor

Address

Telephone

Signature of Contractor

Title

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 0 &1 Specification Sections, apply to this Section.
 - 1. Standard details and requirements per jurisdiction requirements, not limited to herein.

1.2 SUMMARY

- A. This Section includes, but not limited to, construction waste diversion and related items.
 - 1. Establish a Construction Waste Management (CWM) plan for the diverted materials, or meet local construction and demolition waste management ordinance, whichever is more stringent.
 - 2. Construction Waste Management (CWM) worksheet(s).
 - 3. Construction Waste Management (CWM) acknowledgement.
 - 4. Miscellaneous and related forms as required by local jurisdiction and Owner.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 1 Section “Project Closeout” for required closeout documents.
 - 2. Division 2 Section “Selective Demolition” for related items.

1.3 SUBMITTAL

- A. General: Submit for approval prior to initial pay application submission the following in accordance with Conditions of Contract and Division 1 Specification Sections.
 - 1. Construction Waste Management Plan.
 - 2. Construction Waste Management Worksheet(s).
 - 3. Construction Waste Management Acknowledgement.
 - 4. Copies of all applications, permits and related requirements, not limited to, herein and local jurisdiction requirements.
 - 5. Project Closeout Requirements:
 - a. Copies of all completed forms required herein
 - b. Compilation of Construction Waste Management (CWM) worksheet(s).
 - c. Receipts to document diversion.

1.4 QUALITY ASSURANCE

- A. Codes and Standards: Comply with provisions of following codes, specifications, and standards, except where more stringent requirements are shown or specified:
 - 1. Title 24, Part 1 CCR 2013, Chapter 5 (California Green Building Standard Code)
- B. Refer to Division 2 Section "Selective Demolition", for additional requirements.
- B. Refer to Division 2 Section “Building Demolition” for additional requirements.

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PART 2 – PRODUCTS (NOT APPLICABLE)

PART 3 – EXECUTION

3.1 CONSTRUCTION WASTE REDUCTION, DISPOSAL AND RECYCLING

- A. Construction waste diversion. Establish a construction waste management plan for the diverted materials, or meet local construction and demolition waste management ordinance, whichever is more stringent.
- B. Construction waste management plan (CWMP). Where a local jurisdiction does not have a construction and demolition waste management ordinance, submit a construction waste management plan for approval by the District that:
 - 1. Identifies the materials to be diverted from disposal by efficient usage, recycling, reuse on the project or salvage for future use or sale.
 - 2. Determine if materials will be sorted on-site or mixed.
 - 3. Identifies diversion facilities where materials collected will be taken.
 - 4. Specifies that the amount of materials diverted shall be calculated by weight or by volume, but not both.
 - 5. See sample forms at end of section.
- C. Documentation. Documentation shall be provided to the enforcing agency which demonstrates compliance with herein. The waste management plan shall be updated as necessary and shall be accessible during construction for examination by the District and Architect.
- D. Construction waste reduction of at least 65 percent. Recycle and/ or salvage for reuse a minimum of 65 percent of the non- hazardous construction and demolition debris, or meet a local construction and demolition waste management ordinance, whichever is more stringent. Calculate the amount of materials diverted by weight or volume, but not both.

Exceptions:

- 1. Excavated soil and land-clearing debris.
- E. 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. For a phased project, such material may be stockpiled on site until the storage site is developed, if approved by the District and Architect within 30 days of Notice to Proceed.

3.2 DISPOSAL OF WASTE/ DEMOLISHED MATERIALS

- A. Remove from building site debris, rubbish, and other materials resulting from demolition operations. Transport and legally disposed off site per Construction Waste Management Plan.
 - 1. If hazardous materials are encountered during demolition operations, comply with applicable regulations, laws, and ordinances concerning removal, handling, and protection against exposure or environmental pollution.
 - 2. Burning of removed materials is not permitted on project site.
- B. Demolition Permits and Disposal Requirements (Sample forms at end section):
 - 1. The District requires diversion of 65% of discarded materials from landfills, reusing for compliance with AB 939 goals. Contractor shall secure a demolition permit with local jurisdiction as prescribed in Section 002113 "Instructions to Bidders". The following

requirements are:

- a. Prepare Construction Waste Management Plan.
- b. Provide for all Contractor, subcontractor, vendor, workers a Construction Waste Management Acknowledgement. Keep files at project site. Provide copies for Project Closeout.
- c. Complete Construction and Demolition Recycling Program Application as required by local jurisdiction. Verify requirements prior to bidding.
- d. Inform all sub-contractors, vendors and employees about the recycling requirements, as Contractor will be held responsible for any materials they take away from the job site. Document acknowledgement with Construction Waste Management Acknowledgement Report. In order for Contractor to comply with recycling requirements, vendors, employees and subcontractors must take materials to an approved disposal/ recycling site and keep copies of disposal tickets for diversion rate.
 1. Track waste by weight or volume, but not both.
- e. Compliance: District will not accept project until it is determined that the Construction and Demolition waste/disposal has fully complied with the diversion requirements and recycling guidelines.
- f. Non-Compliance: If the Contractor fails to adhere to the Construction and Demolition Recycling Plan, the applicant will not receive project acceptance.
- g. Contractor shall complete a Construction Waste Management Worksheet for documenting compliance with the Waste Management Plan after completion of project, as a precedent to project acceptance.

B. Demolition Permits and Disposal Requirements:

1. The local jurisdiction requires diversion of 65% of discarded materials from landfills, reusing for compliance with AB 939 goals. Contractor shall secure a demolition permit as prescribed in Section 002113 "Instructions to Bidders". The following requirements are:
 - a. Complete Construction and Demolition Recycling Program Application.
 - b. The franchise hauler Mid Valley Disposal shall be the exclusive service provider for roll-off service and shall transport the Construction and Demolition material to their transfer station located at 15300W. Jensen Avenue, Kerman, California, for all projects that require a permit to build or deconstruct to spate material and divert a minimum of sixty-five percent (65%) of Construction and Demolition material form projects. Inform all sub-contractors, vendors and employees about the recycling requirements, as Contractor will be held responsible for any materials they take away from the job site. In order for Contractor to comply with recycling requirements, vendors, employees and subcontractors must take materials to Mid Valley Disposal and keep copies of weight tickets for diversion rate.
 - c. Compliance: If the local entity determines that the Construction and Demolition has fully complied with the diversion requirements and recycling guidelines, the local entity will provide final inspection and/or certificate of occupancy.
 - d. Non-Compliance: If the Contractor fails to adhere to the Construction and Demolition Recycling Plan, the applicant will not receive final inspection and/or certificate of occupancy.
 - e. Contractor shall complete a Waste Reduction and Recycling Report (WRRR) after completion of project, as a precedent to final inspection and/or issuance of any certificate of occupancy is approved by local entity.

END OF SECTION 018000

CONSTRUCTION WASTE MANAGEMENT (CWM) PLAN

Note: This sample form may be used to assist in documenting compliance with the waste management plan.

Project Name: _____
Job #: _____
Project Manager: _____
Waste Hauling Company: _____
Contact Name: _____

All Subcontractors shall comply with the project's Construction Waste Management Plan.
All Subcontractor foremen shall sign the CWM Plan Acknowledgement Sheet.

Subcontractors who fail to comply with the Waste Management Plan will be subject to backcharges or withholding of payment, as deemed appropriate. For instance, Subcontractors who contaminate debris boxes that have been designed for a single material type will be subject to backcharge or withheld payment, as deemed appropriate.

1. The project's overall rate of waste diversion will be _____ %.
2. This project shall generate the least amount of waste possible by planning and ordering carefully, following all proper storage and handling procedure to reduce broken and damaged material and reusing materials whenever possible. The majority of the waste that is generated on this jobsite will be diverted from the landfill and recycled for other use.
3. Spreadsheet 1, enclosed, identifies the waste materials that will be generated on this project, the diversion strategy for each waste type and the anticipated diversion rate.
4. Waste prevention and recycling activities will be discussed at the beginning of weekly subcontractor meetings. As each new subcontractor comes on-site, the WMP Coordinator will present him/her with a copy of the CWM Plan and provide a tour of the jobsite to identify materials to be salvaged and the procedure for handling jobsite debris. All Subcontractor foremen will acknowledge in writing that they have read and will abide by the CWM Plan. Subcontractor Acknowledgement Sheet enclosed. The CWM Plan will be posted at the jobsite trailer.
5. Salvage: Excess materials that cannot be used in the project, nor returned to the vendor, will be offered to site workers, the owner, or donated to charity if feasible.
6. _____ [HAULING COMPANY] will provide a commingled drop box at the jobsite for most of the construction waste. These commingled drop boxes will be taken to [Sorting Facility Name and Location]. The average diversion for commingled waste will be _____%. As site conditions permit, additional drop boxes will be used for particular phases of construction (e.g. concrete and wood waste) to ensure the highest waste diversion rate possible.
7. In the event that the waste diversion rate achievable via the strategy described in (6) above, is projected to be lower than what is required, then a strategy of source-separated waste diversion and/or waste stream reduction will be implemented. Source separated waste refers to jobsite waste that is not commingled but is instead allocated to a debris box designated for a single material type, such as clean wood or metal.
Notes:
 - a. Waste stream reduction refers to efforts taken by the builder to reduce the amount of waste generated by the project to below four (4) pounds per square foot of building area.
 - b. When using waste stream reduction measures, the gross weight of the product is subtracted from the base weight of four (4) pounds per square foot of building area. This reduction is considered additional diversion and can be used in the waste reduction percentage calculations.
8. _____ [HAULING COMPANY] will track and calculate the quantity (in tons) of all waste leaving the project and calculate the waste diversion rate for the project. [HAULING COMPANY] will provide Project Manager with an updated monthly report on gross weight hauled and the waste diversion rate being achieved on the project. [HAULING COMPANY's] monthly report will track separately the gross weights and diversion rates for commingled debris and for each source –separated waste stream leaving the project. In the event the [HAULING COMPANY] does not service any or all of the debris boxes on the project, the [HAULING COMPANY] will work with the responsible parties to track the material type and weight (in tons) in such debris boxes in order to determine waste diversion rates for these materials.
9. In the event that the Subcontractors furnish their own debris boxes as part of their scope of work, such Subcontractors shall not be excluded from complying with the CWM Plan and will provide [HAULING COMPANY] weight and waste diversion data for their debris boxes.
10. In the event that site use constraints (such as limited space) restrict the number of debris boxes that can be used for collection of designed waste the project Superintendent will, as deemed appropriate, allocate specific areas onsite where individual material types are to be consolidated. These collection points are not to be contaminated with non-designated waste types.
11. Debris from jobsite office and meeting rooms will be collected by [DISPOSAL SERVICE COMPANY]. [DISPOSAL SERVICE COMPANY] will, at a minimum recycle office paper, plastic, metal and cardboard.

CONSTRUCTION WASTE MANAGEMENT (CWM) WORKSHEET

Note: This sample form may be used to assist in documenting compliance with the waste management plan.

Project Name: _____			
Job Name: _____			
Project Manager: _____			
Waste Hauling Company: _____			
Construction Waste Management (CWM) Plan			
WASTE MATERIAL TYPE	DIVERSION METHOD		PROJECTED DIVERSION RATE
	COMMINGLED AND SORTED OFF SITE	SOURCE SEPARATED ON SITE	
Asphalt			
Concrete			
Shotcrete			
Metals			
Wood			
Rigid Insulation			
Fiberglass Insulation			
Acoustic ceiling tile			
Gypsum drywall			
Carpet/ carpet pad			
Plastic pipe			
Plastic buckets			
Plastic			
Hardiplank siding and boards			
Glass			
Cardboard			
Pallets			
Job office trash, paper, glass & plastic bottles, cans, plastic			
Alkaline and rechargeable batteries, toner cartridges and electronic devices			
Others:			
Others:			
Others:			
Others:			
Others:			

CONSTRUCTION WASTE MANAGEMENT (CWM) ACKNOWLEDGE

Note: This sample form may be used to assist in documenting compliance with the waste management plan.

Project Name: _____
Job Name: _____
Project Manager: _____
Waste Hauling Company: _____

CWM Plan Acknowledgement

The Foreman for each new Subcontractor that comes on site is to receive a copy of the Construction Waste Management Plan and complete this Acknowledgement Form.

I have read the Waste Management Plan for the project; I understand the goals of this plan and agree to follow the procedures described in this plan.

DATE	SUBCONTRACTOR COMPANY NAME	FOREMAN NAME	SIGNATURE

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 0 &1 Specification Sections, apply to this Section.
 - 1. Standard details and requirements per jurisdiction requirements, not limited to herein.

1.2 SUMMARY

- A. This Section includes, but not limited to, erosion and sedimentation controls and related items.
 - 1. Provide “Data Submitter” information to Legal Responsible Person (LRP)-(District).
 - 2. LRP creates project with “SMARTS” account. LRP will add “Data Submitter” to project.
 - 3. Data Submitter to input / upload information for Permit Registration Documents (PRD’s).
 - 4. LRP to submit PRD’s (SMARTS Protocol).
 - 5. State of Water Resources Control Board (SWRCB) will send notification of fees for permit, issues with PRD’s and/ or Notice of Intent (NOI).
 - 6. SWRCB will evaluate fees for permit. Permit for Waste Discharge/ Identification (WDID) number will be issued by SWRCB once fees are paid. LRP to pay fees for permit to SWRCB.
 - 7. SWRCB notifies LRP of approval of Notice of Intent (NOI) (NOI can be viewed at SMARTS website).
 - 8. Installation of temporary erosion control systems per PRD’s.
 - 9. Installation of temporary slope protection systems per PRD’s.
 - 10. Removal of temporary measures where required by SWPPP per PRD’s.
 - 11. Signage and posting per requirements per PRD’s.
 - 12. Annual report(s), file with SMARTS by Data Submitter.
 - 13. Post-Construction water balance calculation by Data Submitter.
 - 14. File Notice of Termination (NOT) upon completion of project with SMARTS by Data Submitter.
 - 15. Data Submitter to notify LRP of NOT filing. LRP to submit NOT (SMARTS Protocol).
 - 16. SWRCB to notify LRP NOI submitted.
 - 17. Miscellaneous requirements per local jurisdiction.
 - 18. TRPA BMP and coordination.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 1 Section “Summary of Work” for HCP requirements and related work.
 - 2. Division 1 Section “Temporary Facilities” for additional PRD’s requirements.
 - 3. Division 1 Section “ Project Closeout” for additional PRD’s requirements.
 - 4. Division 31 Section “Earthwork” for related items.
 - 5. Division 31 Section “Site Clearing” for related items.
 - 6. Division 33 Section “Utility Materials” for related items.

1.3 REQUIREMENTS

- A. The NOI and related fee shall be submitted electronically on the State Water Boards Stormwater Multi-Application and Report Tracking system (SMARTS) website, <http://smarts.waterboards.ca.gov> prior to the start of construction.

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1. The Owner will pay the filing fee, when prompted by SMARTS and notification of Data Submitter fees are ready to be paid.
- B. Definitions:
1. Data Submitter – prepares and inputs data for Contractor into SMARTS (paid by Contractor)
 2. LRP: Legal Responsible Person (District)
 3. PRD's: Permit Registration Document(s)
 4. SMARTS: Stormwater Multi Application and Report Tracking System
 5. NOI: Notice of Intent
 6. NOT: Notice of Termination
 7. SWRCB: State Water Resources Control Board
 8. RWQCB: Regional Water Quality Control Board
 9. WDID: Waste Discharge Identification
 10. ATS: Active Treatment System
- C. Standard PRD Requirements (All Dischargers) per SWRCB Requirements not limited to the following:
1. Notice of Intent
 2. Risk Assessment (Standard or Site-Specific)
 3. Site Map
 4. SWPPP
 5. Annual Fee (paid by LRP)
 6. Certification
- D. Additional PRD Requirements Related to Construction Type per SWRCB Requirements not limited to the following:
1. Discharger in unincorporated areas of the State (not covered under an adopted Phase I or II SUSMP requirements) and that are not a linear project shall also submit a completed:
 - a. Post-Construction Water Balance Calculator (Appendix 2, available online at SWRCB website).
 2. Dischargers who are proposing to implement ATS shall submit:
 - a. Complete ATS Plan in accordance with Attachment F at least 14 days prior to the planned operation of the ATS and a paper copy shall be available onsite during ATS operation.
 - b. Certification proof that design done by a professional in accordance with Attachment F (available online at SWRCB website).
 3. Dischargers who are proposing an alternate Risk Justification:
 - a. Particle Size Analysis.
- E. Description of PRDs per SWRCB Requirements not limited to the following:
1. Notice of Intent (NOI)
 2. Site Map(s) Includes:
 - a. The project's surrounding area (vicinity)
 - b. Site layout
 - c. Construction site boundaries
 - d. Drainage areas

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- e. Discharge locations
 - f. Sampling locations
 - g. Areas of soil disturbance (temporary or permanent)
 - h. Active areas of soil disturbance (cut or fill)
 - i. Locations of all runoff BMPs
 - j. Locations of all erosion control BMPs
 - k. Locations of all sediment control BMPs
 - l. ATS location (if applicable)
 - m. Locations of sensitive habitats, watercourses, or other features which are not to be disturbed
 - n. Locations of all post-construction BMPs
 - o. Locations of storage areas for waste, vehicles, service, loading/unloading of materials, access (entrance/exits) points to construction site, fueling, and water storage, water transfer for dust control and compaction practices.
3. SWPPPs
- a. A site-specific SWPPP shall be developed by each discharger and shall be submitted with the PRDs.
4. Risk Assessment - All dischargers shall use the Risk Assessment procedure as describe in the General Permit Appendix 1 (available online at SWRCB website).
- a. The Standard Risk Assessment includes utilization of the following:
 - 1) Receiving water Risk Assessment interactive map
 - 2) EPA Rainfall Erosivity Factor Calculator Website
 - 3) Sediment Risk interactive map
 - 4) Sediment sensitive water bodies list
 - b. The Site-Specific Risk Assessment includes the completion of the hand calculated R value Risk Calculator
5. Post-Construction Water Balance Calculator - All dischargers subject to this requirement shall complete the Water Balance Calculator (in Appendix 2) in accordance with the instructions.
6. ATS Design Document and Certification - All dischargers using ATS must submit electronically their system design (as well as any supporting documentation) and proof that the system was designed by a qualified ATS design professional (see Attachment F – available online at SWRCB website).
- F. Information For additional information contact:
- Regional Water Quality Control Board
Fresno Branch Office
1685 East Street
Fresno, CA 93706
(559) 445-5116
1. If this project transverses more than one Regional Water Quality Control Board (RWQCB) jurisdiction, a complete Notice of Intent package (Notice of Intent, site map, and fee) and Notice of Termination (upon completion of each section), must be filed for each RWQCB.
- G. Annual report required for projects under construction for more than one continuous 3 month period, no later than September 1, of each year. This shall be done on line via the SMARTS web site, see above, for the period July 1, to June 30. Provide information needed for overall program evaluation and public information.

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1. Summary and evaluation of all sampling and analysis results
2. Laboratory reports referenced specifically to SWPPP
3. Summary of all corrective actions taken during the compliance year and identification of any compliance activities.

1.4 EROSION CONTROL AND SLOPE PROTECTION IMPLEMENTATION

- A. Prevention Plan to be dictated by site conditions in order to maintain the intent of the specifications and permits at no additional cost to Owner.
- B. Owner has authority to limit surface area of erodible earth material exposed by clearing and grubbing, excavation, borrow and embankment operations and to direct Contractor to provide immediate permanent or temporary pollution control measures.
- C. Maintain temporary erosion control systems as directed by Owner or governing authorities to control siltation during life of contract. Contractor shall respond to maintenance or additional work ordered by Owner or governing authorities within 48 hours or sooner if required at no additional cost to the Owner.
- D. Slopes that erode easily or that will not be graded for a period of 14 days or more shall be temporarily seeded as work progresses with wheat, rye or oats application in accordance with City Standards unless otherwise specified on the Construction Drawings.

1.5 POSTING ON SITE

- A. Post and maintain all notices per SWPPP requirements and requirements herein not limited to the following:
 1. Construction trailer, post the following on a specific allocated board viewable by all parties to this project:
 - a. NOI
 - b. Permit
 - c. Inspection report clipboard
 - d. Site stabilization and Construction activity Dates log
 - e. Rainfall log
 2. Site
 - a. Notice of permit and application
 - b. Site map
 - c. Contractor contact information.
 - d. Sign that indicates the following, size 48" x 48":

SWPPP

Strictly Enforced

You Must

- Comply with all Government Agency Requirements
 - Use provided washout areas
 - Keep mud off streets

Failure to comply will result in a minimum \$1000 Fine.

END OF SECTION 018100

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 0 & 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section requires the selective removal and subsequent offsite disposal, unless noted otherwise, but not limited to, the following:
 - 1. Demolition and removal of selected portions of building or structure.
 - 2. Demolition and removal of selected site elements.
 - 3. Salvage of existing items to be reused or recycled.
 - 4. Removal of existing items indicated on Drawings and miscellaneous items required to complete project.
 - 5. Removal and protection of existing items, materials and equipment items indicated "salvage," or as required to facilitate new work.
- B. Hazardous materials: Hazardous materials are present in buildings and structures to be selectively demolished. A report on the presence materials is included for review and use. Examine report to become aware of locations where hazardous materials are present. Contractor shall abate and remove hazardous materials per these requirements and technical specifications SUMMARY OF COMPREHENSIVE ASBESTOS, LEAD, PCB, MERCURY & FLUORESCENT LIGHT TUBE INSPECTION FINDINGS prepared by YES Environmental, Inc. dated July 2023.
- C. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 1 Section "Construction Waste Reduction, Disposal and Recycling" for waste and disposal requirements.

1.3 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged or removed and reinstalled.
- B. Remove and Salvage: Carefully detach from existing construction, in a manner to prevent damage, and deliver to Owner ready for reuse.
- C. Remove and Reinstall: Detach items from existing construction, prepare for reuse, and reinstall where indicated.
- D. Existing to Remain: Existing items of construction that are not to be permanently removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

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1.4 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.
- B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.
 - 1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.5 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.
- B. Schedule indicating proposed sequence of operations for selective demolition work to Architect for review prior to start of work with starting and ending dates for each activity. Include coordination dates for shutoff, capping, and continuation of utility services as required for review and approval by Architect and Owner.
 - 1. Provide detailed sequence of demolition and removal work to ensure uninterrupted progress of Owner's on-site operations.
 - 2. Coordinate with Owner's continuing occupation of portions of existing facilities and with Owner's partial occupancy of completed work. Provide dates of partial occupancy availability of portions of work for owner's use.
 - 3. Proposed Protection Measures: Submit report, including drawings, that indicates the measures proposed for protecting individuals and property , for environmental protection , for dust control and, for noise control. Indicate proposed locations and construction of barriers.
 - 4. Note and secure prior approval by Owner and Architect in writing of any items that will impact the Owner's continuing operations and note dates of impact. If no impacts provide statement in submittal to that owner's continuing operations will not be impacted by project activities.
 - 5. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.
- C. Digital photographs of existing conditions of structure surfaces, equipment, and adjacent improvements that might be misconstrued as damage related to removal operations. Provide copies in submittal; prior to start of work.

1.6 CLOSEOUT SUBMITTALS

- A. Inventory: Submit a list of items that have been removed and salvaged.
- B. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes

1.7 QUALITY ASSURANCE

- A. Codes and Standards: Comply with provisions of following codes, specifications, and standards,

except where more stringent requirements are shown or specified:

1. Title 24, Part 1 CCR 2019, Chapter 5 (California Green Building Standard Code)
- B. Refrigerant Recovery Technician Qualifications: Certified by an EPA-approved certification program.

1.8 JOB CONDITIONS

- A. Occupancy: Owner will occupy portions of the building immediately adjacent to areas of selective demolition. Conduct selective demolition work in manner that will minimize need for disruption of Owner's normal operations. Provide minimum of 72 hours advance notice to Owner of demolition activities that will affect Owner's normal operations.
1. Refer to Section "Summary of Work" for limitations on noise generations, access and other restrictions.
- B. Condition of Facilities: Owner assumes no responsibility for actual condition of items or facilities to be demolished.
1. Conditions existing at time of inspection for bidding purposes will be maintained by Owner insofar as practicable. However, minor variations may occur by Owner's removal and salvage operations prior to start of selective demolition work.
 2. Owner has first right of refusal of salvaged items. Contractor shall dispose of all items Owner does not want. Owner will walk through project prior to start of demolition and mark items for salvage. Contractor to schedule walk within 7 days written advance notification of architect, owner, subcontractors and consulting engineers.
- C. Partial Demolition and Removal: Items indicated to be removed but of salvageable value to Contractor may be removed as work progresses. Transport salvaged items from site as they are removed. Document all items on Construction Waste Management Plan and reports.
1. Storage or sale of removed items on site will not be permitted.
- D. Protections: Provide temporary barricades and other forms of protection to protect Owner's personnel and general public from injury due to selective demolition work.
1. Provide protective measures as required to provide free and safe passage of Owner's personnel and general public to occupied portions of building.
 2. Erect temporary covered passageways as required by authorities having jurisdiction.
 3. Provide interior and exterior shoring, bracing, or support to prevent movement, settlement, or collapse of structure or element to be demolished and adjacent facilities or work to remain.
 4. Protect from damage existing finish work that is to remain in place and becomes exposed during demolition operations.
 5. Protect floors with suitable coverings when necessary.
 6. Construct temporary insulated dustproof partitions where required to separate areas where noisy or extensive dirt or dust operations are performed. Equip partitions with dustproof doors and security locks.
 7. Provide temporary weather protection during interval between demolition and removal of existing construction on exterior surfaces and installation of new construction to ensure that no water leakage or damage occurs to structure or interior areas of existing building.
 8. Close off supply and return air registers in construction area prior to starting any work. Maintain fresh air to construction area via fans and other means.

9. Remove protections at completion of work.
 10. Equipment, materials and supplies temporarily removed for protection shall be replaced in original locations. Any materials damaged shall be replaced with new materials of like kind and quality.
 11. Protect wall, trim, floors, equipment, utility lines and materials. When working on finished surfaces limit damage to the smallest area if possible and restore to the pre-construction condition all surfaces which are damaged because of the installation of this work.
- E. Damages: Promptly repair damages caused to adjacent facilities by demolition work.
- F. Traffic: Conduct selective demolition operations and debris removal to ensure minimum interference with roads, streets, walks, and other adjacent occupied or used facilities.
1. Do not close, block, or otherwise obstruct streets, walks, or other occupied or used facilities without written permission from authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.
- G. Flame Cutting: Do not use cutting torches for removal until work area is cleared of flammable materials. At concealed spaces, such as interior of ducts and pipe spaces, verify condition of hidden space before starting flame-cutting operations. Maintain portable fire suppression devices during flame-cutting operations.
- H. Utility Services: Maintain existing utilities indicated to remain in service and protect them against damage during demolition operations.
1. Do not interrupt utilities serving occupied or used facilities, except when authorized in writing by authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to governing authorities.
 2. Maintain fire protection services during selective demolition operations.
- I. Environmental Controls: Use water sprinkling, temporary enclosures, and other methods to limit dust and dirt migration. Comply with governing regulations pertaining to environmental protection.
1. Do not use water when it may create hazardous or objectionable conditions such as ice, flooding, and pollution.
- J. Fire safety during demolition.
1. Combustible Debris: Combustible debris shall not be accumulated within buildings and site. Combustible debris, rubbish and waste material shall be removed from buildings as often as practical. Combustible debris, waste material and trash shall not be burned on site.
 2. Motor Equipment: Internal-combustion-powered construction equipment shall be used in accordance with the following:
 - a. Equipment shall be located so that exhausts do not discharge against combustible material.
 - b. When possible, exhausts shall be piped to the outside of the building.
 - c. Equipment shall not be refueled while in operation.
 - d. Fuel for equipment shall be stored in an approved area outside of the building and provided for containment for any spills of containers over 5 gallons.
 3. Cutting and Welding: Cutting and welding operations shall be in accordance with Chapter 26 - California Fire Code.

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4. Flame-producing Equipment: The use of torches or flame-producing devices for the sweating of pipe joints shall be in accordance with Chapter 14 and Chapter 26 - California Fire Code.
5. Flammable Liquids: The storage, use and handling of flammable liquids shall be in accordance with Chapter 34 - California Fire Code. Ventilation shall be provided for operations utilizing the application of materials containing flammable solvents.
6. Open-flame Devices: Open-flame devices and other sources of ignition shall not be located in areas where flammable materials are being used.
7. Building Access: Access to buildings for the purpose of fire fighting shall be provided per CFC 501.4 and 1412.1 and CBC 3311.4. Construction material shall not block access to buildings, hydrants or fire appliances; maintain areas around device clear at all times.
8. General: Demolition of buildings shall be in accordance with Chapter 14 - California Fire Code.
9. General: Construction of building shall be in accordance with Chapter 14 and Chapter 26 – California Fire Code.

PART 2 - PRODUCTS (Not Applicable)

2.1 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Standards: Comply with ANSI/ASSE A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

- C. Verify that utilities have been disconnected and capped before starting selective demolition operations.
- D. Review record documents of existing construction provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in record documents.
- E. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- F. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.

3.2 PREPARATION

- A. General: Provide interior and exterior shoring, bracing, or support to prevent movement, settlement, or collapse of areas to be demolished and adjacent facilities to remain.

1. Cease operations and notify Owner's Representative immediately if safety of structure appears to be endangered. Take precautions to support structure until determination is made for continuing operations.
2. Cover and protect furniture, equipment, and fixtures from soilage or damage when demolition work is performed in areas where such items have not been removed.
3. Erect and maintain dust-proof partitions and closures as required to prevent spread of dust or fumes to occupy and non-construction portions of the building.
4. Locate, identify, cap off, and disconnect utility services that are not indicated to remain.
 - a. Provide bypass connections as necessary to maintain continuity of service to occupied areas of building. Provide minimum of 72 hours advance notice to Owner if shutdown of service is necessary during changeover. Schedule change over during building/site non-occupied times, and after hours.
5. Close off HVAC registers in demolition area to prevent migration of dust and etc. from entering mechanical systems.
6. Selective demolition contractor to coordinate with flooring contractor prior to demolition/removal of all items at existing concrete slab as required to receive new floor finishes prior to starting work.

3.3 DEMOLITION

- A. General: Perform selective demolition work in a systematic manner. Use such methods as required to complete work indicated on Drawings in accordance with demolition schedule and governing regulations.
 1. Demolish concrete and masonry in small sections. Cut concrete and masonry at junctures with construction to remain using power-driven masonry saw or hand tools; do not use power-driven impact tools.
 2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
 3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 4. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
 5. Locate demolition equipment throughout structure and promptly remove debris to avoid imposing excessive loads on supporting walls, floors, or framing.
 6. Provide services for effective air and water pollution controls as required by local authorities having jurisdiction.
 7. Demolish foundation walls to a depth of not less than 12 inches below existing ground surface, unless noted otherwise. Demolish and remove below-grade wood or metal construction. Break up below-grade concrete slabs. (See plans for more restrictive requirements.)
 8. For interior slabs on grade, use removal methods that will not crack or structurally disturb adjacent slabs or partitions. Use power saw where possible.
 9. Completely fill below-grade areas and voids resulting from demolition work. Provide fill consisting of approved earth, gravel, or sand, free of trash and debris, no stones over 1 inch in diameter, roots, or other organic matter.

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- B. If unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure both nature and extent of the conflict. Submit report to Owner's Representative in written, accurate detail. Pending receipt of directive from Owner's Representative, rearrange selective demolition schedule as necessary to continue overall job progress without undue delay.
- C. Demolition work that generates noise shall be scheduled around schedule of occupied rooms within 125 feet of work to be done. This work may have to be done during after hours, evenings and weekends, depending on occupancy schedules. Verify with Director of Facilities prior to scheduling any noise-generating demolition. See Section 011000 for additional requirements. Obtain approvals in writing from Director of Facilities for any work during occupied hours within 125 feet of occupied spaces

3.4 SALVAGED MATERIALS

- A. Salvaged Items: Where indicated on Drawings as "Salvage - Deliver to Owner," carefully remove indicated items, clean, store, and turn over to Owner and obtain receipt.
 - 1. Owner shall remove all items prior to start of demolition of each area of building that they want to salvage. Owner shall have first right of salvage. All items left after Owner has completed salvage shall become property of Contractor.
- B. Where noted herein, Contractor shall remove, package and deliver salvage items to Owner.
 - 1. Clean salvaged items.
 - 2. Pack or crate items after cleaning. Identify contents of containers.
 - 3. Store items in a secure area until delivery to Owner.
 - 4. Transport items to Owner's storage area designated by Owner.
 - 5. Protect items from damage during transport and storage.

3.5 DISPOSAL OF WASTE/ DEMOLISHED MATERIALS

- A. Remove from building site debris, rubbish, and other materials resulting from demolition operations. Transport and legally disposed off site per Construction Waste Management Plan.
 - 1. If hazardous materials are encountered during demolition operations, comply with applicable regulations, laws, and ordinances concerning removal, handling, and protection against exposure or environmental pollution.
 - 2. Burning of removed materials is not permitted on project site.

3.6 CLEANUP AND REPAIR

- A. General: Upon completion of demolition work, remove tools, equipment, and demolished materials from site. Remove protections and leave interior areas soft broom clean.
 - 1. Repair demolition performed in excess of that required. Return elements of construction and surfaces to remain to condition existing prior to start operations. Repair adjacent construction or surfaces soiled or damaged by selective demolition work.
 - 2. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

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END OF SECTION 024119

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SECTION 031000 - CONCRETE FORMING & ACCESSORIES

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Formwork for cast-in place concrete, with shoring, bracing and anchorage.
- B. Openings for other work.
- C. Form accessories.
- D. Form stripping.

1.2 RELATED SECTIONS

- A. Section 032000 - Concrete Reinforcement.
- B. Section 033000 - Cast-in-Place Concrete.

1.3 REFERENCES

- A. ACI 301 - Specifications for Structural Concrete for Buildings; American Concrete Institute International.
- B. ACI 318 - Building Code Requirements for Reinforced Concrete and Commentary; American Concrete Institute International.
- C. ACI 347R - Guide to Formwork for Concrete; American Concrete Institute International.
- D. PS 1 - Construction and Industrial Plywood; National Institute of Standards and Technology (Department of Commerce).

1.4 DESIGN REQUIREMENTS

- A. Design, engineer and construct formwork, shoring, reshoring, and bracing to conform to design and code requirements; resultant concrete to conform to required shape, line and dimension. Engineering design work to be completed by a professional engineer licensed in the state in which the project is located.
- B. Design and fabricate forms to support all applied loads until concrete is cured, and for easy removal without damage to concrete. Design work to be completed by a professional engineer licensed in the state in which the project is located.

1.5 SUBMITTALS

- A. See Division 1 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on void form materials and installation requirements.

1.6 QUALITY ASSURANCE

- A. Perform work of this section in accordance with ACI 347R, ACI 301, and ACI 318.

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- B. Design formwork under direct supervision of a Professional Structural Engineer experienced in design of concrete formwork and licensed in the State in which the project is located.

1.7 REGULATORY REQUIREMENTS

- A. Conform to applicable code for design, fabrication, erection and removal of formwork.

1.8 DELIVERY, STORAGE, AND PROTECTION

- A. Deliver form materials and installation instructions in manufacturer's packaging.
- B. Store forms off ground in ventilated and protected manner to prevent deterioration from moisture or damage.

PART 2 - PRODUCTS

2.1 WOOD FORM MATERIALS

- A. Form Materials: At the discretion of the Contractor to achieve design requirements and specified finishes.
- B. Softwood Plywood: PS 1, B-B High Density Concrete Form Overlay, Class I.
- C. Plywood: Douglas Fir species; solid one side grade; sound undamaged sheets with clean, true edges.
- D. Lumber: Douglas Fir species; structural grade; with grade stamp clearly visible.

2.2 FORMWORK ACCESSORIES

- A. Form Release Agent: Colorless material that will not stain concrete, absorb moisture, impair natural bonding of concrete finish coatings, or affect color characteristics of concrete finish coatings.
- B. Corners: Chamfered, wood strip type; maximum possible lengths.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Contractor shall verify lines, levels and centers before proceeding with formwork. Ensure that dimensions agree with drawings.

3.2 EARTH FORMS

- A. Earth forms may be permitted only where specifically allowed in the Geotechnical report.
- B. Hand trim sides and bottom of earth forms. Remove loose soil prior to placing concrete.

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3.3 APPLICATION - FORM RELEASE AGENT

- A. Apply form release agent on formwork in accordance with manufacturer's recommendations.
- B. Apply prior to placement of reinforcing steel, anchoring devices, and embedded items.
- C. Do not apply form release agent where concrete surfaces will receive special finishes or applied coverings that are affected by agent. Soak inside surfaces of untreated forms with clean water. Keep surfaces coated prior to placement of concrete.

3.4 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field quality control tests, as specified in Section 014000.
- B. Inspect erected formwork, shoring, and bracing to ensure that work is in accordance with formwork design, and to verify that supports, fastenings, wedges, ties, and items are secure.

END OF SECTION 031000

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SECTION 032000 - CONCRETE REINFORCING

PART 1 - GENERAL

1.1 SECTION INCLUDES

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

1.2 RELATED SECTIONS

- A. Section 031000 - Concrete Forms and Accessories.
- B. Section 033000 - Cast-in-Place Concrete.

1.3 REFERENCES

- A. ACI 301 - Specifications for Structural Concrete for Buildings; American Concrete Institute International.
- B. ACI 318 - Building Code Requirements For Reinforced Concrete and Commentary; American Concrete Institute International.
- C. ACI SP-66 - ACI Detailing Manual; American Concrete Institute International.
- D. ASTM A184/A184M - Standard Specification for Welded Deformed Steel Bar Mats for Concrete Reinforcement.; 2019
- E. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2018e1
- F. ASTM A704/A704M - Standard Specification for Welded Steel Plain Bar or Rod Mats for Concrete Reinforcement; 2019e1
- G. ASTM A706/A706M - Standard Specification for Deformed and Plain Low-Alloy Steel Bars for Concrete Reinforcement; 2016
- H. ASTM A996/A996M - Standard Specification for Rail-Steel and Axle-Steel Deformed Bars for Concrete Reinforcement; 2016
- I. ASTM A1064/A1064M – Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete; 2018a
- J. AWS D1.4 - Structural Welding Code - Reinforcing Steel; American Welding Society.
- K. CRSI (DA4) - Manual of Standard Practice; Concrete Reinforcing Steel Institute.
- L. CRSI (P1) - Placing Reinforcing Bars; Concrete Reinforcing Steel Institute.

1.4 SUBMITTALS

- A. Shop Drawings: Only when deviations are made from the contract documents, submit shop drawings under Division 1 provisions with deviations clearly identified.

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1. Indicate sizes, spacings, locations and quantities of reinforcing steel, wire fabric, bending and cutting schedules, splicing, stirrup spacing, supporting and spacing devices.
 - B. Manufacturer's Certificate: Certify that reinforcing steel and accessories supplied for this project meet or exceed specified requirements.
 - C. Reports: Submit certified copies of mill test report of reinforcement materials analysis, indicate physical and chemical analysis.
- 1.5 QUALITY ASSURANCE
- A. Perform work of this section in accordance with CRSI (DA4), CRSI (P1), ACI 301, and ACI SP-66.
- 1.6 AIR QUALITY REQUIREMENTS
- A. Comply with the requirements of Section 014100 as they are applicable to the work of this section, and as though they are repeated verbatim herein.

PART 2 - PRODUCTS

2.1 REINFORCEMENT

- A. Reinforcing Steel: ASTM A615/A615M Grade 60 (420).
 1. Deformed billet-steel bars.
 2. Unfinished.
- B. Reinforcement Accessories:
 1. Tie Wire: Annealed, minimum 16 gage acceptable patented system.
 2. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for adequate support of reinforcement during concrete placement, including load bearing pad on bottom to prevent vapor barrier puncture.
 3. Provide stainless steel, plastic, or plastic coated steel components for placement within 1 ½" of weathering surfaces.

2.2 FABRICATION

- A. Fabricate concrete reinforcing in accordance with CRSI (DA4) - Manual of Standard Practice.
- B. Obtain approval from the architect for additional reinforcing splices not indicated on drawings.

PART 3 - EXECUTION

3.1 PLACEMENT

- 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.

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- B. Verify that anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not interfere with concrete placement.
- C. Do not displace or damage vapor barrier.
- D. Accommodate placement of formed openings.

3.2 FIELD QUALITY CONTROL

- A. An independent testing agency, as specified in Section 014000, will inspect installed reinforcement for conformance to contract documents before concrete placement.

END OF SECTION 032000

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SECTION 033000 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 WORK INCLUDES:

- A. Cast in place structural concrete.

1.2 RELATED SECTIONS:

- A. Section 031000 - Concrete Formwork and Accessories.
- B. Section 032000 - Concrete Reinforcement.

1.3 REFERENCES

- A. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete; American Concrete Institute International.
- B. ACI 211.2 - Standard Practice for Selecting Proportions for Structural Lightweight Concrete; American Concrete Institute International
- C. ACI 301 - Specifications for Structural Concrete for Buildings; American Concrete Institute International.
- D. ACI 302.1R - Guide for Concrete Floor and Slab Construction; American Concrete Institute International.
- E. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete; American Concrete Institute International.
- F. ACI 305R - Hot Weather Concreting; American Concrete Institute International.
- G. ACI 306R - Cold Weather Concreting; American Concrete Institute International.
- H. ACI 308R - Guide to External Curing Concrete; American Concrete Institute International.
- I. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; American Concrete Institute International.
- J. ASTM C33 - Standard Specification for Concrete Aggregate; 2018.
- K. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2018
- L. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete; 2019a
- M. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic-Cement Concrete; 2015a
- N. ASTM C150 - Standard Specification for Portland Cement; 2019a

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- O. ASTM C171 - Standard Specification for Sheet Materials for Curing Concrete; 2016
- P. ASTM C173/C173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method; 2016
- Q. ASTM C260 - Standard Specification for Air-Entraining Admixtures for Concrete; 2016a
- R. ASTM C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete; 2019
- S.
- T. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete; 2017
- U. ASTM C595 - Standard Specification for Blended Hydraulic Cement
- V. ASTM C685/C685M – Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing; 2017
- W. ASTM C1059 - Standard Specification for Latex Agents for Bonding Fresh to Hardened Concrete; 2013
- X. ASTM C1107/C1107M - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink); 2017
- Y. ASTM C1157 - Standard Performance Specification for Hydraulic Cement

1.4 DEFINITIONS

- A. Severe Exposure: Concrete which is in contact with moisture or deicing salts, such as pavements, sidewalks, parking garage floors, etc.
- B. Moderate Exposure: Concrete which is occasionally exposed to moisture, such as exterior walls, beams, girders, and slabs not in contact with soil, etc.

1.5 SUBMITTALS

- A. General: Submit in accordance with Section 013300.
- B. Product Data: Submit product data for proprietary products.
- C. Mix Designs:
 - 1. Submit proposed concrete mix designs for each class or use at least 30 days prior to required delivery including:
 - a. Mixture Identification by class
 - b. Specified compressive strength, $f'c$, that is applicable for the class
 - c. Specified exposure class that is applicable for the class
 - d. Documentation of strength test records of similar class of concrete used to establish standard deviation in accordance with ACI 318, when test records exist
 - e. Required average compressive strength, $f'cr$, for each class of concrete
 - f. Documentation of $f'cr$ of proposed mixture(s) and test age

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- g. Strength of concrete at other ages for stages of construction, when specified
- h. w/cm of proposed concrete mixtures, when specified
- i. Intended placement method
- j. Slump or slump flow
- k. Air content of concrete assigned to Exposure Category F
- l. Density, when specified
- m. Equilibrium density and density of fresh concrete, when specified for lightweight concrete
- n. Documentation supporting other specified requirements of concrete mixtures
- o. Nominal maximum aggregate size or Size number
- p. Type and information about the ingredient materials proposed for use including:
 - 1) Cementitious Materials
 - 2) Aggregates (including individual and combined gradations, source, and characteristics)
 - 3) Admixtures
 - 4) Water
 - 5) Fibers, color pigments, and other additions

2. Mixes shall be prepared by a professional engineer licensed in the state in which the project is located.

D. Test Reports: Submit aggregate and concrete mix test reports from independent testing laboratory as required by Division 1.

1.6 QUALITY ASSURANCE

A. Certifications:

- 1. Submit material certification for admixtures and aggregates, certifying their compliance with specifications.
- 2. Submit certified mill test reports for each lot of cement.

B. Perform work of this section in accordance with ACI 301 and ACI 318.

C. Acquire cement from same source and aggregate from same source for entire project.

D. Follow recommendations of ACI 305R for concreting during hot weather.

E. Follow recommendations of ACI 306R for concreting during cold weather.

1.7 PRE-INSTALLATION CONFERENCE

A. Conduct pre-installation conference in accordance with Section 013100.

1.8 DELIVERY, STORAGE, AND HANDLING

A. General: Comply with requirements of Section 016000.

B. Deliver packaged products to site in manufacturer's sealed and labeled containers; inspect to verify compliance with specified requirements.

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- C. Label containers to indicate manufacturer's name, product name, date of manufacture, and instructions for use.
- D. Store liquid materials in tightly covered containers in well ventilated area at ambient temperatures recommended by manufacturer. Store dry materials on raised platforms and cover to prevent moisture damage. Maintain containers in clean condition, free of foreign materials and residue with labels in legible condition.
- E. Take precautionary measures to prevent fire hazards and spontaneous combustion.

1.9 AIR QUALITY REQUIREMENTS

- A. Comply with the requirements of Section 014000 as they are applicable to the work of this section, and as though they are repeated verbatim therein.

PART 2 – PRODUCTS

2.1 FORMWORK

- A. Comply with the requirements of Section 031000.

2.2 REINFORCEMENT

- A. Comply with the requirements of Section 032000.

2.3 CONCRETE MATERIALS

- A. Cementitious Material:
 - 1. Hydraulic Cement: ASTM C150,. Type as indicated in the structural drawings.
 - a. Air-entraining Portland cement, as defined by ASTM C150, is prohibited.
- B. Aggregate:
 - 1. Coarse Aggregate:
 - a. ASTM C33 for normal weight aggregate.
 - 2. Fine Aggregate: ASTM C33
- C. Water: ASTM C1602
- D. Admixtures:
 - 1. Calcium chloride, thiocyanates, or admixtures containing more than 0.05 percent chloride ions are not permitted unless approved by Architect.
 - 2. Air Entraining: ASTM C260.
 - 3. Water-reducing: ASTM C494, Type A.
 - 4. High Range Water-reducing (Superplasticizer): ASTM C494, Type F or Type G.
 - 5. Water-reducing, Non-corrosive, Non-chloride Accelerator:
 - a. ASTM C494, Type C or E.

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- b. Submit long term non-corrosive test data from independent testing laboratory using accelerated test method such as electrical potential measure.
6. Water-reducing, Retarding, Hydration Control: ASTM C494, Type B or D.
7. Shrinkage-Reducing, Workability-Retaining, Viscosity Modifying, Alkali-Silica Reaction Inhibiting: ASTM C494, Type S

2.4 CURING MATERIALS

- A. Sheet Curing Materials: ASTM C171; white opaque polyethylene film, white polyethylene coated burlap sheeting, or regular waterproof paper.
- B. Dissipating Resin Curing Compounds:
 1. ASTM C309, Type 1 [1-D] clear or translucent], Class B, free of natural or petroleum waxes. Class A not acceptable.
 2. Liquid, membrane forming, 100 percent resin based allowing maximum moisture loss in 72 hours of 0.11 lb./sq. ft.
 3. Compatible with subsequent coatings and toppings.
 4. Acceptable Products:
 - a. Kurex, Chem-Masters Corporation, Madison, OH.
 - b. Kurez DR, Euclid Chemical Company, Cleveland, OH.
 - c. L&M Cure DR, L&M Construction Chemicals, Inc., Omaha, NE.
 - d. 3100 Clear, W. R. Meadows, Inc., Elgin, IL.
 - e. ABCO 1309 Resin Cure, Nox-Crete Chemicals, Omaha, NE.
 - f. Kurez VOX, Euclid Chemical Co., Cleveland, OH.
 - g. L&M Cure R, L&M Construction Chemicals, Inc., Omaha, NE
 - h. 1100 Clear, W.R. Meadows, Elgin, IL.

2.5 CONCRETE MIXES

- A. Mix Design:
 1. Submit design mixes for each type and class of concrete based on laboratory trial batch method or field experience methods described in ACI-318, Chapter 26.
 2. If trial batch method is used, employ an independent testing agency acceptable to Architect for preparing and reporting proposed mix designs. Mix designs are to be prepared by a professional engineer licensed in the state in which the project is located. Contractor employed testing agency shall not be same firm as Owner employed testing agency.
 3. Use concrete of approved mix designs only.
 4. The proportioning of ingredients shall provide a concrete readily worked into forms and around reinforcement under conditions of placement to be employed, without segregation or excessive bleeding.
 5. Do not place concrete until design mix for that class and type of concrete is reviewed by Architect.
 6. Indicate locations in structure where each mix design is to be used.
 7. Identify each mix design with code number which will be used on batch tickets.
- B. Design Compressive Strengths: As indicated on Structural Drawings.
 1. Normal Weight Concrete:

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- a. Compressive strength, when tested in accordance with ASTM C39/C39M, strength at 7 days shall be at least 60% of the minimum required 28-day strength unless noted otherwise on drawings.
 - b. Maximum slump 4 inches \pm 1".
- C. Maximum Size of Coarse Aggregate:
 1. 1/5 narrowest dimension between form sides.
 2. 1/3 depth of slabs.
 3. 3/4 of minimum clear distance between reinforcing bars, wires, or bundles of bars.
 4. 1 inch maximum for normal weight concrete or 3/4 inch maximum for light weight concrete.
- D. Admixtures:
 1. Only use admixtures which have been tested and approved in mix designs.
 2. Air entraining Admixture:
 - a. Use in concrete exposed to freezing and thawing at any time during construction or in completed structure.
 - b. Use in concrete placed at ambient temperatures below 40 degrees F.
 - c. Tolerance on air content as delivered: Plus or minus 1-1/2 percent.
 3. Conform to air content requirements indicated on Drawings.
- E. Maximum water soluble chloride ion concentrations in hardened concrete at ages from 28 to 42 days contributed from all ingredients, expressed as percent by weight of cement as follows:
 1. Concrete exposed to chloride in service: 0.15 percent.
 2. Other concrete: 1.00 percent.
- F. Shrinkage Tests:
 1. Prior to placing any concrete for walls or horizontal surfaces, a trial batch of each mix design of structural concrete shall be prepared using the aggregates, cement and admixture (if any) proposed for the project. From each trial batch at least 3 specimens for determining drying shrinkage shall be prepared. The drying shrinkage specimens shall be a 4" x 4" x 11" prisms fabricated, cured, dried, and measured in accordance with the requirements of Tentative Method of Test for Length Change of Cement Mortar and Concrete, ASTM C157. The measurements shall be made and reported separately for 7 and 28 days of drying after 7 days of moist curing. The effective gage length of the specimens shall be 10", and except for the foundation concrete, the average drying shrinkage at 35 days shall not exceed .045%.
 2. Previous Test: Ready-mixed concrete manufacturer may furnish certified test reports from approved Testing Laboratory as proof of meeting shrinkage requirements, provided aggregate used and concrete covered by such test report conform to mix design approved for use on this project. Method used, use an independent testing facility acceptable to Architect for preparing and reporting proposed mix designs.
- G. Use accelerating admixtures in cold weather only when approved by architect. Use of admixtures will not relax cold weather placement requirements.

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2.6 MIXING

A. Ready-Mix Concrete:

1. Comply with ASTM C94/C94M.
2. Before using trucks for batching, mixing, and transporting concrete, thoroughly cleans trucks and equipment of materials capable of contaminating concrete.
3. During hot weather, or under conditions contributing to rapid setting of concrete, a shorter mixing time than specified in ASTM C94 is required.
4. When air temperature is between 85 degrees F and 90 degrees F, reduce mixing and delivery time from 90 minutes to 75 minutes, and when air temperature is above 90 degrees F, reduce mixing and delivery time to 60 minutes.
5. Do not add water to ready-mix concrete at Project site except when slump is below specified limits and total water does not exceed the design water-cement ratio; inject added water into mixer and mix thoroughly before discharging.

B. Provide certificate signed by authorized official of supplier with each load of concrete stating following:

1. Time truck left plant.
2. Mix of concrete, identify with code number of mix design.
3. Amount of water and cement in mix.
4. Amount and type of admixtures.
5. Amount of water added at project site.
6. Time truck is unloaded at project site.

C. Truck mixers without batch tickets will be rejected.

D. Retain certificates at Project site. Submit to Architect for review upon request.

2.7 PRODUCTION

A. Ready Mixed Concrete

1. Except as otherwise provided in these specifications, ready mixed concrete shall be batched, mixed, and transported in accordance with ASTM C94 "Specification for Ready Mixed Concrete."

B. Mixing Water Control

1. Concrete which arrives at the jobsite with slump below that specified for placement may be adjusted by the addition of water to increase slump, provided the maximum slump is not exceeded and the maximum water content of the design mix is not exceeded. Following any such water addition, the concrete shall be mixed at mixing speed for at least 30 revolutions of the drum.
2. After adjustment is made to the proper slump, the concrete shall be discharged as long as it retains its placeability without the further addition of water.
3. Concrete shall be placed within one and one half hours after mixer is charged in average conditions. Time shall be reduced to one hour during hot weather concreting.

2.8 SOURCE QUALITY CONTROL

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- A. Testing will be performed under the provisions of Section 014000, except as otherwise specified.
- B. Independent Testing Laboratory, approved by Architect and employed by Contractor, is responsible for:
 - 1. Testing aggregate as follows at start of work and whenever change in aggregate source occurs:
 - a. Gradation and fineness modulus: ASTM C136.
 - b. Specific gravity: ASTM C127 for coarse aggregate, ASTM C128 for fine aggregate.
 - c. Organic impurities: ASTM C40.
 - d. Effect of organic impurities on strength: ASTM C87 for effect of organic impurities on strength.
 - e. Potential reactivity of aggregate: ASTM C295, petrographic examination.
 - f. Soundness: ASTM C88.
 - g. Reports of tests conducted on aggregates from the same source within the past 12 months will be acceptable.
 - 2. Testing concrete mixes as follows at start of work and whenever change in materials source occurs:
 - a. Prepare mix designs, test concrete strength, and report results if trial batch method is used to establish design mix proportions. Mix design shall be reviewed, approved, sealed and stamped by a Licensed Professional Engineer in the state where the project is located.
- C. Independent Testing Laboratory, employed by Owner, is responsible for observing and evaluating the following at batch plant at start of Work and at other times as requested by the Architect, unless the batch plant has a current National Ready Mix (or other approved agency's) certification:
 - 1. Condition of batching equipment.
 - 2. Conformance with design mix proportions.
 - 3. Storage of materials.
 - 4. Mixing equipment.
 - 5. Mixing and transporting equipment.
 - 6. Other testing to verify compliance if requested by Architect.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine conditions and proceed with Work in accordance with Section 017300.
- B. Verify forms, reinforcement, anchors, plates, joint materials, vapor retarder and other items to be cast into concrete are accurately placed and held securely.
- C. Verify forms are free of debris and water.
- D. Verify excavations are free of loose material and water.

3.2 TESTING

- A. Concrete materials and operations shall be tested and inspected for compliance with the specifications and requirements.

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3.3 TESTING AGENCY

- A. The testing agency shall be designated by the owner. Ample time shall be allowed for preliminary tests as required prior to concreting operations.
- B. All testing agency personnel shall meet the requirements of ASTM E329, “Recommended Practice of Inspecting and Testing Agencies for Concrete and Steel in Construction.”
- C. All testing agency personnel shall have the knowledge and ability to perform the necessary tests equivalent to the minimum guideline for Certification of Concrete Field Testing Technicians, Grade 1 in accordance with ACI CP-2.

3.4 DUTIES AND SERVICES

- A. The duties and responsibilities of the testing agency and the contractor and services to be performed by each are as designated in ACI 301, Section 1.6, “Specifications for Structural Concrete for Buildings.”

3.5 EVALUATION AND ACCEPTANCE

- A. Test results of standard cylinders, molded, cured, and tested according to ASTM C31 and C39 should be evaluated separately for each concrete mix according to ACI 214, “Recommended Practice for Evaluation of Concrete Compression Test Results of Field Concrete.”
- B. The criteria for acceptance of concrete shall be as detailed in ACI 318, Chapter 26.12, “Evaluation and Acceptance of Concrete” or as per ASTM C94, Section 18 “Strength” and Section 19 “Failure to Meet Strength Requirements.”

3.6 PREPARATION

- A. Construction Joints:
 - 1. Clean previously placed concrete of laitance.
 - 2. Clean reinforcement and accessories of mortar from previous concrete placement operations.
 - 3. Apply bonding agent in accordance with manufacturer's recommendations.
 - 4. Moisten surface of previously placed concrete.

3.7 PLACEMENT

- A. Place concrete according to ACI 301 and 304R, except as modified and supplemented on Drawings or in this Section.
- B. Notify Architect and Owner's testing laboratory minimum of 48 hours prior to commencement of placing operations.
- C. Cold Weather Concreting:
 - 1. Comply with requirements of ACI 306.1.
 - 2. Do not place concrete when ambient air temperature is expected to fall below 40 degrees F within 24 hours, except with prior written approval of Architect.

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3. Remove frost, ice, and snow from formwork, reinforcing, and accessories prior to placing concrete.
 4. Do not place concrete foundations, footings or slabs on frozen ground.
 5. Limit concrete temperature at time of discharge to 55 degrees F for sections less than 12 inches in any dimension and to 50 degrees F for other sections.
- D. Hot Weather Concreting:
1. Comply with requirements of ACI 305R when ambient air temperature exceeds 75 degrees F.
 2. Use water-reducing, retarding admixture when required by high temperatures, low humidity, or other adverse placing conditions to extend setting time to limits specified as approved by Architect.
 3. Cool aggregates, cool mixing water, substitute ice for part of mixing water, or take other measures to limit concrete temperature at time of discharge to 90 degrees F.
 4. Cover reinforcing steel and steel forms with water soaked burlap or use fog spray to limit temperature of steel to 120 degrees F immediately prior to concrete placement.
 5. Use evaporation retardant between finishing passes.
- E. At time of placement, provide concrete temperature between 50 degrees F and 90 degrees F.
- F. Ensure reinforcement, inserts, waterstops, embedded parts, and formed construction joint devices will not be disturbed during concrete placement.
- G. Repair underslab vapor retarder damaged during placement of concrete reinforcing. Repair with vapor retarder material; lap over damaged areas minimum 6 inches and seal watertight.
- H. Separate slabs on grade from vertical surfaces with joint filler.
- I. Place joint filler in floor slab pattern placement sequence. Set top to required elevations. Secure to resist movement by wet concrete.
- J. Extend joint filler from bottom of slab to within 1/2 inch of finished slab surface. Conform to Section 07900 for finish joint sealer requirements.
- K. Install joint devices in accordance with manufacturer's instructions.
- L. Install construction joint devices in coordination with floor slab pattern placement sequence. Set top to required elevations. Secure to resist movement by wet concrete.
- M. Apply sealants in joint devices in accordance with Section 079200.
- N. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.
- O. Place concrete continuously between predetermined expansion, control, and construction joints.
- P. Do not interrupt successive placement; do not permit cold joints to occur.
- Q. Place floor slabs in pattern indicated.

- R. Saw cut joints within 12 hours of finishing concrete.
- S. Maintain surfaces receiving concrete at approximately same temperature as concrete being placed.
- T. Maintain surface of hardened concrete below 100 degrees F.
- U. Convey concrete from mixer to place of deposit by method that will prevent segregation or loss of material, and that will not require addition of water to produce desired slump at point of placement. Do not use supported reinforcing as runway base for concrete conveying equipment.
- V. Depositing:
 - 1. Deposit concrete as nearly as practicable to its final location.
 - 2. Place concrete continuously between construction joints.
 - 3. Deposit concrete in layers not exceeding 24 inches in depth.
 - 4. Avoid inclined layers.
 - 5. Place each layer while preceding layer is still plastic.
 - 6. Do not allow free fall of concrete to exceed 4 feet. Do not allow free fall of concrete containing high-range water reducing admixture to exceed 10 feet.
 - 7. Drop concrete in vertical direction, not at incline.
 - 8. Place concrete without displacing reinforcing and accessories.
- W. Consolidation:
 - 1. Vibrate concrete to eliminate formation of surface air voids, honeycombs and sand streaks.
 - 2. Use mechanical, internal vibrators with proper frequency, rpm, and spud size. Select spud for size and spacing of reinforcement and clearance to formwork. Supplement vibration by hand-spading, rodding, or tamping.
 - 3. Insert and withdraw vibrator vertically at spacing not to exceed 1-1/2 times radius of action of vibrator, maximum of 24 inch centers.
 - 4. Insert vibrators into placed layer and at least 6 inches into preceding layer.
 - 5. Do not allow vibrator to touch form face or embedded items.
 - 6. Do not use mechanical vibration for slabs less than 4 inches thick. Use hand spading and tamping in these locations.

3.8 DEPOSITING

- A. Concrete shall be consolidated by vibration, spading, rodding or forking. Work concrete around reinforcements, embedded items and into corners. Eliminate all air or rock pockets and other causes of honeycombing, pitting or planes of weakness.
- B. Internal vibration shall have a minimum frequency with amplitude to consolidate the concrete effectively. See ACI 309, "Recommended Practice for Consolidation of Concrete."
 - 1. Vibrators shall be operated by experienced and competent workmen.
 - 2. Use of vibrators to transport concrete shall not be allowed.
 - 3. Vibrators shall be vertically inserted every 18 inches for 5 to 15 seconds and then withdrawn.

3.9 FINISHING

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- A. General: Provide finishes at specified locations, unless indicated otherwise.
- B. Finishing Formed Surfaces:
 - 1. Rough Form Finish:
 - a. Leave surfaces with texture imparted by forms, except patch tie holes and defects.
 - b. Remove fins and other projections exceeding 1/4 inch in height.
 - c. Locations: Concrete surfaces not exposed to view.
 - 2. Smooth Form Finish:
 - a. Provide smooth, hard, uniform surface with minimum number of seams.
 - b. Repair and patch defective areas, fill tie holes, remove fins and other projections completely. [
 - c. Locations: Exposed concrete surfaces or concrete surfaces designated to receive coatings applied directly to concrete, such as waterproofing, dampproofing, plaster, painting, and other similar applied finishes.
- C. Finishes for Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces, strike-off smooth and finish with texture matching adjacent formed surfaces.
- D. Slab Finishes:
 - 1. Heavy Broom Finish:
 - a. After float finish, while surface is still plastic, draw fiber bristle broom uniformly over surface to provide texture perpendicular to main traffic or at right angles to floor slope

3.10 CURING

- A. General:
 - 1. Comply with ACI-308, except as modified or supplemented.
 - 2. Start immediately after placing and finishing concrete.
 - 3. Protect from premature drying, temperature extremes, temperature variations, rain, flowing water, and mechanical injury.
 - 4. Cure continuously, without allowing to dry, for minimum period required for hydration of cement and hardening of concrete.
 - 5. Maintain temperature of concrete above 50 degrees F for curing period.
 - 6. Minimum Length of Curing Period:
 - a. High Early Strength Concrete: 3 days.
 - b. Other Concrete: 7 days.
- B. Acceptable Curing Methods:
 - 1. Concrete to receive Waterproofing, Dampproofing, or Membrane Roofing: Moist curing, moisture-retaining sheet covering, or chemical curing compounds.
 - 2. Concrete exposed to Direct Sun when Ambient Temperature Exceeds 75 degrees F: Where permitted, use white pigmented liquid compounds.

3. Other Concrete: Moist curing, moisture-retaining sheet covering, liquid membrane-forming compounds, or chemical curing compounds.
- C. Acceptable Curing Procedures:
1. Moist Curing Unformed Surfaces:
 - a. Ponding: Maintain 100 percent coverage of water continuously.
 - b. Fog Spraying or Sprinkling: Maintain continuously moist with nozzles or sprayers.
 - c. Fabric Mats: Cover surfaces with wet burlap or other absorptive material which will not discolor concrete; keep continuously wet.
 - d. Sand: Minimum 2 inch thick layer, kept continuously saturated with water, free from deleterious materials which would stain concrete.
 2. Sheet Curing Unformed Surfaces:
 - a. Wet surface of concrete with fine spray of water prior to applying sheet.
 - b. Immediately cover surface with polyethylene sheeting, waterproof paper, or burlap-polyethylene sheet.
 - c. Lap edges of sheeting minimum of 12 inches.
 - d. Repair damaged sheet.
 - e. Ballast sheet to prevent movement and blow-off.
 3. Liquid Membrane-forming Compound Curing of Unformed Surfaces:
 - a. Apply in accordance with manufacturer's recommendations.
 - b. Protect surfaces from foot and vehicular traffic.
 - c. Curing compounds used must be compatible with adhesives used in setting carpet, resilient tile or sheeting flooring, and other similar finishes.
 4. Curing Formed Surfaces:
 - a. Keep forms continuously moist.
 - b. Loosen forms for vertical surfaces to allow curing water to run between concrete and forms.
 - c. If forms are removed prior to end of curing period, continue curing with any of methods described for unformed surfaces.
 5. Curing of surfaces which are moist cured for first 24 hours may be cured by other acceptable methods for remaining curing period provided they are not allowed to become dry.

3.11 FIELD QUALITY CONTROL

- A. Field testing will be performed under the provisions of Section 014000.
- B. Independent testing laboratory, employed by Owner, is responsible for:
 1. Sampling Fresh Concrete: ASTM C172, sample at point of placement from end of pipe for concrete conveyed by pumping methods, sample at the truck for concrete not pumped; if water is added at Project site, obtain another sample for testing.
 2. Concrete Temperature: Test each time slump and air content is tested and each time set of compressive strength test specimens is made.

3. Slump: ASTM C143; one test from first truck at point of discharge each day, one test each time set of compressive strength test specimens is made, and when change in consistency occurs.
 4. Compressive Strength Tests:
 - a. Make and cure test specimens in accordance with ASTM C31, from concrete sampled at point of placement from end of pipe for concrete conveyed by pumping methods, sampled at the truck for concrete not pumped.
 - b. Make one set of 4 test cylinder specimens for every 150 cubic yards (50 cubic yards for DSA and OSHPD), or for every 5000 square feet of slabs and walls, or fraction thereof, of each class of concrete, with at least one set for each class each day.
 - c. Test cylinders in accordance with ASTM C39, 1 at 7 days for information, and 2 at 28 days for acceptance. Retain one untested cylinder for later testing if required.
 - d. When frequency of testing will provide less than five strength tests for a given class of concrete, conduct testing from at least 5 randomly selected batches, or from each batch if fewer than 5 are used.
 5. Environmental Conditions:
 - a. When ambient air temperature falls below 40 degrees F, record maximum and minimum air temperature in each 24 hour period; record air temperature inside protective enclosure; record minimum temperature of surface of hardened concrete.
 - b. When ambient air temperature rises above 85 degrees F, record maximum and minimum air temperature in each 24 hour period; record minimum relative humidity; record maximum wind velocity, and record maximum temperature of surface of hardened concrete.
 6. Observe conveying, placement and consolidation of concrete for conformance to Specifications.
 7. Observe condition of formed surfaces upon removal of formwork prior to repair of surface defects and observe repair of surface defects.
 8. Observe curing procedures for conformance with Specifications, record dates of concrete placement, start of preliminary curing, start of final curing, end of curing period.
 9. Observe Preparations for Placement of Concrete:
 - a. Inspect handling, conveying, and placing equipment, inspect vibrating and compacting equipment.
 - b. Inspect preparation of construction, expansion, and isolation joints.
 10. Observe preparations for protection from hot weather, cold weather, sun, and rain and preparations for curing.
 11. Observations of Concrete Mixing:
 - a. Monitor and record amount of water added at Project site.
 - b. Observe minimum and maximum mixing times.
- C. Evaluation and Acceptance of Concrete:
1. Strength Test: Defined as average strength of two 28 day cylinder tests from each set of cylinders.

2. Acceptance Criteria Based on Strength Tests: Strength level of individual class of concrete is considered satisfactory if both:
 - a. Average of three consecutive strength test results equal or exceed required design compressive strength, and
 - b. No individual strength test results falls below required design compressive strength by more than 500 psi.
 3. Acceptance Criteria Based on Field Tests:
 - a. Core Tests: Where strength tests indicate concrete of deficient strength, obtain and test cores in accordance with ASTM C42, ACI 318 and ACI-301, at locations directed by Architect.
 - b. Strength level of concrete in area represented by core test is considered adequate if complies with the requirements of ACI 318.
 - c. Fill core holes with low slump concrete or patching mortar used to repair surface defects.
 4. Revise concrete mix proportions, curing procedures and protection as necessary to provide concrete conforming to Specifications.
- D. Acceptance of Structure:
1. Acceptance of structure for dimensional tolerances, appearance, and strength will be based on ACI-301, Section 1.7.
 2. Remove and replace concrete which does not meet acceptance criteria.

3.12 PATCHING AND REPAIRING DEFECTIVE CONCRETE

- A. General:
1. Rewettable bonding agent may be used only in areas not subject to wet conditions.
 2. Patching compound may only be used for concrete not exposed to view.
- B. Repairing Formed Surfaces:
1. Surface Defects Requiring Repair:
 - a. Color and texture irregularities.
 - b. Honeycomb, air bubbles, rock pockets, and spalls.
 - c. Fins, burrs and other surface projections.
 - d. Cracks.
 - e. Stains and other discolorations that cannot be removed by cleaning.
 2. Patch defective areas and tie holes immediately after removal of forms.
 3. Cut out honeycomb, rock pockets, and voids over 1/4 inch down to solid concrete but not less than 1 inch depth.
 4. Make edges of cuts perpendicular to concrete surface.
 5. Clean and dampen area including 6 inches of surrounding surface with water.
 6. Apply bonding grout by brushing into surface, after surface water has evaporated.
 7. Place patching mortar or patching compound before grout has set or dried.
 8. Compact patching material in place and strike off slightly higher than surrounding surface.
 9. Finish after minimum of one hour to match surrounding surface.

10. Flush out form tie holes, fill with patching mortar, patching compound, or precast cement cone plugs secured in place with bonding compound.
11. Cure repair areas by same methods as surrounding concrete or keep continuously damp for 7 days.

C. Repairing Unformed Surfaces:

1. Surface Defects Requiring Repair:

- a. Fine crazing cracks.
- b. Cracks larger than 0.012 inch wide or cracks which penetrate to reinforcing.
- c. Cracks penetrating completely through non-reinforced sections.
- d. Spalling, popouts, honeycomb, and rock pockets.
- e. High and low areas in slabs.

2. Correct high areas in hardened concrete by grinding after concrete has cured at least 14 days.

3. Correct high and low areas during, or immediately after, completion of initial floating operations by cutting high areas and by placing fresh concrete in low areas.

4. Repair defective areas, except isolated random cracks and single holes not exceeding 1 inch diameter, by cutting out and replacing with patching mortar or patching compound.

- a. Remove defective areas to sound concrete with clean, square cuts.
- b. Dampen concrete surfaces in contact with patching material and apply bonding grout by brushing into surface, after surface water has disappeared.
- c. Place patching mortar or patching compound before grout has set or dried.
- d. Compact and finish to blend with adjacent finished concrete.
- e. Cure in same manner as adjacent concrete.

5. Repair isolated random cracks and single holes not over 1 inch diameter with patching mortar.

- a. Groove top of cracks and cut out holes to sound concrete and clean area.
- b. Dampen cleaned surfaces and apply bonding grout by brushing into surface, after surface water has disappeared.
- c. Place patching material before bonding grout is set or dry.
- d. Compact in place and finish to match adjacent concrete.
- e. Keep patched area continuously moist for not less than 72 hours.

D. Structural Repairs: Contractor shall proposed materials, methods, and procedures to the Architect for review and approval prior to proceed with structural repairs.

3.13 PROTECTION

A. Protect finished work in accordance with Section 017300.

B. Protect concrete from construction traffic, weather, or mechanical damage for 14 days after placing.

C. Provide raised runways for traffic areas.

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- D. Protect concrete from staining.

END OF SECTION

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SECTION 051200 - STRUCTURAL STEEL

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Structural steel work is as shown on drawings, including schedules, notes and details to show size and location of members, typical connections and type of steel required.
- B. Structural steel is that work defined in AISC" Code of Standard Practice" and as otherwise shown on drawings.
- C. Shop priming and field touch-up to extent specified.
- D. Grouting under base plates.
- E. Employment of a licensed surveyor registered in the state in which the project is located to certify lines and levels of installed structural steel.

1.2 RELATED SECTIONS

- A. Section 032000 – Concrete Reinforcing

1.3 UNIT PRICES - MEASUREMENT AND PAYMENT

- A. Structural Steel Framing:
 - 1. Basis of Measurement: By the ton.
 - 2. Basis of Payment: Includes structural members fabricated, placed and anchored.

1.4 REFERENCES

- A. AISC (MAN) - Steel Construction Manual; American Institute of Steel Construction, Inc. – 15th edition.
- B. AISC Specifications for the Design Fabrication and Erection of Structural Steel for Buildings, including the Commentary and Supplements thereto as issued.
- C. AISC 303 - Code of Standard Practice for Steel Buildings and Bridges; American Institute of Steel Construction, Inc.
- D. ANSI/AISC 341 – Seismic Design Provisions for Structural Steel Buildings, 2016
- E. AISC Specification for Structural Joints Using ASTM F3125/F3125M Bolts.
- F. AISI/AISC 358 – Prequalified Connections for Special and Intermediate Steel Moment Frames for Seismic Applications; 2016.
- G. ANSI/AISC 360 – Specification for Structural Steel Buildings; 2016.
- H. AISC – Specification for Architectural Exposed Structural Steel.

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- I. California Code of Regulations (CCR) Title 24 California Building Code (CBC), 2019.
- J. AWS D1.1/D1.1M - Structural Welding Code - Steel; American Welding Society, 2015.
- K. AWS D1.8/D1.8M –Structural Welding Code - Seismic Supplement, 2016.
- L. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; American Welding Society, 2012.
- M. SSPC-Paint 15 - Steel Joist Shop Primer; Society for Protective Coatings.
- N. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); Society for Protective Coatings.
- O. UL (FRD) - Fire Resistance Directory; Underwriters Laboratories Inc.
- P. ASTM A36/A36M - Standard Specification for Carbon Structural Steel, 2014
- Q. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless, 2012
- R. ASTM A108 - Standard Specification for Steel Bar, Carbon and Alloy, Cold Finished, 2013
- S. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products, 2015.
- T. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware, 2016
- U. ASTM A307 - Standard Specification for Carbon Steel Bolts and Studs, and Threaded Rod 60 000 PSI Tensile Strength, 2014.
- V. ASTM A449 - Standard Specification for Hex Cap Screws, Bolts and Studs, Steel, Heat Treated, 120/105/90 ksi Minimum Tensile Strength, General Use, 2014.
- W. ASTM A500 - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes, 2013.
- X. ASTM A501 - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing, 2014.
- Y. ASTM A563 - Standard Specification for Carbon and Alloy Steel Nuts, 2015
- Z. ASTM A572/A572M - Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel, 2015.
- AA. ASTM A913/A913M Standard Specification for High Strength Low-Alloy Steel Shapes of Structural Quality, Produced by Quenching and Self-Tempering Process (QST), 2015.
- BB. ASTM A992/A992M - Standard Specification for Structural Steel Shapes, 2015.
- CC. ASTM C1107/C1107M - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Non-shrink), 2014.

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- DD. ASTM E94 - Standard Guide for Radiographic Examination Using Industrial Radiographic Film; 2017.
- EE. ASTM E164 - Standard Practice for Contact Ultrasonic Testing of Weldments, 2013.
- FF. ASTM E165/E165M - Standard Practice for Liquid Penetrant Examination for General Industry; 2012
- GG. ASTM E709 - Standard Guide for Magnetic Particle Testing; 2015.
- HH. ASTM F436/F436M - Standard Specification for Hardened Steel Washers, Inch and Metric Dimensions; 2016
- II. ASTM F959/F959M - Standard Specification for Compressible-Washer-Type Direct Tension Indicators for Use with Structural Fasteners, Inch and Metric Dimension; 2017.
- JJ. ASTM F1554 - Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength, 2015.
- KK. ASTM F3125/F3125M – Standard Specifications for High Strength Structural Bolts, Steel and Alloy Steel, Heat Treated, 120 ksi (830MPa) and 150 ksi (1040 MPa) Minimum Tensile Strength, Inch and Metric Dimensions; 2015.

1.5 SUBMITTALS

- A. See Section 013300 - Administrative Requirements, for submittal procedures. Allow adequate time to check the number of drawings in each submittal. A normal two-week turnaround time applies to individual non-overlapping submittals not exceeding 250 sheets.
- B. Product Data: Submit copies of producers or manufacturer's specifications and installation instructions for the following products. Include laboratory test reports and other data required to show compliance with these specifications (including specified standards).
- C. Certified Mill Test Reports: Structural Steel (each type) indicates chemical, physical properties, destructive test analysis and non-destructive test analysis.
- D. Welding electrodes.
- E. Welding gas.
- F. Unfinished bolts and nuts.
- G. Structural Steel Primer Paint.
- H. Shop Drawings: Submit shop drawings, including complete details and schedules for fabrication and shop assembly of members, and details, schedules, procedures and diagrams showing the sequence of erections. Fully detail minor connections and fastenings not shown or specified in the Contract Documents to meet required conditions using similar details as shown in the Contract Documents. Include a fully detailed, well controlled sequence and technique plan for shop and field welding that minimizes locked-in stresses and distortion; submit sequence and technique plan for review by the Architect.
 - 1. Include details of cuts, connections, camber, holes per Figure 5.2 of AWS D1.1 or AISC Section J1.8, weld position plan and other pertinent data. Indicate welds by standard AWS symbols, and show size, length and type of each weld,

2. Provide setting drawings, templates and directions for installation of anchor bolts and other anchorages to be installed for work specified in other sections.
 3. Shop drawings shall use the "United States Standards" system dimensioning (feet, inches, etc.). Shop drawings which use only metric system of measurements will be rejected.
 4. Shop drawings shall be drawn on sheet sizes not less than 24" x 32".
 5. During the shop drawings submittal phase if the Contractor cannot establish approved document within two submissions he will assume the responsibility for the additional cost incurred by the Architect for the additional reviews.
 6. No deviation of structural details or framing shall be made in the shop drawings without prior approval by DSA and the Architect.
 7. All approved deviations from the contract documents thru Request for Information (RFI) process shall be referenced on the shop drawings with appropriate RFI numbers.
 8. Maximum number of shop drawing sheets in any submittal shall not exceed 200 for a minimum two-week review period by the structural engineer. The review period for additional submittal will begin at the end of the previous submittal review.
- I. Weld Procedures: Contractor shall submit all welding procedures, stamped and signed by an AWS/CWI Inspector licensed in the state in which the project is located, for review by the owners testing and inspection firm, the structural engineer of record, and DSA. Welding procedures shall be qualified as described in AWS D1.1, Section 3 or 4. All CJP single and/or double groove welds shall be back gouged unless otherwise noted on the drawings. Weld procedure shall indicate joints details and tolerances, back gouge, preheat and interpass temperature, post heat treatment, single or multiple stringer passes, peening of stringer passes for groove welds except for the first and the last layers, electrode type and size, welding current polarity and amperes and root treatment. The welding variables for each stringer pass shall be recorded and averaged, from these averages the weld heat input shall be calculated.
- J. Test Reports: Submit copies of test conducted on shop and field welds and bolted connections. Include data on type of tests conducted and test results.
- K. Provide Procedure Qualification Record (PQRs) in accordance with AWS D1.1.
- L. Welders Certificates: All field welders shall be job certified per AWS D1.1. All shop welders shall be job certified for FCAWS per AWS D1.1. Welders working on restricted access joints shall be certified per AWS D1.8.
- M. Stress Relieving Method.

1.6 QUALITY ASSURANCE

- A. Fabricate structural steel members in accordance with AISC "Steel Construction Manual" in AISC certified shop
- B. Comply with Section 10 of AISC 303 "Code of Standard Practice for Steel Buildings and Bridges" for architecturally exposed structural steel.
- C. Maintain one copy of each document on site.
- D. Fabricator: See Paragraph 1.7B.
- E. Erector: See Paragraph 1.7C.

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- F. Except per prequalified welds per AWS D1.1, weld procedures for non-rigid frame connections shall be qualified and must be reviewed and approved by the Architect and by the governing agency.
- G. Continuous inspection by a Registered Deputy Inspector hired by the owner and approved by the Architect and governing agency will be provided during fabrication. Not required for work done in an AISC certified shop.
- H. To assure the proper amperage and voltage of the welding process, the use of the handheld calibrated amp and voltmeter shall be used. The hand-held amperage and volt meters shall be calibrated at the start of each shift or once a day as a minimum.

This equipment shall be used by the fabricator, erector, and the inspectors. Amperage and voltage shall be measured near the arc. Travel speed and electrode stick out shall be verified to be in compliance with the approved welding procedures.
- I. Inspection agency approved by the Architect and by the governing agency will perform visual inspection of all welds.
- J. Contractor's Responsibility: The Contractor alone shall be responsible for correct fitting of structural members and the elevation and alignment of the finished structure.
- K. Codes and Standards: Comply with Paragraph 1.4 and provisions of following, except as otherwise indicated:
AISC "Code of Standard Practice for Steel Buildings and Bridges AISC "Specifications for the Design, Fabrication, and Erection of Structural Steel for Buildings" and including the Commentary" and Supplements thereto as issued.
AWS D1.1 "Structural Welding Code."
ASTM-A6 "General Requirements for Delivery of Rolled Steel Plates, Shapes. Sheet Piling and Bars for Structural Use."
CCR, Title 24, Chapter 22 – California Building Code (Chapter 22A for DSA and OSHPD).
- L. Qualifications for Welding Work: Qualify welding processes and welding operators in accordance with the AWS "Procedure Qualification" and "Welder Qualification."
- M. Source Quality Control: Materials and fabrication procedures are subject to inspection and test in mill, shop and field, conducted by a qualified inspection agency appointed by the Architect. Such inspections and tests will not relieve contractor of responsibility for providing materials and fabrication procedures in compliance with specified requirements.
- N. Testing Laboratory shall perform conformance testing in accordance with CBC Chapter 17A.
 - 1. Identified Structural Steel: Steel shall be identified in accordance with ASTM A6 and bear legible heat numbers acceptable to the Testing Laboratory which shall make positive identification of structural steel as to mill source, heat numbers, and certified mill analysis and test report for each heat. Obtain the mill test reports and furnish report certifying identity of steel.
 - 2. Unidentified Structural Steel: Steel not identified is not allowed.
 - 3. Promptly remove and replace materials or fabricated components which do not comply.
- O. For Exposed Structural Steel: Perform work in accordance with AISC – Specification for Architectural Exposed Structural Steel.

- P. Preheat and Interpass Temperatures:
1. The preheat temperatures and conditions given in AWS D1.1, Chapter 3 shall be strictly observed with special attention given to Paragraph 3.5 for the thickness of material to be welded.
 2. Preheat temperatures should be measured at a distance from the weld equal to the thickness of the part being welded, but not less than three inches in any direction including the through thickness of the piece. Where plates are of different thickness, the pre-heat requirements for the thicker plate should govern. Maintenance of pre-heat temperatures through the execution of the weld (i.e. the interpass temperature) is essential. Maximum interpass temperature should be limited to 550 degrees Fahrenheit for all complete joint penetration welds. Welding operators and inspectors shall be in possession of and utilizing temperature measure devices. Temperature indicating sticks may be used.
- Q. When ambient temperature drops below 50°F or under circumstances where the wind chill at higher temperature would increase the heat loss to be equivalent to a temperature of 50°F controlled cooling shall be provided by wrapping insulating blankets over the welded assembly immediately after completion of welding.
- R. Where noted on drawings, perform work in accordance with AISC “Specification for Architectural Exposed Structural Steel” (AESS).

1.7 QUALIFICATIONS

- A. Qualifications: Contractor shall determine, warrant, and certify that producer, detailer, fabricator, erector, materials suppliers and all other involved in the Work of this Section with minimum five years documented experienced for at least five building 5 stories or more in height.
- B. Fabricator: AISC certified shop for complex structures specializing in standard building structures (BU) with minimum five years of documented experience in fabrication of structural steel for at least five buildings 5 stories or more in height.
- C. Erector: AISC certified steel erector with minimum five years of documented experience in the erection of structural steel for at least five buildings 5 or more stories in height.

1.8 FIELD MEASUREMENTS

- A. Verify that field measurements are as shown on the Contract Documents. Contractor shall furnish accurate as-built drawings of bolt settings for work specified in this section and other sections.

1.9 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to site at such intervals to insure uninterrupted progress of work. Protect all steel materials from damage during shipping, handling, and storage on the site. Steel showing dents, creases, deformations, weathering, or other defects is not acceptable. Deliver welding electrodes to site in unbroken packages bearing the manufacturer's name and label identifying the contents.

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1. Deliver anchor bolts and anchorage devices, which are to be embedded in cast-in-place concrete, in ample time to not delay that work. Anchor bolts and template delivery shall be indicated as a milestone date on the project construction schedule.
- B. Storage of fabricated steel at the site shall be the responsibility of the Contractor. Store materials to permit easy access for inspection and identification. Keep steel members off ground, using pallets, platforms, or other supports. Protect steel members and package materials from corrosion and deterioration.
- C. Do not store materials on structure in a manner that might cause distortion or damage to members or supporting structures. Repair or replace damaged materials or structures as required by the architect.
- D. Other material shall be stored in weather-tight containers until ready for use in the Work. Containers must be stored in a dry place.
- E. The Architect reserves the right to reject any material that has become damaged because of improper storage.
- F. Storage areas must be shown on the current site use plan.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Steel Angles and Channels: ASTM A36/A36M, ASTM/A572 Grade 50 if noted on the drawings.
- B. Steel W Shapes and Tees: ASTM A992/A992M.
- C. Steel Plates and Bars: ASTM A572/A572M, Grade 50 (345) high-strength, columbium-vanadium steel, or as indicated on the drawings.
- D. Structural Tubing: ASTM A500, Grade C.
- E. Pipe: ASTM A53/A53M, Grade B, Finish black.
- F. Structural Bolts and Nuts: Carbon steel, ASTM A307, Grade A galvanized to ASTM A153/A153M, Class C.
- G. Unheaded Anchor Rods: ASTM F1554, Grade 55 S1 (UNO), plain, with matching ASTM A563 or A563M nuts and ASTM F436 Type 1 washers.
- H. Welding Materials: AWS D1.1; type required for materials being welded.
- I. Shop and Touch-Up Primer: Fabricator's standard, complying with VOC limitations of authorities having jurisdiction.
- J. Touch-Up Primer for Galvanized Surfaces: Fabricator's standard, complying with VOC limitations of authorities having jurisdiction.
- K. Unfinished Threaded Fasteners: ASTM A307, Grade A, regular low-carbon steel bolts and nuts. Provide hexagonal heads and nuts for all connections.

- L. High-Strength Threaded Fasteners: Heavy hexagon structural bolts, heavy hexagon nuts, and hardened washers, as follows:

Quenched and Tempered Medium-Carbon Steel Bolts, nuts and washers, complying with ASTM-A325, and/or as called for on the drawings.
- M. Anchor Bolts: ASTM A36, non-headed type or ASTM F1554 Headed unless otherwise indicated. ASTM A572 and/or ASTM F1554 where indicated on drawings.
- N. Electrodes for Flux Cored Arch welding (FCAW) shall not have diameter greater than 7/64 inch and an electrical stick out greater than two inches.

2.2 FABRICATION

- A. Shop Fabrication and Assembly: Fabricate and assemble structural assemblies in the shop to greatest extent possible. Fabricate items of structural steel in accordance with AISC Specifications and as indicated on contract documents. Properly mark and match-mark materials for field assembly. Fabricate for delivery sequence which will expedite erection and minimize field handling of materials.
- B. Cleaning and Straightening: Wire brush steel materials and clean off loose mill scale and rust. Straighten steel members by non-injurious methods prior to fabrication. Remove twists or bends after punching or working component parts of a member before the parts are assembled. Produce finished members free from twists, bends, and open joints when erected.
- C. Provide and deliver test samples for material properties verifications per Paragraph 1.6.O.3 and 1.6.O.4 to the testing laboratory.
- D. Connections: Weld or bolt shop connections, as indicated.
- E. Welded Construction: Strictly comply with AWS D1.1 code for procedures, appearance, and quality of welds, and methods used in correcting defective welding work.
- F. Assemble and weld built-up sections by some method which will produce true alignment of axes without warp.
- G. Holes for Other Work: Provide holes required for securing other work to structural steel framing and for passage of other work through steel framing members. Provide threaded nuts welded to framing, and other specialty items as indicated to receive other work including hole reinforcing as shown or required.

Cut, drill, or punch holes perpendicular to metal surfaces. Do not flame cut holes or enlarge holes by burning.

Holes in steel may be punched 1/16" larger than nominal diameter of bolt if steel thickness is equal to or less than 1/8" plus bolt diameter. If the steel is thicker than the diameter of the bolt plus 1/8", the holes shall be drilled or sub-punched and reamed. Diameter of sub-punched holes, and the drill for sub-drilled holes, shall be 1/16" smaller than the nominal diameter of bolt to be installed. Precisely locate finished holes to ensure passage of all bolts through steel assemblies without drifting. Enlarge holes only by reaming. Poor matching of holes is cause for rejection.

- H. Gas Cutting: Use of a cutting torch is allowed where the metal being cut is not stressed during the operation, and provided stresses are not transmitted through flame-cut surface. Make gas cuts with a smooth regular contour. Deduct 1/8" from the width of gas cut edges to determine the effective width of gas cut members. Make reentrant gas cut radius as large as possible, but 1" minimum. For reentrant corners (e.g. slots in tube steel braces) drill 1" (inch) diameter pilot holes.
- I. Welded Construction: Strictly comply with AWS Codes for procedures, appearance and quality of welds, and methods used in correcting welding work. Assemble and weld built-up sections by methods that will produce true alignment of axes without warp.
1. Conform to AWS D1.1 and D1.3, as modified by referenced AISC Standards, and as indicated or noted on Drawings. Employ welding operators qualified in accordance to AWS D1.1 and D1.3, as applicable, who are thoroughly trained and experienced in arc welding and that produce uniformly reliable groove and fillet welds in flat, vertical, and overhead positions, and make neat and consistent welds. Weld all structural steel joints by shielded electric-arc method unless otherwise shown, specified, or approved.
 2. Qualifications of Welders: Each welder working on the Project shall be assigned an identification symbol or mark. Each welder shall mark or stamp his identification symbol at each completed weldment.
 3. Welders and Welding operators shall be qualified per AWS "Standard for Qualifications". The Contractor shall require any welder to retake the test when, in the opinion of the Architect, the Work of the welder creates a reasonable doubt as to the proficiency of the welder. All such tests shall be made using the filler metal to be used in actual fabrication.
 4. Test, when required, and costs for qualifying welders shall be conducted at no additional expense to the Owner.
 5. Recertification of the welder shall be made to Architects only after the welder has taken and passed the required retest. The architect may require coupon to be cut from any location in any joint for testing. All sections of welds found defective shall be chipped or cut out to base metal and properly re welded before proceeding with the Work.
 - a. Should any 2 coupons cut from the work of any welder show strengths that, under test, are less than that of the base metal, it will be considered evidence of negligence or incompetence and such welder shall be permanently removed from the Work.
 - b. When coupons are removed from any part of a structure, the members cut shall be repaired, at no additional cost to the owner. Make repairs in a neat and workmanlike manner with joints of proper type to develop the full strength of the member and joint cut. Peen as necessary or directed to relieve residual stress.
 6. Storage and Care of Electrodes: Coating of low-hydrogen type electrodes shall be thoroughly dry as used. Conform to AWS D1.1. Use electrodes taken from hermetically sealed packages within time limit specified therein after package is opened. Electrodes not used within allowable time period and electrodes that have been exposed more than one hour to air having a relative humidity of 75% or greater shall be dried according to AWS D1.1 before they are used, or shall be reconditioned according to electrode manufacturer's recommendations. Electrodes so dried or reconditioned and not used within allowable time period shall be redried before use. Electrodes of any class that have been wet shall not be used under any conditions.

7. Preparation: Clean surfaces to be welded of all paint, grease, oil, mill scale, and foreign matter. Clean weld each time the electrode is changed. Chip full surface of hand guided and controlled flame-cut edges before welding. Steel surfaces prepared with automatic or mechanically guided and controlled equipment need not be ground or chipped before welding.
8. Procedures: During assembling and welding, hold components of a built-up member with adequate clamps, bolts, or other means to keep parts straight and in tight contact.
GMAW, FCAW-G, GTAW and EGW shall not be performed when the wind velocity in the immediate vicinity of the weld exceeds three miles per hour. Welding performed within an enclosed area, and not subject to drafts may be deemed to satisfy this requirement. SMAW, FCAW-S, AND SAW may be performed without limitation to wind velocity, provided the wind does not affect the appearance of the molten weld puddle. Cut out defective welding with chisel or air arc and replace.
9. Maintain record of welding procedures, welders employed, date of qualification and identification symbol of mark. Submit at completion of Work, or upon request, certified copies of records.
10. Related Welding: Conform to AWS D1.1 for fillet, plug, slot, partial or flared groove, and lap. Welding starts and stops do not count as part of the effective length of any weld.
11. Weld Characteristics: Clean and wire brush all welds. Visual inspection of finished welds must show uniform section, smoothness of welded metal, feather edges without undercuts or overlays, freedom from porosity and inclusions, and good fusion and penetration into base metal at edges and ends of fillet welds.
12. Weld Finishing: Grind exposed welds to smooth surfaces free of holes, slag, or other defects, flush with adjoining surfaces. No finish treatment is required for permanently concealed welds.

J. Bolted Construction

1. Machine Bolts: Make connections with machine bolts only where indicated.
2. Load Indicator Washers: Manufactured and licensed by Cooper and Turner, or equal, may be used for field installation of high-strength bolts. Load indicator washers do not replace required washers but may be used in conjunction with required washers. Conform tightening to Paragraph 5e of "Reference Specifications". After sufficient bolts in a joint are snugged to bring the members into close contact, perform tightening from most rigid part to free edges until load indicators on all bolts are closed to required gap of 0.015" under bolts heads or 0.010" under the nuts. Do not completely close the gap to prevent overtightening and damage to the bolts.
3. Tension Set or Load Indicator Bolts, Nuts, and Washers: As manufactured by Cold Form Specialties, or equal, may be used for the field installation of high-strength bolts. In multi-bolts joints, tighten the nuts in stages (a little at a time) without breaking spline in any of them until final stage, to minimize slackening of the installed bolts.

K. Fabricate connections for bolt, nut, and washer connectors.

2.3 FINISH

A. General: Shop paint structural steel work, except as follows:

1. Steel surfaces embedded in concrete or masonry.
2. Structural steel which is completely closed-in by interior or exterior building finish.

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3. Do not paint surfaces which are to be welded or high-strength bolted with slip critical (SC)-type connection.
 4. Do not paint surfaces which are scheduled to receive sprayed-on fireproofing.
- B. Prepare structural component surfaces in accordance with SSPC-Paint 20.
 - C. Shop prime all structural steel which will be exposed in the finished work. Do not prime surfaces that will be fireproofed, field welded, in contact with concrete, high strength bolted, or where concealed by building finishes unless noted on the drawings.
 - D. Painting: Immediately after surface preparation, apply structural steel primer paint in accordance with manufacturer's instructions and at a rate to provide a uniform dry film thickness of not less than 1.5 mils. Use painting methods which will result in full coverage of joints, corners, edges and exposed surfaces.
 - E. Galvanize all steel exposed to weather per ASTM A123. Provide minimum 1.7 oz/sq ft. galvanized coating.

2.4 SOURCE QUALITY CONTROL AND TESTS

- A. Welded Connections: Visually inspect all shop-welded connections and test 100 percent of complete penetration welds ultrasonically in accordance with ASTM E164 and test at least 10 percent of all other welds using one of the following:
 1. Radiographic testing performed in accordance with ASTM E94.
 2. Ultrasonic testing performed in accordance with ASTM E164.
 3. Liquid penetrant inspection performed in accordance with ASTM E165.
 4. Magnetic particle inspection performed in accordance with ASTM E709.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive work.
- B. Beginning of installation means erector accepts existing conditions.

3.2 ERECTION

- A. General: Comply with AISC Specifications and Code of Standard Practice, and as herein specified.
- B. Temporary Shoring and Bracing: Provide temporary shoring and bracing members with connections of sufficient strength to bear imposed loads. Remove temporary members and connections when permanent members are in place and final connections are made. Provide temporary guy lines to achieve proper alignment of structures as erection proceeds.
- C. Temporary Planking: Provide temporary planking and working platforms as necessary to effectively complete the work.

- D. Setting Bases and Bearing Plates: Furnish and deliver anchor bolts with setting drawings and templates. Verify position of bolts prior to delivery of steel; report errors or deviation for correction to the architect.
 - 1. Clean concrete bearing surfaces of bond-reducing materials and roughen to improve bond to surfaces. Clean the bottom surface of base and bearing plates.
 - 2. Set loose and attached base plates and bearing plates for structural members on wedges or other adjusting devices.
 - 3. Snug tighten anchor bolts after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of base or bearing plate prior to packing with grout.
- E. Field Assembly: Set structural frames accurately to lines and elevations. Align and adjust various members forming a part of a complete frame or structure before permanently fastening. Clean bearing surfaces and other surfaces that will be in permanent contact before assembly. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.
 - 1. Level and plumb individual members of structure within specified tolerances.
 - 2. Splice members only where indicated and accepted on final shop drawings.
 - 3. Do not enlarge unfair holes in members by burning or by use of drift pins except in secondary bracing members. Ream holes that must be enlarged to admit bolts.
 - 4. Except for gravity or cantilevered connections, all back-up bars, dams, and runoff tabs shall be removed: the weld, base metal shall be ground flush and smooth per AWS D1.8 Table C-1.1 and AISC 341I2.3 unless noted otherwise on drawings.
- F. Gas Cutting: Do not use gas cutting torches in field for correcting fabrication errors in structural framing without the approval of the architect. Cutting will be permitted only on secondary members which are not under stress. Finish gas-cuts sections equal to a sheared appearance when permitted.
- G. Damaged Members: Remove members damaged to an extent impairing appearance, strength or serviceability, as determined by architect and replace with new members at no extra cost to the owner.
- H. Field Touch-up Painting: After structural steel erection and connections are completed, inspected, and approved, clean all connections to be painted and damage to shop painted surfaces, and apply a field touch-up coat of same primer used for shop coat.

3.3 TOLERANCES: ERECT MEMBERS TO THE TOLERANCES CONFORMING TO REFERENCED AISC STANDARDS AND CBC, EXCEPT AS FOLLOWS:

- A. Vertical Dimensions: Measured from top of beams at their connections at any column, variation not more than 1/4" plus or minus per story or, when variations are accumulative from floor to floor, not exceeding 3/8" per story exclusive of column shortening due to dead load.
- B. Plumb Displacement: Center line of columns from established column line, no more than 1" toward or away from established center line.
- C. Horizontal Dimension Variances: Governed by specified column plumb displacement.

3.4 QUALITY CONTROL – SHOP AND FIELD

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- A. The Owner will engage an independent testing and inspection agency to inspect high strength bolted connections and welded connections and to perform tests and prepare test reports in accordance with CBC Chapter 17A.
- B. Testing Agency shall conduct and interpret test and state in each report whether test specimens comply with requirements, and specifically state any deviations therefrom.
- C. Provide access for testing agency to places where structural steel work is being fabricated or produced so that required inspection and testing can be accomplished safely.
- D. The testing agency may inspect structural steel at plant before shipment; however, Architect reserves the right at any time before final acceptance to reject material not complying with specified requirements.
- E. Correct deficiencies in structural work which inspections and laboratory test reports have indicated to be not in compliance with requirements. Perform additional tests, at Contractor's expense, as may be necessary to reconfirm any non-compliance of original work, and as may be necessary to show compliance of corrected work.
- F. Welding: Inspect and test during fabrication and erection of structural steel assemblies, as follows:
 - 1. Certify welders and conduct inspections and tests as required. Record types and locations of defects found in the work. Record work required and performed to correct deficiencies.
 - 2. Inspect all welds. All welds shall be accepted visually prior to performing any non-destructive testing. Groove weld shall be inspected by ultrasonic or other approved non-destructive test methods. All testing shall be performed to AWS D1.1 Table 6.2 *statically* loaded non-tubular connections.
 - 3. Ultrasonic testing shall be performed by a specially trained and qualified technician who shall operate the equipment, examine welds, and maintain a record of welds examined, defects found, and disposition of each defect. All defective welds shall be repaired and costs for retesting defective welds shall be paid by Contractor.
 - 4. Rate of Testing: All completed welds contained in joints and splices shall be tested 100 percent either by ultrasonic testing or by radiography.
 - 5. Any material discontinuities shall be accepted or rejected on the basis of the defect rating in accordance with the criteria of AWS D1.1 *Table 6.2* by the Architect.
 - 6. Welds inspected by visual or ultrasonic testing or any other approved method that does not meet the requirements of AWS D1.1 shall be repaired or replaced as prescribed by AWS D1.1. Additional testing of repaired or replaced areas shall be made at the Contractor's expense.
 - 7. Should defects appear in base metal and/or in welds tested, repairs of defects in base metal or welds shall be similarly inspected, as approved by architect at the Contractor's expense until satisfactory performance is assured.
 - 8. Other method of non-destructive testing and inspection, for example, liquid dye penetrant testing, magnetic particle inspection or radiographic inspection, may be used on weld if required.
 - 9. Lamellar Tearing: Lamellar tearing resulting from welding is a crack (with zero tolerance) and shall be repaired per AWS D1.1.
 - 10. Lamination: Lamination are defects in the base metal. The rejection criteria shall be based on ASTM A435.
 - 11. Where lamination or conditions of lamellar tearing in base metal are revealed by testing, the steel fabricator shall submit a proposed method of repair for approval. Retesting of repaired areas is required. Costs of repair and retesting shall be borne by the Contractor.

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12. Magnetic Particle Testing: Magnetic particle testing when required shall be provided in accordance with AWS D1.1 for procedure and technique. The standards of acceptance shall be in accordance with AWS D1.1 - Qualification.
- G. Prior Testing of Base Material: Test material prior to fabrication in order to detect possible defects that would require difficult and expensive repair.
- H. Lines and levels of erected steel to be certified by a licensed surveyor. See additional requirements in Division 1 Sections.
- I. As erected Drawings: After all steel has been erected, correct or revise shop drawings and erection diagrams to correspond with the changes made in the field.

END OF SECTION 051200

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 0 & 1 Specification Sections, apply to work of this Section.

1.2 SUMMARY

- A. This section includes, but not limited to, the following metal fabrications:
 - 1. Rough hardware.
- B. Related Sections: The following sections contain requirements that relate to this section:
 - 1. Division 32 Section "Chain Link Fences and Gates" for metal gates posts and related items.
 - 2. Division 32 Section "Portland Cement Concrete Paving" for grates and steel covers for yard, catch basin and utility boxes.
 - 3. Division 5 Section "Structural Steel" for structural steel framing system components.

1.3 DEFINITIONS

- A. Definitions in ASTM E 985 for railing-related terms apply to this section.

1.4 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.
- B. Product data for products used in miscellaneous metal fabrications, including paint products and grout.
- C. Shop drawings detailing fabrication and erection of each metal fabrication indicated. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items. Provide templates for anchors and bolts specified for installation under other sections.
- D. Samples representative of materials and finished products as may be requested by Architect.
- E. Welder certificates signed by Contractor certifying that welders comply with requirements specified under "Quality Assurance" article.
- F. Qualification data for firms and persons specified in "Quality Assurance" article to demonstrate their capabilities and experience. Include list of completed projects with project name, addresses, names of Architects and Owners, and other information specified.

1.5 QUALITY ASSURANCE

- A. Fabricator Qualifications: Firm experienced in successfully producing metal fabrications similar to that indicated for this Project, with sufficient production capacity to produce required units without causing delay in the Work.
- B. Installer Qualifications: Arrange for installation of metal fabrications specified in this section by same firm that fabricated them.
- C. Qualify welding processes and welding operators in accordance with CFC Chapter 26, AWS D1.1 "Structural Welding Code - Steel," D1.3 "Structural Welding Code - Sheet Steel", and D1.2 "Structural Welding Code - Aluminum."
 - 1. Certify that each welder is certified and has satisfactorily passed AWS qualification tests for welding processes involved and, if pertinent, has undergone recertification.
- D. Provide materials and inspections that comply with the following 2019 CBC requirements.
 - 1. Materials:
 - a. Structural steel, cold formed steel 2202A.1, 2209A.1
 - b. Identification 2203A.1
 - 2. Quality
 - a. Tests of structural and cold formed steel 2212A.1
1703A
 - 3. Inspection
 - a. Shop fabrication 1704A.3.2.1
 - b. Welding 1704A.3.1.1

1.6 PROJECT CONDITIONS

- A. Field Measurements: Where metal fabrications are indicated to fit walls and other construction, verify dimensions by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying of Work.
 - 1. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating metal fabrications without field measurements. Coordinate construction to ensure that actual dimensions correspond to established dimensions. Allow for trimming and fitting.

1.7 COORDINATION

- A. Coordinate installation of anchorages for metal fabrications. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

PART 2 - PRODUCTS

2.1 FERROUS METALS

- A. Metal Surfaces, General: For metal fabrications exposed to view in the completed Work, provide materials with smooth, flat surfaces without blemishes. Do not use materials with exposed pitting, seam marks, roller marks, rolled trade names, or roughness.
- B. Steel Plates, Shapes, and Bars: ASTM A 36.
- C. Rolled Steel Floor Plates: ASTM A 786.
- D. Steel Bars for Gratings: ASTM A 569 or ASTM A 36.
- E. Wire Rod for Grating Cross Bars: ASTM A 510.
- F. Steel Tubing: Product type (manufacturing method) and as follows:
 - 1. Cold-Formed Steel Tubing: ASTM A 500, grade as indicated below:
 - a. Grade A, unless otherwise indicated or required for design loading.
 - 2. Hot-Formed Steel Tubing: ASTM A 501.
 - a. For exterior/interior installation where indicated, provide tubing with hot-dip galvanized coating per ASTM A 53.
- G. Uncoated Structural Steel Sheet: Product type (manufacturing method), quality, and grade, as follows:
 - 1. Cold-Rolled Structural Steel Sheet: ASTM A 611, grade as follows:
 - a. Grade A, unless otherwise indicated or required by design loading.
- H. Uncoated Steel Sheet: Commercial quality, product type (method of manufacture) as follows:
 - 1. Cold-Rolled Steel Sheet: ASTM A 366.
- I. Galvanized Steel Sheet: Quality as follows:
 - 1. Structural Quality: A 653, SQ Grade, unless another grade required for design loading, and G90 coating designation unless otherwise indicated.
- J. Steel Pipe: ASTM A 53, Grade B; finish, type, and weight class as follows:
 - 1. Black finish, for interior installations, galvanized where indicated for interior installations on plans.
 - 2. Galvanized finish for exterior installations. (Where used for rails and related items, galvanized entire assembly after fabrication)
 - 3. Type F, standard weight, unless otherwise indicated, or another weight, type, and grade required by structural loads.
- K. Steel Tubing: ASTM A 500, Grade B.
 - 1. Black finish, for interior installations, galvanized where indicated on plans.

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2. Galvanized finish for exterior installations.
 3. Size and configuration indicated on Plans.
- L. Brackets, Flanges and Anchors: Cast or formed metal of the same type material and finish as supported rails, unless otherwise indicated.
- M. Concrete Inserts: Threaded or wedge type; galvanized ferrous castings, either malleable iron, ASTM A 47, or cast steel, ASTM A 27. Provide bolts, washers, and shims as required, hot-dip galvanized per ASTM A 153.
- N. Welding Rods and Bare Electrodes: Select in accordance with AWS specifications for the metal alloy to be welded.
- O. Aluminum Plate: 6061 grade.

2.2 STAINLESS STEEL

- A. Bar Stock: ASTM A 276, Type 302 or 304.
- B. Plate: ASTM A 167, Type 302 or 304.
- C. Pipe: Grade B, Type 302 or 304.

2.3 ALUMINUM

- A. Extruded Bars and Shapes: ASTM B 221, alloys as follows:
1. 6061-T6 or 6063-T6 for bearing bars of gratings and shapes.
 2. 6061-T1 for grating cross bars.

2.4 GROUT AND ANCHORING CEMENT

- A. Nonshrink Nonmetallic Grout: Premixed, factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with CE CRD- C 621. Provide grout specifically recommended by manufacturer for interior and exterior applications of type specified in this section.
- B. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include but are not limited to the following:
1. Nonshrink Nonmetallic Grouts:
 - a. Master Builders "928".
 - b. "SonogROUT"; Sonneborn Building Products Div., Rexnord Chemical Products, Inc.
 - c. Sika "212".

2.5 FASTENERS

- A. General: Provide zinc-coated fasteners for exterior use or where built into exterior walls. Select fasteners for the type, grade, and class required.
- B. Bolts and Nuts: Regular hexagon head type, ASTM A 307, Grade A.

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- C. Lag Bolts: Square head type, FS FF-B-561.
- D. Machine Screws: Cadmium plated steel, FS FF-S-92.
- E. Wood Screws: Flat head carbon steel, FS FF-S-111.
- F. Plain Washers: Round, carbon steel, FS FF-W-92.
- G. Drilled-In Expansion Anchors: Expansion anchors complying with FS FF-S-325, Group VIII (anchors, expansion, [nondrilling]), Type I (internally threaded tubular expansion anchor); and machine bolts complying with FS FF-B-575, Grade 5.
 - 1. Hilti "Kwik-Bolt TZ", ICC-1917.
- H. Lock Washers: Helical spring type carbon steel, FS FF-W-84.
- I. Stainless Steel: Type 304.
- J. Snap hooks, chain, galvanized.
- K. Thread Inserts: Rivnut or equal.
- L. Rubber Pad: Size as indicated on drawings.

2.6 PAINT

- A. Shop Primer for Ferrous Metal: Manufacturer's or fabricator's standard, fast-curing, lead-free, universal modified alkyd primer selected for good resistance to normal atmospheric corrosion, for compatibility with finish paint systems indicated, and for capability to provide a sound foundation for field-applied topcoats despite prolonged exposure complying with performance requirements of FS TT-P-645.
 - 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the work include, but are not limited to, the following:
 - a. "Sea Guard Marine TT-P-645-B, ALKYD F-84" Sherwin Williams.
- B. Galvanizing Field Weld Paint: High zinc dust content paint for regalvanizing welds in galvanized steel, with dry film containing not less than 94 percent zinc dust by weight, and complying with DOD-P-21035 or SSPC-Paint-20.
 - 1. No field welding of galvanized steel assemblies. Any and all field welding of galvanized items shall be prior approved by Architect without exception.
 - 2. In the event any field welding of galvanized items is done, this Contractor shall warranty against rusting for five (5) years.
- C. Bituminous Paint: Cold-applied asphalt mastic complying with SSPC-Paint 12 except containing no asbestos fibers.
- D. Zinc Chromate Primer: FS TT-P-645.

2.7 CONCRETE FILL AND REINFORCING MATERIALS

- A. Concrete Materials and Properties: Comply with requirements of Division 3 section "Cast-in-Place Concrete" for normal weight, ready-mix concrete.
- B. Reinforcing Bars: ASTM A 615, Grade 60, unless otherwise indicated.

2.8 FABRICATION, GENERAL

- A. Form metal fabrications from materials of size, thickness, and shapes indicated but not less than that needed to comply with performance requirements indicated. Work to dimensions indicated or accepted on shop drawings, using proven details of fabrication and support. Use type of materials indicated or specified for various components of each metal fabrication.
- B. Form exposed work true to line and level with accurate angles and surfaces and straight sharp edges.
- C. Allow for thermal movement resulting from the following maximum change (range) in ambient temperature in the design, fabrication, and installation of installed metal assemblies to prevent buckling, opening up of joints, and overstressing of welds and fasteners. Base design calculations on actual surface temperatures of metals due to both solar heat gain and nighttime sky heat loss.
 - 1. Temperature Change (Range): 100 deg F (55.5 deg C).
- D. Shear and punch metals cleanly and accurately. Remove burrs.
- E. Ease exposed edges to a radius of approximately 1/8 inch, unless otherwise indicated. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
- F. Remove sharp or rough areas on exposed surfaces.
- G. Weld corners and seams continuously to comply with AWS recommendations and 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. At exposed connections, finish exposed welds and surfaces smooth and blended so that no roughness shows after finishing and contour of welded surface matches those adjacent.
- H. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners wherever possible. Use exposed fasteners of type indicated or, if not indicated, Phillips flat-head (countersunk) screws or bolts. Locate joints where least conspicuous.
- I. Provide for anchorage of type indicated; coordinate with supporting structure. Fabricate and space anchoring devices to provide adequate support for intended use.
- J. Shop Assembly: Preassemble items in shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.

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- K. Cut, reinforce, drill and tap miscellaneous metal work as indicated to receive finish hardware, screws, and similar items.
- L. Fabricate joints that will be exposed to weather in a manner to exclude water, or provide weep holes where water may accumulate.

2.9 ROUGH HARDWARE

- A. Furnish bent or otherwise custom fabricated bolts, plates, anchors, hangers, dowels, and other miscellaneous steel and iron shapes as required for framing and supporting woodwork, and for anchoring or securing woodwork to concrete or other structures. Straight bolts and other stock rough hardware items are specified in Division 6 sections.
- B. Fabricate items to sizes, shapes, and dimensions required. Furnish malleable-iron washers for heads and nuts which bear on wood structural connections; elsewhere, furnish steel washers.

2.10 MISCELLANEOUS STEEL TRIM

- A. Provide shapes and sizes indicated for profiles shown. Unless otherwise indicated, fabricate units from structural steel shapes, plates, and steel bars, with continuously welded joints and smooth exposed edges. Use concealed field splices wherever possible. Provide cutouts, fittings, and anchorages as required for coordination of assembly and installation with other work.
- C. Galvanize miscellaneous framing and supports in the following locations:
 - 1. Exterior locations.
 - 2. Interior locations where indicated.

2.11 FINISHES, GENERAL

- A. Comply with NAAMM "Metal Finishes Manual" for recommendations relative to application and designations of finishes.
- B. Finish metal fabrications after assembly.

2.12 STEEL AND IRON FINISHES

- A. Galvanizing: For those items indicated for galvanizing, apply zinc-coating by the hot-dip process compliance with the following requirements:
 - 1. ASTM A 153 for galvanizing iron and steel hardware.
 - 2. ASTM A 123 for galvanizing both fabricated and unfabricated iron and steel products made of uncoated rolled, pressed, and forged shapes, plates, bars, and strip 0.0299 inch thick and heavier.
- B. Preparation for Shop Priming: Prepare uncoated ferrous metal surfaces to comply with minimum requirements indicated below for SSPC surface preparation specifications and environmental exposure conditions of installed metal fabrications:
 - 1. Exteriors (SSPC Zone 1B): SSPC-SP6 "Commercial Blast Cleaning."
 - 2. Interiors (SSPC Zone 1A): SSPC-SP3 "Power Tool Cleaning:"

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- C. Apply shop primer to uncoated surfaces of metal fabrications, except those with galvanized finish or to be embedded in concrete, sprayed-on fireproofing, or masonry, unless otherwise indicated. Comply with requirements of SSPC-PA1 "Paint Application Specification No. 1" for shop painting.
- D. All exterior steel and iron shall be galvanized after fabrication unless noted otherwise. Refer to drawings for galvanized items to be painted.

2.13 ALUMINUM FINISHES

- A. Finish designations prefixed by "AA" conform to the system established by the Aluminum Association for designating aluminum finishes.
- B. As Fabricated Finish: AA-M10 (Mechanical Finish: as fabricated, unspecified).

2.14 PRE-ENGINEERED METAL FRAMING COMPONENTS

- A. Materials:
 - 1. All channel members shall be fabricated from structural grade steel conforming to the following ASTM specifications:
 - a. A 570 GR 33.
 - 2. All fittings shall be fabricated from steel conforming to the following ASTM specifications:
 - a. A 575.
- B. Finishes:
 - 1. Strut System components shall be finished in accordance with one of the following standards:
 - a. Rust inhibiting acrylic enamel paint applied by electro-deposition, after cleaning and phosphating and thoroughly baked. Color is per Federal Standard 595a color number 14109 (dark limit V-). Finish to withstand minimum 400 hours salt spray when tested in accordance with ASTM B 117. Paint where indicated.
- C. Manufacturers:
 - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
 - a. Unistrut Corporation.
 - b. P. W. Industries, Inc.
 - c. B Line

PART 3 - EXECUTION

3.1 PREPARATION

- A. Coordinate and furnish anchorages, setting drawings, diagrams, templates, instructions, and

directions for installation of anchorages, including concrete inserts, sleeves, anchor bolts, and miscellaneous items having integral anchors that are to be embedded in concrete or masonry construction. Coordinate delivery of such items to project site.

- B. Set sleeves in concrete with tops flush with finish surface elevations; protect sleeves from water and concrete entry.

3.2 INSTALLATION, GENERAL

- A. **Fastening to In-Place Construction:** Provide anchorage devices and fasteners where necessary for securing miscellaneous metal fabrications to in-place construction; include threaded fasteners for concrete and masonry inserts, toggle bolts, through-bolts, lag bolts, wood screws, and other connectors as required.
- B. **Cutting, Fitting, and Placement:** Perform cutting, drilling, and fitting required for installation of miscellaneous metal fabrications. Set metal fabrication accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.
- C. Provide temporary bracing or anchors in formwork for items that are to be built into concrete masonry or similar construction.
- D. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints, but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade the surfaces of exterior units which have been hot-dip galvanized after fabrication, and are intended for bolted or screwed field connections.
- E. **Field Welding:** Comply with AWS Code for procedures of manual shielded metal-arc welding, appearance and quality of welds made, methods used in correcting welding work, and 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. At exposed connections, finish exposed welds and surfaces smooth and blended so that no roughness shows after finishing and contour of welded surface matches those adjacent.
 - 5. No field welding of rails to receive galvanized finish.
- F. **Corrosion Protection:** Coat concealed surfaces of aluminum that will come into contact with grout, concrete, masonry, wood, or dissimilar metals with a heavy coat of bituminous paint or zinc chromate primer.

3.3 SETTING LOOSE PLATES

- A. Clean concrete and masonry bearing surfaces of any bond-reducing materials, and roughen to improve bond to surfaces. Clean bottom surface of bearing plates.
- B. Set loose leveling and bearing plates on wedges, or other adjustable devices. After the bearing members have been positioned and plumbed, tighten the anchor bolts. Do not remove wedges or shims, but if protruding, cut off flush with the edge of the bearing plate before packing with grout.

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1. Use metallic nonshrink grout in concealed locations where not exposed to moisture; use nonmetallic nonshrink grout in exposed locations, unless otherwise indicated.
2. Pack grout solidly between bearing surfaces and plates to ensure that no voids remain.

3.4 ADJUSTING AND CLEANING

- A. Touch-Up Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with same material as used for shop painting to comply with SSPC-PA 1 requirements for touch-up of field painted surfaces.
 3. Apply by brush or spray to provide a minimum dry film thickness of 2.0 mils.
- B. For galvanized surfaces, clean field welds areas and apply galvanizing repair paint to comply with ASTM A 780.
 1. All locations of field welds shall be approved prior to fabrication.
 2. Field welds on galvanized items shall be allowed only where approved by Architect. Repair work done on items shall be re-galvanized prior to reinstallation and approved in advanced by the Architect.

END OF SECTION 055000

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SECTION 061000 - ROUGH CARPENTRY

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Structural framing.
- B. Floor, wall, and roof sheathing.
- C. Preservative treatment of wood.
- D. Miscellaneous framing and sheathing.
- E. Telephone and electrical panel boards.
- F. Wood nailers and curbs for roofing and items installed on roof.
- G. Roofing cant strips.
- H. Concealed wood blocking for support of toilet and bath accessories, wall cabinets, and wood trim.
- I. Miscellaneous wood nailers and furring strips.

1.2 RELATED SECTIONS

- A. Section 051200 - Structural Steel.
- B. Section 055000 - Metal Fabrications: Miscellaneous steel connectors and support angles for wood framing.

1.3 REFERENCES

- A. ANSI A208.1 - American National Standard for Particleboard.
- B. AFPA T10 - Wood Frame Construction Manual; American Forest and Paper Association.
- C. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
- 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 D 2898 - Standard Test Methods for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing.
- F. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- G. AWPA U1 - Use Category System: User Specification for Treated Wood; American Wood-Preservers' Association.

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- H. PS 20 - American Softwood Lumber Standard; National Institute of Standards and Technology (Department of Commerce).
- I. RIS (GR) - Standard Specifications for Grades of California Redwood Lumber; Redwood Inspection Service.
- J. SPIB (GR) - Grading Rules; Southern Pine Inspection Bureau, Inc.
- K. WCLB (GR) - Standard Grading Rules for West Coast Lumber No. 17; West Coast Lumber Inspection Bureau.
- L. WWPA G-5 - Western Lumber Grading Rules; Western Wood Products Association.

1.4 SUBMITTALS

- A. See Division 1 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide technical data on sheathing, wood preservative materials, and application instructions.
- C. Manufacturer's Certificate: Certify that wood products supplied for rough carpentry meet or exceed specified requirements.

1.5 QUALITY ASSURANCE

- A. Lumber: Comply with PS 20 and approved grading rules and inspection agencies.
 - 1. Acceptable Lumber Inspection Agencies: Any agency with rules approved by American Lumber Standards Committee.
- B. Exposed-to-View Rough Carpentry: Submit manufacturer's certificate that products meet or exceed specified requirements, in lieu of grade stamping.
- C. Preservative-Treated Wood: Provide lumber and plywood marked or stamped by an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWPA standards.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.

PART 2 - PRODUCTS

2.1 DIMENSION LUMBER

- A. Sizes: Nominal sizes as indicated on drawings.
- B. Moisture Content: Provide seasoned lumber with 19% maximum moisture content.
- C. Structural Framing:

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1. Species and grade as indicated on drawings.

D. Miscellaneous Blocking, Furring, and Nailers:

1. Lumber: S4S, No. 2 or Standard Grade.
2. Boards: Standard or No. 3.

2.2 ACCESSORIES

A. Fasteners and Anchors:

1. Metal and Finish: Hot-dipped galvanized steel per ASTM A 153/A 153M for high humidity and preservative-treated wood locations, unfinished steel elsewhere. Type as indicated on drawings.
2. Furnish bolts and attachments to other trades for installation in masonry and concrete work.
3. Nails: Common wire, galvanized for exterior use.
4. Lag Screws and Wood Screws: Steel. Conforming to ANSI/ASME Standard B18.2.1, galvanized for exterior use.
5. Machine Bolts: ASTM A307, galvanized for exterior use.
6. Plain Washers: ANSI B18.22, galvanized for exterior use.
7. Hangers, Straps, Ties and other Framing Connectors: Steel, Galvanized. "Simpson Strong-Tie" unless noted otherwise.

B. Building Paper: No. 15 asphalt felt.

C. Termite Shield: Galvanized sheet steel, 28 gage.

2.3 FACTORY WOOD TREATMENT

A. Treated Lumber and Plywood: Comply with requirements of AWPA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.

B. Preservative Treatment:

1. Manufacturers:
 - a. Arch Wood Protection, Inc.; Product Wolman E: www.wolmanizedwood.com.
 - b. Chemical Specialties, Inc.; Product Preserve ACQ: www.treatedwood.com.
 - c. Substitutions: See Section 016000- Product Requirements.

C. Preservative Pressure Treatment of Lumber Above Grade:

1. Interior: AWPA Standard U1, Commodity Specification A, to the requirement of UC2 using waterborne preservative to 0.25 lb./cu. ft. retention.
2. Exterior: AWPA Standard U1, Commodity Specification A, to the requirement of UC3B using waterborne preservative to 0.25 lb./cu. ft. retention.
3. Kiln dry lumber after treatment to maximum moisture content of 19 percent.
4. Treat lumber in contact with roofing, flashing, or waterproofing.
5. Treat lumber in contact with masonry or concrete.
6. Treat lumber less than 18 inches above grade.

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7. Treat lumber in other locations as indicated.
 8. Identification: Preservative treated wood shall be identified in accordance with California Building Code (International Building Code) Section 2303.1.9.1.
- D. Preservative Pressure Treatment of Lumber in Contact with Soil: AWPAs Use Category UC4A, Commodity Specification A using waterborne preservative to 0.4 lb. /cu ft. retention.
1. Preservative for Field Application to Cut Surfaces: As recommended by manufacturer of factory treatment chemicals for brush-application in the field.
 2. Restrictions: Do not use lumber or plywood treated with chromated copper arsenate (CCA) in exposed exterior applications subject to leaching.
- E. Preservative Pressure Treatment of Plywood Above Grade: AWPAs Use Category UC2 and UC3B, Commodity Specification F using waterborne preservative to 0.25 lb. /cu ft. retention.
1. Kiln dry plywood after treatment to maximum moisture content of 19 percent.
 2. Treat plywood in contact with roofing, flashing, or waterproofing.
 3. Treat plywood in contact with masonry or concrete.
 4. Treat plywood less than 18 inches above grade.
 5. Treat plywood in other locations as indicated.

PART 3 - EXECUTION

3.1 FRAMING INSTALLATION

- A. Verify that surfaces to receive rough carpentry materials are prepared to require grades and dimensions.
- B. Conduct work under direction of capable experienced foreman.
- C. Accurately located members to line and dimension. Ensure full contact of timbers framed together. Ensure let-in members in full contact on two surfaces. Where there is a significant variation in moisture content between individual members, shrinkage shall be allowed for and final connection shall not be made until moisture content of adjacent members has been stabilized. Allow no construction over framing members until final connections and/or adjustments have been made to achieve maximum strength at connections and maximum future movement from shrinkage or expansion.
- D. Cutting: Do all cutting and framing required to accommodate structural members, piping conduit, ducts and installation of mechanical, electrical, and other equipment and apparatus.
1. Obtain Architect's approval for cutting of structural members not detailed on structural drawings.
 2. Reinforce cut sill and top plates with metal straps in accordance with the requirements of the drawings.
- E. Bracing and Shoring: Provide all supports, guys and braces, required to stabilize structure during construction.
- F. Accurately saw-cut and fit lumber into position and securely nail, spike, lag bolt, or bolt as required.

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- G. Fasteners: Installation of fasteners shall be performed in accordance with ANSI/ASME Standard B18.6.1. Drill holes for fasteners and size as noted:
 - 1. Nails and spikes: Smaller than diameter of fastener. Predrill as required to prevent splitting.
 - 2. Lag Bolts: Drill holes same length as shank. Bit size, no larger than base of threaded portion of screw.
 - 3. Bolts: Holes 1/32" - 1/16" larger than bolt.
 - 4. Framing Connectors: Smaller than diameter of fastener. Predrill as required to prevent splitting.
 - 5. No lubricant of any kind shall be used on any fastener depending on friction for holding.
- H. Nailing: Refer to details and tables on drawings for specific nailing requirements. In absence of specific instruction, comply with the following:
 - 1. Edge Distance: 1/4 length of fastener.
 - 2. Toe Nailing: Drive toe nails at an angle or approximately thirty degrees with the piece and started approximately one-third the length of the nail from end of piece.
 - 3. Replace split or otherwise damaged structural members.
- I. Bolts: Use standard cut washer under bolt heads and nuts against wood. Use heavy plate washer or malleable iron washer where noted on drawings. Drive into place. Ensure full engagement of nut, but projection of bolt beyond nut not to exceed one bolt diameter. Tighten nuts at installation and again immediately prior to enclosure.
- J. Lag Screws: Lubricate with soap or similar material. Turn into place without driving. Ensure penetration into lagged member of 60 percent of screw length. Lead hole shall have diameter of about 70 percent of the root diameter of the screw. Provide washers of same sizes as specified for bolts.
- K. Framing Connectors: Drive nails into all holes of each connector. Install all bolts in each framing connector unless detailed otherwise.
- L. Screws: Screws shall not be driven by hammering.
- M. Frame openings with two or more studs at each jamb and support headers on cripple studs unless noted otherwise in the drawings.
- N. Provide miscellaneous members as indicated or as required to support finishes, fixtures, specialty items, and trim.

3.2 INSTALLATION OF ACCESSORIES AND MISCELLANEOUS WOOD

- A. Coordinate curb installation with installation of sheathing and support of openings.

3.3 SILLS AND PLATES

- A. Install Pressure Preservative-treated lumber for plates and sill in contact with concrete or masonry construction.
- B. Pack space between sill and concrete with non-shrink grout.

3.4 STUD WALLS, PARTITIONS AND FURRING

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- A. Provide studs in continuous lengths without splices.
- B. Plates: Provide single bottom plate and double top plate. Stagger joints 4' minimum in top plates.
- C. Nail or anchor plates to supporting construction.
- D. Corners and Intersections: Frame with 3 studs or as detailed in the drawings.
- E. Openings: Frame with double studs each side and double header placed on edge, resting on cripple studs.
- F. Provide continuous horizontal blocking row at mid-height of single-story partitions over 8' high and at midpoint of multi-story partitions, using 2" thick members of same width as wall or partitions.
- G. Cut-in blocks wherever necessary for bracing or backing for applied finish or fixtures. Cut-in 2" solid blocking between studs at all horizontal joints in non-structural plywood wall sheathing.

3.5 JOISTS AND RAFTERS

- A. Joists and Rafters: Lay with crowning edge up with full end bearing.
- B. Openings: Frame for hatches, vents, and other openings as required.
- C. Bridging: Provide bridging for roof joists or rafters of more than 8" which are spaced 32" on center or less. Bridge roof joist or rafters every 10' by solid blocking 2" thick and full depth of joist or rafter, or by wood cross bridging of not less than 1"x3" or nailed metal cross bridging of equal strength. Where cross bridging is used, drive lower ends of such cross bridging up and nail after roof sheathing has been nailed.
- D. Solid Blocking: Install between roof rafters and ceiling joists over partitions and at end supports as indicated.
- E. Plywood Roof Sheathing: Install plywood over rafters or decking as indicated on drawings. Thickness and nailing shall be as indicated on structural drawings.
- F. Plywood Joints: Install 1/2" H clips at butt joints of roof sheathing, between rafters spaced 24" on center where solid blocking is not required.

3.6 SITE APPLIED WOOD TREATMENT

- A. Apply preservative treatment compatible with factory applied treatment at site-sawn cuts, complying with manufacturer's instructions.
- B. Allow preservative to dry prior to erecting members.

3.7 TOLERANCES

- A. Framing Members: 1/4 inch from true position, maximum.

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- B. Variation from Plane (Other than Floors): 1/4 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

END OF SECTION 061000

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 0 & 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes, but is not limited to, the following:
 - 1. Interior standing and running trim and rails.
 - 2. Installation of finish hardware.
 - 3. Installation of doors / windows / frames.
 - 4. Installation of toilet accessories.
 - 5. Installation of miscellaneous accessories.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 6 Section "Rough Carpentry" for furring, blocking, and other carpentry work that is not exposed to view.

1.3 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.
- B. Product data for each type of factory-fabricated product and process specified, including details of construction relative to materials, dimensions of individual components, profiles, textures, and colors.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Arrange for installation of finish carpentry by a firm that can demonstrate successful experience in installing finish carpentry items similar in type and quality to those required for this Project.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Delivery and Storage: Keep materials under cover and dry. Protect against exposure to weather and contact with damp or wet surfaces. Stack lumber as well as plywood and other panels. Provide for air circulation within and around stacks and under temporary coverings including polyethylene and similar materials.
- B. Do not deliver interior finish carpentry until environmental conditions meet requirements specified for installation areas. If finish carpentry must be stored in other than installation areas, store only in areas where environmental conditions meet requirements specified for installation areas.

1.6 PROJECT CONDITIONS

- A. Environmental Conditions: Obtain and comply with finish carpentry manufacturer's and installer's coordinated advice for optimum temperature and humidity conditions for finish carpentry during its storage and installation.
- B. Weather Conditions: Proceed with finish carpentry only when existing and forecasted weather conditions will permit exterior finish carpentry to be installed in compliance with manufacturer's recommendations and when substrate is completely dry.

PART 2 - PRODUCTS

2.1 MISCELLANEOUS MATERIALS

- A. Fasteners for Exterior Finish Carpentry: Stainless steel, noncorrosive aluminum or hot-dip galvanized nails, in sufficient length to penetrate minimum of 1-1/2 inches into substrate unless recommended otherwise by manufacturer.
 - 1. Countersink nails and fill surface where face nailing is unavoidable.
- B. Fasteners for Interior Finish Carpentry: Nails, screws, and other anchoring devices of type, size, material, and finish required for application indicated to provide secure attachment, concealed where possible.
 - 1. Countersink nails, fill surface flush, and sand where face nailing is unavoidable.
- C. Adhesives: Comply with manufacturer's recommendations for adhesives.
- D. Flashing: Comply with requirements of Division 7 Section "Flashing and Sheet Metal" for flashing materials installed in finish carpentry.
- E. Plywood: Plywood where plywood is finish material for room shall be AC grade 5 ply minimum.

2.2 FABRICATION

- A. Wood Moisture Content: Comply with requirements of specified inspection agencies and manufacturer's recommendations for moisture content of finish carpentry in relation to relative humidity conditions existing during time of fabrication and in installation areas. Provide finish carpentry with moisture content that is compatible with Project requirements.
- B. Fabricate finish carpentry to dimensions, profiles and details indicated. Ease edges to radius indicated for the following:
 - 1. Lumber less than 1 inch in nominal thickness: 1/16 inch.
 - 2. Lumber 1 inch or more in nominal thickness: 1/8 inch.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates for compliance with requirements for installation tolerances and other conditions affecting installation and performance of finish carpentry. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean substrates of projections and substances detrimental to application.
- B. Condition finish carpentry to average prevailing humidity conditions in installation areas before installation for a minimum of 24 hours unless longer conditioning recommended by manufacturer.
- C. Backprime lumber for painted finish exposed on the exterior. Comply with requirements for surface preparation and application in Section "Painting."

3.3 INSTALLATION, GENERAL

- A. Do not use finish carpentry materials that are unsound, warped, bowed, twisted, improperly treated or finished, not adequately seasoned, or too small to fabricate with proper jointing arrangements.
- B. Install finish carpentry plumb, level, true, and aligned with adjacent materials. Use concealed shims where required for alignment.
 - 1. Scribe and cut finish carpentry to fit adjoining work. Refinish and seal cuts as recommended by manufacturer.
 - 2. Install to tolerance of 1/8 inch in 8 feet for plumb and level. Install adjoining finish carpentry with 1/16 inch maximum offset for flush installation and 1/8 inch maximum offset for reveal installation.
 - 3. Coordinate finish carpentry with materials and systems that may be in or adjacent to standing and running trim and rails. Provide cutouts for mechanical and electrical items that penetrate exposed surfaces of trim and rails.
 - 4. Screws and similar fasteners shall be installed plumb and true. Counter-sunk screws shall seat uniformly in recesses evenly all around.
- C. Finish in accordance with specified requirements.
- D. Refer to Division 6 Section "Interior Architectural Woodwork" for factory finished cabinets and Division 9 Sections for final finishing of finish carpentry.

3.4 STANDING AND RUNNING TRIM AND RAILS

- A. Install with minimum number of joints practical, using full-length pieces from maximum lengths of lumber available. Stagger joints in adjacent and related standing and running trim and rails. Cope at returns and miter at corners to produce tight-fitting joints with full-surface contact throughout length of joint. Use scarf joints for end-to-end joints. Plane back of casings to provide uniform thickness across joints if required.

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1. Match color and grain pattern across joints.
2. Install trim after drywall joint finishing operations are completed.
3. Drill pilot holes in hardwood prior to nailing or fastening to prevent splitting. Fasten to prevent movement or warping. Countersink nail heads on exposed carpentry work and fill holes.
4. Fit exterior joints to exclude water. Apply flat grain lumber with bark side exposed to weather.

3.5 PLYWOOD

- A. Where plywood is finish install with Philips head screw 12" o/c edges and 12" o/c field. Set flush with plywood surface.
 1. Do not splinter or split plywood when setting screws flush with plywood surface.
 2. Ease all plywood edges.
 3. 1/2" x 1" trim at plywood to ceilings obstructions and stop/start of wall runs. Stop at top of base.
 4. Fill/repair all imperfections to match plywood texture. Do not fill screws.
 5. Install screws with story stick to align screw heads.

3.6 ADJUSTING

- B. Repair damaged or defective finish carpentry where possible to eliminate functional or visual defects. Where not possible to repair, replace finish carpentry. Adjust joinery for uniform appearance.

3.7 CLEANING

- A. Clean finish carpentry on exposed and semi-exposed surfaces. Touch up factory-applied finishes to restore damaged or soiled areas.

3.8 PROTECTION

- A. Provide final protection and maintain conditions that ensure finish carpentry is without damage or deterioration at time of Notice of Completion.

END OF SECTION 062000

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 0 and 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Exterior wood trim.

- B. Related Requirements:

- 1. Section 061000 "Rough Carpentry" for furring, blocking, and other carpentry work not exposed to view.
- 2. Section 099000 "Painting" for painting of exterior wood trim and lumber siding.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of process and factory-fabricated product. Indicate component materials, dimensions, profiles, textures, and colors and include construction and application details.

- B. Samples for Verification:

- 1. For each species and cut of lumber with 1/2 of exposed surface finished; 50 sq. in. for lumber.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Stack lumber flat with spacers between each bundle to provide air circulation. Protect materials from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

- B. Do not allow lumber to weather for more than 2 weeks before painting.

- C. All wood trim and lumber siding to be locally acclimatized as recommended by WRCLA prior to installation.

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1.5 FIELD CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecast weather conditions permit work to be performed and at least one coat of specified finish can be applied without exposure to rain, snow, or dampness.
- B. Do not install finish carpentry materials that are wet, moisture damaged, or mold damaged.
 - 1. Indications that materials are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
 - 2. Indications that materials are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

- A. Lumber: DOC PS 20 and the following grading rules:
 - 1. NLGA: National Lumber Grades Authority, "Standard Grading Rules for Canadian Lumber."

2.2 MISCELLANEOUS MATERIALS

- A. Fasteners for Exterior Finish Carpentry: Provide nails, in sufficient length to penetrate not less than 1-1/2 inches (38 mm) into wood substrate.

2.3 FABRICATION

- A. Back out or kerf backs of standing and running trim wider than 5 inches (125 mm), except members with ends exposed in finished work.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance.
- B. Examine finish carpentry materials before installation. Reject materials that are wet, moisture damaged, and mold damaged.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean substrates of projections and substances detrimental to application.

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3.3 INSTALLATION, GENERAL

- A. Do not use materials that are unsound, warped, improperly treated or finished, inadequately seasoned, or too small to fabricate with proper jointing arrangements.
 - 1. Do not use manufactured units with defective surfaces, sizes, or patterns.
- B. Install exterior finish carpentry level, plumb, true, and aligned with adjacent materials. Use concealed shims where necessary for alignment.
 - 1. Scribe and cut exterior finish carpentry to fit adjoining work. Refinish and seal cuts as recommended by manufacturer.
 - 2. Install to tolerance of 1/8 inch in 96 inches (3 mm in 2438 mm) for level and plumb. Install adjoining exterior finish carpentry with 1/32-inch (0.8-mm) maximum offset for flush installation and 1/16-inch (1.5-mm) maximum offset for reveal installation.
 - 3. Coordinate exterior finish carpentry with materials and systems in or adjacent to it. Provide cutouts for mechanical and electrical items that penetrate exterior finish carpentry.

3.4 STANDING AND RUNNING TRIM INSTALLATION

- A. Install flat-grain lumber with bark side exposed to weather.
- B. Install trim with minimum number of joints practical, using full-length pieces from maximum lengths of lumber available. Do not use pieces less than 24 inches (610 mm) long except where necessary.
 - 1. Use scarf joints for end-to-end joints.
 - 2. Stagger end joints in adjacent and related members.
- C. Fit exterior joints to exclude water. Cope at returns and miter at corners to produce tight-fitting joints with full-surface contact throughout length of joint. Plane backs of casings to provide uniform thickness across joints, where necessary for alignment.
- D. Where face fastening is unavoidable, set fasteners, flush, with face otherwise indicated. Do not counter sink fasteners.

3.5 PROTECTION

- A. Protect installed products from damage from weather and other causes during construction.
- B. Remove and replace finish carpentry materials that are wet, moisture damaged, and mold damaged.
 - 1. Indications that materials are wet or moisture damaged include, but not limited to, discoloration, sagging or irregular shape.
 - 2. Indications that materials are mold damaged include, but not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 062013

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 0 & 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes, but not limited to, the following:
 - 1. Interior standing and running trim, base and rails.
 - 2. Wood cabinets (casework).
 - 3. Interior miscellaneous ornamental items.
 - 4. Hardware for cabinets.
 - 5. Installation of Interior Architectural Woodwork.
 - 6. Modification of existing Interior Architectural Woodwork as indicated for re-use and modification.

- B. Related Sections: The following sections contain requirements that relate to this section:
 - 1. Division 6 Section "Rough Carpentry" for furring, blocking, and other carpentry work that is not exposed to view.
 - 2. Division 6 Section "Finish Carpentry" for cabinet installation requirements.
 - 3. Division 6 Section "Solid Polymer Fabrications" for countertops.
 - 4. Division 9 Section "Painting" for final finishing of installed architectural woodwork.
 - 5. Division 22 Section "Plumbing" for fittings and fixtures installed in countertops.

1.3 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.
 - 1. Product data for each type of product and process specified in this section and incorporated into items of architectural woodwork during fabrication, finishing, and installation.
 - 2. Shop drawings showing location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components, not limited to wood or laminated plastic trim, frames, wall surfacing, casework and countertops in conformance to WI Architectural Woodwork Standards Section 1, "Submittals."
 - a. Furnish a Woodwork Institute – Monitored Compliance Label on the first page of shop drawings with stamp of WI representative under the scope of their Monitored Compliance Program, indicating shop drawing was reviewed.
 - b. Show wall blocking in all submittal elevations and sections.
 - 3. Submit 8.5"x11" samples (4) of stain for casework shop finish of each type of wood species. Match Architect's sample for stain color.

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- B. Samples for verification purposes of the following:
 - 1. Lumber with or for transparent finish.
 - 2. Wood veneer faced panel products, with or for transparent finish, 8-1/2 inches by 11 inches, for each species and cut with one half of exposed surface finished, with separate samples of unfaced panel product used for core.
 - 3. Exposed cabinet hardware, one unit of each type and finish.
- C. Product certificates signed by woodwork manufacturer certifying that products comply with specified requirements.

1.4 QUALITY ASSURANCE

- A. Work shall be in accordance with Grade or Grades Specified of the Architectural Woodwork Standards.
- B. Monitored Compliance:
 - 1. All millwork and the installation thereof for this project shall be monitored for compliance to the contract documents by a Woodwork Institute Director of Architectural Services.
 - 2. Full particulars of the Woodwork Institute Monitored Compliance Program may be found at the Institute web site at www.woodworkinstitute.com or by calling the administrative office at (916) 372-9943.
 - 3. Millwork and/or installation found to be non-compliant (and not corrected) will be rejected.
 - 4. Issuance of a Monitored Compliance Certificate is a prerequisite of acceptance.
 - 5. All fees charged by the Woodwork Institute for their Monitored Compliance program are the responsibility of the millwork manufacturer and/or installer and shall be included in their Contract proposal.
- C. Manufacturer's Qualification:
 - 1. Submit WI compliance certificate. Provide original and one (1) copy to be submitted to the Architect.
 - 2. Firm (woodwork manufacturer) with not less than 5 years of production experience similar to this Project, whose qualifications indicate the ability to comply with the requirements of this Section.
 - 3. The woodwork manufacturer must have at least one project in the past 5 years where the value of the woodwork was within 20 percent of the cost of woodwork for this Project.
- D. Installer Qualifications:
 - 1. Submit WI compliance certificate. Provide original and one (1) copy to be submitted to the Architect.
 - 2. Arrange for installation of finish carpentry by a firm that can demonstrate successful experience in installing finish carpentry items similar in type and quality to those required for this Project.
 - 3. Installer shall be a member/licensee in good standing of the Woodwork Institute.
- E. Single Source Responsibility: A single manufacturer shall provide the work of this section.

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1.5 DELIVERY, STORAGE, AND HANDLING

- A. Protect woodwork during transit, delivery, storage, and handling to prevent damage, soilage, and deterioration.
- B. Do not deliver woodwork until painting, wet work, grinding, and similar operations that could damage, soil, or deteriorate woodwork have been completed in installation areas. If woodwork must be stored in other than installation areas, store only in areas whose environmental conditions meet requirements specified in "Project Conditions."

1.6 PROJECT CONDITIONS

- A. Environmental Conditions: Obtain and comply with Woodwork Manufacturer's and Installer's coordinated advice for optimum temperature and humidity conditions for woodwork during its storage and installation. Do not install woodwork until these conditions have been attained and stabilized so that woodwork is within plus or minus 1.0 percent of optimum moisture content from date of installation through remainder of construction period and as defined in the Manual of Millwork, more restrictive requirements will govern.
 - 1. Relative humidity shall be maintained between 45% and 65% at 60° to 90°F. HVAC system shall be on and functioning and the architectural millwork shall be acclimated to these conditions for 72 hours prior to installation. Contractor shall have option to provide these requirements through alternative ways and means. No exceptions will be taken on climatic requirements.
- B. Field Measurements: Where woodwork is indicated to be fitted to other construction, check actual dimensions of other construction by accurate field measurements before manufacturing woodwork; show recorded measurements on final shop drawings. Coordinate manufacturing schedule with construction progress to avoid delay of Work.

1.7 PROJECT CLOSEOUT

- A. Provide a Woodwork Institute Monitored Compliance Certificate after complete installation of applicable Architectural Millwork Products per grade(s) specified. If the project involves 2 buildings or more, the Contractor shall submit certification for each building. The certificate should be signed by the Director of WI stating that all casework were inspected by WI and has passed AWI's standard.

PART 2 - PRODUCTS

2.1 FABRICATION, GENERAL

- A. Wood Moisture Content: Comply with requirements of Woodwork Institute Architectural Millwork Standards Premium Grade and manufacturer's recommendations for moisture content of finish carpentry in relation to relative humidity conditions existing during time of fabrication and in installation areas. Provide finish carpentry with moisture content that is compatible with Project requirements.
- B. Fabricate woodwork to dimensions, profiles, and details indicated. Ease edges to radius indicated

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for the following:

1. Corners of cabinets and edges of solid wood (lumber) members less than 1 inch in nominal thickness: 1/16 inch.
 2. Edges of rails and similar members more than 1 inch in nominal thickness: 1/8 inch.
- C. Complete fabrication, including assembly, finish sanding, and hardware application, before shipment to project site to maximum extent possible. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.
- D. Factory-cut openings, to maximum extent possible, to receive hardware, appliances, plumbing fixtures, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Smooth edges of cutouts and, where located in countertops and similar exposures, seal edges of cutouts with a water-resistant coating.
- E. All shelves shall be built up to minimum 1 1/4" thick with 3/4" maple hardwood edge band at front. Bottom surface of shelves shall be prefinished to match top.
- F. All veneers shall take from the same flitch, to be selected by the Architect and shall be FSC Certified.
1. Casework, paneling, doors and wood trims shall be provided by the same manufacturer.
 2. Faces at cabinet doors, drawer fronts and false fronts shall be sequence matched, shall run and match vertically, and shall be sequence matched with adjacent wall paneling and/or doors.
 3. Faces at exposed ends of cabinets shall be selected from the same flitch and shall be well matched to be adjacent paneling and to the cabinet front.
 4. All components including casework, paneling, doors and trim shall be factory finished at the same time in the same facility.
- G. Drawers:
1. Sides shall be twelve-ply Baltic Birch hardwood plywood with hardwood plywood bottoms.
 2. Construction shall be either lock joint or dowelled.
- H. Adhesives: Use Type I. VOC content of contact cement shall be less than 80 g/L.

2.2 STANDING AND RUNNING TRIM AND RAILS FOR TRANSPARENT FINISH

- A. Quality Standard: Comply with WI Section 4 "Interior Trim."
- B. Backout or groove backs of flat trim members and kerf backs of other wide flat members, except for members with ends exposed in finished work.
- C. Grade: Premium.
- D. Lumber Species: Maple
- E. Lumber Species: Match species and cut indicated for other types of transparent finished architectural woodwork located in same area of building unless otherwise indicated.

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2.3 STANDING AND RUNNING TRIM AND RAILS FOR OPAQUE FINISH

- A. Quality Standard: Comply with WI Section 4 "Interior Trim."
- B. Grade: Premium.
- C. Backout or groove backs of flat trim members and kerf backs of other wide flat members, except for members with ends exposed in finished work.
- D. Lumber Species: Any closed grain hardwood listed in referenced woodworking standard.

2.4 WOOD CABINETS (CASEWORK) FOR TRANSPARENT FINISH

- A. Quality Standard: Comply with WI Section 10 "Wood Casework."
- B. Grade: Premium (Dado and glued joints).
- C. WI Construction Style: Face Frame Construction/Reveal Overlay .
- D. WI Door and Drawer Front Style: Flush overlay.
- E. WI Finishes:
 - 1. Exposed exterior: Maple
 - 2. Exposed interior: Maple
 - 3. Semi-exposed: Melamine (white)
 - 4. Concealed: Maple
- F. Wood Species for Exposed Surfaces: Maple
 - 1. Grain Matching: Run and match grain vertically for drawer fronts, doors, and fixed panels.
 - 2. Matching of Veneer Leaves: Book match.
 - 3. Veneer Matching Within Panel Face: Center match.
- G. Provide dust panels of 1/4-inch plywood above compartments and drawers except where located directly under tops.
- H. Door/Drawer Gap Tolerance: Gaps between adjacent doors, drawer fronts, and false fronts shall be equal.
- I. Minimum 1/4" Maple hardwood edge band at edges of plywood.
- J. Cabinet Base: 3/4" plywood uno.

2.5 CABINET HARDWARE AND ACCESSORY MATERIALS

- A. General: Provide cabinet hardware and accessory materials associated with architectural cabinets.
 - 1. Adjustable shelf bored holes: 8mm pins, chrome finish. Gap shall be 1/8" max to conceal shelf pins. 1-1/2" o.c. spacing pin holes.
 - 2. Pulls: Wire pulls #26D finish - 4" all drawers/cabinets, Amerock 943 SCH.
 - 3. Drawer slides – 22" full extension – Zinc plated.
 - a. Drawer slides: Drawers 24" or less and 6" or less: Accuride 7432 Ball Bearing, #100.
 - b. Drawer slides – Drawers over 24" wide or over 6" deep: Accuride 3640 Ball Bearing, #200.
 - 4. Hinges – Terry Grade 1 H08-99P60 (5-knuckle), 26D finish.
 - 5. Locks - National C8163 26D finish. (BHMA A156.11, E07121)
 - 6. The following wire management grommets - Plastic Industries, Inc., New Jersey, (800) 543-3217.
 - a. Round: 2" diameter x 1" deep, finish as selected from full range of available finishes

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- model #31DG with cap #2 (round).
 - b. Round: 3-1/4" diameter x 1-7/8" deep, finish as selected from full range, no cap.
- 7. Door Catches: Dual, self-aligning, permanent heavy-duty magnet catch. Provide two (2) catches on doors more than 48 inches (1200 mm) high.
- B. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with ANSI/BHMA A156.18 for BHMA code number indicated.
 - 1. US26D – Chrome plated.
- C. For concealed hardware provide manufacturer's standard finish that complies with product class requirements of ANSI/BHMA A156.9.

2.6 INTERIOR MISCELLANEOUS ORNAMENTAL ITEMS FOR TRANSPARENT FINISH

- A. Quality Standard: Comply with WI Section 6 "Miscellaneous Interior Millwork."
- B. Grade: Premium.
- C. Lumber Species: Maple.

2.7 INTERIOR MISCELLANEOUS ORNAMENTAL ITEMS FOR OPAQUE FINISH

- A. Quality Standard: Comply with WI Section 6 "Miscellaneous Interior Millwork."
- B. Grade: Premium.
- C. Lumber Species: Any closed-grain hardwood listed in referenced woodworking standard.

2.8 FASTENERS AND ANCHORS

- A. Screws: Select material, type, size, and finish required for each use. Comply with FS FF-S-111 for applicable requirements.
- B. Nails: Select material, type, size, and finish required for each use. Comply with FS FF-N-105 for applicable requirements.
- C. Anchors: Select material, type, size, and finish required by each substrate for secure anchorage. Provide nonferrous metal or hot-dip galvanized anchors and inserts on inside face of exterior walls and elsewhere as required for corrosion resistance. Provide toothed steel or lead expansion bolt devices for drilled-in-place anchors. Furnish inserts and anchors, as required, to be set into concrete or masonry work for subsequent woodwork anchorage.

2.9 WALL PANELING

- A. Paneling shall be per WI Architectural Woodwork Standard premium grade. Faces shall be plain sliced sap birch, book and balance matched on an MDF core.
- B. Fabrication shall comply to First Class Workmanship, as defined by the WI AWS manual.

2.10 SHOP FINISHING

- A. Grade: Provide finishes of same grades as items to be finished.

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- B. General: Finish architectural woodwork at fabrication shop as specified in this Section. Defer only final touchup, cleaning, and polishing until after installation.
- C. Shop Priming: Shop apply the prime coat including backpriming. Refer to AWI section 5 Finishing and Division 9 painting Sections for material and application requirements.
- D. Preparation for Finishing: Comply with referenced quality standard for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing architectural woodwork, as applicable to each unit of work.
 - 1. Backpriming: Apply one coat of sealer or primer, compatible with finish coats, to concealed surfaces of woodwork. Apply two coats to back of paneling and to end-grain surfaces.
- E. Transparent Finish: Comply with AWI Section 5 Finishing.
 - 1. Grade: Premium
 - 2. AWS Finish System: (3 coats) Nitrocellulose lacquer and (1 coat) water based lacquer.
 - 3. Sheen: Semigloss, 46-60 gloss units measured on 60-degree gloss meter per ASTM D 523.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Condition woodwork to average prevailing humidity conditions in installation areas before installing.
- B. Deliver concrete inserts and similar anchoring devices to be built into substrates well in advance of time substrates are to be built.
- C. Before installing architectural woodwork, examine shop-fabricated work for completion and complete work as required, including back priming and removal of packing.
- D. Architectural woodwork shall be allowed to come to equilibrium on site prior to installation. A minimum of 72 hours shall be allowed for best result. Factory finished woodwork shall require a week or more to acclimatize. The design, detailing and fabrication shall be directed toward achieving installation with a minimum of exposed face fastening.

3.2 INSTALLATION

- A. Quality Standard: Install woodwork to comply with WIC Section 26 for same grade specified in Part 2 of this section for type of woodwork involved.
- B. Install woodwork plumb, level, true, and straight with no distortions. Shim as required with concealed shims. Install to a tolerance of 1/8 inch in 8'-0" for plumb and level (including tops) and with no variations in flushness of adjoining surfaces.
- C. Scribe and cut woodwork to fit adjoining work and refinish cut surfaces or repair damaged finish at cuts.
- D. Standing and Running Trim and Rails: Install with minimum number of joints possible, using full-length pieces (from maximum length of lumber available) to the greatest extent possible.

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Stagger joints in adjacent and related members. Cope at returns and miter at corners.

- E. Cabinets: Install without distortion so that doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete the installation of hardware and accessory items as indicated. Maintain veneer sequence matching (if any) of cabinets with transparent finish.
- F. Tops: Anchor securely to base units and other support systems as indicated.
- G. Paneling: Anchor paneling to supporting substrate with concealed panel-hanger clips and by blind nailing on backup strips, splined-connection strips, and similar associated trim and framing. Do not face nail unless otherwise indicated.
- H. Refer to WI AWS Section 5 and Division 9 sections for final finishing of installed architectural woodwork.
- I. Seal bottoms of tops.

3.3 ADJUSTMENT AND CLEANING

- A. Repair damaged and defective woodwork where possible to eliminate defects functionally and visually; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.
- B. Clean, lubricate, and adjust hardware.
- C. Clean woodwork on exposed and semi-exposed surfaces. Touch up factory-applied finishes to restore damaged or soiled areas.

3.4 PROTECTION

- A. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer to ensure that woodwork is being without damage or deterioration at time of Notice of Completion.

END OF SECTION 064000

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 0 & 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. The extent of solid polymer fabrications is shown on the Drawings and includes, but not limited to, the following:
 - 1. Counter tops and edges.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 6 Section "Interior Architectural Woodwork" for architectural woodwork.

1.3 REFERENCES

- A. Applicable Standards: Standards of the following, as referenced herein:
 - 1. American National Standards Institute (ANSI).
 - 2. American Society for Testing and Materials (ASTM).
 - 3. Federal Specifications (FS).

1.4 SUBMITTALS

- A. General: Submit the following according to Conditions of Contract and Division 1 Specification Sections.
- B. Shop Drawings: Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices and other components.
 - 1. Show full-size details, edge details, thermoforming requirements, attachments, etc.
 - 2. Show locations and sizes of furring, blocking, including concealed blocking and reinforcement specified in other Sections.
 - 3. Show locations and sizes of cutouts and holes for plumbing fixtures, faucets and other items installed in solid surface.
- C. Samples: Submit minimum 2-inch by 2-inch samples. Indicate full range of color and pattern variation. Approved samples will be retained as a standard for work.
- D. Product Data: Indicate product description, fabrication information and compliance with specified performance requirements.
- E. Maintenance Data: Submit manufacturer's care and maintenance data, including repair and cleaning instructions. Include in project close-out documents.

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1.5 DELIVERY, STORAGE AND HANDLING

- A. Deliver no components to project site until areas are ready for installation. Store indoors.
- B. Handle materials to prevent damage to finished surfaces. Provide protective coverings to prevent physical damage or staining following installation for duration of project.

1.6 QUALITY ASSURANCE

- A. Allowable Tolerances:
 - 1. Variation in component size: 1/16-inch

1.7 WARRANTY

- A. Provide manufacturer's warranty against defects in materials. Warranty shall provide for replacement materials, custom fabrication and labor for a period of ten (10) years, beginning at Date of Notice of Completion.

PART 2 – PRODUCTS

2.1 SOLID POLYMER FABRICATIONS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
 - 1. "Corian," EIDu Pont de Nemours, Inc. (District standard)
- B. Material: Cast, filled, acrylic; not coated, laminated or of composite construction, meeting ANSI Z124 1980, Type Six, and FS WW-P-541E/GEN dated August 1, 1980.
 - 1. Material shall have minimum physical and performance properties specified.
 - 2. Superficial damage to a depth of 0.10 inch shall be repairable by sanding or polishing.
 - 3. Material Thickness: ½" thick all locations/applications.
 - 4. Color: Linen.
 - 5. Sheen: Satin.
 - 6. Edge Treatments: 2" retical face with radiused edges (match standards).
 - 7. Performance Characteristics:

Property	Typical Result	Test
Tensile Strength	6,000 psi	ASTM D 638
Tensile Modulus	1.5 x 10 ⁻⁶ psi	ASTM D 638
Tensile Elongation	0.4% min.	ASTM D 638
Flexural Strength	10,000 psi	ASTM D 790
Flexural Modulus	1.2 x 10 ⁻⁶ psi	ASTM D 790
Hardness	>85	Rockwell "M" Scale ASTM D 785

	56	Barcol Impressor ASTM D 2583 ASTM D 696
Thermal Expansion	3.02 x 10 ⁻⁵ in./in./°C (1.80 x 10 ⁻⁵ in./in./°F)	
Gloss (60° Gardner) Light Resistance	5–75 (matte—highly polished) (Xenon Arc) No effect	ANSI Z124 NEMA LD 3-2000 Method 3.3
Wear and Cleanability	Passes	ANSI Z124.3 & Z124.6
Stain Resistance: Sheets	Passes	ANSI Z124.3 & Z124.6
Fungus and Bacteria Resistance	Does not support microbial growth	ASTM G21&G22
Boiling Water Resistance	No visible change	NEMA LD 3-2000 Method 3.5
High Temperature Resistance	No change	NEMA LD 3-2000 Method 3.6
Izod Impact (Notched Specimen)	0.28 ft.-lbs./in. of notch	ASTM D 256 (Method A)
Ball Impact Resistance: Sheets	No fracture—1/2 lb. ball: 1/2" slab—144" drop	NEMA LD 3-2000 Method 3.8
Weatherability	ΔE* ₉₄ <5 in 1,000 hrs.	ASTM G 155
Specific Gravity †	1.7	
Water Absorption	Long-term 0.4% (3/4") 0.6% (1/2") 0.8% (1/4")	ASTM D 570
Toxicity	99 (solid colors) 66 (patterned colors)	Pittsburgh Protocol Test ("LC50" Test)
Flammability	All colors (Class I and Class A)	ASTM E 84, NFPA 255 &
UL 723		
Flame Spread Index	<25	
Smoke Developed Index	<25	

† Approximate weight per square foot: 1/2" (12.3 mm) 4.4 lbs.
Shapes meet or exceed the ANSI Z124.3 and ANSI Z124.6 standards for plastic sinks
and lavatories.
NEMA results based on the NEMA LD 3-2000

2.2 ACCESSORY PRODUCTS

- A. Joint Adhesive: Manufacturer's standard one- or two-part adhesive kit to create inconspicuous, nonporous joints.
- B. Sealant: Manufacturer's standard mildew-resistant, FDA-compliant, NSF 51-compliant (food zone — any type), UL-listed silicone sealant in colors matching components.
- C. Panel Adhesive: Manufacturer's standard neoprene-based panel adhesive complying with ANSI A136.1-1967.

2.3 FABRICATION

- A. Factory fabricate components to greatest extent practicable to sizes and shapes indicated, in accordance with approved Shop Drawings.
- B. Form joints between components using manufacturer's standard joint adhesive; without conspicuous joints and without voids. Attach 2" wide reinforcing strip of solid surface material under each joint.
- C. Cut and finish component edges with clean, sharp returns. Machine radii and contours to template. Repair or reject defective and inaccurate work. Sand all edges smooth.
- D. Perform thermoforming in accordance with manufacturer's product data.
 - 1. Construct molds of plywood in "male/female" sections. Construct molds matching component shape.
 - 2. Form pieces to shape prior to seaming and joining.
 - 3. Cut pieces to finished dimensions. Sand edges, Remove nicks and scratches.
 - 4. Heat entire component. Maintain uniform temperature between 275-375 degrees Fahrenheit during forming.
 - 5. Prevent blistering, whitening and cracking or material during forming. Reject defective material.
- E. Fabricate coved backsplash and sidesplashes with 1/2 inch radius cove at intersection of tops and splashes. Form splashes using polymer material.

PART 3 - EXECUTION

3.1 JOB MOCK-UP

- A. Prior to final approval of Shop Drawings, erect at job site one full size mock-up of each component required, for Architect's review.
- B. Should mock-up not be approved, re-fabricate and reinstall until approval is secured. Remove rejected units from project site.
- C. Approved mock-ups may remain as part of finished work.

3.2 INSTALLATION

- A. Install components plumb, level and rigid, scribed to adjacent finishes, in accordance with approved Shop Drawings and product data.
- B. Form field joints using manufacturer's recommended adhesive, with joints inconspicuous in finished work.
- C. Provide backsplashes and sidesplashes as indicated on the Drawings. Adhere to tops using manufacturer's standard color matched silicone sealant.
- D. Keep components clean during installation. Remove adhesives, sealants and other stains. Keep clean until project completion. Replace stained components.

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- E. Protect surfaces from damage until project completion. Repair work or replace damaged work, which cannot be repaired to Architect's satisfaction.

END OF SECTION 064100

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 0 & 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following, but not limited to:
 - 1. Concealed building insulation.
 - 2. Exposed building insulation.
 - 3. Vapor retarders.
 - 4. Sound attenuation insulation.

1.3 QUALITY ASSURANCE

- A. Source Limitations: Obtain each type of building insulation through one source from a single manufacturer.
- B. Provide certification that the insulation material complies with the California Quality Standards of insulating Materials, Title 20, Chapter 4 and Article 3.
- C. Fire-Test-Response Characteristics: Provide insulation and related materials with the fire-test-response characteristics indicated, as determined by testing identical products per test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.
 - 1. Surface-Burning Characteristics: ASTM E 84.
 - 2. Fire-Resistance Ratings: ASTM E 119.
 - 3. Combustion Characteristics: ASTM E 136.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Protect plastic insulation as follows:
 - 1. Do not expose to sunlight, except to extent necessary for period of installation and concealment.
 - 2. Protect against ignition at all times. Do not deliver plastic insulating materials to Project site before installation time.
 - 3. Complete installation and concealment of plastic materials as rapidly as possible in each area of construction.

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PART 2 - PRODUCTS

2.1 MANUFACTURERS

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

2.2 GLASS-FIBER BLANKET INSULATION

- A. Available Manufacturers:
1. CertainTeed Corporation.
 2. Guardian Fiberglass, Inc.
 3. Johns Manville.
 4. Knauf Fiber Glass.
 5. Owens Corning.
 6. FiberTek
- B. Unfaced, Glass-Fiber Blanket Insulation: ASTM C 665, Type I (blankets without membrane facing); consisting of fibers; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively; passing ASTM E 136 for combustion characteristics. Water Vapor Sorption (ASTM C 1104) 5% or less by weight. Non-Corrosive (ASTM E 136) pass required. Fungi Resistant (ASTM C 1338), pass required. Odor Emission (ASTM C 1304), pass required.
- C. Foil Faced, Glass-Fiber Blanket Insulation: ASTM C 553, ASTM C 665, Type III (blankets with foil reflective membrane facing), Class A (membrane-faced surface with a flame-spread index of 25 or less); Category 1 (membrane is a vapor barrier), faced with foil-scrim-kraft, vapor-retarder membrane on 1 face. Water Vapor Permeance (ASTM E 96), 0.05 perms.
- D. Non Plenum Areas: Thermal insulation combining mineral fibers of type described below with thermosetting resins to comply with ASTM C 553, ASTM C 665, Type III, Class A, Category 1 (plenum rated blankets with flame spread of 25 or less throughout project foil faced).
1. Mineral-Fiber Type: Fibers manufactured from glass, slag wool, or rock wool.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements of Sections in which substrates and related work are specified and for other conditions affecting performance.
1. Proceed with installation only after unsatisfactory conditions have been corrected.

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3.2 PREPARATION

- A. Clean substrates of substances harmful to insulation or vapor retarders, including removing projections capable of puncturing vapor retarders or of interfering with insulation attachment.

3.3 INSTALLATION, GENERAL

- A. Comply with insulation manufacturer's written instructions applicable to products and application indicated.
- B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed at any time to ice, rain, and snow.
- C. Extend insulation in thickness indicated to envelop entire area to be insulated. Cut and fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.
- D. Water-Piping Coordination: If water piping is located within insulated exterior walls, coordinate location of piping to ensure that it is placed on warm side of insulation and insulation encapsulates piping.
- E. For preformed insulating units, provide sizes to fit applications indicated and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units to produce thickness indicated unless multiple layers are otherwise shown or required to make up total thickness.

3.4 INSTALLATION OF GENERAL BUILDING INSULATION

- A. Apply insulation units to substrates by method indicated, complying with manufacturer's written instructions. If no specific method is indicated, bond units to substrate with adhesive or use mechanical anchorage to provide permanent placement and support of units.
- B. Set vapor-retarder-faced units with vapor retarder to warm side of construction, unless otherwise indicated.
 - 1. Tape joints and ruptures in vapor retarder, and seal each continuous area of insulation to surrounding construction to ensure airtight installation.
- C. Install insulation in cavities formed by framing members according to the following requirements:
 - 1. Use insulation widths and lengths that fill the cavities formed by framing members. If more than one length is required to fill cavity, provide lengths that will produce a snug fit between ends.
 - 2. Place insulation in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.
 - 3. For metal-framed wall cavities where cavity heights exceed 96 inches (2438 mm), support unfaced blankets mechanically and support faced blankets by taping stapling flanges to flanges of metal studs.
 - 4. For wood-framed construction, install mineral-fiber blankets according to ASTM C 1320 and as follows:

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- a. With faced blankets having stapling flanges, secure insulation by inset, stapling flanges to sides of framing members.
 - b. With faced blankets having stapling flanges, lap blanket flange over flange of adjacent blanket to maintain continuity of vapor retarder once finish material is installed over it.
- D. Stuff glass-fiber loose-fill insulation into miscellaneous voids and cavity spaces where shown. Compact to approximately 40 percent of normal maximum volume equaling a density of approximately 2.5 lb/cu. ft. (40 kg/cu. m).
- E. Provide faced insulation where exposed in return air plenums. Seal all joints with tape approved by manufacturer for this use.
- 3.5 INSULATION SCHEDULE - Refer to plans for additional and more restrictive requirements. in the event of a conflict, the more restrictive requirement will prevail.
- A. Insulation Type IR1: Glass-fiber blanket insulation, R-38 FSK, typ at roof envelope, uno.
 - B. Insulation Type IW1: Glass-fiber blanket insulation, R-19 FSK typ at 6" exterior walls to roof lines.
 - C. Insulation Type IW2: Glass-fiber blanket insulation, R-11 FSK typ at 4" exterior walls to roof lines.
 - D. Insulation Type IS1: Glass-fiber sound attenuation blanket insulation, unfaced 4" thick at 4" interior walls where indicated.
 - E. Insulation Type IS2: Glass-fiber sound attenuation blanket insulation, unfaced 6" thick at 6" interior walls where indicated.
 - F. Insulation Type IS2: Glass-fiber sound attenuation blanket insulation, unfaced 6" thick interior ceilings at restrooms and 1-hour ceiling assemblies. Provide faced insulation where exposed in return air plenums.
- 3.6 INSULATION PROTECTION
- A. In the event any insulation becomes damp and/or wet, it shall be removed and replaced.

END OF SECTION 072100

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SECTION 072500 - WEATHER BARRIERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 0 & 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Building paper (underlayment).
 - 2. Flexible flashing (self-adhered flashing).

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.

1.4 INFORMATIONAL SUBMITTALS

- A. Evaluation Reports: For building paper and flexible flashing, from ICC-ES.

PART 2 - PRODUCTS

2.1 WATER-RESISTIVE BARRIER

- A. Building Paper: Water-vapor-permeable, asphalt-saturated kraft building paper that complies with ICC-ES AC38, Grade D.
 - 1. Products: Subject to compliance with requirements, provide the following:
 - a. Fortifiber Building SystemGroup; Super JumboTex.

2.2 MISCELLANEOUS MATERIALS

- A. Flexible Flashing: Composite, self-adhesive, flashing product consisting of a pliable, rubberized-asphalt compound, bonded to a high-density polyethylene film, aluminum foil, or spunbonded polyolefin to produce an overall thickness of not less than 0.025 inch (0.6 mm).
 - 1. Products: Subject to compliance with requirements, provide the following:
 - a. Grace Construction Products, a unit of W. R. Grace & Co. - Conn.; Vycor Plus Self-Adhered Flashing.

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- b. Fortifiber Building Systems Group; FortiFlash.
- B. Primer for Flexible Flashing: Product recommended by manufacturer of flexible flashing for substrate.
- C. Nails and Staples: ASTM F 1667.

PART 3 - EXECUTION

3.1 WATER-RESISTIVE BARRIER INSTALLATION

- A. Cover exposed exterior surface of sheathing with water-resistive barrier securely fastened to framing.
- B. Cover sheathing with water-resistive barrier as follows:
 - 1. Cut back barrier 1/2 inch (13 mm) on each side of the break in supporting members at expansion- or control-joint locations.
 - 2. Apply barrier to cover vertical flashing with a minimum 4-inch (100-mm) overlap unless otherwise indicated.
- C. Building Paper: Apply horizontally with a 2-inch (50-mm) overlap and a 6-inch (150-mm) end lap; fasten to sheathing with galvanized staples.

3.2 FLEXIBLE FLASHING INSTALLATION

- A. Apply flexible flashing where indicated to comply with manufacturer's written instructions.
 - 1. Prime substrates as recommended by flashing manufacturer.
 - 2. Lap seams and junctures with other materials at least 4 inches (100 mm) except that at flashing flanges of other construction, laps need not exceed flange width.
 - 3. Lap flashing over water-resistive barrier at bottom and sides of openings.
 - 4. Lap water-resistive barrier over flashing at heads of openings and metal trims where indicated.
 - 5. After flashing has been applied, roll surfaces with a hard rubber or metal roller to ensure that flashing is completely adhered to substrates.

END OF SECTION 072500

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 0 & 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes, but not limited to, firestopping for the following:
 - 1. Penetrations through fire-resistance-rated floor, ceiling and roof construction including both empty openings and openings containing cables, pipes, ducts, conduits, and other penetrating items.
 - 2. Penetrations through fire-resistance-rated walls and partitions including both empty openings and openings containing cables, pipes, ducts, conduits, and other penetrating items.
 - 3. Penetrations through smoke barriers and construction enclosing compartmentalized areas involving both empty openings and openings containing penetrating items.
 - 4. Sealant joints in fire-resistance rated condition (FRS1).
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 7 Section "Joint Sealants" for non-fire-resistive-rated joint sealants.
 - 2. Division 22 and 23 Sections specifying ducts and piping penetrations.
 - 3. Division 26, 27 and 28 Sections specifying cable and conduit penetrations.

1.3 SYSTEM PERFORMANCE REQUIREMENTS

- A. General: Provide firestopping systems that are produced and installed to resist the spread of fire, according to requirements indicated, and the passage of smoke and other gases per CBC Section 713.
- B. F-Rated Through-Penetration Firestop Systems: Provide through-penetration firestop systems with F ratings indicated, as determined per ASTM E 814, but not less than that equaling or exceeding the fire-resistance rating of the constructions penetrated.
- C. T-Rated Through-Penetration Firestop Systems: Provide through-penetration firestop systems with T ratings, in addition to F ratings, as determined per ASTM E 814, where required and where systems protect penetrating items exposed to contact with adjacent materials in occupiable floor areas. T-rated assemblies are required where the following conditions exist:
 - 1. Where firestop systems protect penetrations located outside of wall cavities.
 - 2. Where firestop systems protect penetrations located outside fire-resistive shaft enclosures.
 - 3. Where firestop systems protect penetrations located in construction containing doors required to have a temperature-rise rating.
 - 4. Where firestop systems protect penetrating items larger than a 4-inch-diameter nominal pipe or 16 sq. in. in overall cross-sectional area.
- D. Fire-Resistive Joint Sealants: Provide joint sealants with fire-resistance ratings indicated, as

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determined per ASTM E 119, but not less than that equaling or exceeding the fire-resistance rating of the construction in which the joint occurs.

- E. For firestopping exposed to view, traffic, moisture, and physical damage, provide products that do not deteriorate when exposed to these conditions.
 - 1. For floor penetrations with annular spaces exceeding 4 inches or more in width and exposed to possible loading and traffic, provide firestop systems capable of supporting the floor loads involved either by installing floor plates or by other means.
- F. For firestopping exposed to view, provide products with flame-spread values of less than 25 and smoke-developed values of less than 450, as determined per ASTM E 84.

1.4 SUBMITTALS

- A. General: Submit the following according to Conditions of Contract and Division 1 Specification Sections.
- B. Product data for each type of product specified.
 - 1. Certification by firestopping manufacturer that products supplied comply with local regulations controlling use of volatile organic compounds (VOCs) and are nontoxic to building occupants.
 - 2. UL assembly designations for each penetration, along with a copy of the approved assembly for each.
- C. Product certificates signed by manufacturers of firestopping products certifying that their products comply with specified requirements.
- D. The assemblies noted herein and products have been submitted to DSA and the DSA approval is specific to these products indicated herein. If the contractor requests a substitution of any of these products, systems or related items indicated herein he shall be responsible for the following:
 - 1. Approved equals shall meet or exceed items specified herein as a basis of design.
 - 2. Contractor shall secure DSA approval with assistance of the Architect. All time spent by the architect in securing this approval shall be reimbursed by the contractor at office billing rates.
 - 3. Any time spent by the Architect in coordinating the material substitution, reviewing items, trips to DSA, DSA communications, securing approvals and related items shall be reimbursed as aforementioned.

1.5 QUALITY ASSURANCE

- A. Fire-Test-Response Characteristics: Provide firestopping that complies with the following requirements and those specified under the "System Performance Requirements" article:
 - 1. Firestopping tests are performed by a qualified testing and inspecting agency. A qualified testing and inspecting agency is UL, Warnock Hersey, or another agency performing testing and follow-up inspection services for firestop systems that is acceptable to authorities having jurisdiction.
 - 2. Through-penetration firestop systems are identical to those tested per ASTM E 814 under conditions where positive furnace pressure differential of at least 0.01 inch of water is maintained at a distance of 0.78 inch below the fill materials surrounding the penetrating

items in the test assembly. Provide rated systems complying with the following requirements:

- a. Through-penetration firestop systems correspond to those indicated by reference to through-penetration firestop system designations listed by UL in their "Fire Resistance Directory," by Warnock Hersey, or by another qualified testing and inspecting agency.
3. Fire-resistive joint sealant systems are identical to those tested for fire-response characteristics per ASTM E 119 under conditions where the positive furnace pressure differential is at least 0.01 inch of water, as measured 0.78 inch from the face exposed to furnace fire. Provide systems complying with the following requirements:
- a. Fire-Resistance Ratings of Joint Sealants: As indicated by reference to design designations listed by UL in their "Fire Resistance Directory" or by another qualified testing and inspecting agency.
 - b. Joint sealants, including backing materials, bear classification marking of qualified testing and inspection agency.
- B. Information on drawings referring to specific design designations of through-penetration firestop systems is intended to establish requirements for performance based on conditions that are expected to exist during installation. Any changes in conditions and designated systems require the Architect's prior approval. Submit documentation showing that the performance of proposed substitutions equals or exceeds that of the systems they would replace and are acceptable to authorities having jurisdiction.
- C. Installer Qualifications: Engage an experienced Installer who has completed firestopping that is similar in material, design, and extent to that indicated for Project and that has performed successfully.
- D. Single-Source Responsibility: Obtain through-penetration firestop systems for each kind of penetration and construction condition indicated from a single manufacturer.
- E. Provide firestopping products containing no detectable asbestos as determined by the method specified in 40 CFR Part 763, Subpart F, Appendix A, Section 1, "Polarized Light Microscopy."
- F. Coordinating Work: Coordinate construction of openings and penetrating items to ensure that designated through-penetration firestop systems are installed per specified requirements.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver firestopping products to Project site in original, unopened containers or packages with intact and legible manufacturers' labels identifying product and manufacturer; date of manufacture; lot number; shelf life, if applicable; qualified testing and inspecting agency's classification marking applicable to Project; curing time; and mixing instructions for multicomponent materials.
- B. Store and handle firestopping materials to prevent their deterioration or damage due to moisture, temperature changes, contaminants, or other causes.

1.7 PROJECT CONDITIONS

- A. Environmental Conditions: Do not install firestopping when ambient or substrate temperatures are outside limits permitted by firestopping manufacturers or when substrates are wet due to rain,

frost, condensation, or other causes.

- B. Ventilation: Ventilate firestopping per firestopping manufacturers' instructions by natural means or, where this is inadequate, forced air circulation.

PART 2 - PRODUCTS

2.1 FIRESTOPPING, GENERAL

- A. Compatibility: Provide firestopping composed of components that are compatible with each other, the substrates forming openings, and the items, if any, penetrating the firestopping under conditions of service and application, as demonstrated by firestopping manufacturer based on testing and field experience.
- B. Accessories: Provide components for each firestopping system that are needed to install fill materials and to comply with "System Performance Requirements" article in Part 1. Use only components specified by the firestopping manufacturer and approved by the qualified testing and inspecting agency for the designated fire-resistance-rated systems. Accessories include but are not limited to the following items:
 - 1. Permanent forming/damming/backing materials including the following:
 - a. Semi-refractory fiber (mineral wool) insulation.
 - b. Ceramic fiber.
 - c. Sealants used in combination with other forming/damming materials to prevent leakage of fill materials in liquid state.
 - d. Fire-rated formboard.
 - e. Joint fillers for joint sealants.
 - 2. Temporary forming materials.
 - 3. Substrate primers.
 - 4. Collars.
 - 5. Steel sleeves.
- C. Applications: Provide firestopping systems composed of materials specified in this Section that comply with system performance and other requirements.

2.2 FILL MATERIALS FOR THROUGH-PENETRATION FIRESTOP SYSTEMS

- A. Ceramic-Fiber and Mastic Coating: Ceramic fibers in bulk form formulated for use with mastic coating, and ceramic fiber manufacturer's mastic coating.
- B. Ceramic-Fiber Sealant: Single-component formulation of ceramic fibers and inorganic binders.
- C. Endothermic, Latex Compound Sealant: Single-component, endothermic, latex formulation.
- D. Intumescent, Latex Sealant: Single-component, intumescent, latex formulation.
- E. Intumescent Putty: Nonhardening, dielectric, water-resistant putty containing no solvents, inorganic fibers, or silicone compounds.
- F. Intumescent Wrap Strips: Single-component, elastomeric sheet with aluminum foil on one side.
- G. Job-Mixed Vinyl Compound: Prepackaged vinyl-based powder product for mixing with water at

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Project site to produce a paintable compound, passing ASTM E 136, with flame-spread and smoke-developed ratings of zero per ASTM E 84.

- H. Mortar: Prepackaged dry mix composed of a blend of inorganic binders, fillers, and lightweight aggregate formulated for mixing with water at Project site to form a nonshrinking, homogenous mortar.
- I. Pillows/Bags: Re-usable, heat-expanding pillows/bags composed of glass-fiber cloth cases filled with a combination of mineral-fiber, water-insoluble expansion agents and fire-retardant additives.
- J. Silicone Foam: Two-component, silicone-based liquid elastomer that, when mixed, expands and cures in place to produce a flexible, nonshrinking foam.
- K. Silicone Sealant: Moisture-curing, single-component, silicone-based, neutral-curing elastomeric sealant of grade indicated below:
 - 1. Grade: Pourable (self-leveling) formulation for openings in floors and other horizontal surfaces and nonsag formulation for openings in vertical and other surfaces requiring a nonslumping/ gunnable sealant, unless indicated firestop system limits use to nonsag grade for both opening conditions.
- L. Solvent-Release-Curing Intumescent Sealant: Solvent-release-curing, single-component, synthetic-polymer-based sealant of grade indicated below:
 - 1. Grade: Pourable (self-leveling) formulation for openings in floors and other horizontal surfaces and nonsag formulation for openings in vertical and other surfaces requiring a nonslumping/ gunnable sealant, unless indicated firestop system limits use to nonsag grade for both opening conditions.
- M. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - 1. Ceramic-Fiber and Mastic Coating:
 - a. FireMaster Bulk and FireMaster Mastic, Thermal Ceramics.
 - 2. Ceramic-Fiber Sealant:
 - a. Metacaulk 525, The RectorSeal Corporation.
 - 3. Endothermic, Latex Sealant:
 - a. Fyre-Shield, Tremco Inc.
 - 4. Endothermic, Latex Compounds:
 - a. Flame-Safe FS500/600 Series, International Protective Coatings Corp.
 - b. Flame-Safe FS900/FST900 Series, International Protective Coatings Corp.
 - 5. Intumescent Latex Sealant:
 - a. Metacaulk 950, The RectorSeal Corporation.
 - b. Fire Barrier CP 25WB Caulk, 3M Fire Protection Products.
 - 6. Intumescent Putty:

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- a. Pensil 500 Intumescent Putty, General Electric Co.
 - b. Flame-Safe FSP1000 Putty, International Protective Coatings Corp.
 - c. Fire Barrier Moldable Putty, 3M Fire Protection Products.
7. Intumescent Wrap Strips:
- a. Dow Corning Fire Stop Intumescent Wrap Strip 2002, Dow Corning Corp.
 - b. CS2420 Intumescent Wrap, Hilti Construction Chemicals, Inc.
 - c. Fire Barrier FS-195 Wrap/Strip, 3M Fire Protection Products.
8. Job-Mixed Vinyl Compound:
- a. USG Firecode Compound, United States Gypsum Co.
9. Mortar:
- a. K-2 Firestop Mortar, Bio Fireshield, Inc.
 - b. Novasit K-10 Firestop Mortar, Bio Fireshield, Inc.
 - c. KBS-Mortar Seal, International Protective Coatings Corp.
10. Pillows/Bags:
- a. Firestop Pillows, Bio Fireshield, Inc.
 - b. KBS Sealbags, International Protective Coatings Corp.
11. Silicone Foams:
- a. Dow Corning Fire Stop Foam 2001, Dow Corning Corp.
 - b. Pensil 200 Foam, General Electric Co.
12. Silicone Sealants:
- a. Dow Corning Firestop Sealant 2000, Dow Corning Corp.
 - b. Dow Corning Firestop Sealant SL 2003, Dow Corning Corp.
 - c. Pensil 100 Firestop Sealant, General Electric Co.
 - d. CS240 Firestop Sealant, Hilti Construction Chemicals, Inc.
 - e. Metacaulk 835, The RectorSeal Corporation.
 - f. Metacaulk 880, The RectorSeal Corporation.
 - g. Fyre-Sil, Tremco Inc.
 - h. Fyre-Sil S/L, Tremco Inc.
13. Solvent-Release-Curing Intumescent Sealants:
- a. Biostop 500 Intumescent Firestop Caulk, Bio Fireshield, Inc.
 - b. Fire Barrier CP 25N/S Caulk, 3M Fire Protection Products.
 - c. Fire Barrier CP 25S/L Caulk, 3M Fire Protection Products.
14. Pre-formed, precured stopping:
- a. "Q-Stop," Fyresleeve Industries.
 - b. "Fyre Strip," Fyresleeve Industries.

2.3 FIRE-RESISTIVE ELASTOMERIC JOINT SEALANTS (FRS1)

- A. Elastomeric Sealant Standard: Provide manufacturer's standard chemically curing, elastomeric

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sealants of base polymer indicated that complies with ASTM C 920 requirements, including those referenced for Type, Grade, Class, and Uses, and requirements specified in this Section applicable to fire-resistive joint sealants indicated FRS 1 on Contract Documents.

- B. Sealant Colors: Provide color of exposed joint sealants to comply with the following:
1. Provide selections made by Architect from manufacturer's full range of standard colors for products of type indicated.
- C. Single-Component, Neutral-Curing Silicone Sealant: Type S; Grade NS; Class 25; exposure-related Use NT, and joint-substrate-related Uses M, G, A, and (as applicable to joint substrates indicated) O.
- D. Multicomponent, Nonsag, Urethane Sealant: Type M; Grade NS; Class 25; exposure-related Use NT, and joint-substrate-related Uses M, A, and (as applicable to joint substrates indicated) O.
- E. Single-Component, Nonsag, Urethane Sealant: Type S; Grade NS; Class 25; and Uses NT, M, A, and (as applicable to joint substrates indicated) O.
- F. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
1. Single-Component, Neutral-Curing, Silicone Sealant:
 - a. Dow Corning 790, Dow Corning Corp.
 - b. Dow Corning 795, Dow Corning Corp.
 - c. Silpruf, General Electric Co.
 - d. Ultraglaze, General Electric Co.
 - e. 864, Pecora Corp.
 2. Multicomponent, Nonsag, Urethane Sealant:
 - a. Vulkem 922, Mameco International Inc.
 - b. Dynflex, Pecora Corp.
 - c. Dynatred, Pecora Corp.
 - d. Dynatrol II, Pecora Corp.
 - e. Sikaflex 2cn NS, Sika Corp.
 - f. Sonolastic NP 2, Sonneborn Building Products Div., ChemRex Inc.
 - g. Dymeric, Tremco Inc.
 3. Single-Component, Nonsag, Urethane Sealant:
 - a. Isoflex 880 GB, Harry S. Peterson Co., Inc.
 - b. Isoflex 881, Harry S. Peterson Co., Inc.
 - c. Vulkem 921, Mameco International Inc.
 - d. Sikaflex--15LM, Sika Corp.
- G. Intumescent Firestop Sealant (FRS1):
1. Basis-of- Design Product: The design for each piece of intumescent firestop sealant is based on the product named. Subject to compliance with requirements, provide either the named product or an approved comparable product by one of the other manufactures specified. Subject to compliance with requirements, manufacturers offering intumescent firestop sealant that may be incorporated into the Work include, but are not limited to, the following. Model numbers for intumescent firestop sealant manufactured by Hilti, Inc. are listed to establish a standard of quality for design, function, materials and workmanship. Other manufacturers may be submitted for evaluation by the Architect. Approval shall be

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obtained 45 days after Contract date. The Architect shall be the sole judge as to the acceptability of all products submitted for substitution.

- a. System: "FS-ONE" PVC and metal pipes by Hilti, Inc.

2.4 MIXING

- A. For those products requiring mixing prior to application, comply with firestopping manufacturer's directions for accurate proportioning of materials, water (if required), type of mixing equipment, selection of mixer speeds, mixing containers, mixing time, and other procedures needed to produce firestopping products of uniform quality with optimum performance characteristics for application indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for opening configurations, penetrating items, substrates, and other conditions affecting performance of firestopping. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Cleaning: Clean out openings and joints immediately prior to installing firestopping to comply with recommendations of firestopping manufacturer and the following requirements:
 1. Remove all foreign materials from surfaces of opening and joint substrates and from penetrating items that could interfere with adhesion of firestopping.
 2. Clean opening and joint substrates and penetrating items to produce clean, sound surfaces capable of developing optimum bond with firestopping. Remove loose particles remaining from cleaning operation.
 3. Remove laitance and form release agents from concrete.
- B. Priming: Prime substrates where recommended by firestopping manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.
- C. Masking Tape: Use masking tape to prevent firestopping from contacting adjoining surfaces that will remain exposed upon completion of Work and that would otherwise be permanently stained or damaged by such contact or by cleaning methods used to remove smears from firestopping materials. Remove tape as soon as it is possible to do so without disturbing firestopping's seal with substrates.

3.3 INSTALLING THROUGH-PENETRATION FIRESTOPS

- A. General: Comply with the "System Performance Requirements" article in Part 1 and the through-penetration firestop manufacturer's installation instructions and drawings pertaining to products and applications indicated.
- B. Install forming/damming materials and other accessories of types required to support fill materials during their application and in the position needed to produce the cross-sectional shapes and

depths required to achieve fire ratings of designated through-penetration firestop systems. After installing fill materials, remove combustible forming materials and other accessories not indicated as permanent components of firestop systems.

- C. Install fill materials for through-penetration firestop systems by proven techniques to produce the following results:
 - 1. Completely fill voids and cavities formed by openings, forming materials, accessories, and penetrating items.
 - 2. Apply materials so they contact and adhere to substrates formed by openings and penetrating items.
 - 3. For fill materials that will remain exposed after completing Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

3.4 INSTALLING FIRE-RESISTIVE JOINT SEALANTS

- A. General: Comply with the "System Performance Requirements" article in Part 1, with ASTM C 1193, and with the sealant manufacturer's installation instructions and drawings pertaining to products and applications indicated.
- B. Install joint fillers to provide support of sealants during application and at position required to produce the cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability and develop fire-resistance rating required.
- C. Install sealants by proven techniques that result in sealants directly contacting and fully wetting joint substrates, completely filling recesses provided for each joint configuration, and providing uniform, cross-sectional shapes and depths relative to joint width that optimum sealant movement capability. Install sealants at the same time joint fillers are installed.
- D. Tool nonsag sealants immediately after sealant application and prior to the time skinning or curing begins. Form smooth, uniform beads of configuration indicated or required to produce fire-resistance rating, as well as to eliminate air pockets, and to ensure contact and adhesion of sealants with sides of joint. Remove excess sealant from surfaces adjacent to joint. Do not use tooling agents that discolor sealants or adjacent surfaces or are not approved by sealant manufacturer.

3.5 INSTALLING FIRE RESISTIVE JOINT SYSTEM

A. PREPARATION

- 1. Surface Cleaning: Clean joints immediately before installing fire-resistive joint systems to comply with fire-resistive joint system manufacturer's written instructions and the following requirements:
 - a. Remove from surfaces of joint substrates foreign materials that could interfere with adhesion of fill materials.
 - b. Clean joint substrates to produce clean, sound surfaces capable of developing optimum bond with fill materials. Remove loose particles remaining from cleaning operation.
 - c. Remove laitance and form-release agents from concrete.
- 2. Priming: Prime substrates where recommended in writing by fire-resistive joint system manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.

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3. Masking Tape: Use masking tape to prevent fill materials of fire-resistive joint system from contacting adjoining surfaces that will remain exposed on completion of the Work and that would otherwise be permanently stained or damaged by such contact or by cleaning methods used to remove stains. Remove tape as soon as possible without disturbing fire-resistive joint system's seal with substrates.

B. INSTALLATION

1. General: Install fire-resistive joint systems to comply with manufacturer's written installation instructions and published drawings for products and applications indicated.
2. Install forming materials and other accessories of types required to support fill materials during their application and in position needed to produce cross-sectional shaped and depths required to achieve fire ratings indicated.
 - a. After installing fill materials and allowing them to fully cure, remove combustible forming materials and other accessories not indicated as permanent components of fire-resistive joint system.
3. Install fill materials for fire-resistive joint systems by proven techniques to produce the following results:
 - a. Fill voids and cavities formed by joints and forming materials as required to achieve fire-resistance ratings indicated.
 - b. Apply fill materials so they contact and adhere to substances formed by joints.
 - c. For fill materials that will remain exposed after completing the Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

3.6 FIELD QUALITY CONTROL

- A. Do not proceed to enclose firestopping with other construction until inspected by Owner's Representative.
- B. Where deficiencies are found, repair or replace firestopping so that it complies with requirements.

3.7 CLEANING

- A. Clean off excess fill materials and sealants adjacent to openings and joints as work progresses by methods and with cleaning materials approved by manufacturers of firestopping products and of products in which opening and joints occur.
- B. Protect firestopping during and after curing period from contact with contaminating substances or from damage resulting from construction operations or other causes so that they are without deterioration or damage at time of Notice of Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated firestopping immediately and install new materials to produce firestopping complying with specified requirements.

END OF SECTION 072700

SECTION 075720 - POLYURETHANE FOAM ROOFING

07/25/13

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 0 & 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes, but not limited to, polyurethane foam roofing systems.
 - 1. Repair of existing foam roof.
 - 2. Patching of existing foam roof from new roof penetrations and related work.
- B. Types of coatings specified in this Section include the following:
 - 1. Fibered elastomeric.

1.3 SYSTEM PERFORMANCE

- A. General: Provide coating material products that have been produced and installed to establish and maintain continuous surface protection of roofing systems.

1.4 SUBMITTALS

- A. General: Submit the following according to Conditions of Contract and Division 1 Specifications Sections.
- B. Product data and general recommendations from coating materials manufacturer for types of coatings required.
 - 1. Certification by coating materials manufacturer that products supplied comply with local VOC regulations.
- C. Samples of coating and auxiliary materials mounted on plywood.
- D. Similar jobs: The installer and manufacturer shall submit a list of five (5) similar-sized projects which the Contractor has completed over the past five (5) years.

1.5 QUALITY ASSURANCE

- A. Manufacturer's Qualifications: Obtain primary coating materials of each type required from a single manufacturer to the greatest extent possible. Provide secondary materials only as recommended by manufacturer of primary materials.
 - 1. The manufacturer of coating shall maintain a minimum of \$5,000,000 of product liability insurance on a continuing basis.

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2. The manufacturer shall have a minimum of 1,000,000 square feet of successful roofing installed in California.
 3. The manufacturer of the coating shall have been in the roof coating manufacturing business for a minimum of ten (10) years.
- B. Installer: A firm with coating projects similar to requirements for this Project with satisfactory in-service performance and which is acceptable to primary coating materials manufacturer.
1. Installer shall be specifically engaged in the application of sprayed-in-place polyurethane foam roofing systems. Such installers shall have been engaged in the installation of these systems for not less than five (5) years. Each installer shall have performed at least five (5) applications of similar size and type. The applicator shall have installed a minimum of 100,000 square feet of the system specified or of any proposed alternate acrylic system.
- C. Pre-installation Conference: Prior to installing coating and associated work, meet at Project site with Installer of each component of associated work, inspection and testing agency representatives (if any), and installers of work requiring coordination with coating work. Review material selections and procedures to be followed in performing work. Notify Architect at least 7 days before conducting meeting.

1.6 PROJECT CONDITIONS

- A. Substrate: Proceed with work after substrate construction, openings, and penetrating work have been completed and areas are free of standing or running water, ice, and frost. Verify that roofing is dry, smooth, and free from sharp or ragged out-angles, honeycombing, rock pockets, depressions, and projections.
- B. Weather: Proceed with coating and associated work only when existing and forecasted weather conditions will permit work to be performed in accordance with manufacturers' recommendations and warranty requirements.

1.7 WARRANTY

- A. Warranty: Submit a written warranty executed by the manufacturer, agreeing to repair or replace coating that fails in materials or workmanship within specified warranty period.
1. Warranty Period: Ten (10) years from date of Notice of Completion against peeling, cracking and eroding.
- B. The warranty shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and will be in addition to and run concurrent with other warranties made by the Contractor under requirements of the Contract Documents.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Available manufacturers: This specification is based on using the manufacturer below as a standard. Other manufacturers will be considered when submitted for review prior to bidding.

Manufacturers are subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:

1. PremiR + EVO by National Coatings Corp (Henry a Carlisle Co.)

2.2 MATERIALS

- A. Primer (Foam Repairs): Primer shall be a two-component, epoxy-polyamide primer/sealer which utilizes high flash point, and low VOC solvents. The product shall be “Black Primer A450” by National Coatings Corp. The primer shall be used to repair blistered foam areas.
- B. Primer (Acrylic Recoat): Primer shall be water-based acrylic primer designed to enhance adhesion of acrylic coating when being re-coated. The product shall be “Black Primer A450” by National Coatings Corp. The primer shall be used to promote adhesion to the properly prepared surface and the new coating system.
- C. Polyurethane Foam: Polyurethane Foam shall be two-component polyurethane foam system formulated for use through airless equipment. The project shall be. The product shall exhibit the following typical physical properties:

Density (sprayed-in-place)	2.6 pcf min.
Compressive strength	40-60 psi min.
Tensile strength	42-56 psi min.
Closed cell content	94% min.
Thermal resistance	6.5
Flame spread (ASTM-E84)	20 FSI/415 SDI
Roof Deck Classification	UL 790 (ASTM E-108)
Non-combustible deck	Class A
Combustible deck	Class B

*This numerical flame spread rating is not intended to reflect hazards presented by this or any other material under actual fire conditions.

- D. Fluid-Applied Elastomeric Coating
 1. Acrylic Roof Coating: The coating shall be an acrylic elastomer coating. The product shall be (ICC ESR-2140) “Acryshield A510” by National Coatings Corp, with the following typical physical properties:

Solids content	50% min.
Elongation	100% min.
Tensile strength	200 psi min.
Ultraviolet exposure (8,000 hrs. in Atlas Weatherometer)	no cracking, checking or significant discoloration
Roof Deck Classification	UL 790 (ASTM E-108)
Non-combustible deck	Class A
Combustible deck	Class B

The acrylic protective coating shall be based solely on 100% Rohm and Haas Rhoplex EC 1791 resins and formulation. No other blend or substitute of this formulation will be accepted. Bidder must provide written certification from the manufacturer of the coating materials that the coating offered meets these requirements. Failure to meet this

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requirement shall render the bid as non-responsive.

The minimum dry mil thickness of the acrylic coating shall be 25 dry mils. Materials such as terpolymers, single-component urethanes and catalyzed urethanes shall not be considered.

E. Granules

1. "Roofguard Granules" by National Coatings Corp.

F. Caulking or Sealants

1. Caulking materials shall either be single component polyurethane elastomers such as "Vulkem-921" or Sikaflex 1-A.

PART 3 - EXECUTION

3.1 SURFACE PREPARATION

- A. Inspect roof surface and establish the presence of any blisters in the existing foam or saturated or delaminated areas. Tear out all areas where temporary repairs have been made around new penetrations or on parapet walls. Prime all areas to receive foam. Flash all new penetrations with foam. Spot foam repairs must be ground level to match existing grade and pre-coated and back-rolled with base coating, before design thickness of the recoat is applied.
- B. Remove all blisters to the deck and repair in accordance with the Navy repair specification TN No. N1691. Tear out and re-foam delaminated and saturated areas. Grind all repairs flush with the existing foam surfaces.
- C. Repair all bird pecks and other mechanical damage by cutting away the damaged material or temporary repairs and filling the void with a single component urethane caulking material. Smooth the repaired area to conform to the existing roof grade.
- D. Remove all loose and delaminated existing top coating. The surface shall be free from solvent, grease, dust, sediment, dirt and sticky mastic.
- E. Reseal all open flashings at roof penetrations.
- F. Power-wash all surfaces with a diluted solution of Ultra-Shield Cleaner, followed by a thorough power-rinse.
- G. All surfaces not to receive foam, such as walls, air conditioners and other roof-mounted equipment are to be carefully masked with tape and paper to avoid overspraying of these surfaces with foam or coating. All coating is to be terminated in clean straight lines.

3.2 APPLICATION OF URETHANE FOAM

A. Environmental Conditions

1. Wind velocity shall not exceed 12 miles per hour.

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2. Application of spray foam shall not proceed if ambient temperature is less than 40 degrees Fahrenheit or if the substrate temperature is less than 50 degrees Fahrenheit.
3. Spray foam is not to be applied over moist substrates or where rain or inclement weather is imminent.

B. Spray Application

1. The polyurethane foam shall be applied in minimum 1/2-inch passes to blistered areas and foamed slightly above the existing grade.
2. The foam shall be free from bumps, pinholes and ridges. The surface shall exhibit a smooth or "orange peel" surface texture. "popcorn" or "tree bark" surfaces shall be deemed unacceptable.
3. Re-foam larger areas to existing grade (thickness to match existing).

3.3 APPLICATION OF FLUID-APPLIED PROTECTIVE COATING

- A. General: Sprayed polyurethane foam must be protected from ultraviolet light in order to avoid degradation of the polymer. Coating also protects the foam from liquid, water and adverse weather conditions. Coatings must be specifically formulated for use over urethane foams.
- B. Spray Application: After the preparation work has been completed, spray apply 1.0 gallon per 100 sq. ft. primer to the roof surface.

The coating is to be applied to the surface of the urethane foam in two (2) uniform passes. The base coat and top coat shall be of contrasting colors to assure uniformity of coverage. A total of 25 dry mils at 3 gals per 100 sq. ft. shall be applied to the roof as determined by an optical comparator.

The base coat shall be applied at a rate of 1.0 gallon per 100 sq. ft. and be back-rolled as being applied. Elastomeric coating shall be applied in a picture frame fashion and back-rolled at the roof perimeter and all areas where the foam has been scarified. This procedure shall ensure proper sealing of these critical areas and provide double the design thickness of coating.

The top coat application shall be applied over the cured base coat application at a minimum rate of 2 gallons per 100 sq. ft. and a total of 40-45 lbs. per 100 sq. ft. of white roofing granules shall be broadcast into the final coat while it is still wet.

3.4 WARRANTY AND CERTIFICATION

- A. The manufacturer shall issue a five (10) year non-depreciating coatings only re-coat warranty covering leakage. The manufacturer will provide the materials and the Contractor will provide the labor for all necessary repairs during the warranty period.

3.5 INSPECTION

- A. A representative from the coating manufacturer shall inspect the roof after completion to assure that the detail work at the protrusions, drains, parapets and edges has been completed in conformance with good practice. The Inspector shall also check the thickness of the coating with an optical comparator.

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3.6 CLEANING

- A. General: After completion, remove any masking materials and stains from exposed surfaces caused by coating installation.

3.7 PROTECTION

- A. General: Protect completed coating during installation of other materials or processes over coating and throughout remainder of construction period.

END OF SECTION 075710

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 0 & 1 Specification Sections, apply to work of this Section.

1.2 SUMMARY

- A. This Section includes, but not limited to, the following:
 - 1. Metal counter flashing and base flashing.
 - 2. Metal wall flashing and expansion joints.
 - 3. Exposed metal trim.
 - 4. Miscellaneous sheet metal accessories.
- B. Related Section: The following sections contain requirements that related to this Section.
 - 1. Roofing accessories installed integral with roofing membrane are specified in roofing system sections as roofing work.
 - 2. Division 7 Section "Roof Accessories" for roof accessory units manufactured and set-on type.

1.3 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.
- B. Product data, Flashing, Sheet Metal, and Accessories: Manufacturer's technical product data, installation instructions and general recommendations for each specified sheet material and fabricated product.
- C. Samples of the following flashing, sheet metal, and accessory items:
 - 1. 8-inch-square samples of specified sheet materials to be exposed as finished surfaces.
- D. Shop drawings showing layout, profiles, methods of joining, and anchorages details, including major counterflashings, trim/fascia units, gutters, downspouts, scuppers, and expansion joint systems. Provide layouts at 1/4-inch scale and details at 3-inch scale.

1.4 PROJECT CONDITIONS

- A. Coordinate work of this section with interfacing and adjoining work for proper sequencing of each installation. Ensure best possible weather resistance and durability of work and protection of materials and finishes.

PART 2 - PRODUCTS

2.1 SHEET METAL FLASHING AND TRIM MATERIALS

- A. Zinc-Coated Steel: Commercial quality with 0.20 percent copper, ASTM A 526 except ASTM A 527 for lock-forming, G90 hot-dip galvanized, mill phosphatized where indicated for painting; 0.0359-inch thick (20 gage) except as otherwise indicated.

2.2 MISCELLANEOUS MATERIALS AND ACCESSORIES

- A. Solder: For use with steel or copper, provide lead free solder (ASTM B 32), with rosin flux.
- B. Fasteners: Same metal as flashing/sheet metal or other non-corrosive metal as recommended by sheet manufacturer. Match finish of exposed heads with material being fastened. Rubber neoprene washers under all heads as indicated.
 - 1. Blind Rivets: all exterior blind rivets shall be stainless steel.
- C. Bituminous Coating: SSPC - Paint 12, solvent-type bituminous mastic, nominally free of sulfur, compounded for 15-mil dry film thickness per coat.
- D. Mastic Sealant: Polyisobutylene; nonhardening, nonskinning, non-drying, nonmigrating sealant.
- E. Elastomeric Sealant: Generic type recommended by manufacturer of metal and fabricator of components being sealed and complying with requirements for joint sealants as specified in Division 7 Section "Joint Sealants."
- F. Epoxy Seam Sealer: 2-part noncorrosive metal seam cementing compound, recommended by metal manufacturer for exterior/interior nonmoving joints including riveted joints.
- G. Adhesives: Type recommended by flashing sheet manufacturer for waterproof/weather-resistant seaming and adhesive application of flashing sheet.
- H. Polyethylene Underlayment: Minimum 6-mil carbonated polyethylene film resistant to decay when tested in accordance with ASTM E 154.
- I. Reglets: Metal units of type and profile indicated, compatible with flashing indicated, noncorrosive.
- J. Metal Accessories: Provide sheet metal clips, straps, anchoring devices, and similar accessory units as required for installation of work, matching or compatible with material being installed, noncorrosive, size and gage required for performance.
- K. Elastic Flashing Filler: Closed-cell polyethylene or other soft closed-cell material recommended by elastic flashing manufacturer as filler under flashing loops to ensure movement with minimum stress on flashing sheet.
- L. Roofing Cement: ASTM D 2822, asphaltic.
- M. Stainless Steel: Gage and finish as indicated in plans – see details:

2.3 FABRICATED UNITS

- A. General Metal Fabrication: Shop-fabricate work to greatest extent possible. Comply with details shown and with applicable requirements of SMACNA "Architectural Sheet Metal Manual" and other recognized industry practices. Fabricate for waterproof and weather-resistant performance, with expansion provisions for running work, sufficient to permanently prevent leakage, damage, or deterioration of the work. Form work to fit substrates. Comply with material manufacturer instructions and recommendations for forming material. Form exposed sheet metal work without excessive oil-canning, buckling, and tool marks, true to line and levels indicated, with exposed edges folded back to form hems.
 - 1. Provide end terminations for all flashings to allow for end closures to flash against roofing. End termination shall be integral with flashing design.
- B. Seams: Fabricate nonmoving seams in sheet metal with flat-lock seams. For metal other than aluminum, tin edges to be seamed, form seams, and solder. Form aluminum seams with epoxy seam sealer; rivet joints for additional strength where required.
- C. Expansion Provisions: Where lapped or bayonet-type expansion provisions in work cannot be used or would not be sufficiently water/weatherproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).
- D. Sealant Joints: Where movable, nonexpansion type joints are indicated or required for proper performance of work, form metal to provide for proper installation of elastomeric sealant, in compliance with SMACNA standards.
- E. Separations: Provide for separation of metal from noncompatible metal or corrosive substrates by coating concealed surfaces at locations of contact, with bituminous coating or other permanent separation as recommended by manufacturer/fabricator.

2.4 RUBBERIZED ASPHALT FLASHING

- A. Rubberized asphalt self-adhering membrane integrally bonded to polyethylene sheeting, formed into uniform flexible sheets of not less than 56 mils thick, complying with the following:
 - 1. Tensile Strength: 250 psi minimum; ASTM D 412.
 - 2. Ultimate Elongation: 300 percent minimum; ASTM D 412.
 - 3. Brittleness Temperature: Minus 25 deg F (minus 32 deg C); ASTM D 746.
 - 4. Hydrostatic Head Resistance: 150 feet minimum.
 - 5. Water Absorption: Not more than 0.5 percent weight gain after 48 hours' immersion at 70 deg F (21 deg C); ASTM D 570.
- B. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - 1. Bituthene, W. R. Grace & Co.
 - 2. MEL-ROL, W. R. Meadows, Inc.
 - 3. Miradri, Mirafi, Inc.
 - 4. Duramem 700-SM, Pecora Corporation.
 - 5. Polyguard 650, Polyguard Products, Inc.

PART 3 - EXECUTION

3.1 INSTALLATION REQUIREMENTS

- A. General: Except as otherwise indicated, comply with manufacturer's installation instructions and recommendations and with SMACNA "Architectural Sheet Metal Manual." Anchor units of work securely in place by methods indicated, providing for thermal expansion of metal units; conceal fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weatherproof.
- B. Bed flanges of work in a thick coat of bituminous roofing cement where required for waterproof performance.
- C. Install reglets to receive counterflashing in manner and by methods indicated.
- D. Install counterflashing in reglets, either by snap-in seal arrangement or by welding in place for anchorage and filling reglet with mastic or elastomeric sealant, as indicated and depending on degree of sealant exposure. Install termination flashing at end runs to allow for roof overlap of flashing.
- E. Install elastic flashing in accordance with manufacturer's recommendations. Where required, provide for movement at joints by forming loops or bellows in width of flashing. Locate cover or filler strips at joints to facilitate complete drainage of water from flashing. Seam adjacent flashing sheets with adhesive, seal and anchor edges in accordance with manufacturer's recommendations.
- F. Screw flanges of expansion joint units to curb nailers, at maximum spacing of 6 inches o.c. Fabricate seams at joints between units with minimum 3-inch overlap, to form a continuous, waterproof system.
- G. Provide multi-part pieces with detail where sequence of construction requires placement of flashings under, around and over items prior to roofing and other flashing operations. Provide details of methods to be used for approval prior to starting work. Sequence methods shall be verified with Contractor prior to bidding for this Contractor to allow for multi-sequence flashings.

3.2 CLEANING AND PROTECTION

- A. Clean exposed metal surfaces, removing substances that might cause corrosion of metal or deterioration of finishes.
- B. Protection: Advise Contractor of required procedures for surveillance and protection of flashings and sheet metal work during construction to ensure that work will be without damage or deterioration other than natural weathering at time of Notice of Completion.

END OF SECTION 076000

SECTION 079200 - JOINT SEALANTS

05/21/15

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Divisions 0 & 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes, but is not limited to the following sealants for the following applications, including those specified by reference to this Section (refer to Joint Sealer Schedule on construction documents for additional requirements):

- 1. Exterior joints in the following vertical surfaces and nontraffic horizontal surfaces:

- a. Perimeter joints at frames of doors and windows.
- b. Other joints as indicated.

- 2. Exterior joints in the following horizontal traffic surfaces:

- a. Control, expansion, and isolation joints in cast-in-place concrete slabs.
- b. Other joints as indicated.

- 3. Interior joints in the following vertical surfaces and horizontal nontraffic surfaces:

- a. Perimeter joints of exterior openings where indicated.
- b. Perimeter joints between interior wall surfaces and frames of interior doors.
- c. Joints between plumbing fixtures and adjoining walls, floors, and counters.
- d. Other joints as indicated.

- 4. Interior joints in the following horizontal traffic surfaces:

- a. Control and expansion joints in cast-in-place concrete slabs.
- b. Other joints as indicated.

- B. Related Sections include the following:

- 1. Division 7 Section "Firestopping" for fire-resistant building joint-sealant systems.
- 2. Division 8 Section "Glazing" for glazing sealants.
- 3. Division 9 Section "Gypsum Board Assemblies" for sealing perimeter joints of gypsum board partitions to reduce sound transmission.
- 4. Division 9 Section "Acoustical Panel Ceilings" for sealing edge moldings at perimeters of acoustical ceilings.
- 5. Division 9 Section "Acoustical Tile Ceiling" for sealing edge moldings at perimeter of acoustical ceilings.

1.3 PERFORMANCE REQUIREMENTS

- A. Provide elastomeric joint sealants that establish and maintain watertight and airtight continuous joint seals without staining or deteriorating joint substrates.

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- B. Provide joint sealants for interior applications that establish and maintain airtight and water-resistant continuous joint seals without staining or deteriorating joint substrates.

1.4 SUBMITTALS

- A. Product Data: For each joint-sealant product indicated.
- B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.
- C. Samples for Verification: For each type and color of joint sealant required. Install joint sealants in 1/2-inch- (13-mm-) wide joints formed between two 6-inch- (150-mm-) long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.
- D. Product Certificates: Signed by manufacturers of joint sealants certifying that products furnished comply with requirements and are suitable for the use indicated.
- E. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.
- F. Compatibility and Adhesion Test Reports: From sealant manufacturer indicating the following:
 - 1. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.
 - 2. Interpretation of test results and written recommendations for primers and substrate preparation needed for adhesion.
- G. Warranties: Special warranties specified in this Section.
- H. Project Closeout Requirements:
 - 1. 5-year installer warranty.
 - 2. 5-year manufacturer's warranty.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who has specialized in installing joint sealants similar in material, design, and extent to those indicated for this Project and whose work has resulted in joint-sealant installations with a record of successful in-service performance.
- B. Source Limitations: Obtain each type of joint sealant through one source from a single manufacturer.
- C. Preconstruction Field-Adhesion Testing: Before installing elastomeric sealants, field test their adhesion to joint substrates as follows:
 - 1. Locate test joints where indicated or, if not indicated, as directed by Architect.
 - 2. Conduct field tests for each application indicated below:
 - a. Each type of elastomeric sealant and joint substrate indicated.
 - b. Each type of nonelastomeric sealant and joint substrate indicated.

3. Notify Architect seven days in advance of dates and times when test joints will be erected.
4. Arrange for tests to take place with joint sealant manufacturer's technical representative present.
5. Test Method: Test joint sealants by hand-pull method described below:
 - a. Install joint sealants in 60-inch- (1500-mm-) long joints using same materials and methods for joint preparation and joint-sealant installation required for the completed Work. Allow sealants to cure fully before testing.
 - b. Make knife cuts from one side of joint to the other, followed by two cuts approximately 2 inches (50 mm) long at sides of joint and meeting cross cut at one end. Place a mark 1 inch (25 mm) from cross-cut end of 2-inch (50-mm) piece.
 - c. Use fingers to grasp 2-inch (50-mm) piece of sealant between cross-cut end and 1-inch (25-mm) mark; pull firmly at a 90-degree angle or more in direction of side cuts while holding a ruler along side of sealant. Pull sealant out of joint to the distance recommended by sealant manufacturer for testing adhesive capability, but not less than that equaling specified maximum movement capability in extension; hold this position for 10 seconds.
 - d. For joints with dissimilar substrates, check adhesion to each substrate separately. Do this by extending cut along one side, checking adhesion to opposite side, and then repeating this procedure for opposite side.
6. Report whether sealant in joint connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each type of product and joint substrate. For sealants that fail adhesively, retest until satisfactory adhesion is obtained.
7. Evaluation of Preconstruction Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing, in absence of other indications of noncompliance with requirements, will be considered satisfactory. Do not use sealants that fail to adhere to joint substrates during testing.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to Project site in original unopened containers or bundles with labels indicating manufacturer, product name and designation, color, expiration date, pot life, curing time, and mixing instructions for multicomponent materials.
- B. Store and handle materials in compliance with manufacturer's written instructions to prevent their deterioration or damage due to moisture, high or low temperatures, contaminants, or other causes.

1.7 PROJECT CONDITIONS

- A. Environmental Limitations: Do not proceed with installation of joint sealants under the following conditions:
 1. When ambient and substrate temperature conditions are outside limits permitted by joint sealant manufacturer or are below 40 deg F (4.4 deg C).
 2. When joint substrates are wet.
- B. Joint-Width Conditions: Do not proceed with installation of joint sealants where joint widths are less than those allowed by joint sealant manufacturer for applications indicated.
- C. Joint-Substrate Conditions: Do not proceed with installation of joint sealants until contaminants

capable of interfering with adhesion are removed from joint substrates.

1.8 WARRANTY

- A. General Warranty: Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.
- B. Special Installer's Warranty: Written warranty, signed by Installer agreeing to repair or replace elastomeric joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
 - 1. Warranty Period: Five (5) years from date of Notice of Completion.
- C. Special Manufacturer's Warranty: Written warranty, signed by elastomeric sealant manufacturer agreeing to furnish elastomeric joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.
 - 1. Warranty Period: Five (5) years from date of Notice of Completion.
- D. Special warranties specified in this Article exclude deterioration or failure of elastomeric joint sealants from the following:
 - 1. Movement of the structure resulting in stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression caused by structural settlement or errors attributable to design or construction.
 - 2. Disintegration of joint substrates from natural causes exceeding design specifications.
 - 3. Mechanical damage caused by individuals, tools, or other outside agents.
 - 4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 - PRODUCTS

2.1 PRODUCTS AND MANUFACTURERS

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the products specified in the Sealant Data Sheets at the end of Part 3.

2.2 MATERIALS, GENERAL

- A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
- B. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range for this characteristic.

2.3 ELASTOMERIC JOINT SEALANTS

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- A. **Elastomeric Sealant Standard:** Comply with ASTM C 920 and other requirements indicated for each liquid-applied chemically curing sealant in the Elastomeric Joint-Sealant Schedule at the end of Part 3, including those referencing ASTM C 920 classifications for type, grade, class, and uses.
- B. **Additional Movement Capability:** Where additional movement capability is specified in the Elastomeric Joint-Sealant Schedule, provide products with the capability, when tested for adhesion and cohesion under maximum cyclic movement per ASTM C 719, to withstand the specified percentage change in the joint width existing at the time of installation and remain in compliance with other requirements of ASTM C 920 for uses indicated.
- C. **Suitability for Contact with Food:** Where elastomeric sealants are indicated for joints that will come in repeated contact with food, provide products that comply with 21 CFR 177.2600.

2.4 PREFORMED JOINT SEALANTS

- A. **Preformed Silicone-Sealant System:** For each product of this description provide manufacturer's standard system consisting of precured low-modulus silicone extrusion, in sizes to fit joint widths indicated, combined with a neutral-curing silicone sealant for bonding extrusions to substrates.
- B. **Preformed Foam Sealants:** For each product of this description indicated in the Preformed Joint-Sealant Schedule at the end of Part 3, provide manufacturer's standard preformed, precompressed, impregnated, open-cell foam sealant manufactured from high-density urethane foam impregnated with a nondrying, water-repellent agent; factory produced in precompressed sizes and in roll or stick form to fit joint widths indicated and to develop a watertight and airtight seal when compressed to the degree specified by manufacturer; and complying with the following:
 - 1. **Properties:** Permanently elastic, mildew resistant, nonmigratory, nonstaining, and compatible with joint substrates and other joint sealants.
 - 2. **Impregnating Agent:** Manufacturer's standard.
 - 3. **Density:** Manufacturer's standard.
 - 4. **Backing:** Pressure-sensitive adhesive, factory applied to one side with protective wrapping.
 - 5. **Available Products:** Subject to compliance with requirements, preformed foam sealants that may be incorporated in the Work include, but are not limited to, the following:
 - a. "Emseal," Emseal Corp.
 - b. "Emseal Greyflex," Emseal Corp.
 - c. "Wil-Seal 150," Wil-Seal Construction Foams Div., Illbruck.
 - d. "Wil-Seal 250," Wil-Seal Construction Foams Div., Illbruck.

2.5 JOINT-SEALANT BACKING

- A. **General:** Provide sealant backings of material and type that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
- B. **Cylindrical Sealant Backings:** ASTM C 1330, of type indicated below and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance:
 - 1. **Type C:** Closed-cell material with a surface skin.
 - 2. **Type O:** Open-cell material.
 - 3. **Type B:** Bicellular material with a surface skin.
 - 4. **Type:** Any material indicated above.

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- C. **Elastomeric Tubing Sealant Backings:** Neoprene, butyl, EPDM, or silicone tubing complying with ASTM D 1056, nonabsorbent to water and gas, and capable of remaining resilient at temperatures down to minus 26 deg F (minus 32 deg C). Provide products with low compression set and of size and shape to provide a secondary seal, to control sealant depth, and otherwise contribute to optimum sealant performance.
- D. **Bond-Breaker Tape:** Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.

2.6 MISCELLANEOUS MATERIALS

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

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. **Surface Cleaning of Joints:** Clean out joints immediately before installing joint sealants to comply with joint sealant manufacturer's written instructions and the following requirements:
 - 1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
 - 2. Clean porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining from above cleaning operations by vacuuming or blowing out joints with oil-free compressed air. Porous joint surfaces include the following:
 - a. Concrete.

- b. Masonry.
 - c. Unglazed surfaces of ceramic tile.
 3. Remove laitance and form-release agents from concrete.
 4. Clean nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants.
 - a. Metal.
 - b. Glass.
 - c. Glazed surfaces of ceramic tile.
- B. Joint Priming: Prime joint substrates where recommended in writing by joint sealant manufacturer, based on preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with joint sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.
- B. Sealant Installation Standard: Comply with recommendations of ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. Acoustical Sealant Application Standard: Comply with recommendations of ASTM C 919 for use of joint sealants in acoustical applications as applicable to materials, applications, and conditions indicated.
- D. Install sealant backings of type indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
 1. Do not leave gaps between ends of sealant backings.
 2. Do not stretch, twist, puncture, or tear sealant backings.
 3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.
- E. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and back of joints.
- F. Install sealants by proven techniques to comply with the following and at the same time backings are installed:
 1. Place sealants so they directly contact and fully wet joint substrates.
 2. Completely fill recesses provided for each joint configuration.
 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- G. Tooling of Non-sag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified below to form smooth, uniform beads of

configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.

1. Remove excess sealants from surfaces adjacent to joint.
2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
3. Provide concave joint configuration per Figure 5A in ASTM C 1193, unless otherwise indicated.
4. Provide flush joint configuration, per Figure 5B in ASTM C 1193, where indicated.
5. Provide recessed joint configuration, per Figure 5C in ASTM C 1193, of recess depth and at locations indicated.

a. Use masking tape to protect adjacent surfaces of recessed tooled joints.

- H. Installation of Preformed Foam Sealants: Install each length of sealant immediately after removing protective wrapping, taking care not to pull or stretch material, to produce seal continuity at ends, turns, and intersections of joints. For applications at low ambient temperatures where expansion of sealant requires acceleration to produce seal, apply heat to sealant to comply with sealant manufacturer's written instructions.

3.4 CLEANING

- A. Clean off excess sealants or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.5 PROTECTION

- A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Project Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from the original work.

ELASTOMERIC JOINT SEALANT DATA SHEET

Elastomeric Joint Sealant Designation: ES #1.

Base Polymer: Polysulfide/polyurthane.

Type: M (multicomponent).

Grade: P (pourable).

Class: 25.

Use[s] Related to Exposure: T (traffic)/40+/-5 shore harnes.

Uses Related to Joint Substrates: M, A, and, as applicable to joint substrates indicated, O.

Use O Joint Substrates: Color anodized aluminum, aluminum coated with a high-performance coating, galvanized steel, brick, granite, marble, ceramic tile, and wood.

Available Products:

Flat to 1/8"/ft. slope

1. "Deck-O-Seal #125", D.F.C. Company
2. "Elasto-Seal 227 - Self-Leveling", Pacific Polymers.
3. Sika 2C.

1/8"/ft.&greater slope

1. "Deck-O-Seal Gun Grade", D.F.C. Co.
2. "Elasto-Seal Gun Grade", Pacific Polymers.

3. Sika 2C Non-Sag.

ELASTOMERIC JOINT SEALANT DATA SHEET

Elastomeric Joint Sealant Designation: ES #2.

Base Polymer: Acid-curing silicone.

Type: S (single component).

Grade: NS (nonsag).

Class: 25.

Use[s] Related to Exposure: NT (nontraffic).

Uses Related to Joint Substrates: G, A, and, as applicable to joint substrates indicated, O.

Use O Joint Substrates: Ceramic tile, plastic.

Available Products:

1. "786 Mildew Resistant", Dow Corning.
2. "Sanitary 1700", G.E.
3. "Proglaze White", Tremco.

ELASTOMERIC JOINT SEALANT DATA SHEET

Elastomeric Joint Sealant Designation: ES #3.

Base Polymer: Urethane.

Type: M (multicomponent).

Grade: P (pourable).

Class: 25.

Use[s] Related to Exposure: T (traffic).

Uses Related to Joint Substrates: M, A, and, as applicable to joint substrates indicated, O.

Use O Joint Substrates: Color anodized aluminum, aluminum coated with a high-performance coating, galvanized steel, brick, granite, marble, ceramic tile, and wood.

Available Products:

1. "Chem-Calk 550", Bostik Construction Products Div.
2. "Vulkem 245", Mameco International, Inc.
3. "Urexpan NR-200", Pecora Corp.
4. "THC-900", Tremco Corp.

ELASTOMERIC JOINT SEALANT DATA SHEET

Elastomeric Joint Sealant Designation: ES #4.

Base Polymer: Neutral-curing silicone.

Type: S (single component).

Grade: NS (nonsag).

Class: 25.

Additional Movement Capability: 100 percent movement in extension and 50 percent in compression for a total of 150 percent movement.

Use[s] Related to Exposure: NT (nontraffic).

Uses Related to Joint Substrates: M, G, A, and, as applicable to joint substrates indicated, O.

Use O Joint Substrates: Coated glass, color anodized aluminum, aluminum coated with a high-performance coating, galvanized steel, brick, granite, marble, ceramic tile, and wood.

Available Products:

1. "790", Dow Corning.
2. "Spectrem 1", Tremco.

ELASTOMERIC JOINT SEALANT DATA SHEET

Elastomeric Joint Sealant Designation: ES #5.

Base Polymer: Neutral-curing silicone.

Type: S (single component).

Grade: NS (nonsag).

Class: 25.

Additional Movement Capability: 50 percent movement in extension and 50 percent in compression for a total of 100 percent movement.

Use[s] Related to Exposure: NT (nontraffic).

Uses Related to Joint Substrates: M, G, A, and, as applicable to joint substrates indicated, O.

Use O Joint Substrates: Coated glass, color anodized aluminum, aluminum coated with a high-performance coating, galvanized steel, brick, granite, marble, ceramic tile, plastic, and wood.

Available Products:

1. "795", Dow Corning.
2. "895", Pecora Corp.

ELASTOMERIC JOINT SEALANT DATA SHEET

Elastomeric Joint Sealant Designation: ES #6.

Base Polymer: Acrylic emulsion.

Type: S (single component).

Grade: NS (nonsag).

Class: 25.

Additional Movement Capability: 5 percent movement in extension and 5 percent in compression for a total of 10 percent movement.

Use[s] Related to Exposure: NT (nontraffic).

Uses Related to Joint Substrates: M, G, A, and, as applicable to joint substrates indicated, O.

Use O Joint Substrates: Coated glass, color anodized aluminum, aluminum coated with a high-performance coating, galvanized steel, brick, granite, marble, ceramic tile, plastic, and wood.

Available Products:

1. "Sonolac", Sonneborn Building Products Div., ChemRex, Inc.
2. "AC-20", Pecora Corp.
3. "Tremco Acrylic Latex 834", Tremco, Inc.

ELASTOMERIC JOINT SEALANT DATA SHEET

Elastomeric Joint Sealant Designation: ES #7.

Base Polymer: Synthetic rubber.

Type: S (single component).

Grade: NS (nonsag).

Class: 25.

Additional Movement Capability: NA.

Use[s] Related to Exposure: NT (nontraffic).

Uses Related to Joint Substrates: M, G, A, and, as applicable to joint substrates indicated, O.

Use O Joint Substrates: Coated glass, color anodized aluminum, aluminum coated with a high-performance coating, galvanized steel, brick, granite, marble, ceramic tile, plastic, and wood.

Available Products:

1. Acoustic Sealant:

- a. "Sheetrock Acoustic Sealant", United States Gypsum Co.
- b. "AC-20 FTR Acoustic & Insulation Sealant", Pecora Corp.

2. Acoustic Sealant for Concealed Joints:
 - a. “BA-98”, Pecora Corp.
 - b. “Tremco Acoustic Sealant”, Tremco, Inc

ELASTOMERIC JOINT SEALANT DATA SHEET

Elastomeric Joint Sealant Designation: ES #8. Tape Sealant.

Base Polymer: Elastic modified butyl tape.

Type: S (single component).

Grade: NS (nonsag).

Class: 25.

Additional Movement Capability: 100 percent movement in extension and 50 percent in compression for a total of 150 percent movement.

Use[s] Related to Exposure: NT (nontraffic).

Uses Related to Joint Substrates: M, G, A, and, as applicable to joint substrates indicated, O.

Use O Joint Substrates: Coated glass, color anodized aluminum, aluminum coated with a high-performance coating, galvanized steel, brick, granite, marble, ceramic tile, and wood.

Available Products: 1. 1-1/2" w x 3/16".

ELASTOMERIC JOINT SEALANT DATA SHEET

Elastomeric Joint Sealant Designation: ES #9.

Base Polymer: Neutral-curing silicone.

Type: S (single component).

Grade: NS (non-sag).

Class: 25.

Additional Movement Capability: 100 percent movement in extension and 50 percent in compression for a total of 150 percent movement.

Use[s] Related to Exposure: NT (nontraffic).

Uses Related to Joint Substrates: M, G, A, and, as applicable to joint substrates indicated, O.

Use O Joint Substrates: EIFS, coated glass, color anodized aluminum, aluminum coated with a high-performance coating, galvanized steel, brick, granite, marble, ceramic tile, and wood.

Available]Products: 1. "790", Dow Corning.

ELASTOMERIC JOINT SEALANT DATA SHEET

Elastomeric Joint Sealant Designation: ES #10.

Base Polymer: Neutral-curing silicone.

Type: S (single component).

Grade: NS (nonsag).

Class: 25.

Additional Movement Capability: ±25 percent movement in extension and in compression for a total of ±25 percent movement.

Use[s] Related to Exposure: NT (nontraffic).

Uses Related to Joint Substrates: M, G, A, and, as applicable to joint substrates indicated, O.

Use O Joint Substrates: Coated glass, color anodized aluminum, aluminum coated with a high-performance coating, galvanized steel, brick, granite, marble, ceramic tile, and wood.

Available Products: 1. "790", Dow Corning.

Additional Notes: Allow for priming the adhesion surface of the copper flashing with Dow Corning 1200 OS or

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provide field adhesion test results acceptable to the sealant manufacturer.

END OF SECTION 079200

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Divisions 0 & 1 Specification Sections, apply to this Section.

1.2 SUMMARY:

- A. Section includes, but is not limited to the following:
 - 1. Hollow Metal Frames.
 - 2. Hollow Metal Doors.
 - 3. Hollow Metal Window Frames.
- B. Related Sections:
 - 1. Division 8 "Flush Wood Doors" for wood doors.
 - 2. Division 8 Section "Door Hardware" for door hardware.
 - 3. Division 8 Section "Glass and Glazing" for glazing.

1.3 REFERENCES:

- A. ASTM A653, specification for Steel Sheet, Zinc Coated.
- B. ANSI/SDI 100, Recommended Specifications for Standard Steel Doors and Frames.
- C. ANSI/SDI 119, Performance test Procedures for Steel Door Frames and Anchors.
- D. ANSI A151.1, Test Procedure and Acceptance Criteria for Physical Endurance, Steel Doors and Frames.
- E. ANSI/SDI A250.6 Recommended Practice for Hardware Reinforcing on Standard Steel Doors and Frames.
- F. ANSI A224.1, Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames.
- G. SDI 107, Hardware on Steel Doors, Reinforcement Application.
- H. Applicable model building code.
- I. California Title 24.

1.4 SUBMITTALS:

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specifications.

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- B. Shop drawings showing fabrication and installation of standard steel doors and frames. Include details of each frame type, elevations of door design types, conditions at openings, details of construction, location and installation requirements of door and frame hardware and reinforcements, and details of joints and connections. Show anchorage and accessory items.
 - 1. Provide schedule of doors and frames using same reference numbers for details and openings as those on Contract Documents.
 - 2. Indicate coordinate of glazing frames and stops with glass and glazing requirements.
- C. Certification of Compliance: Provide letter of certification that all materials comply with these Specifications.

1.5 QUALITY ASSURANCE:

- A. Steel Door and Frame Supplier: direct factory supplier who employs a Certified Door Consultant (CDC) or person with equivalent experience, available at reasonable times during course of Work, for consultation to Owner, Architect and Contractor.

1.6 DELIVERY, STORAGE, AND HANDLING:

- A. Delivery: coordinate delivery to the appropriate locations (shop or field) for installation.
- B. Storage of Doors: Doors shall be stored in an upright position under cover. Place the units on at least 4-inch high (101.6 mm) wood sills on floors in a manner that will prevent rust and damage. Do not use non-vented plastic or canvas shelters, which create a humidity chamber and promote rusting. If the corrugated wrapper on the door becomes wet, or moisture appears, remove the wrapper immediately. Provide a 1/4" (6.35 mm) space between the doors to promote air circulation.
- C. Storage of Frames: Frames shall be stored under cover on 4" (101.6 mm) wood sills on floors in a manner that will prevent rust and damage. Do not use non-vented plastic or canvas shelters, which create a humidity chamber and promote rusting. Assembled frames shall be stored in a vertical position, five units maximum in a stack. Provide a 1/4" (6.35 mm) space between frames to promote air circulation.
- D. Inspect delivered items for damage. Minor damage may be repaired provided repaired items are equal to new Work and accepted by the Architect. Provide new items when directed. Comply with VOC regulations when repairing damage.

1.7 SEQUENCING AND SCHEDULING

- A. Deliver doors and frames to the jobsite in a timely manner so not to delay progress of other trades.
- B. Issue purchase orders to suppliers so as not to interfere with normal quoted delivery times.

1.8 WARRANTY

- A. Steel doors and frames supplied with a one (1) year warranty against defects in materials and workmanship.

1.9 ENVIRONMENTAL

- A. Packaging and Disposal: package in biodegradable packs, paper or cardboard boxes. Dispose of non-biodegradable packs, plastic, styrofoam, polystyrene, and polyurethane to a licensed or authorized collector for proper disposal. Comply with the applicable standards and laws for VOC.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Subject to compliance with requirements, manufacturers offering doors and frames that may be incorporated in the Work include, but are not limited to, the following:
 - 1. Steelcraft Manufacturing Co., Cincinnati, Ohio
 - 2. Curries Co., Mason City, Iowa
 - 3. Ceco Corp., Oakbrook, Illinois

2.2 MATERIALS:

- A. Steel requirements: doors and frames manufactured of commercial quality, stretcher leveled flatness, cold rolled steel per ASTM A366 and A568 general requirements. Galvanized doors and frames to A60 minimum coating weight.
- B. Coating Materials:
 - 1. Primer: Manufacturer's standard rust inhibiting primer to ANSI A250.10.
- C. Core Materials:
 - 1. Doors: non-toxic honeycomb or vertical steel stiffened internal reinforcing manufactured of hot rolled, pickled and oiled steel per ASTM A569.
- D. Glass Light Frames: flush with door face, fabricated of 18 ga. steel.

2.3 FABRICATION

A. Doors:

- 1. Classification: SDI

LEVEL	MODEL	GAUGE	DESCRIPTION	CYCLES
IV	2	14	Maximum Duty, Seamless	1,000,000

- 2. Vertical lock edges:

- a. Beveled 1/8 inch in 2 inches.
- b. Exterior, seamless construction by tack welding and fill.
- c. Interior, manufacturers standard interlocking and glued edge.

3. Top and bottom channels:
 - a. Not less than 16 gauge, flush or inverted.
 - b. Welded to the face sheets.
 - c. Exterior doors: flush steel top channel.
 4. Door Louvers: Provide sightproof stationary louvers for interior doors where indicated. Construction of inverted V-shaped or Y-shaped blades formed of 24-gauge cold rolled steel set into minimum 20-gauge steel frame.
 - a. Exterior stationary louvers shall be rated for exterior use.
- C. Frames:
1. Construction:
 - a. 16 gauge cold rolled steel at interior locations; 14 gauge galvanized at exterior locations.
 - b. 12 gauge, full width, face and head reinforcement for non-labeled openings over 48" in door width.
 2. Corner Construction: weld full depth and face, grind smooth and re-prime. Weld includes faces, rabbets, soffit and stops.
 3. Provide temporary shipping spreaders to help protect frames from damage during transit and handling. Remove spreaders prior to setting frame.
- D. Frame Anchors:
1. Attachment to Drywall Construction (Exterior wall):
 - a. Manufacturers standard compression type for Drywall type frame.
 - b. Steel or Wood Stud type to accommodate frame jamb depth and face dimension on welded type frame.
 3. Provide one anchor for every 30 inches of jamb or fraction thereof.
 4. Floor Anchor: angle clip type:
 - a. 16 Gauge.
 - b. Two fasteners per jamb.
 - b. Weld to bottom of each jamb.
 5. Head Struts: per details.
- D. Preparation for Hardware:
1. Reinforce per SDI 107.
 2. Lock and Closer reinforcement: box type.
 3. Door Hinge reinforcement: 7 gauge or equivalent, Manufacturer's standard.
 4. Punch strike jambs to receive three silencers; double leaf frames to receive manufacturer's standard preparation.
 5. Hardware locations per "Recommended Locations for Builders' Hardware for Standard Steel Doors and Frames".
 6. Provide welded in place guards for all hardware cutouts in frame.
 7. Electrical preps: provide welded-in-place boxes, special designed anchors, raceways and access panels as required.

PART 3 - EXECUTION

3.1 SETTING FRAMES

- A. Set frames in accordance with SDI 105.
- B. Set welded frames in place prior to construction of adjacent partition work. Properly brace frame until permanent anchors are set.
- C. Install frames plumb and true with only hairline seam at corner joints.

3.2 DOOR INSTALLATION

- A. Clearances:
 - 1. The clearance between the door and frame head and jambs shall be 1/8" (3.2 mm) in the case of both single swing and pairs of doors.
 - 2. The clearance between the meeting edges of pairs of doors shall be 1/8" (3.2 mm) to 1/4" (6.3 mm), for fire rated doors 1/8" (3.2 mm) ± 1/16" (1.6 mm).
 - 3. The clearance at the bottom shall be [3/4" (19.1 mm)] [5/8" (15.8 mm)].
 - 4. The clearance between the face of the door and door stop shall be 1/16" (1.6 mm) to 1/8" (3.2 mm).
 - 5. All clearances shall be, unless otherwise specified, subject to a tolerance of ± 1/32" (0.8 mm).

3.3 ADJUSTMENT AND CLEANING

- A. Remove dirt and excess sealants, mortar, or glazing compounds from exposed surfaces.
- B. Adjust moving parts for smooth operation. Use shims as required.
- C. Fill dents, holes, etc. with metal filler and sand smooth and flush with adjacent surfaces. Paint to match adjacent surface.

END OF SECTION 081113

SECTION 081416 - FLUSH WOOD DOORS

04/09/15

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 0 & 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes, but is not limited, the following:
 - 1. Solid-core doors with wood-veneer faces.
 - 2. Louvers for flush wood doors.
- B. Related Sections include the following:
 - 1. Division 6 Section "Finish Carpentry" for wood door installation.
 - 2. Division 8 Section "Standard Steel Doors and Frames" for door frames.
 - 3. Division 8 Section "Door Hardware" for door hardware.
 - 4. Division 9 Section "Painting" for field applied finish.

1.3 SUBMITTALS

- A. Product Data: For each type of door. Include details of core and edge construction, trim for openings, and vision lights.
 - 1. Submit WI Certified Compliance Certificate indicating that doors meet requirements of grades specified.
- B. Shop Drawings: Submit drawings in conformance with the requirements of Architectural Woodwork Standards (AWS). Furnish a Woodwork Institute Certified Compliance Label on the first page of the shop drawing. Indicate location, size, and hand of each door; elevation of each kind of door; construction details not covered in Product Data; location and extent of hardware blocking; and other pertinent data.
 - 1. Indicate dimensions and locations of blocking.
 - 2. Indicate dimensions and locations of mortises and holes for hardware.
 - 3. Indicate dimensions and locations of cutouts.
 - 4. Undercuts
 - 5. Indicate requirements for veneer matching.
 - 6. Indicate doors to be factory finished and finish requirements.
 - 7. Indicate fire-protection ratings for fire-rated doors.
- C. Project Closeout Requirements:
 - 1. Lifetime door warranty.
- D. Samples for Initial Selection: For factory finished doors.
- E. Samples for Verification:

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1. Factory finished applied to actual door face materials, approximately 8 by 10 inches (200 by 250 mm), for each material and finish. For each wood species and transparent finish, provide set of three samples showing typical range of color and grain to be expected in the finished work.

F. Warranty: Sample of special warranty.

1.4 QUALITY ASSURANCE

A. Source Limitations: Obtain flush wood doors through one source from a single manufacturer.

B. Monitored Compliance:

1. All millwork and the installation thereof for this project shall be monitored for compliance to the contract documents by a Woodwork Institute Director of Architectural Services.
 - a. Full particulars of the Woodwork Institute Monitored Compliance Program may be found at the Institute web site at www.woodworkinstitute.com or by calling the administrative office at (916) 372 9943.
2. Millwork and/or installation found to be non compliant (and not corrected) will be rejected.
3. Issuance of a Monitored Compliance Certificate is a prerequisite of acceptance.
4. All fees charged by the Woodwork Institute for their Monitored Compliance program are the responsibility of the millwork manufacturer and/or installer and shall be included in their Contract proposal.

C. Quality Standard: Comply with the following standard:

1. WI Quality Standard: WI's "AWS Manual" for grade of door, core, construction, finish, and other requirements.

D. Manufacturer's Qualification:

1. A qualified manufacturer that is certified for chain of custody by an FSC-accredited certification body when FSC Certified wood is specified.
2. A qualified manufacturer that is a member in good standing of the Window and Door Manufacturers Association.

E. Installer Qualification:

1. A qualified installer that is certified for chain of custody by an FSC-accredited certification body when FSC Certified wood is specified.
2. A qualified installer that is a WI member in good standing and qualified user of the AWS method of workmanship.

F. Product Performance: Provide documents showing compliance to the following WDMA attributes, validating the specified WDMA Performance Duty Level:

1. Adhesive Bonding Durability: WDMA TM-6
2. Cycle Slam: WDMA TM-7
3. Hinge Loading: WDMA TM-8
4. Screw Holding: WDMA TM-10
 - a. Door Face
 - b. Vertical Door Edge
 - c. Horizontal Door Edge (applies when hardware is attached)

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1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials only when the project is ready for installation and the general contractor has provided a clean storage area.
 - 1. Delivery of architectural millwork shall be made only when the area of operation is enclosed, all plaster and concrete work is dry and the area broom clean.
 - 2. The work area shall be well ventilated and protected from direct sunlight, excessive heat, rain or moisture. Temperature shall be maintained between 60E and 90E F and relative humidity between 45% and 65%. The HVAC system shall be on and functioning.
- B. Protect doors during transit, storage, and handling to prevent damage, soiling, and deterioration. Comply with requirements of referenced standard and manufacturer's written instructions.
 - 1. Individually package doors in cardboard cartons and wrap bundles of doors in plastic sheeting.
 - 2. Comply with WI's Technical Bulletin 420-R for delivery, storage, and handling of doors.
- C. Mark each door with individual opening numbers used on Shop Drawings. Use removable tags or concealed markings.

1.6 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install doors until conditions for temperature and relative humidity have been stabilized and will be maintained in storage and installation areas during the remainder of the construction period to comply with requirements of the referenced quality standard for Project's geographical location.

1.7 WARRANTY

- A. General Warranty: Door manufacturer's warranty 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. Door Manufacturer's Warranty: Submit written agreement on door manufacturer's standard form, signed by manufacturer, Installer, and Contractor, agreeing to repair or replace defective doors that have warped (bow, cup, or twist) more than 1/4 inch (6.35 mm) in a 42-by-84-inch (1067-by-2134-mm) section or that show telegraphing of core construction in face veneers exceeding 0.01 inch in a 3-inch (0.25 mm in a 75-mm) span, or do not comply with tolerances in referenced quality standard.
 - 1. Warranty shall also include installation and finishing that may be required due to repair or replacement of defective doors.
 - 2. Warranty shall be in effect during the following period of time after the date of Notice of Completion:
 - a. Solid-Core Interior Doors: Life of installation.
- C. Provide a Woodwork Institute Monitored Compliance Certificate after complete installation of wood doors. If the project involves 2 buildings or more, the Contractor shall submit certification for each building. The certificate should be signed by the Director of WI stating that all wood doors were inspected by WI and has passed AWI's standard

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
1. Flush Wood Doors:
 - a. Algoma Hardwoods Inc.
 - b. Eggers Industries; Architectural Door Division.
 - c. Marshfield Door Systems
 - d. Graham Manufacturing Corp.
 - e. V-T Industries Inc.
 2. Metal Louvers for Doors:
 - a. Air Louvers, Inc.
 - b. Anemostat Door Products.
 - c. Construction Specialties, Inc.
 - d. Leslie-Locke, Inc.

2.2 DOOR CONSTRUCTION, GENERAL

- A. Doors for Transparent Stain Finish: Comply with the following requirements:
1. Grade: Premium, Grade AA face and back.
 2. Faces: White birch, plain sliced.
 3. Match between Veneer Leaves: Well match.
 4. Match within Door Faces: Balance match.
 5. Pair and Set Match: Provide for pairs of doors and for doors hung in adjacent sets.
 6. Stiles: Same species as face.
- B. Doors For Opaque Finish:
1. Interior Solid-Core Doors:
 2. Grade: Premium.
 3. Faces: Any closed-grain hardwood of mill option.
 4. Exposed Vertical and Top Edges: Any closed-grain hardwood.
 5. Core: Particleboard.
 6. Construction: Five or seven plies. Stiles and rails are bonded to core, then entire unit abrasive planed before veneering. Faces are bonded to core using a hot press.

2.4 SOLID-CORE DOORS

- A. Particleboard Cores: Comply with the following requirements:
1. Particleboard: ANSI A208.1, Grade LD-2.
- B. Blocking: Provide wood blocking at particleboard or core doors as follows:
1. 5-inch (125-mm) top-rail blocking.
 2. 5-inch (125-mm) bottom-rail blocking.
 3. 5-inch (125-mm) midrail blocking, at doors indicated to have exit devices.
 4. As necessary to eliminate need for through-bolting hardware.

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C. Interior Veneer-Faced Doors: Comply with the following requirements:

1. Core: Particleboard core, per ANSI 208.1, Grade #1-LD-2-1989.
2. Construction: Five plies with stiles and rails bonded to core, then entire unit abrasive planed before veneering.

2.5 LOUVERS

A. Metal Louvers: As follows:

1. Blade Type: Vision proof, inverted V.
2. Metal and Finish: Galvanized steel, 0.0396 inch (1.0 mm) thick, hot-dip zinc coated and factory primed for paint finish.
 - a. Color: Match Architect's sample.
3. Available Products: Subject to compliance with requirements, products which may be incorporated in the Work include, but are not limited to, the following:
4. Non-Fire Rated.
 - a. SDL-V90; K.N. Crowder Mfg., Inc.
 - b. AFDL; Anemostat Door Products.
 - c. 800 Series, Air Louver Inc.

2.6 FABRICATION

- A. Fabricate flush wood doors in sizes indicated for Project site fitting.
- B. Factory fit doors to suit frame-opening sizes indicated, with the following uniform clearances and bevels, unless otherwise indicated:
 1. Comply with clearance requirements of referenced quality standard for fitting. Comply with requirements of CBC for fire-rated doors.
- C. Factory machine doors for hardware that is not surface applied. Locate hardware to comply with DHI-WDHS-3. Comply with final hardware schedules, door frame Shop Drawings, DHI A115-W series standards, and hardware templates.
 1. Coordinate measurements of hardware mortises in metal frames to verify dimensions and alignment before factory machining.
- D. Openings: Cut and trim openings through doors to comply with applicable requirements of referenced standards for kind(s) of door(s) required.
 1. Louvers: Factory install louvers in prepared openings.

2.7 FACTORY FINISHING

- A. General: Comply with referenced quality standard for factory finishing. Complete fabrication including fitting doors for openings and machining for hardware that is not surface applied, before finishing.
 1. Finish faces, all four edges, edges of cutouts and mortises.
- B. Finish doors at factory.

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- C. Finish doors at factory that are indicated to receive stain and transparent finish. Field finish doors indicated to receive opaque finish.
- D. Transparent Finish:
 - 1. Grade: Premium Grade.
 - 2. Finish: AWS System #5 catalyzed polyurethane.
 - 3. Staining: Match Architect's sample.
 - 4. Sheen: Semigloss.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine installed door frames before hanging doors.
 - 1. Verify that frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with plumb jambs and level heads.
 - 2. Reject doors with defects.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Hardware: For installation, see Division 8 Section "Door Hardware."
 - 1. Hardware shall be installed complete and as required by the manufacturer.
- B. Install all doors in conformance with the Architectural Woodwork Standards, latest edition. Reference AWS Manual Section 9 "Doors".
 - 1. Installation shall conform to the AWS Grade of the items being installed.
 - 2. Doors shall be secured in place, square, plumb and level.
- C. Manufacturer's Written Instructions: Install wood doors to comply with manufacturer's written instructions, referenced quality standard, and as indicated.
- D. Factory-Fitted Doors: Align in frames for uniform clearance at each edge.
- F. Factory-Finished Doors: Restore finish before installation if fitting or machining is required at Project site.

3.3 ADJUSTING, TOUCH UP AND PROTECTING

- A. Before completion of installation, the installer shall adjust all moving and operating parts to function smoothly and correctly. Do not remove hinge screws after initial insertion. Shims used for alignment purposes must be inserted between hinge and frame. Do not insert shims between hinge and door.
- B. Operation: Rehang or replace doors that do not swing or operate freely.
- C. To prevent stile failure, insure that door closers are properly adjusted and do not limit the door opening swing. Limit door opening swing only with a properly located stop.

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- D. Protect doors as recommended by door manufacturer to ensure that wood doors are without damage or deterioration at the time of Notice of Completion.
- E. Finished Doors: Replace doors that are damaged or that do not comply with requirements. Doors may be repaired or refinished if work complies with requirements and shows no evidence of repair or refinishing.
- F. Upon completion of installation, the installer shall clean all installed items of pencil and ink marks, and broom clean the area of operation, depositing debris in containers provided by the Contractor.

END OF SECTION 081416

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 0 & 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes, but not limited to, access doors for installation in the following types of construction:
 - 1. Access Doors
- D. Related Sections: The Following Sections contain requirements that relate to this Sections:
 - 1. Division 9 Section "Gypsum Board Assemblies" for gypsum board walls and ceiling.
 - 3. Division 9 Section "Tile" for ceramic tile walls.
 - 6. Access doors for access to Mechanical items are indicated in Division 22,23,24 Sections. Coordinate with mechanical trades for quantity, size and location, access doors to be provided by this contractor.

1.3 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.
 - 2. Product data in form of manufacturer's technical data and installation instructions for each type of access door assembly, including setting drawings, templates, instructions, and directions for installation of anchorage, devices.
 - a. Include complete schedule, including types, general locations, sizes, wall and ceiling construction details, finishes, latching or locking provisions, and other data pertinent to installation.

1.4 QUALITY ASSURANCE

- A. Single-Source Responsibility: Obtain access doors for entire project from one source from a single manufacturer.
- B. Size Variations: Obtain Architect's acceptance of manufacturer's standard size units, which may vary slightly from sizes indicated.
- C. Coordination: Furnish inserts and anchoring devices that must be built into other work for installation of access doors. Coordinate delivery with other work to avoid delay.

1.5 PROJECT CONDITIONS

- A. Verification: Obtain specific locations and sizes for required access doors from trades requiring access to concealed equipment, valves, damper controls, and indicate on submittal schedule.

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PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering access doors that may be incorporated in the work include, but are not limited to, the following:
1. Bar-Co., Inc.
 2. Cesco Products
 3. J.L. Industries
 4. Karp Associates, Inc.
 5. Milcor, Inc.
 6. Nystrom Building Products.
 7. The Williams Brothers Corp.

2.2 MATERIALS AND FABRICATION

- A. General: Furnish each access door assembly manufactured as an integral unit, complete with all parts, and ready for installation.
- B. Steel Access Doors and Frames: Fabricate units of continuous welded steel construction unless otherwise indicated. Grind welds smooth and flush with adjacent surfaces. Furnish attachment devices and fasteners of type required to secure access panels to types of support shown.
- C. Frames: Fabricate from 16-gage steel.
- D. Frames: Fabricate from 16-gage, #4 satin-finished stainless steel at stainless steel access doors.
1. Fabricate frame with exposed flange nominal 1-inch wide around perimeter of frame for units installed in the following construction:
 - a. Gypsum Board finish.
 - b. Ceramic tile finish.
 - c. Acoustic Tile
 2. For gypsum drywall, gypsum veneer plaster, lath and plaster, furnish perforated frames with drywall bead.
- E. Cylinder lock: Provide one cylinder lock per access door. Furnish 2 keys per lock. Key all locks alike, unless otherwise scheduled.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Comply with manufacturer's instructions for installation of access doors.
- B. Coordinate installation with work of other trades.

3.2 ADJUST AND CLEAN

- A. Adjust hardware and panels after installation for proper operation.
- B. Remove and replace panels or frames that are warped, bowed, or otherwise damaged.

END OF SECTION 083113

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 0 & 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes Residential Grade aluminum windows of the performance class indicated. Window types required include the following:

- 1. Fixed windows 1" insulated glazing.

1.3 DEFINITIONS

- A. Performance class number, included as part of the window designation system, is the actual design pressure in pounds force per square foot (pascals) used to determine structural test pressure and water test pressure.

- 1. Structural test pressure, wind load test, is equivalent to 150 percent of the design pressure.
- 2. Water-leakage-resistance test pressure is equivalent to 15 percent of the design pressure with 2.86 lbf/sq. ft. (137 Pa) as a minimum for Residential, Commercial, and Heavy-Commercial Grade windows.

1.4 PERFORMANCE REQUIREMENTS

- A. General: Provide aluminum windows engineered, fabricated, and installed to withstand normal thermal movement, wind loading, and impact loading without failure, as demonstrated by testing manufacturer's standard window assemblies representing types, grades, classes, and sizes required for Project according to test methods indicated.
- B. Test Criteria: Testing shall be performed by a qualified independent testing agency based on the following criteria:
 - 1. Design wind velocity at Project site is 70 mi./h (113 km/h).
 - 2. Test Procedures: Test window units according to ASTM E 283 for air infiltration, ASTM E 547 for water penetration, and ASTM E 330 for structural performance.
- C. Performance Requirements: Testing shall demonstrate compliance with requirements indicated in AAMA 101 for air infiltration, water penetration, and structural performance for type, grade, and performance class of window units required. Where required design pressure exceeds the minimum for the specified window grade, comply with requirements of AAMA 101, Section 3, "Optional Performance Classes," for higher than minimum performance class.

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1. Air-Infiltration Rate for Fixed Windows: Not more than 0.15 cfm/ft. (2.74 cu. m/h per m) of area for an inward test pressure of 1.57 lbf/sq. ft. (75 Pa).
2. Water Penetration: No water penetration as defined in the test method at an inward test pressure of 15 percent of the design pressure.
3. Uniform Load Deflection: No deflection in excess of 1/175 of any member's span during the imposed load, for a positive (inward) and negative (outward) test pressure of 60 lbf/sq. ft. (2873 Pa).
4. Structural Performance: No failure or permanent deflection in excess of 0.4 percent of any member's span after removing the imposed load, for a positive (inward) and negative (outward) test pressure of 30 lbf/sq. ft. (1437 Pa).
5. Condensation Resistance: Where window units are indicated to be "thermally improved," provide units tested for thermal performance according to AAMA 1503.1 showing a condensation resistance factor (CRF) of 45.
6. Forced-Entry Resistance: Comply with Performance Level 10 requirements when tested according to ASTM F 588.
7. Thermal Movements: Provide window units that allow thermal movement resulting from the following maximum change (range) in ambient temperature when engineering, fabricating, and installing aluminum windows to prevent buckling, opening of joints, and overstressing of components, connections, and other detrimental effects. Base engineering calculation on actual surface temperatures of materials due to solar heat gain and nighttime sky heat loss.
 - a. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

1.5 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.
- B. Product Data for each type of window required, including the following:
 1. Construction details and fabrication methods.
 2. Profiles and dimensions of individual components.
 3. Data on finishes.
 4. Recommendations for maintaining and cleaning exterior surfaces.
- C. Shop Drawings showing fabrication and installation of each type of window required including information not fully detailed in manufacturer's standard Product Data and the following:
 1. Layout and installation details, including anchors.
 2. Elevations at 1/4 inch = 1 foot (1:50) scale and typical window unit elevations at 3/4 inch = 1 foot (1:20) scale.
 3. Full-size section details of typical composite members, including reinforcement and stiffeners.
 4. Location of weep holes.
 5. Panning details.
 6. Window cleaning provisions.
 7. Glazing details.
- D. Samples for initial color selection on 12-inch- (300-mm-) long sections of window members. Where finishes involve normal color variations, include Sample sets showing the full range of variations expected.

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- E. Test reports from a qualified independent testing agency indicating that each type, grade, and size of window unit complies with performance requirements indicated based on comprehensive testing of current window units within the last 5 years. Test results based on use of down-sized test units will not be accepted.

1.6 QUALITY ASSURANCE

- A. **Installer Qualifications:** Engage an experienced Installer who has completed installation of aluminum windows similar in material, design, and extent to those required for this Project and with a record of successful in-service performance.
- B. **Single-Source Responsibility:** Obtain aluminum windows from one source and by a single manufacturer.
- C. **Product Options:** The Drawings indicate sizes, profiles, dimensional requirements, and aesthetic effects of aluminum windows and are based on the specific window types and models indicated. Other aluminum window manufacturers whose products have equal performance characteristics may be considered provided deviations in size, profile, and dimensions are minor and do not alter the aesthetic effect. Refer to Division 1 Section "Substitutions."

1.7 PROJECT CONDITIONS

- A. **Field Measurements:** Check window openings by field measurements before fabrication and show recorded measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
 - 1. Where field measurements cannot be made without delaying the Work, guarantee opening dimensions and proceed with fabricating aluminum windows without field measurements. Coordinate wall construction to ensure that actual opening dimensions correspond to guarantee dimensions.

1.8 WARRANTY

- A. **General Warranty:** The special warranty 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. **Special Warranty:** Submit a written warranty signed by aluminum window manufacturer agreeing to repair or replace window components that fail in materials or workmanship within the specified warranty period. Failures include, but are not limited to, the following:
 - 1. Structural failures including excessive deflection, water leakage, air infiltration, or condensation.
 - 2. Faulty operation of sash and hardware.
 - 3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
- C. **Warranty Period for Metal Finishes and Glass:** 5 years after date of Substantial Completion.

PART 2 - PRODUCTS

BCSD – CAMPUS HVAC SYSTEM UPGRADE

2.1 MANUFACTURERS

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

1. Fixed Windows:
 - a. Alenco Commercial Division.
 - b. Arcadia
 - c. Kawneer

2.2 MATERIALS

- A. Aluminum Extrusions: Provide alloy and temper recommended by manufacturer for strength, corrosion resistance, and application of required finish, but not less than 22,000-psi (150-MPa) ultimate tensile strength and not less than 0.062 inch (1.6 mm) thick at any location for main frame and sash members. Integral plaster at exterior finish.
- B. Fasteners: Provide aluminum, nonmagnetic stainless steel, epoxy adhesive, or other materials warranted by manufacturer to be noncorrosive and compatible with aluminum window members, trim, hardware, anchors, and other components of window units.
1. Reinforcement: Where fasteners screw anchor into aluminum less than 0.125 inch (3.2 mm) thick, reinforce interior with aluminum or nonmagnetic stainless steel to receive screw threads or provide standard, noncorrosive, pressed-in, splined grommet nuts.
 2. Exposed Fasteners: Except where unavoidable for application of hardware, do not use exposed fasteners. For application of hardware, use fasteners that match finish of member or hardware being fastened, as appropriate.
- C. Anchors, Clips, and Window Accessories: Fabricate anchors, clips, and window accessories of aluminum, nonmagnetic stainless steel, or hot-dip zinc-coated steel or iron complying with requirements of ASTM B 633; provide sufficient strength to withstand design pressure indicated.
- D. Compression-Type Glazing Strips and Weatherstripping: Unless otherwise indicated, and at manufacturer's option, provide compressible stripping for glazing and weatherstripping such as molded EPDM or neoprene gaskets complying with ASTM D 2000 Designation 2BC415 to 3BC620, or molded PVC gaskets complying with ASTM D 2287, or molded expanded EPDM or neoprene gaskets complying with ASTM C 509, Grade 4.
- E. Sealant: For sealants required within fabricated window units, provide type recommended by manufacturer for joint size and movement. Sealant shall remain permanently elastic, nonshrinking, and nonmigrating. Comply with Division 7 Section "Joint Sealants" of these Specifications for selection and installation of sealants.

2.3 HARDWARE

- A. General: Provide manufacturer's standard hardware fabricated from aluminum, stainless steel, or other corrosion-resistant material compatible with aluminum and of sufficient strength to perform the function for which it is intended.

2.4 ACCESSORIES

BCSD – CAMPUS HVAC SYSTEM UPGRADE

- A. General: Provide manufacturer's standard accessories that comply with indicated standards.

2.5 FIXED WINDOWS

- A. Window Grade and Class: Comply with requirements of AAMA Grade and Performance Class F-DW-R15. Solar grey tint outside glass. Clear inside – 1” insulated glass assembly.

2.6 FABRICATION

- A. General: Fabricate aluminum window units to comply with indicated standards. Include a complete system for assembly of components and anchorage of window units.
 - 1. Provide units that are reglazable without dismantling sash or ventilator framing.
 - 2. Prepare window sash or ventilators for glazing, except where preglazing at the factory is indicated.
- B. Thermally Improved Construction: Fabricate window units with an integral, concealed, low-conductance, thermal barrier, located between exterior materials and window members exposed on interior, in a manner that eliminates direct metal-to-metal contact.

2.7 FINISHES

- A. Comply with NAAMM "Metal Finishes Manual" for recommendations relative to applying and designating finishes.
- B. Finish designations prefixed by AA conform to the system established by the Aluminum Association for designating aluminum finishes.
- C. Class II, Color Anodic Finish: AA-M12C22A32/A34 (Mechanical Finish: nonspecular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class II, integrally colored or electrolytically deposited color coating 0.010 mm or thicker).
 - 1. Color: Dark bronze.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Inspect openings before installation. Verify that rough opening is correct and sill plate is level.
 - 1. Wood frame walls shall be dry, clean, sound, well nailed, free of voids, and without off-sets at joints. Ensure nail heads are driven flush with surfaces in opening and within 3 inches (75 mm) of opening.

3.2 INSTALLATION

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- A. Comply with manufacturer's specifications and recommendations for installing window units and other components of the Work.
- B. Set window units plumb, level, and true to line, without warp or rack of frames or sash. Provide proper support and anchor securely in place.
 - 1. Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials by complying with requirements specified under "Dissimilar Materials" Paragraph in appendix to AAMA 101.
- C. Set sill members and other members in a bed of sealant or with joint fillers or gaskets, as shown on Shop Drawings, to provide weathertight construction. Refer to Division 7 Section "Joint Sealants" for compounds, fillers, and gaskets to be installed concurrently with window units. Coordinate installation with wall flashings and other components of the Work.
 - 1. Sealants, joint fillers, and gaskets to be installed after installation of window units are specified in another Division 7 Section.

3.3 FIELD QUALITY CONTROL

- A. Conduct on-site tests for air and water infiltration with window manufacturer's representative present. The Architect will select units to be tested. Tests not meeting specified requirements and units having similar deficiencies shall be corrected at no cost to the Owner. Testing shall be performed by a qualified independent testing agency selected by the Architect.
 - 1. Air-Infiltration Tests: Conduct tests according to requirements of ASTM E 783. Allowable infiltration shall not exceed 1.5 times the amount indicated.
 - 2. Water-Resistance Tests: Conduct tests according to requirements of ASTM E 1105. No water leakage is permitted.

3.4 CLEANING

- A. Clean aluminum surfaces promptly after installing windows. Exercise care to avoid damage to protective coatings and finishes. Remove excess glazing and sealant compounds, dirt, and other substances. Lubricate hardware and other moving parts.
- B. Clean glass of preglazed units promptly after installing windows. Comply with requirements of Division 8 Section "Glass and Glazing" for cleaning and maintenance.

3.5 PROTECTION

- A. Provide final protection and maintain conditions, in a manner acceptable to aluminum window manufacturer, that ensure window units are without damage or deterioration at the time of Substantial Completion.

END OF SECTION 085113

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SECTION 087100 - DOOR HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of contract, including General and Supplementary Conditions and Division 00 & 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes, but is not limited to the following:
 - 1. Door Hardware.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 06 Section "Finish Carpentry" for installation of hardware.
 - 2. Division 08 Section "Standard Steel Doors and Frames"
 - 3. Division 08 Section "Flush Wood Doors" for factory prefabricating and factory pre-machining of doors for door hardware.

1.3 REFERENCES:

- A. Use date of standard in effect as of Bid date.
- B. American National Standards Institute - ANSI 156.18 - Materials and Finishes.
- C. ADA - Americans with Disabilities Act of 2010
- D. BHMA - Builders Hardware Manufacturers Association
- E. DHI - Door and Hardware Institute
- F. UL - Underwriters Laboratories
 - 1. UL 305 - Panic Hardware
- G. WHI - Warnock Hersey Incorporated
- H. State of California Building Code
- I. SDI - Steel Door Institute
- J. WDI - Wood Door Institute
- K. AWI - Architectural Woodwork Institute
- L. NAAM - National Association of Architectural Metal Manufacturers

1.4 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 01 Specification sections.
- B. Product data including manufacturers' technical product data for each item of door hardware, installation instruction, maintenance of operating parts and finish, and other information necessary to show compliance with requirements.
- C. Organize schedule into "Hardware Sets" with an index of doors and heading, indicating complete designations of every item required for each door or opening. Include the following information:
 - 1. Type, style, function, size, quantity and finish of each hardware item. Use BHMA Finish codes as per ANSI A156.18.

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2. Name, part number and manufacturer of each item.
3. Fastenings and other pertinent information.
4. Location of hardware set cross referenced to indications on drawings both on floor plans and in door schedule.
5. Explanation of all abbreviations, symbols, and codes contained in schedule.
6. Mounting locations for hardware.
7. Door and frame sizes and materials and degree of swing.
8. Include a list of all manufacturers used and their nearest representative with address and phone number.
9. Submit manufacturer's technical data and installation instructions for the electronic hardware.
10. Provide data file of final installed hardware sets on compact disk with certification that hardware installed complies with Project requirements.

1.5 QUALITY ASSURANCE

A. Qualifications:

1. Obtain each kind of hardware (latch and lock sets, exit devices, hinges, and closers) from one manufacturer.
2. Supplier Qualifications: A recognized architectural door hardware supplier, with warehousing facilities in the Project's vicinity, that has a record of successful in-service performance for supplying door hardware similar in quantity, type, and quality to that indicated for this Project and that employs an experienced hardware consultant who is available to Owner, Architect, and Contractor, at reasonable times during the course of the Work, for consultation.
 - a. Require supplier to meet with Owner to develop and finalize keying requirements and to obtain final instructions in writing.
 - b. Be available for consultation with the Architect at no additional cost to the Owner during progress of construction at job site.
 - c. Be present at substantial completion of construction, and:
 - 1) Inspect installation of all finish hardware items.
 - 2) Make all minor adjustments required.
 - 3) Report to the Architect on completeness of the installation.

B. Exit Doors: Openable from the inside without the use of a key or any special knowledge or effort.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Acceptance at Site: Individually package each unit of finish hardware complete with proper fastening and appurtenances, clearly marked on the outside to indicate contents and specific locations in the Work.
- B. Deliver packaged hardware items at the times and to the locations (shop or field) for installation, as directed by the Contractor.
- C. Unused Hardware: Return new hardware not installed and existing hardware not indicated to be reinstalled to the Owner.
 1. Box and label in original manufacturer's-type boxes. Deliver to Owner to location directed by Architect.

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- D. Provide secure lock-up for door hardware delivered to the Project, but not yet installed. Control handling and installation of hardware items that are not immediately replaceable so that completion of the Work will not be delayed by hardware losses both before and after installation.

1.7 PROJECT CONDITIONS AND COORDINATION

- A. Coordination: Coordinate hardware with other work. Furnish hardware items of proper design for use on doors and frames of the thickness, profile, swing, security and similar requirements indicated, as necessary for proper installation and function, regardless of omissions or conflicts in the information on the Contract Documents.
 - 1. Embedded and attached items to concrete.
 - 2. Backing in walls for related hardware items.
 - 3. Finish floor materials and floor-mounted hardware, including height differentials.
 - 4. Furnish manufacturers templates to door and frame fabricators.
 - 5. Check Shop Drawings for doors and entrances to confirm that adequate provisions will be made for proper hardware installation.
 - a. Confirm that door manufacturers furnish necessary UBC-7-2 compliant seal system.
 - 6. Notify wood door supplier that proper blocking is required to support wood screws for panic hardware and door closers.
 - 8. Notify metal doors and frame supplier that proper reinforcement is required to support machine screws for panic hardware and door closers.
- B. Check the Shop Drawings for doors and entrances to confirm that adequate provisions will be made for the proper installation of hardware.
 - 1. Provide written documentation that this requirement has been done prior to installation of hardware.

1.8 WARRANTY

- A. Provide guarantee from hardware supplier as follows:
 - 1. Closers: Ten years.
 - 2. Exit Devices: Five years.
 - 3. All other Hardware: Two years.
- B. Provide written documentation that the Hardware supplier has made an inspection of the finished installation, including the electrical, electronic and pneumatic hardware, and has verified that the hardware is functioning properly and is installed per manufacturer's written instructions.

1.10 COMMISSIONING:

- A. Test door hardware operation with climate control system and both at rest and while in full operation.
- B. Test hardware systems for satisfactory operation.

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- 1.11 REGULATORY REQUIREMENTS:
- A. Locate latching hardware between 34” to 44” above the finished floor, per California Building Code, Section 1010-1.9.2 and 11B-404.2.7.
 - 1. Locate panic hardware between 36” to 44” above the finished floor.
 - B. Handles, pull, latches, locks, other operating devices: readily openable without tight grasping, tight pinching, or twisting of the wrist to operate. California Building Code 1010.1.9.1 and 11B-309.4.
 - C. Adjust doors to open with not more than 5.0 lbs pressure to open at exterior doors and 5.0 lbs at interior doors. As allowed per California Building Code, Section 11B-404.2.9, local authority may increase the allowable pressure for fire doors to achieve positive latching, but not to exceed 15 lbs.
 - D. Adjust door closer sweep periods so that from an open position of 90 degrees, the door will take at least 5 seconds to move to a point 12 degrees from the latch, measured to the landing side of the door, per California Building Code Section 11B-404.2.8.1.
 - E. Smooth surfaces at bottom 10” of push sides of doors, facilitating push-open with wheelchair footrests, per California Building Code Section 11B-404.2.10.
 - F. Door opening clear width no less than 32”, measured from face of frame stop, or edge of inactive leaf of pair of doors, to door face with door opened to 90 degrees. Hardware projection not a factor in clear width if located above 34” and the hardware projects no more than 4”. California Building Code Section 11B-404.2.3, 11B-404.2.4, and 1010.1.1.
 - G. Door opening clear height no less than 80” measured from top of sill to bottom of frame header stop. Projections into clear opening height not to exceed 4”. California Building Code Section 11B-404.2.3 and 1010.1.1.1.
 - H. Thresholds: floor or landing no more than 1/2” below the top of the threshold of the doorway. Change in level between 1/4” and 1/2”: beveled to slope no greater than 1:2 (50 percent slope). California Building Code Section 11B-404.2.5.
 - I. Floor stops: Do not locate in path of travel. Locate no more than 4” from walls.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Listed Acceptable Substitutes must provide the function and features of the specified product otherwise it will not be considered for substitution or approved.
- B. Items listed with no substitute, manufacturers have been established by the Owner to be the existing standard per public contract code. No substitutions will be considered.

Item:	Manufacturer:	Acceptable Substitution:
Hinges	(IVE) Ives	Hager
Cylinders	(YAL) Yale	Owner’s Standard
Locks	(YAL) Yale	Owner’s Standard
Exit Devices	(YAL) Yale	Owner’s Standard
Closers	(NOR) Norton	Owner’s Standard
Lock Guards	(TRI) Trimco	Owner’s Standard
Silencers	(IVE) Ives	Trimco

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Push & Pull Plates	(IVE) Ives	Trimco
Kickplates	(IVE) Ives	Trimco
Stops & Holders	(IVE) Ives	Trimco
Thresholds	(NGP) National Guard	Zero
Seals & Bottoms	(NGP) National Guard	Zero

- C. Furnish items of hardware required to complete the work in accordance with these specifications and the manufacturers instructions, including items of hardware inadvertently omitted from this specification. Items omitted to be of equal quality and type as indicated herein.
- D. Where the exact types of hardware specified are not adaptable to the finished shape or size of the members requiring hardware, furnish suitable types having as nearly as practicable the same operation and quality as the type specified, subject to Architect's approval.
- E. Carefully inspect Project for the extent of the finish hardware required to complete the Work. Where there is a conflict between these Specifications and the existing hardware, furnish finish hardware to specification.
 - 1. Provide notification of conflict to Architect thirty (30) days prior to Contractor proceeding with project hardware installation.

2.2 HANGING MEANS:

- A. Conventional Hinges: Hinge open widths minimum, but of sufficient throw to permit maximum door swing. Steel or stainless-steel pins and concealed bearings.
 - 1. Three hinges per leaf to 7 foot, 6 inch height. Add one for each additional 30 inches in height or fraction thereof.
 - 2. Outswinging exterior doors: non-ferrous with nonremovable (NRP) pins.
 - 3. Non-ferrous material exteriors and at doors subject to corrosive atmospheric conditions.
 - 4. Provide shims and shimming instructions for proper door adjustment.

2.3 LOCKSETS, LATCHSETS:

- A. Mortise Locksets and Latchsets: as scheduled.
 - 1. Latchbolts: 3/4-inch throw stainless steel anti-friction type.
 - 2. Strikes: 16 gage curved steel, bronze or brass with 1" deep box construction, lips of sufficient length to clear trim and protect clothing.
 - 3. Scheduled Lock Series and Design: Yale 8800 series, AUCN design.
 - 6. Certifications:
 - a. ANSI A156.13, 1994, Grade 1 Operational, Grade 1 Security.
 - b. ANSI/ASTM F476-84 Grade 30 UL Listed.
 - 7. Comply with CBC Section 11B-309.4.
- B. Extra Heavy Duty Cylindrical Locks and Latches: as scheduled.
 - 1. Lever Trim: accessible design, independent operation, spring-cage supported, minimum 2" clearance from lever mid-point to door face.
 - 2. Strikes: 16 gage curved steel, bronze or brass with 1" deep box construction, lips of sufficient length to clear trim and protect clothing.

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3. Lock Series and Design: Yale 5400LN series, "AU" design.
7. Certifications:
 - a. ANSI A156.2, 1994, Series 4000, Grade 1.
 - b. UL listed for A label and lesser class single doors up to 4ft x 8ft.
8. Comply with CBC Section 1010.1.10 and 11B-309.4.

2.4 EXIT DEVICES/PANIC HARDWARE

- A. General features:
 1. 3/4" throw deadlocking latchbolts.
 2. Push-through push-pad design.
 2. Non-handed basic device design with center case interchangeable with all functions, no extra parts required to effect change of function.
 3. Comply with CBC Section 1010.1.10.
- B. Specific features:
 1. Non-Fire Rated Devices: cylinder dogging.
 2. Comply with CBC Section 11B-309.4.

2.5 CLOSERS

- A. General: One manufacturer for closer units throughout the Work, including surface closers, high security closers, overhead concealed closers, floor closers, low-energy door operators and electromagnetic hold-open closers.
- B. Surface Closers:
 1. Full rack-and-pinion type cylinder.
 2. Thru-bolts at wood doors unless doors are provided with closer blocking. Non-sized and adjustable. Place closers inside building, stairs, and rooms.
 3. Plates, brackets and special templating when needed for interface with particular header, door and wall conditions and neighboring hardware.
 4. Adjustable to open with not more than 5.0lbs pressure to open at exterior doors and 5.0lbs at interior doors. As allowed per California Building Code, Section 11B-404.2.9, local authority may increase the allowable pressure for fire doors to achieve positive latching, but not to exceed 15lbs.
 5. Separate adjusting valves for closing speed, latching speed and backcheck, fourth valve for delayed action where scheduled.

2.6 OTHER HARDWARE

- A. Kick Plates: Four beveled edges, .050 inches minimum thickness, height and width as scheduled. Sheet-metal screws of bronze or stainless steel to match other hardware.
- B. Door stops: Provide stops to protect walls, casework or other hardware.
 1. Unless otherwise noted in Hardware Sets, provide wall type with appropriate fasteners. Where wall type cannot be used, provide floor type. If neither can be used, provide overhead type.
- C. Seals: Finished to match adjacent frame color. Resilient seal material: solid high-grade neoprene. UL label applied to seals on rated doors. Substitute products: certify that the products equal or exceed specified material's thickness and durability. Proposed substitutions: submit for approval.
 1. Solid neoprene: MIL Spec. R6855-CL III, Grade 40.
 2. Non-corroding fasteners at inswinging exterior doors.
- D. Thresholds: As scheduled and per details. Substitute products: certify that the products

equal or exceed specified material's thickness. Proposed substitutions: submit for approval.

1. Exteriors: Set in full bed of butyl-rubber or polyisobutylene mastic sealant complying with requirements in Division 7 "Thermal and Moisture Protection". Non-ferrous 1/4inch fasteners and lead expansion shield anchors, or Red-Head #SFS-1420 (or approved equivalent) Flat Head Sleeve Anchors (SS/FHSL).
- E. Fasteners: Generally, exposed screws to be Phillips or Robertson drive. Pinned TORX drive at high security areas. Flat head sleeve anchors (FHSL) may be slotted drive. Sheet metal and wood screws: full-thread. Sleeve nuts: full length to prevent door compression.
- F. Silencers: Interior hollow metal frames, 3 for single doors, 4 for pairs of doors. Omit where adhesive mounted seal occurs. Leave no unfilled/uncovered prepunched silencer holes.

2.7 FINISH

- A. Generally BHMA 626 Dull Chromium, unless otherwise noted.
- B. Door closers shall be factory powder coated to match other hardware, unless otherwise noted.
- C. Aluminum items: match predominant adjacent material.
- D. Seals to coordinate with frame color. Submit sample of colors to be selected from.

2.8 KEYING REQUIREMENTS

- A. Initiate and conduct meeting(s) with the Owner to determine the Key System requirements. Keying system shall be approved by Owner's representative in writing. Furnish construction key system in accordance with lock manufacturers standard. Where interchangeable core systems are used, use temporary cores for construction keying. Stamp keys "Do Not Duplicate".
 1. Key system: Yale. Verify keyway with owner.
- B. Locks and cylinders: Keyed at the factory of the lock manufacturer where permanent records are maintained. Locks and cylinders shall be of the same manufacturer.
- C. Permanent keys: Deliver only to Owner's representative.
- D. Quantity of Keys:
 1. Change Keys: Three per cylinder with a maximum of ten keys per keyed alike group. Furnish balance due as blanks.
 2. Master Keys: Six per set.
 3. Control Keys: Two.
 4. Construction Keys: Ten.
 5. Construction Control Keys: Two.
- E. Keying Schedule: Submit three copies indicating how the Owner's final instructions has been fulfilled.
- F. Key Transcript: Supply to Owner upon completion.
- G. Permanent cylinders and keys shall be delivered directly to the Owner. Upon Project completion, Owner shall install permanent cylinders.

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- H. Temporary cylinders shall be furnished and installed as required for security and testing for proper operation of locking hardware.

PART 3 - EXECUTION

3.1 HARDWARE LOCATIONS

- A. Locate hardware per SDI-100 and applicable building, fire, life-safety, accessibility and security codes.
 - 1. Where new hardware is to be installed near existing doors/hardware which are scheduled to remain, match locations of the existing hardware.
 - 2. Notify Architect of any code conflicts before ordering material.

3.2 INSTALLATION

- A. Mount hardware units at heights indicated in following applicable publications, except as specifically indicated or required to comply with governing regulations and except as otherwise directed by Architect.
 - 1. "Recommended Locations for Builders Hardware for standard Steel Doors and Frames" by Door and Hardware Institute and as indicated herein.
 - 2. NWWDA Industry Standard I.S.1.7, "Hardware Locations for Wood Flush Doors."
- B. Install each hardware item in compliance with the manufacturer's instructions and recommendations. Where cutting and fitting is required to install hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation or application of surface protection with finishing work specified in the Division 9 Sections. Do not install surface-mounted items until finishes have been completed on the substrates involved.
- C. Set units level, plumb, and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.
- D. Drill pilot holes for fasteners in wood doors and/or frames. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.
- E. Set thresholds for exterior doors in full bed of butyl-rubber or polyisobutylene mastic sealant complying with requirements specified in Division 7 Section "Joint Sealers."
- F. Gaskets: install jamb-applied gaskets before closers, overhead stops, rim strikes, etc; fasten hardware over and through these seals. Install sweeps across bottoms of doors before astragals, cope sweeps around bottom pivots, trim astragals to tops of sweeps.
- G. When hardware is to be attached to existing metal surface and insufficient reinforcement exists, use RivNuts, NutSerts or similar anchoring device for screws.
- H. Use manufacturers' fasteners furnished with hardware items, or submit Request for substitution with Architect.

3.3 ADJUSTING

- A. Adjust and check each operating item of hardware and each door, to ensure proper

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operation or function of every component. Replace components which cannot be adjusted, to operate freely and smoothly.

1. Hardware damaged by improper adjustment methods to be repaired or replaced to Owner's satisfaction.
- B. Inspection: Contractor will notify Architect that the hardware has been completely installed and correctly adjusted. Architect will perform verification of the installation.
- C. Final inspection: Installer to provide letter to Owner that upon completion installer has visited the Project and accomplished the following:
 1. Re-adjust all hardware.
 2. Evaluate maintenance procedures and recommend changes or additions, and instruct owner's personnel.
 3. Identify items that have deteriorated or failed.
 4. Submit a written report identifying problems.

3.4 DEMONSTRATION:

- A. Demonstrate hardware systems, including adjustment and maintenance procedures.

3.5 PROTECTION/CLEANING:

- A. Cover installed hardware, protect from paint, cleaning agents, weathering, carts/barrows, etc. Remove covering materials and clean hardware just prior to substantial completion.
- B. Clean adjacent wall, frame and door surfaces soiled from installation/reinstallation process.

3.6 SCHEDULE OF FINISH HARDWARE

- A. The Door Schedule on the Drawings indicates which Hardware Set is used with each door.

HW SET: 01

3	EA	HINGE	5BB1HW 5 X 4.5 NRP	630	IVE
1	EA	EXIT DEVICE	5CA-7155 X 632F	626	YAL
1	EA		IC MORTISE CYLINDER W/ TEMP CORE (DOGGING)	626	YAL
1	EA		IC RIM CYLINDER (W/ TEMP CORE)	626	YAL
2	EA		PERMANENT IC CORE ONLY	626	YAL
1	EA	SURFACE CLOSER	P7500	689	NOR
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	WALL STOP & HOLDER	WS40	626	IVE
2	EA	JAMB SEALS	700ES	CL	NGP
1	EA	HEAD SEAL	700SA	CL	NGP
1	EA	DOOR SWEEP	200NA	CL	NGP
1	EA	THRESHOLD	613 MS/LA	AL	NGP

INSTALL HEAD SEAL BEFORE CLOSER

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HW SET: 02

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	PRIVACY LOCK	AU5402LN	626	YAL
1	EA	SURFACE CLOSER	P7500	689	NOR
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	MOP PLATE	8400 4" X 1" LDW	630	IVE
1	EA	DOME STOP	FS438 435 436 437 AS REQU'D	626	IVE
3	EA	SILENCER	SR64	GRY	IVE

HW SET: 03

3	EA	HINGE	5BB1HW 5 X 4.5 NRP	630	IVE
1	EA	CLASSROOM LOCK	AU5417LN X 1210	626	YAL
1	EA	LOCK GUARD	5000-T	630	TRI
1	EA	SURFACE CLOSER	P7500	689	NOR
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	WALL STOP & HOLDER	WS40	626	IVE
2	EA	JAMB SEALS	700ES	CL	NGP
1	EA	HEAD SEAL	700SA	CL	NGP
1	EA	DOOR SWEEP	200NA	CL	NGP
1	EA	THRESHOLD	613 MS/LA	AL	NGP

INSTALL HEAD SEAL BEFORE CLOSER

HW SET: 04

3	EA	HINGE	5BB1HW 4.5 X 5 NRP	630	IVE
1	EA	CLASSROOM LOCK	357 X 2196	626	YAL
1	EA	PUSH PLATE	8200 8" X 16" CFTT	630	IVE
1	EA	PULL PLATE	8302-6 4" X 16" CFC	630	IVE
1	EA	SURFACE CLOSER	P7500-H	689	NOR
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	SECURITY FLOOR STOP	FS18S	BLK	IVE
2	EA	JAMB SEALS	700ES	CL	NGP
1	EA	HEAD SEAL	700SA	CL	NGP
1	EA	DOOR SWEEP	200NA	CL	NGP
1	EA	THRESHOLD	613 MS/LA	AL	NGP

INSTALL HEAD SEAL BEFORE CLOSER

HW SET: 05

1	EA	CLASSROOM LOCK	AUCN8808-2 X 2196	626	YAL
1	EA	SURFACE CLOSER	P7500	689	NOR

BALANCE OF EXISTING HARDWARE TO REMAIN

HW SET: 06

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1	EA	CLASSROOM LOCK	AU5417LN X 1210	626	YAL
1	EA	SURFACE CLOSER	P7500	689	NOR

BALANCE OF EXISTING HARDWARE TO REMAIN

END OF SECTION 087100

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 0 & 1 Specification sections, apply to work of this section.

1.2 SUMMARY:

- A. This Section includes, but not limited to, the following:
 - 1. Extent of glass and glazing work is indicated on drawings. Where glazing is added to existing system, tint of glass shall match existing. Adjacent to be picked from available manufactured tints. Provide safety glazing per CBC Code requirements.
 - a. 1" insulated glass - tinted.
 - b. 6 mm glass – tinted.
 - 2. Types of work in this section include glass and glazing for:
 - a. Storefront construction.
 - b. Hollow metal window/wall system.
 - c. Wood Doors.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 8 Section "Standard Steel Doors and Frames" for hollow metal windows.
 - 2. Division 8 Section "Aluminum Windows" for aluminum windows systems.

1.3 SYSTEM DESCRIPTION:

- A. Provide glass and glazing that has been produced, fabricated and installed to withstand normal thermal movement, wind loading and impact loading (where applicable), without failure including loss or breakage of glass, failure of sealants or gaskets to remain watertight and airtight, deterioration of glass and glazing materials and other defects in the work.
 - 1. Normal thermal movement is defined as that resulting from an ambient temperature range of 120 deg. F (67 deg. C) and from a consequent temperature range within glass and glass framing members of 180 deg. F (100 deg. C).
 - 2. Deterioration of insulating glass is defined as failure of hermetic seal due to other causes than breakage which results in intrusion of dirt or moisture, internal condensation or fogging, deterioration of protected internal glass coating, if any, resulting from seal failure, and any other visual evidence of seal failure or performance.
 - 3. Deterioration of coated glass is defined as the development of manufacturing defects including peeling, cracking or other indications of deterioration in metallic coating due to normal conditions of use.

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1.4 SUBMITTALS:

- A. Product Data: Submit manufacturer's technical data for each glazing material and fabricated glass product required, including installation and maintenance instructions.
- B. Samples: Submit, for verification purposes, 12" square samples of each type of glass indicated except for clear single pane units, and 12" long samples of each color required (except black) for each type of sealant or gasket exposed to view. Install sealant or gasket sample between two strips of material representative of adjoining framing system in color.
- C. Certificate: Submit certificates from respective manufacturers attesting that glass and glazing materials furnished for project comply with requirements.
 - 1. Separate certification will not be required for glazing materials bearing manufacturer's permanent labels designating type and thickness of glass, provided labels represent a quality control program involving a recognized certification agency or independent testing laboratory acceptable to authorities having jurisdiction.
- D. Compatibility and Adhesion Test Report: Submit statement from sealant manufacturer indicating that glass and glazing materials have been tested for compatibility and adhesion with glazing sealants and interpreting test results relative to material performance, including recommendations for primers and substrate preparation needed to obtain adhesion.
- E. Project Closeout Requirements:
 - 1. Insulated glass 5-year warranty.
 - 2. Laminated glass 5-year warranty.

1.5 PERFORMANCE REQUIREMENTS

- A. Passes positive pressure test standards UL10C and UL9.

1.6 QUALITY ASSURANCE:

- A. Glazing Standards: Comply with recommendations of Flat Glass Marketing Association (FGMA) "Glazing Manual" and "Sealant Manual" except where more stringent requirements are indicated. Refer to those publications for definitions of glass and glazing terms not otherwise defined in this section or other referenced standards.
- B. Safety Glazing Standard: Where safety glass is indicated by "SG", and/or required by authorities having jurisdiction, provide type of products indicated which comply with CBC 2406 and ANSI Z97.1 and testing requirements of 16 CFR Part 1201 for category II materials.
- C. Insulating Glass Certification Program: Provide insulating glass units permanently marked either on spacers or at least one component pane of units with appropriate certification label of inspecting and testing organization indicated below:
 - 1. Insulating Glass Certification Council (IGCC).
- D. Single Source Responsibility for Glass: To ensure consistent quality of appearance and performance, provide materials produced by a single manufacturer or fabricator for each kind and condition of glass indicated and composed of primary glass obtained from a single source for

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each type and class required.

- E. Glazing materials and glazing subject to human impact shall comply with CBC Chapter 24.

1.6 DELIVERY, STORAGE, AND HANDLING:

- A. Protect glass and glazing materials during delivery, storage and handling to comply with manufacturer's directions and as required to prevent edge damage to glass, and damage to glass and glazing materials from effects of moisture including condensation, of temperature changes, of direct exposure to sun, and from other causes.

1.7 PROJECT CONDITIONS:

- A. Environmental Conditions: Do not proceed with glazing when ambient and substrate temperature conditions are outside the limits permitted by glazing material manufacturer or when joint substrates are wet due to rain, frost, condensation or other causes.

1.8 WARRANTY:

- A. General: Warranties shall be in addition to, and not a limitation of, other rights the Owner may have under the Contract Documents.
- B. Manufacturer's Special Project Warranty on Insulating Glass: Provide written warranty signed by manufacturer of insulating glass agreeing to furnish f.o.b. point of manufacture, freight allowed project site, within specified warranty period indicated below, replacements for those insulating glass units developing manufacturing defects. Manufacturing defects are defined as failure or hermetic seal of air space (beyond that due to glass breakage) as evidenced by intrusion of dirt or moisture, internal condensation or fogging, deterioration of protected internal glass coatings, if any, and other visual indications of seal failure or performance; provided the manufacturer's instructions for handling, installing, protecting and maintaining units have been complied with during the warranty period.
 - 1. Warranty Period: Manufacturer's standard but not less than 5 years after date of notice of completion. All labor and related work to install replaced glass shall be included in warranty.

PART 2 - PRODUCTS

2.1 MANUFACTURERS:

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include; but are not limited to, the following:
 - 1. Clear and Tinted Float Glass:
 - a. PPG Industries, Inc.
 - 2. Insulating Glass:

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- a. PPG Industries, Inc.
3. Laminated Glass:
 - a. PPG Industries, Inc.
 - b. Pilkington Sales Limited.
 - c. Interpane Glass Co.

2.2 GLASS PRODUCTS, GENERAL:

- A. Primary Glass Standard: Provide primary glass which complies with ASTM C 1036 requirements, including those indicated by reference to type, class, quality, and, if applicable, form, finish, mesh and pattern.
- B. Heat-Treated Glass Standard: (Safety Glazing) Provide heat-treated glass which complies with ASTM C 1048 requirements, including those indicated by reference to kind, condition, type, quality, class, and, if applicable, form, finish, and pattern.
- C. Sizes: Fabricate glass to sizes required for glazing openings indicated, with edge clearances and tolerances complying with recommendations of glass manufacturer. Provide thicknesses indicated or, if not otherwise indicated, as recommended by glass manufacturer for application indicated.

2.3 PRIMARY GLASS PRODUCTS:

- A. Clear Float Glass: Type I (transparent glass, flat), Class 1 (clear), Quality q3 (glazing select).
 1. Low iron glass:
 - a. Thickness – 6mm
 - b. Visible light transmittance – 91%
 - c. Reflectance – 8%
 - d. U-Value – 5.8
 - e. Shading Coefficient – 1.03
 - f. Basis of Design- The design for each piece of glass is based on the product named. Subject to compliance with requirements, provide either the named product or an approved comparable product by one of the other manufactures specified. Subject to compliance with requirements, manufacturers offering glass that may be incorporated into the Work include, but are not limited to, the following. Model numbers and names for glass manufactured by PPG Starphire below are listed to establish a standard of quality for design, function, materials and workmanship. Other manufacturers may be submitted for evaluation by the Architect. Approval shall be obtained 45 days after Contract date. The Architect shall be the sole judge as to the acceptability of all products submitted for substitution.
 - i. Starphire Ultra Clear Glass by PPG
- B. Tinted Float Glass: Type I (transparent glass, flat), Class 2 (tinted heat absorbing and light reducing), Quality q3 (glazing select), and as follows:
 1. Grey: Manufacturer's standard tint, with visible light transmittance of 41-45 percent and shading coefficient of 0.67- 0.71 percent for 6mm thick glass.
 2. Refer to requirements for sealed insulating glass units for performance characteristics of assembled units composed of tinted glass, coated or uncoated, relative to visible light transmittance, U-values, shading coefficient and visible reflectance.

2.4 HEAT-TREATED GLASS PRODUCTS (SAFETY GLAZING):

- A. Manufacturing Process: Manufacture heat-treated glass as follows:
 - 1. By vertical (tong-held) or horizontal (roller hearth) process, at manufacturer's option, except provide horizontal process where indicated as "tong less" or "free of tong marks".
- B. Uncoated Clear Heat-Treated Float Glass: Condition A (uncoated surfaces), Type I (transparent glass, flat), Class 1 (clear), Quality q3 (glazing select), kind as indicated below.
 - 1. Kind FT (fully tempered) where indicated and required by CBC. (SG--Safety Glazing indicated on Construction Documents.)
- C. Uncoated Tinted Heat-Treated Float Glass: Condition A (uncoated surfaces), Type I (transparent glass, flat), Class 2 (tinted heat absorbing and light reducing), Quality q3 (glazing select), with tint color and performance characteristics for 1/4" thick glass matching those indicated for non-heat-treated tinted float glass; kind as indicated below:
 - 1. Kind FT (fully tempered) where indicated and required by CBC.

2.5 SEALED INSULATING GLASS UNITS:

- A. General: Provide preassembled units consisting of organically sealed panes of glass enclosing a hermetically sealed dehydrated air space and complying with ASTM E 2190 for performance classification indicated as well as with other requirements specified for glass characteristics, air space, sealing system, sealant, spacer material, corner design and desiccant.
 - 1. For properties of individual glass panes making up units, refer to product requirements specified elsewhere in this section applicable to types, classes, kinds and conditions of glass products indicated.
 - 2. Performance Classification per ASTM E 2190.
 - 3. Thickness of Each Pane: 1/4".
 - 4. Air Space Thickness: 1/2".
 - 5. Sealing System: Dual seal; primary and secondary sealant: manufacturer's standard materials.
 - 6. Spacer Material: Manufacturer's standard metal.
 - 7. Desiccant: Manufacturer's standard; either molecular sieve or silica gel or blend of both.
 - 8. Corner Construction: Manufacturer's standard corner construction.
 - 9. Where tinted and/or coated, provide exterior face tinted interior face clear.

2.6 LAMINATED GLASS

- A. Laminated Glass: ASTM C 1172, and complying with testing requirements in 16 CFR 1201 for Category II materials, and with other requirements specified. Use materials that have a proven record of no tendency to bubble, discolor, or lose physical and mechanical properties after fabrication and installation.
 - 1. Construction: Laminate glass with [polyvinyl butyral interlayer] [or] [cast-in-place and cured-transparent-resin interlayer] to comply with interlayer manufacturer's written recommendations.
 - 2. Interlayer Thickness: Provide thickness not less than that indicated and as needed to comply with requirements.

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3. Interlayer Color: Clear unless otherwise indicated.
4. See drawings for sizes and thicknesses.

2.7 GLASS TINTS BY MANUFACTURER

Available Manufacturers: Subject to Compliance with requirements, manufacturers offering products what may be incorporated in the Work include, but are not limited to, the following:

A. Basis of Design:

The design for each piece of glass is based on the product named. Subject to compliance with requirements, provide either the named product or an approved comparable product by one of the other manufactures specified. Subject to compliance with requirements, manufacturers offering glass that may be incorporated into the Work include, but are not limited to, the following. Model numbers and names for glass manufactured by PPG below are listed to establish a standard of quality for design, function, materials and workmanship. Other manufacturers may be submitted for evaluation by the Architect. Approval shall be obtained 45 days after Contract date. The Architect shall be the sole judge as to the acceptability of all products submitted for substitution.

B. Solargray low E coated-insulated glass

1. Surfaces:

- a. Exterior - surface 1 – Solargray tinted glass 6 mm
- b. Surface 2 – Solarban 70XL low E coating
- c. Interior - Surface 3 – Clear 6 mm
- d. Surface 4 - Clear

2. Manufactures:

- a. PPG Industries, Inc. ,“Solarban” 70 XL on “Solargray”

2.8 ELASTOMERIC GLAZING SEALANTS AND PREFORMED GLAZING TAPES:

A. General: Provide products of type indicated and complying with the following requirements:

1. Compatibility: Select glazing sealants and tapes of proven compatibility with other materials with which they will come into contact, including glass products, seals of insulating glass units, and glazing channel substrates, under conditions of installation and service, as demonstrated by testing and field experience.
2. Suitability: Comply with recommendations of sealant and glass manufacturers for selection of glazing sealants and tapes which have performance characteristics suitable for applications indicated and conditions at time of installation.
3. Elastomeric Sealant Standard: Provide manufacturer's standard chemically curing, elastomeric sealant of base polymer indicated which complies with ASTM C 920 requirements, including those for Type, Grade, Class and Uses.
4. Colors: Provide color of exposed sealants indicated or, if not otherwise indicated, as selected by Architect from manufacturer's standard colors.

B. One-Part Non-Acid-Curing Silicone Glazing Sealant: Type S; Grade NS, Class 25; Uses NT, G, A, and, as applicable to uses indicated, O; and complying with the following requirements for modulus and additional joint movement capability. (Indicated ES5 on Plans.)

1. Low Modulus: Tensile strength of 45 psi or less at 100 percent elongation when tested per ASTM D 412 after 14 days at 77 deg. F (20 deg. C) and 50 percent relative humidity.
2. Additional capability, when tested per ASTM C 719 for adhesion and cohesion under maximum cyclic movement, to withstand the following percentage increase and decrease

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of joint width, as measured at time of application, and remain in compliance with other requirements of ASTM C 920.

- a. 50 percent each way for a total 100% movement.
- C. Preformed Butyl-Polyisobutylene Glazing Tape: Provide manufacturer's standard solvent-free butyl-polyisobutylene formulation with a solids content of 100 percent; complying with AAMA A 804.1; in extruded tape form; non-staining and non-migrating in contact with nonporous surfaces; packaged on rolls with a release paper on one side; with or without continuous spacer rod as recommended by manufacturers of tape and glass for application indicated.
- D. Available Products: Subject to compliance with requirements, glazing sealants which may be incorporated in the work include, but are not limited to, the following:
1. One-Part Non-Acid Curing Low-Modulus Silicone Glazing Sealant:
 - a. "Dow Corning 795"; Dow Corning Corp.
 - b. "895"; Pecora Corp.
 2. Preformed Butyl-Polyisobutylene Glazing Tape Without Spacer Rod:
 - a. "Chem-Tape 40"; Bostik Construction Products Div.
 - b. "Extru-Seal"; Pecora Corp.
 - c. "PTI 303" Glazing Tape; Protective Treatments, Inc.
 - d. "Tremco 440 Tape"; Tremco Inc.
 3. Preformed Butyl-Polyisobutylene Glazing Tape With Spacer Rod:
 - a. "Chem-Tape 60"; Bostik Construction Products Div.
 - b. "Shim-Seal"; Pecora Corp.
 - c. "PTI 303" Shim Tape; Protective Treatments, Inc.
 - d. "Pre-shimmed Tremco 440 Tape"; Tremco Inc.

2.9 GLAZING GASKETS:

- A. Lock-Strip Gaskets: Neoprene extrusions of size and shape indicated, fabricated into frames with molded corner units and zipper lock strips, complying with ASTM C 542; black.
- B. Dense Elastomeric Compression Seal Gaskets: Molded or extruded gaskets of material indicated below, complying with ASTM C 864, of profile and hardness required to maintain watertight seal:
1. Neoprene.
 2. EPDM.
 3. Thermoplastic polyolefin rubber.
 4. Any material indicated above.
- C. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following:
1. Manufacturers of Lock-Strip Gaskets:
 - a. Cadillac Rubber & Plastics, Inc.

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- b. Maloney Precision Products Co.
 - c. The Standard Products Co.
2. Manufacturers of Preformed Gaskets:
- a. D. S. Brown Co.
 - b. Maloney Precision Products Co.
 - c. Tremco.

2.10 MISCELLANEOUS GLAZING MATERIALS:

- D. Compatibility: Provide materials with proven record of compatibility with surfaces contacted in installation.
- E. Cleaners, Primers and Sealers: Type recommended by sealant or gasket manufacturer.
- F. Setting Blocks: Neoprene, EPDM or silicone blocks as required for compatibility with glazing sealants, 80 to 90 Shore A durometer hardness.
- G. Spacers: Neoprene, EPDM or silicone blocks, or continuous extrusions, as required for compatibility with glazing sealant, of size, shape and hardness recommended by glass and sealant manufacturers for application indicated.
- H. Edge Blocks: Neoprene, EPDM or silicone blocks as required for compatibility with glazing sealant, of size and hardness required to limit lateral movement (side-walking) of glass.

PART 3 - EXECUTION

3.1 EXAMINATION:

- A. Require Glazier to inspect work of glass framing erector for compliance with manufacturing and installation tolerances, including those for size, squareness, offsets at corners; for presence and functioning of weep system; for existence of minimum required face or edge clearances; and for effective sealing of joinery. Obtain Glazier's written report listing conditions detrimental to performance of glazing work. Do not allow glazing work to proceed until unsatisfactory conditions have been corrected.

3.2 PREPARATION:

- A. Clean glazing channels and other framing members to receive glass, immediately before glazing. Remove coatings, which are not firmly bonded to substrates. Remove lacquer from metal surfaces where elastomeric sealants are indicated for use.

3.3 GLAZING, GENERAL:

- A. Comply with combined printed recommendations of glass manufacturers, of manufacturers of sealants, gaskets and other glazing materials, except where more stringent requirements are indicated, including those of referenced glazing standards.
- B. Glazing channel dimensions as indicated in details are intended to provide for necessary bite on

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glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances. Adjust as required by job conditions at time of installation.

- C. Protect glass from edge damage during handling and installation; use a rolling block in rotating glass units to prevent damage to glass corners. Do not impact glass with metal framing. Use suction cups to shift glass units within openings; do not raise or drift glass with a pry bar. Rotate glass with flares or bevels along one horizontal edge which would occur in vicinity of setting blocks so that these are located at top of opening. Remove from project and dispose of glass units with edge damage or other imperfections of kind that, when installed, weakens glass and impairs performance and appearance.
- D. Apply primers to joint surfaces where required for adhesion of sealants, as determined by pre-construction sealant-substrate testing.

3.4 GLAZING:

- A. Install setting blocks of proper size in sill rabbet, located one quarter of glass width from each corner, but with edge nearest corner not closer than 6" from corner, unless otherwise required. Set blocks in thin course of sealant, which is acceptable for heel bead use.
- B. Provide spacers inside and out, of correct size and spacing to preserve required face clearances, for glass sizes larger than 50 united inches (length plus height), except where gaskets or glazing tapes with continuous spacer rods are used for glazing. Provide 1/8" minimum bite of spacers on glass and use thickness equal to sealant width, except with sealant tape use thickness slightly less than final compressed thickness of tape.
- C. Provide edge blocking to comply with requirements of referenced glazing standard, except where otherwise required by glass unit manufacturer.
- D. Set units of glass in each series with uniformity of pattern, draw, bow and similar characteristics.
- E. Provide compressible filler rods or equivalent back-up material, as recommended by sealant and glass manufacturers, to prevent sealant from extruding into glass channel weep systems and from adhering to joints back surface as well as to control depth of sealant for optimum performance, unless otherwise indicated.
- F. Force sealants into glazing channels to eliminate voids and to ensure complete "wetting" or bond of sealant to glass and channel surfaces.
- G. Tool exposed surfaces of sealants to provide a substantial "wash" away from glass. Install pressurized tapes and gaskets to protrude slightly out of channel, so as to eliminate dirt and moisture pockets.
- H. Where wedge-shaped gaskets are driven into one side of channel to pressurize sealant or gasket on opposite side, provide adequate anchorage to ensure that gasket will not "walk" out when installation is subjected to movement.
- I. Miter cut wedge-shaped gaskets at corners and install gaskets in manner recommended by gasket manufacturer to prevent pull away at corners; seal corner joints and butt joints with sealant recommended by gasket manufacturer.

3.5 PROTECTION AND CLEANING:

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- A. Protect exterior glass from breakage immediately upon installation by use of crossed streamers attached to framing and held away from glass. Do not apply markers to surfaces of glass. Remove nonpermanent labels and clean surfaces.
- B. Protect glass from contact with contaminating substances resulting from construction operations. If, despite such protection, contaminating substances do come into contact with glass, remove immediately by method recommended by glass manufacturer.
- C. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less often than once a month, for build-up of dirt, scum, alkali deposits or staining. When examination reveals presence of these forms of residue, remove by method recommended by glass manufacturer.
- D. Remove and replace glass which is broken, chipped, cracked, abraded or damaged in other ways during construction period, including natural causes, accidents and vandalism.
- E. Wash glass on both faces not more than 4 days prior to date scheduled for inspections intended to establish date of substantial completion in each area of project. Wash glass by method recommended by glass manufacturer.

END OF SECTION 088000

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 0 and 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes, but not limited to the following:
 - 1. Patching exterior Portland cement plasterwork on metal lath at building tie-ins. Field verify.
 - 2. Mortar bed for tile.
- B. Related Sections:
 - 1. Division 6 Section "Rough Carpentry" for wood framing and furring included in portland cement plaster assemblies.
 - 2. Division 6 Section "Sheathing" for sheathing and water-resistant barriers included in portland cement plaster assemblies.
 - 3. Division 7 Section "Building Insulation" for thermal insulations and vapor retarders included in portland cement plaster assemblies.
 - 4. Division 7 Section "Flashing and Sheet Metal" for self-adhered waterproofing membrane.
 - 5. Division 9 Section "Tile" for ceramic tile.
 - 6. Division 9 Section "Painting" for paint coating over final coat finish.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: Show locations and installation of control and expansion joints including plans, elevations, sections, details of components, and attachments to other work.
- C. Samples for Verification: For each type of finish coat indicated; 12 by 12 inches (305 by 305 mm), and prepared on rigid backing.
- D. Comply with 2019 CBC, Chapter 25A.

1.4 QUALITY ASSURANCE

- A. DSA requirements: Exterior plaster system shall be provided and installed per CBC section 2506A.5

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store materials inside under cover and keep them dry and protected against damage from weather, direct sunlight, surface contamination, corrosion, construction traffic, and other causes.

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1.6 PROJECT CONDITIONS

- A. Comply with ASTM C 926 requirements.
- B. Interior Plasterwork: Maintain room temperatures at greater than 40 deg F (4.4 deg C) for at least 48 hours before plaster application, and continuously during and after application.
 - 1. Avoid conditions that result in plaster drying out during curing period. Distribute heat evenly; prevent concentrated or uneven heat on plaster.
 - 2. Ventilate building spaces as required to remove water in excess of that required for hydrating plaster in a manner that prevents drafts of air from contacting surfaces during plaster application and until plaster is dry.
- C. Exterior Plasterwork:
 - 1. Apply and cure plaster to prevent plaster drying out during curing period. Use procedures required by climatic conditions, including moist curing, providing coverings, and providing barriers to deflect sunlight and wind.
 - 2. Apply plaster when ambient temperature is greater than 40 deg F (4.4 deg C).
 - 3. Protect plaster coats from freezing for not less than 48 hours after set of plaster coat has occurred.

PART 2 - PRODUCTS

2.1 METAL LATH

- A. Expanded-Metal Lath: ASTM C 847 with ASTM A 653/A 653M, G60 (Z180), hot-dip galvanized zinc coating.
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Alabama Metal Industries Corporation; a Gibraltar Industries Company.
 - b. CEMCO.
 - c. Clark Dietrich Building Products - a Worthington Industries Company
 - d. MarinoWARE.
 - e. Phillips Manufacturing Co.
 - f. Chicago Metallic Corporation
 - g. Gold Bond Building Products Div., National Gypsum Co.
 - h. United States Gypsum Co.
 - 2. Recycled Content: Provide steel products with average recycled content such that postconsumer recycled content plus one-half of preconsumer recycled content is not less than 25 percent.
 - 3. Diamond-Mesh Lath: 3.4 lb/sq. yd. (1.8 kg/sq. m).
 - 4. Flat Rib Lath: Rib depth of not more than 1/8 inch (3.1 mm), 3.4 lb/sq. yd. (1.8 kg/sq. m).
- B. Wire-Fabric Lath:

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1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Davis Wire Corporation; a Heico Wire Group company.
 - b. Jaenson Wire Company.
 - c. Keystone Steel & Wire Co.
 - d. K-Lath; a division of Georgetown Wire.
 2. Woven-Wire Lath: ASTM C 1032; self-furring, with stiffener wire backing, 1.4 lb/sq. yd. (0.8 kg/sq. m).
- C. Paper Backing: FS UU-B-790, Type I, Grade B, Style 1a vapor-retardant paper.
1. Provide paper-backed lath unless otherwise indicated.

2.2 ACCESSORIES

- A. General: Comply with ASTM C 1063 and coordinate depth of trim and accessories with thicknesses and number of plaster coats required.
- B. Metal Accessories:
1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Alabama Metal Industries Corporation; a Gibraltar Industries company.
 - b. CEMCO.
 - c. Clark Western Building Systems.
 - d. Dietrich Metal Framing; a Worthington Industries company.
 - e. MarinoWARE.
 - f. Phillips Manufacturing Co.
 - g. Fry Reglet Corporation.
 2. Foundation Weep Scream: Fabricated from hot-dip galvanized-steel sheet, ASTM A 653/A 653M, G60 (Z180) zinc coating.
 3. Cornerite: Fabricated from metal lath with ASTM A 653/A 653M, G60 (Z180), hot-dip galvanized zinc coating.
 4. Cornerbeads: Fabricated from zinc-coated (galvanized) steel.
 5. Casing Beads: Fabricated from zinc-coated (galvanized) steel] square-edged style; with expanded flanges.
 6. Control Joints: Fabricated from zinc-coated (galvanized) steel; one-piece-type, folded pair of unperforated screeds in M-shaped configuration; with perforated flanges and removable protective tape on plaster face of control joint.

2.3 MISCELLANEOUS MATERIALS

- A. Water for Mixing: Potable and free of substances capable of affecting plaster set or of damaging plaster, lath, or accessories.

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- B. Fiber for Base Coat: Alkaline-resistant glass or polypropylene fibers, 1/2 inch (13 mm) long, free of contaminants, manufactured for use in Portland cement plaster.
- C. Bonding Compound: ASTM C 932.
- D. Steel Drill Screws: For metal-to-metal fastening, ASTM C 1002 or ASTM C 954, as required by thickness of metal being fastened; with pan head that is suitable for application; in lengths required to achieve penetration through joined materials of no fewer than three exposed threads.
- E. Fasteners for Attaching Metal Lath to Substrates: Complying with ASTM C 1063.
- F. Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, not less than 0.0475-inch (1.21-mm) diameter, unless otherwise indicated.

2.4 PLASTER MATERIALS

- A. Portland Cement: ASTM C 150, Type I or Type II.
 - 1. Color for Finish Coats: White.
- B. Masonry Cement: ASTM C 91, Type N.
 - 1. Color for Finish Coats: White.
- C. Lime: ASTM C 206, Type S; or ASTM C 207, Type S.
- D. Sand Aggregate: ASTM C 897.
 - 1. Color for Job-Mixed Finish Coats: In color matching Architect's sample.

2.5 PLASTER MIXES

- A. General: Comply with ASTM C 926 for applications indicated.
 - 1. Fiber Content: Add fiber to base-coat mixes after ingredients have mixed at least two minutes. Comply with fiber manufacturer's written instructions for fiber quantities in mixes, but do not exceed 1 lb of fiber/cu. yd. (0.6 kg of fiber/cu. m) of cementitious materials.
- B. Base-Coat Mixes for Use over Metal Lath: Scratch and brown coats for three-coat plasterwork as follows:
 - 1. Portland Cement Mixes:
 - a. Scratch Coat: For cementitious material, mix 1 part portland cement and 3/4 to 1-1/2 parts lime. Use 2-1/2 to 4 parts aggregate per part of cementitious material.
 - b. Brown Coat: For cementitious material, mix 1 part portland cement and 3/4 to 1-1/2 parts lime. Use 3 to 5 parts aggregate per part of cementitious material, but not less than volume of aggregate used in scratch coat.
- C. Job-Mixed Finish-Coat Mixes:

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1. Portland Cement Mix: For cementitious materials, mix 1 part portland cement and 1-1/2 to 2 parts lime. Use 1-1/2 to 3 parts aggregate per part of cementitious material.
2. Masonry Cement Mix: 1 part masonry cement and 1-1/2 to 3 parts aggregate.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames, cast-in anchors, and structural framing, for compliance with requirements and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Protect adjacent work from soiling, spattering, moisture deterioration, and other harmful effects caused by plastering.
- B. Prepare solid substrates for plaster that are smooth or that do not have the suction capability required to bond with plaster according to ASTM C 926.

3.3 INSTALLATION, GENERAL

- A. Thermal: Where required, install blankets before installing lath unless blankets are readily installed after lath has been installed on one side.
- B. Provide two (2) layers of Type I paper backing at shear walls and wood framing with plywood.

3.4 INSTALLING METAL LATH

- A. Expanded-Metal Lath: Install according to ASTM C 1063.
 1. Partition Framing and Vertical Furring: Install flat rib lath.
 2. Flat-Ceiling and Horizontal Framing: Install flat rib 3/8-inch (9.5-mm) rib lath.
 3. On Solid Surfaces, Not Otherwise Furred: Install self-furring, diamond-mesh lath.
 4. Self furring lath shall be installed per DSA IR 25-4.

3.5 INSTALLING ACCESSORIES

- A. Install according to ASTM C 1063 and at locations indicated on Drawings.
- B. Reinforcement for External Corners:
 1. Install lath-type, external-corner reinforcement at exterior locations.
 2. Install cornerbead at interior locations.
- C. Control Joints: Install control joints at locations indicated on Drawings and required herein.

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1. As required to delineate plasterwork into areas (panels) of the following maximum sizes:
 - a. Vertical Surfaces: 144 sq. ft. (13.4 sq. m).
 - b. Horizontal and other Nonvertical Surfaces: 100 sq. ft. (9.3 sq. m).
2. At distances between control joints of not greater than 18 feet (5.5 m) o.c.
3. As required to delineate plasterwork into areas (panels) with length-to-width ratios of not greater than 2-1/2:1.
4. Where control joints occur in surface of construction directly behind plaster.
5. Where plasterwork areas change dimensions, to delineate rectangular-shaped areas (panels) and to relieve the stress that occurs at the corner formed by the dimension change.

3.6 PLASTER APPLICATION

- A. General: Comply with ASTM C 926.
 1. Do not deviate more than plus or minus 1/4 inch in 10 feet (6.4 mm in 3 m) from a true plane in finished plaster surfaces, as measured by a 10-foot (3-m) straightedge placed on surface.
 2. Finish plaster flush with metal frames and other built-in metal items or accessories that act as a plaster ground unless otherwise indicated. Where casing bead does not terminate plaster at metal frame, cut base coat free from metal frame before plaster sets and groove finish coat at junctures with metal.
- B. Concealed Exterior Plasterwork: Where plaster application will be used as a base for adhered finishes, omit finish coat.
- C. Concealed Interior Plasterwork:
 1. Where plaster application will be concealed behind built-in cabinets, similar furnishings, and equipment, apply finish coat.
 2. Where plaster application will be concealed above suspended ceilings and in similar locations, finish coat may be omitted.
 3. Where plaster application will be used as a base for adhesive application of tile and similar finishes, omit finish coat.

3.7 PLASTER REPAIRS

- A. Repair or replace work to eliminate cracks, dents, blisters, buckles, crazing and check cracking, dry outs, efflorescence, sweat outs, and similar defects and where bond to substrate has failed.

3.8 PROTECTION

- A. Remove temporary protection and enclosure of other work. Promptly remove plaster from door frames, windows, and other surfaces not indicated to be plastered. Repair floors, walls, and other surfaces stained, marred, or otherwise damaged during plastering.

END OF SECTION 092400

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 0 & 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes, but not limited to, the following:
 - 1. Gypsum board assemblies attached to wood framing and furring members.
 - 2. Backing for accessories not limited to door hardware, hold opens, grab bars, accessories, related items and misc. items.
 - 3. Patching existing walls - match adjacent finish.
 - 4. Interior gypsum board wall panels.
- B. Related Sections include the following:
 - 1. Division 6 Section "Rough Carpentry" for wood framing and furring.
 - 2. Division 7 Section "Building Insulation" for insulation and vapor retarders installed in gypsum board assemblies.
 - 3. Division 7 Section "Firestopping" for firestopping systems and fire-resistive-rated joint sealants.
 - 4. Division 7 Section "Joint Sealants" for related sealants.

1.3 DEFINITIONS

- A. Gypsum Board Terminology: Refer to ASTM C 11 for definitions of terms for gypsum board assemblies not defined in this Section or in other referenced standards.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples: For the following products:
 - 1. Textured Finishes: For each textured finish indicated and on same backing indicated for Work.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in original packages, containers, or bundles bearing brand name and identification of manufacturer or supplier.

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- B. Store materials inside under cover and keep them dry and protected against damage from weather, direct sunlight, surface contamination, corrosion, construction traffic, and other causes. Stack gypsum panels flat to prevent sagging.

1.6 PROJECT CONDITIONS

- A. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Gypsum Board and Related Products:
 - a. American Gypsum Co.
 - b. Georgia Pacific Gypsum LLC.
 - c. National Gypsum Company.
 - d. United States Gypsum Co.

2.2 INTERIOR GYPSUM WALLBOARD

- A. Panel Size: Provide in maximum lengths and widths available that will minimize joints in each area and correspond with support system indicated.
- B. Glass-Mat Interior Gypsum Board: ASTM C 1658/C 1658M. With fiberglass mat laminated to both sides. Specifically designed for interior use.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but not limited to the following:
 - a. Georgia-Pacific Gypsum LLC; DensArmour Plus®
 - b. National Gypsum Company, eXP Extreme
 - 2. Core: 5/8 inch (15.9 mm), Type X and 5/8 inch (15.9 mm), abuse resistant
 - 3. Long Edge: Tapered.
 - 4. Mold Resistance: ASTM D 3273, score of 10.
- C. Gypsum Wallboard: ASTM C 1396/ C 1396 with moisture and mold resistant core and paper faces.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but not limited to the following:
 - a. Georgia-Pacific Gypsum LLC
 - b. National Gypsum Company

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2. Core: 5/8 inch (15.9 mm), Type X
3. Long Edge: Tapered.
4. Mold Resistance: ASTM D 3273, score of 10.

2.3 TILE BACKING PANELS

- A. Panel Size: Provide in maximum lengths and widths available that will minimize joints in each area and correspond with support system indicated.
- B. Glass-Mat, Water-Resistant Backing Board: ASTM C 1178/C 1178M.
 1. Available Product: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to,
 - a. "Dens-Shield Tile Backer" manufactured by G-P Gypsum Corp.
 - b. eXP Tile backer, manufactured by National Gypsum Company
 2. Core: 5/8 inch (15.9 mm), Type X.

2.4 TRIM ACCESSORIES

- A. Interior Trim: ASTM C 1047.
 1. Material: Galvanized or aluminum-coated steel sheet, rolled zinc or paper-faced galvanized steel sheet.

2.5 JOINT TREATMENT MATERIALS

- A. General: Comply with ASTM C 475.
- B. Joint Tape:
 1. Interior Gypsum Wallboard: Glassmat or Paper.
 2. Glass-Mat Gypsum Sheathing Board: 10-by-10 glass mesh.
 3. Tile Backing Panels: As recommended by panel manufacturer.
- C. Joint Compound for Interior Gypsum Wallboard: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.
 1. Prefilling: At open joints, rounded or beveled panel edges, and damaged surface areas, use setting-type taping compound.
 2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use.
 - a. Use setting-type compound for installing paper-faced metal trim accessories.
 3. Fill Coat: For second coat, use setting-type, sandable topping compound.
 4. Finish Coat: For third coat, use setting-type, sandable topping compound.
 5. Skim Coat: For final coat of Level 5 finish, use setting-type, sandable topping compound.

2.6 AUXILIARY MATERIALS

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- A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written recommendations.
- B. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.
 - 1. Use screws complying with ASTM C 954 for fastening panels to steel members from 0.033 to 0.112 inch (0.84 to 2.84 mm) thick.
- C. Sound Attenuation Blankets: ASTM C 665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers manufactured from glass, slag wool, or rock wool.
- D. Thermal Insulation: As specified in Division 7 Section "Building Insulation."

2.7 TEXTURE FINISHES

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Texture Finish:
 - a. Goldbond Building Products, "Perfect Spray Em."
 - b. United States Gypsum Co.; SHEETROCK Wall and Ceiling Spray Texture.
 - c. Georgia Pacific, "GyProc Wall and Ceiling Texture."
 - 2. Primer:
 - a. Hamilton Materials, "Prep Coat Plus."
 - b. PPG SpeedHide® Max-Build High Build Drywall Surfacer 6-1.
 - c. Sherwin Williams Builders Solution A63W100 Latex Surfacer.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames, cast-in anchors, and structural framing, for compliance with requirements and other conditions affecting performance. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 APPLYING AND FINISHING PANELS, GENERAL

- A. Use moisture and mold resistance gypsum board in the following areas:
 - 2. Restrooms
- B. Gypsum Board Application and Finishing Standards: ASTM C 840 and GA-216.
- C. Install sound attenuation blankets before installing gypsum panels, unless blankets are readily installed after panels have been installed on one side.

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- D. Install ceiling board panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in the central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.
- E. Install gypsum panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch (1.5 mm) of open space between panels. Do not force into place.
- F. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.
- G. Attach gypsum panels to steel studs so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.
- H. Attach gypsum panels to framing provided at openings and cutouts.
- I. Cover both faces of stud partition framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.
- J. Space fasteners in gypsum panels according to referenced gypsum board application and finishing standard and manufacturer's written recommendations.
 - 1. 12" OC maximum, see drawings for more restrictive locations.
- K. Clean all stud cavities of debris, excess materials and dust prior to closing wall in.

3.3 PANEL APPLICATION METHODS

- A. Single-Layer Application:
 - 1. On ceilings, apply gypsum panels before wall/partition board application to the greatest extent possible and at right angles to framing, unless otherwise indicated.
 - 2. On partitions/walls, apply gypsum panels horizontally (perpendicular to framing), unless otherwise indicated or required by fire-resistance-rated assembly, and minimize end joints.
 - a. Stagger abutting end joints not less than one framing member in alternate courses of board.
- B. Single-Layer Fastening Methods: Apply gypsum panels to supports with steel drill screws.
 - 1. #6 x 1" minimum.
- D. Tile Backing Panels:
 - 1. Glass Mat, Water Resistant Backing Panel: Comply with manufacturer's written installation instructions and install at showers and where indicated to receive tile. Install with ¼-inch (6.4mm) gap where panels abut other construction or penetrations.
 - 2. Cementitious Backer Units: ANSI A108.11 at locations indicated on plans.
 - 3. Areas Not Subject to Wetting: Install standard gypsum wallboard panels to produce a flat surface except at showers, tubs and other locations indicated to receive water-resistant panels.

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4. Where tile backing panels abut other types of panels in the same plane, shim surfaces to produce a uniform plane across panel surfaces.
5. Provide membrane per installation requirements per TCNA assembly.

3.4 INSTALLING TRIM ACCESSORIES

- A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.

3.5 FINISHING GYPSUM BOARD ASSEMBLIES

- A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.
- B. Prefill open joints, rounded or beveled edges, and damaged surface areas.
- C. Apply joint tape over gypsum board joints, except those with trim having flanges not intended for tape.
- D. Gypsum Board Finish Levels: Finish panels to levels indicated below, according to ASTM C 840, for locations indicated:
 1. Level 1: Embed tape at joints in ceiling plenum areas, concealed areas, and where indicated, unless a higher level of finish is required for fire-resistance-rated assemblies and sound-rated assemblies.
 2. Level 2: Embed tape and apply separate first coat of joint compound to tape, fasteners, and trim flanges where [panels are substrate for acoustical tile].
 3. Level 3: Embed tape and apply separate first and fill coats of joint compound to tape, fasteners, and trim flanges where indicated.
 4. Level 4: Embed tape and apply separate first, fill, and finish coats of joint compound to tape, fasteners, and trim flanges at panel surfaces that will be exposed to view, unless otherwise indicated.
 5. Level 5: Embed tape and apply separate first, fill, and finish coats of joint compound to tape, fasteners, and trim flanges, and apply skim coat of joint compound over entire surface where indicated.
- E. Glass-Mat Gypsum Sheathing Board: Finish according to manufacturer's written instructions for use as exposed soffit board.
- F. Glass-Mat, Water-Resistant Backing Panels: Finish according to manufacturer's written instructions.

3.9 APPLYING TEXTURE FINISHES

- A. Surface Preparation and Primer: Prepare and apply primer to gypsum panels and other surfaces receiving texture finishes prior to applying texture finish. Apply primer to surfaces that are clean, dry, and smooth. The primer shall be applied to a dry film thickness of 1.7 to 1.8 mils.
- B. Texture Finish Application: Mix and apply finish using powered spray equipment, to produce a uniform texture matching approved mockup and free of starved spots or other evidence of thin application or of application patterns.

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1. Texture: Match existing.

- C. Prevent texture finishes from coming into contact with surfaces not indicated to receive texture finish by covering them with masking agents, polyethylene film, or other means. If, despite these precautions, texture finishes contact these surfaces, immediately remove droppings and overspray to prevent damage according to texture finish manufacturer's written recommendations. Light stipple at restrooms and selected rooms painted semi-gloss.

3.10 FIELD QUALITY CONTROL.

- A. Above-Ceiling Observation: The Architect will conduct an above-ceiling observation before installing gypsum board ceilings and report deficiencies in the Work observed. Do not proceed with installation of gypsum board to ceiling support framing until deficiencies have been corrected.

1. Notify the Architect seven days in advance of date and time when Project, or part of Project, will be ready for above-ceiling observation.

END OF SECTION 092900

SECTION 093013 - CERAMIC TILING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:

1. Unglazed ceramic mosaic tile.
2. Glazed wall tile.
3. Waterproof membrane for thinset applications.
4. Crack isolation membrane.

- B. Related Requirements:

1. Section 079200 "Joint Sealants" for sealing of expansion, contraction, control, and isolation joints in tile surfaces.
2. Section 092900 "Gypsum Board" for glass-mat, water-resistant gypsum board.

1.3 DEFINITIONS

- A. General: Definitions in the ANSI A108 series of tile installation standards and in ANSI A137.1 apply to Work of this Section unless otherwise specified.
- B. ANSI A108 Series: ANSI A108.01, ANSI A108.02, ANSI A108.1A, ANSI A108.1B, ANSI A108.1C, ANSI A108.4, ANSI A108.5, ANSI A108.6, ANSI A108.8, ANSI A108.9, ANSI A108.10, ANSI A108.11, ANSI A108.12, ANSI A108.13, ANSI A108.14, ANSI A108.15, ANSI A108.16, and ANSI A108.17, which are contained in its "Specifications for Installation of Ceramic Tile."
- C. Face Size: Actual tile size, excluding spacer lugs.
- D. Module Size: Actual tile size plus joint width indicated.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 1. Review requirements in ANSI A108.01 for substrates and for preparation by other trades.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.

- B. Shop Drawings: Show locations of each type of tile and tile pattern. Show widths, details, and locations of expansion, contraction, control, and isolation joints in tile substrates and finished tile surfaces.
- C. Samples for Verification:
 - 1. Full-size units of each type and composition of tile and for each color and finish required. For ceramic mosaic tile in color blend patterns, provide full sheets of each color blend.
 - 2. Full-size units of each type of trim and accessory for each color and finish required.

1.6 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match and are from same production runs as products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Tile and Trim Units: Furnish quantity of full-size units equal to 3 percent of amount installed for each type, composition, color, pattern, and size indicated.
 - 2. Grout: Furnish quantity of grout equal to 3 percent of amount installed for each type, composition, and color indicated.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications:
 - 1. Installer is a Five-Star member of the National Tile Contractors Association or a Trowel of Excellence member of the Tile Contractors' Association of America.
 - 2. Installer's supervisor for Project holds the International Masonry Institute's Foreman Certification.
 - 3. Installer employs only Ceramic Tile Education Foundation Certified Installers or installers recognized by the U.S. Department of Labor as Journeyman Tile Layers for Project.
 - 4. Installer employs at least one installer for Project that has completed the Advanced Certification for Tile Installers (ACT) certification for installation of mud floors mud walls membranes shower receptors gauged porcelain tile/gauged porcelain tile panels and slabs and large format tile.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirements in ANSI A137.1 for labeling tile packages.
- B. Store tile and cementitious materials on elevated platforms, under cover, and in a dry location.
- C. Store aggregates where grading and other required characteristics can be maintained and contamination can be avoided.
- D. Store liquid materials in unopened containers and protected from freezing.

1.9 FIELD CONDITIONS

- A. Environmental Limitations: Do not install tile until construction in spaces is complete and ambient temperature and humidity conditions are maintained at the levels indicated in referenced standards and manufacturer's written instructions.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations for Tile: Obtain tile from single source or producer.
 - 1. Obtain tile of each type and color or finish from same production run and of consistent quality in appearance and physical properties for each contiguous area.

2.2 PRODUCTS, GENERAL

- A. ANSI Ceramic Tile Standard: Provide tile that complies with ANSI A137.1 for types, compositions, and other characteristics indicated.
 - 1. Provide tile complying with Standard grade requirements unless otherwise indicated.
- B. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI A108.02, ANSI standards referenced in other Part 2 articles, ANSI standards referenced by TCNA installation methods specified in tile installation schedules, and other requirements specified.
- C. Mounting: For factory-mounted tile, provide back- or edge-mounted tile assemblies as standard with manufacturer unless otherwise indicated.

2.3 TILE PRODUCTS

- A. Ceramic Tile Type UCMT - 1: Factory-mounted unglazed ceramic mosaic tile.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by the following:
 - a. Daltile "Keystones".
 - 2. Composition: Porcelain.
 - 3. Certification: Porcelain tile certified by the Porcelain Tile Certification Agency.
 - 4. Module Size: 2 by 2 inches.
 - 5. Thickness: 1/4 inch.
 - 6. Face: Plain with cushion edges.
 - 7. Dynamic Coefficient of Friction: Not less than 0.6.
 - 8. Tile Pattern: DP3003.
 - 9. Tile Color: As selected by Architect from manufacturer's full range.
 - Group 2 - 92%
 - Group 3 - 2.67%
 - Group 1 - 2.67%
 - Group 5 - 2.67%
 - 10. Grout Color: As Selected by Architect from manufacturer's full range.

- B. Ceramic Tile Type GWT - 1: Glazed wall tile.
1. Manufacturers: Subject to compliance with requirements, provide products by the following:
 - a. Daltile "Semi-Gloss & Matte".
 2. Module Size: 6 by 6 inches.
 3. Thickness: 5/16 inch.
 4. Face: Plain with cushion edges.
 5. Finish: Semi-gloss glaze.
 6. Tile Color: As selected by Architect from manufacturer's full range.
 7. Grout Color: As selected by Architect from manufacturer's full range.
 8. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable. Provide shapes as follows, selected from manufacturer's standard shapes:
 - a. External Corners for Thinset Mortar Installations: Surface bullnose, same size as adjoining flat tile.
 - b. Internal Corners: Field-butted square corners.
 - c. Base Cove: Coved, same as adjoining flat tile.

2.4 CRACK ISOLATION MEMBRANE

- A. General: Manufacturer's standard product that complies with ANSI A118.12 for standard performance and is recommended by the manufacturer for the application indicated. Include reinforcement and accessories recommended by manufacturer.
- B. Chlorinated Polyethylene Sheet: Nonplasticized, chlorinated polyethylene faced on both sides with nonwoven polyester fabric; 0.030-inch nominal thickness.
1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Noble Company (The).

2.5 SETTING MATERIALS

- A. Standard Dry-Set Mortar (Thinset): ANSI A118.1.
1. Manufacturers: Subject to compliance with requirements, provide products by the following:
 - a. Custom Building Products.
 2. For wall applications, provide mortar that complies with requirements for nonsagging mortar in addition to the other requirements in ANSI A118.1.

2.6 GROUT MATERIALS

- A. Sand-Portland Cement Grout: ANSI A108.10, consisting of white or gray cement and white or colored aggregate as required to produce color indicated.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Custom Building Products.

2.7 MISCELLANEOUS MATERIALS

- A. Tile Cleaner: A neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, specifically approved for materials and installations indicated by tile and grout manufacturers.
- B. Floor Sealer: Manufacturer's standard product for sealing grout joints and that does not change color or appearance of grout.
 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Custom Building Products.

2.8 MIXING MORTARS AND GROUT

- A. Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.
- B. Add materials, water, and additives in accurate proportions.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
 1. Verify that substrates for setting tile are firm; dry; clean; free of coatings that are incompatible with tile-setting materials, including curing compounds and other substances that contain soap, wax, oil, or silicone; and comply with flatness tolerances required by ANSI A108.01 for installations indicated.
 2. Verify that concrete substrates for tile floors installed with adhesives bonded mortar bed or thinset mortar comply with surface finish requirements in ANSI A108.01 for installations indicated.
 - a. Verify that surfaces that received a steel trowel finish have been mechanically scarified.
 - b. Verify that protrusions, bumps, and ridges have been removed by sanding or grinding.
 3. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed.
 4. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust joint locations in consultation with Architect.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Fill cracks, holes, and depressions in concrete substrates for tile floors installed with adhesives or thinset mortar with trowelable leveling and patching compound specifically recommended by tile-setting material manufacturer.
- B. Where indicated, prepare substrates to receive waterproof membrane by applying a reinforced mortar bed that complies with ANSI A108.1A and is sloped 1/4 inch per foot (1:50) toward drains.
- C. Blending: For tile exhibiting color variations, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colors as those taken from other packages and match approved Samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.

3.3 INSTALLATION OF CERAMIC TILE

- A. Comply with TCNA's "Handbook for Ceramic, Glass, and Stone Tile Installation" for TCNA installation methods specified in tile installation schedules. Comply with parts of the ANSI A108 series "Specifications for Installation of Ceramic Tile" that are referenced in TCNA installation methods, specified in tile installation schedules, and apply to types of setting and grouting materials used.
 - 1. For the following installations, follow procedures in the ANSI A108 series of tile installation standards for providing 95 percent mortar coverage:
 - a. Tile floors in wet areas.
 - b. Tile floors consisting of tiles 8 by 8 inches (200 by 200 mm) or larger.
 - c. Tile floors consisting of rib-backed tiles.
- B. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.
- C. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.
- D. Provide manufacturer's standard trim shapes where necessary to eliminate exposed tile edges.
- E. Where accent tile differs in thickness from field tile, vary setting-bed thickness so that tiles are flush.
- F. Jointing Pattern: Lay tile in grid pattern unless otherwise indicated. Lay out tile work and center tile fields in both directions in each space or on each wall area. Lay out tile work to minimize the use of pieces that are less than half of a tile. Provide uniform joint widths unless otherwise indicated.
 - 1. For tile mounted in sheets, make joints between tile sheets same width as joints within tile sheets so joints between sheets are not apparent in finished work.
 - 2. Where adjoining tiles on floor, base, walls, or trim are specified or indicated to be same size, align joints.
 - 3. Where tiles are specified or indicated to be whole integer multiples of adjoining tiles on floor, base, walls, or trim, align joints unless otherwise indicated.

- G. Joint Widths: Unless otherwise indicated, install tile with the following joint widths:
 - 1. Ceramic Mosaic Tile: 1/16 inch 1.6 mm.
 - 2. Glazed Wall Tile: 1/16 inch 1.6 mm.

- H. Expansion Joints: Provide expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated. Form joints during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.
 - 1. Where joints occur in concrete substrates, locate joints in tile surfaces directly above them.
 - 2. Do not extend cleavage membrane waterproof membrane or crack isolation membrane under thresholds set in mortar. Fill joints between such thresholds and adjoining tile set with elastomeric sealant.

- I. Floor Sealer: Apply floor sealer to cementitious grout joints in tile floors according to floor-sealer manufacturer's written instructions. As soon as floor sealer has penetrated grout joints, remove excess sealer and sealer from tile faces by wiping with soft cloth.

3.4 INSTALLATION OF WATERPROOF MEMBRANE

- A. Install waterproof membrane to comply with ANSI A108.13 and manufacturer's written instructions to produce waterproof membrane of uniform thickness that is bonded securely to substrate.

- B. Allow waterproof membrane to cure and verify by testing that it is watertight before installing tile or setting materials over it.

3.5 INSTALLATION OF CRACK ISOLATION MEMBRANE

- A. Install crack isolation membrane to comply with ANSI A108.17 and manufacturer's written instructions to produce membrane of uniform thickness that is bonded securely to substrate.

- B. Allow crack isolation membrane to cure before installing tile or setting materials over it.

3.6 ADJUSTING AND CLEANING

- A. Remove and replace tile that is damaged or that does not match adjoining tile. Provide new matching units, installed as specified and in a manner to eliminate evidence of replacement.

- B. Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.
 - 1. Remove grout residue from tile as soon as possible.
 - 2. Clean grout smears and haze from tile according to tile and grout manufacturer's written instructions but no sooner than 10 days after installation. Use only cleaners recommended by tile and grout manufacturers and only after determining that cleaners are safe to use by testing on samples of tile and other surfaces to be cleaned. Protect metal surfaces and plumbing fixtures from effects of cleaning. Flush surfaces with clean water before and after cleaning.

3.7 PROTECTION

- A. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear. If recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile walls and floors.
- B. Prohibit foot and wheel traffic from tiled floors for at least seven days after grouting is completed.
- C. Before final inspection, remove protective coverings and rinse neutral protective cleaner from tile surfaces.

3.8 INTERIOR CERAMIC TILE INSTALLATION SCHEDULE

- A. Interior Floor Installations, Concrete Subfloor:
 - 1. Ceramic Tile Installation: TCNA F111 and ANSI A108.1C; cement mortar bed (thickset) with cleavage membrane waterproof membrane.
 - a. Ceramic Tile Type: UCMT.
 - b. Bond Coat for Cured-Bed Method: Standard dry-set mortar.
 - c. Grout: Sand-portland cement or Standard sanded grout. ANSI A108.1A is wet-set method, ANSI A108.1B is cured-bed method, and ANSI A108.1C allows Contractor choice of using either method.
 - 2. Ceramic Tile Installation: TCNA F122; thinset mortar on waterproof membrane.
 - a. Ceramic Tile Type: UCMT
 - b. Thinset Mortar: Modified dry-set mortar.
 - c. Grout: High-performance sanded grout.
- B. Interior Wall Installations, Wood Studs or Furring:
 - 1. Ceramic Tile Installation: TCNA W245; thinset mortar on backer board.
 - a. Ceramic Tile Type: GWT.
 - b. Thinset Mortar: Standard dry-set mortar.
 - c. Grout: Sand-portland cement or Standard sanded grout.
 - 2. Ceramic Tile Installation: TCNA W231/W241; cement mortar bed (thickset).
 - a. Ceramic Tile Type: GWT
 - b. Bond Coat for Wet-Set Method: Modified dry-set mortar.
 - c. Bond Coat for Cured-Bed Method: Modified dry-set mortar.
 - d. Grout: Standard-Portland cement standard sanded cement.

END OF SECTION 093013

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Divisions 0 & 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes, but is not limited to, ceilings consisting of acoustical panels and exposed suspension systems.
 - 1. Lay-in acoustical panels with suspension systems.
- B. Related Sections include the following:
 - 1. Division 9 Section "Acoustical Tile Ceilings" for ceilings consisting of mineral-base acoustical tiles used with stapling, or adhesive bonding.
 - 2. Division 23 Section "Mechanical" for grilles, registers, and diffusers in acoustical ceilings.
 - 3. Division 26 Section "Electrical" for lighting fixtures in acoustical ceilings.

1.3 SUBMITTALS

- A. Product Data: For each type of product specified.
- B. Samples for Verification: Full-size units of each type of ceiling assembly indicated; in sets for each color, texture, and pattern specified, showing the full range of variations expected in these characteristics.
 - 1. 6-inch- (150-mm-) square samples of each acoustical panel type, pattern, and color.
 - 2. Set of 12-inch- (300-mm-) long samples of exposed suspension system members, including moldings, for each color and system type required.
- C. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.
- D. Product Test Reports: Indicate compliance of acoustical panel ceilings and components with requirements based on comprehensive testing of current products.
- G. Project Closeout Requirement:
 - 1. Extra materials.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced installer who has completed acoustical panel ceilings similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.

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- B. Source Limitations for Ceiling Units: Obtain each acoustical ceiling panel from one source with resources to provide products of consistent quality in appearance and physical properties without delaying the Work.
- C. Source Limitations for Suspension System: Obtain each suspension system from one source with resources to provide products of consistent quality in appearance and physical properties without delaying the Work.
- D. Fire-Test-Response Characteristics: Provide acoustical panel ceilings that comply with the following requirements:
 - 1. Fire-response tests were performed by UL, ITS/Warnock Hersey, or another independent testing and inspecting agency that is acceptable to authorities having jurisdiction and that performs testing and follow-up services.
 - 2. Surface-burning characteristics of acoustical panels comply with ASTM E 1264 for Class I materials as determined by testing identical products per ASTM E 84.
 - 3. Products are identified with appropriate markings of applicable testing and inspecting agency.
- E. Testing of embeds and wires will be field tested by Owner's laboratory to values accepted by DSA and quantity as required to substantiate conformance with specifications.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver acoustical panels and suspension system components to Project site in original, unopened packages and store them in a fully enclosed space where they will be protected against damage from moisture, direct sunlight, surface contamination, and other causes.
- B. Before installing acoustical panels, permit them to reach room temperature and a stabilized moisture content.
- C. Handle acoustical panels carefully to avoid chipping edges or damaging units in any way.

1.6 PROJECT CONDITIONS

- A. Environmental Limitations: Do not install acoustical panel ceilings until spaces are enclosed and weatherproof, wet-work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.
 - 1. Do not install suspension system until vinyl tack surface has been installed.

1.7 COORDINATION

- A. Coordinate layout and installation of acoustical panels and suspension system with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment and partition assemblies.

1.8 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed, are packaged with

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protective covering for storage, and are identified with labels describing contents.

1. Acoustical Ceiling Units: Full-size units equal to 2.0 percent of amount installed, or minimum of three (3) unopened cases of each type and color used.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, those indicated for each designation in the Acoustical Panel Ceiling Data Sheets at the end of Part 3.

2.2 ACOUSTICAL PANELS, GENERAL

- A. Acoustical Panel Standard: Provide manufacturer's standard panels of configuration indicated that comply with ASTM E 1264 classifications as designated by types, patterns, acoustical ratings, and light reflectances, unless otherwise indicated.
- B. Acoustical Panel Colors and Patterns: Match appearance characteristics indicated for each product type.
 1. Where appearance characteristics of acoustical panels are indicated by referencing ASTM E 1264 pattern designations and not manufacturers' proprietary product designations, provide products selected by Architect from each manufacturer's full range of products that comply with requirements indicated for type, pattern, color, light reflectance, acoustical performance, edge detail, and size.
- C. Panel Characteristics: Comply with requirements indicated in the Acoustical Panel Data Sheets at the end of Part 3, including those referencing ASTM E 1264 classifications.

2.3 METAL SUSPENSION SYSTEMS FOR ACOUSTICAL TILE PANELS

- A. Ceiling System General Notes
 1. Ceiling system components shall comply with ASTM C635 and Section 5.1 of ASTM E580.
 2. The ceiling grid system must be rated heavy duty as defined by ASTM C635.
 3. Ceiling panels shall not support any luminaires, air terminals or devices.
 4. For ceiling installations utilizing acoustical tile panels of mineral or glass fiber, it is not mandatory to provide $\frac{3}{4}$ " clearance between the acoustical tile panels and the wall on the sides of the ceiling which are free to slip. for all other ceiling panel types, provide $\frac{3}{4}$ " clearance between the ceiling panel and the wall on the sides of the ceiling free to slip. clearance between ceiling grid runners/members and walls shall comply with the details on these drawings regardless of ceiling tile material.
- B. MATERIALS
 1. Ceiling wire shall be class 1 zinc coated (galvanized) carbon steel conforming to ASTM A641. Wire shall be #12 gauge (0.106" diameter) with soft temper and minimum ultimate tensile strength = 70 ksi.

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- Galvanized sheet steel (including that used for metal stud and track compression struts/post) shall conform to ASTM A653, or other equivalent sheet steel listed in Section A3.1 of the North American Specification for the design of cold-formed steel structural members, (AISI S100). Material 43 mil (18 gauge) and lighter shall have minimum yield strength of 33 ksi. Material 54 mil (16 gauge) and heavier shall have a minimum yield strength of 50 ksi.
- Electrical metallic tube (EMT) shall be ANSI C80.3/UL 797 carbon steel with G90 galvanizing. EMT shall have minimum yield strength (fy) of 30 ksi and minimum ultimate strength (fu) of 48 ksi.

C. ATTACHMENT OF HANGER AND BRACING WIRES

- Separate all ceiling hanger and bracing wires at least 6 inches from all unbraced ducts, pipes, conduit, etc.
- Hanger and bracing wires shall not attach to or bend around obstructions including but not limited to piping, ductwork, conduit and equipment.
- Hanger wires that are more than one (horizontal) in six (vertical) out of plumb shall have counter-sloping wires.
- Slack safety wires shall be considered hanger wires for installation and testing requirements.
- Hanger and bracing wire anchorage to the structure shall be installed in such a manner that the direction of the anchorage aligns closely with the direction of the wire (e.g., bracing wire ceiling clips must be bent as shown in the details and rotated as required to align closely with the direction of the wire, screw eyes in wood must be installed so they align closely with the direction of the wire, etc.).

D. FASTENERS AND WELDING

- Sheet metal screws shall comply with ASTM C1513 and ASME B18.6.3. Penetration of screws through joined material shall not be less than three exposed threads.
- Expansion anchors shall be: [Hilti KBTZ2, ICC-ESR-4266]
- Power-actuated fasteners shall be:[Hilti X-U shot pins, ICC-ESR-2269]
- If not otherwise specified in the evaluation report, power-actuated fasteners installed in steel shall be installed so the entire pointed end of the fastener is driven through the steel member.
- Power-actuated fasteners in concrete or masonry are not permitted for bracing wires.
- Concrete reinforcement and prestressing tendons shall be located by non destructive means prior to installing post-installed anchors.
- Welding shall be in accordance with AWS D1.3 using E60XX series electrodes.

E. TESTING

- All field testing must be performed in the presence of the project inspector.
- Post-installed anchors in concrete used to support hanger wires shall be tested at a frequency of 10 percent. power-actuated fasteners in concrete shall be field tested for 200 pounds in tension. all other post-installed anchors in concrete shall be tested in accordance with CBC Section 1910a.5.
- Post-installed anchors in concrete used to attach bracing wires shall be tested at a frequency of 50 percent in accordance with CBC Section 1910a.5.

F. LUMINAIRES

- All luminaires shall be positively attached to the ceiling suspension systems by mechanical means to resist a horizontal force equal to the weight of the luminaire. a minimum of two screws or approved fasteners are required at each

- luminaire, per ASTM E580 Section 5.3.1.
2. Surface-mounted luminaires shall be attached to the main runner with at least two positive clamping devices. the clamping device shall completely surround the supporting ceiling runner and be made of steel with a minimum thickness of #14 gauge. Rotational spring catches do not comply. A #12 gauge slack safety wire shall be connected from each clamping device to the structure above. Provide additional supports when a luminaire is 8 feet or longer or exceeds 56 pounds. Maximum spacing between supports shall not exceed 8 feet.
3. Luminaires weighing less than or equal to 10 pounds may be supported directly on the ceiling runners, shall have a minimum of one #12 gauge slack safety wire connected from the fixture housing to the structure above.
4. Luminaires weighing greater than 10 pounds but less than or equal to 56 pounds may be supported directly on the ceiling runners, but they shall have a minimum of two #12 gauge slack safety wires connected from the fixture housing at diagonal corners to the structure above. Exception: all luminaires greater than two by four feet weighing less than 56 pounds shall have a #12 gauge slack safety wire at each corner.
5. All luminaires weighing greater than 56 pounds shall be independently supported by not less than four taut #12 gauge hanger wires (one at each corner) attached from the fixture housing to the structure above or other approved hangers. the four taut #12 gauge wires or other approved hangers, including their attachment to the structure above, shall be capable of supporting four times the weight of the fixture.

G. SERVICES WITHIN THE CEILING

1. All flexible sprinkler hose fitting mounting brackets, ceiling-mounted air terminals or other services shall be positively attached to the ceiling suspension systems by mechanical means. screws or approved fasteners are required. a minimum of two attachments are required at each component.
2. Ceiling-mounted air terminals or other services weighing less than or equal to 20 pounds shall have one #12 gauge slack safety wire attached from the terminal or service to the structure above.
3. Flexible sprinkler hose fittings, ceiling-mounted air terminals or other services weighing more than 20 pounds but less than or equal to 56 pounds shall have two #12 gauge slack safety wires (at diagonal corners) connected from the terminal or service to the structure above.
4. Flexible sprinkler hose fittings, ceiling-mounted air terminals or other services weighing more than 56 pounds shall be supported directly from the structure above by not less than four taut #12 gauge hanger wires attached from the terminal or service to the structure above or other approved hangers.

H. OTHER DEVICES WITHIN THE CEILING

1. All lightweight miscellaneous devices, such as strobe lights, occupancy sensors, speakers, exit signs, etc., shall be attached to the ceiling grid. In addition, devices weighing more than 10 pounds shall have a #12 gauge slack safety wire anchored to the structure above. Devices weighing more than 20 pounds shall be supported independently from the structure above.

I. Finishes and Colors: Provide manufacturer's standard factory-applied finish for type of system indicated. See Data Sheets end of this section.

J. Wire for Hangers and Ties: ASTM A 641, Class 1 zinc coating, soft temper.

1. Gage: Provide wire sized so that stress at 3 times hanger design load (ASTM C 635, Table 1, Direct-Hung), will be less than yield stress of wire, but provide not less than 0.106-inch

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diameter (12 gage).

- K. Hanger Rods: Mild steel, zinc coated, or protected with rust- inhibitive paint.
- L. Flat Hangers: Mild steel, zinc coated, or protected with rust inhibitive paint.
- M. Angle Hangers: Angles with legs not less than 7/8 inch wide, formed with 0.0365-inch-thick galvanized steel sheet complying with ASTM A 446, Coating Designation G90, with bolted connections and 5/16-inch-diameter bolts.
- N. Edge Moldings and Trim: Metal or extruded aluminum of types and profiles indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations that fit type of edge detail and suspension system indicated.
- O. Hold-Down Clips for Non-Fire-Resistance-Rated Ceilings: For interior ceilings composed of lay-in panels weighing less than 1 lb per sq. ft., provide hold-down clips spaced 2'-0" o.c. on all cross-tees.
 - 1. Install clips as recommended by manufacturer and for sloping ceiling.
- P. Impact Clips: Where indicated, provide manufacturer's standard impact clip system design to absorb impact forces against lay-in panels.
- Q. Eye Lag Screw: Eye lag screw for suspended ceiling applications. Zinc finish ICC ESR-4272.
 - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the work include, but are not limited to, the following:
 - a. Doc's Industries Inc.
- R. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
 - 1. Chicago Metallic Corporation
 - 2. Armstrong Ceiling Systems
 - 3. Finish Color: White

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and structural framing to which acoustical panel ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage, and other conditions affecting performance of acoustical panel ceilings.
 - 1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Coordination: Furnish layouts for cast-in-place anchors, clips, and other ceiling anchors whose

installation is specified in other Sections.

- B. Measure each ceiling area and establish layout of acoustical panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width panels at borders, and comply with layout shown on reflected ceiling plans.

3.3 INSTALLATION

- A. General: Install acoustical panel ceilings to comply with manufacturer's written instructions, CISCA's "Ceiling Systems Handbook", ASTM E580-08, CBC Section 1615A.1.16 and Interpretation of Regulation IR25-2.10.
 - 1. Standard for Ceiling Suspension System Installations: Comply with ASTM C 636.
 - a. CBC Sections 1632A, Table 16 A-0 and IR-25-5.
 - b. DSA IR 25-5.
- B. Suspend ceiling hangers from building's structural members and as follows:
 - 1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.
 - 2. Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
 - 3. Splay hangers only where required and, if permitted with fire-resistance-rated ceilings, to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
 - 4. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards and publications.
 - 5. Secure wire hangers to ceiling suspension members and to supports above with a minimum of three tight turns. Connect hangers directly either to structures or to inserts, eye screws, or other devices that are secure; that are appropriate for substrate; and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
 - 6. Secure flat, angle, channel, and rod hangers to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices that are secure and appropriate for both structure to which hangers are attached and type of hanger involved. Install hangers in a manner that will not cause them to deteriorate or fail due to age, corrosion, or elevated temperatures.
- C. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels.
 - 1. Screw attach moldings to substrate at intervals not more than 16 inches (400 mm) o.c. and not more than 3 inches (75 mm) from ends, leveling with ceiling suspension system to a tolerance of 1/8 inch in 12 feet (3 mm in 3.6 m). Miter corners accurately and connect securely.
- D. Install suspension system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.
- E. Install acoustical panels with undamaged edges and fitted accurately into suspension system

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runners and edge moldings. Scribe and cut panels at borders and penetrations to provide a neat, precise fit.

1. Arrange directionally patterned acoustical panels as follows:
 - a. As indicated on reflected ceiling plans.
2. For square-edged panels, install panels with edges fully hidden from view by flanges of suspension system runners and moldings.
3. For reveal-edged panels on suspension system runners, install panels with bottom of reveal in firm contact with top surface of runner flanges.
4. For reveal-edged panels on suspension system members with box-shaped flanges, install panels with reveal surfaces in firm contact with suspension system surfaces and panel faces flush with bottom face of runners.
5. Install hold-down clips in areas indicated, in areas required by authorities having jurisdiction, and for fire-resistance ratings; space as recommended by panel manufacturer's written instructions, unless otherwise indicated or required.
6. Protect lighting fixtures and air ducts to comply with requirements indicated for fire-resistance-rated assembly.

3.4 CLEANING

- A. Clean exposed surfaces of acoustical panel ceilings, including trim, edge moldings, and suspension system members. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage. Remove and replace ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

3.5 ACOUSTICAL PANEL CEILING PANEL (Data Sheets) - See Data Sheets attached herein.

ACOUSTICAL PANEL CEILING DATA SHEET

Water-Felted, Mineral-Base Acoustical Panels for Acoustical Panel Ceiling “Type A”:

Where this designation is indicated, provide acoustical panels complying with the following:

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

"Fine Fissured" No. 1714; Armstrong Ceiling Solutions.
Celotex Corporation (The).
USG Interiors, Inc.

Classification: Panels fitting ASTM E 1264 for Type III, mineral base with painted finish; Form 2, water felted.

Pattern: Panels fitting ASTM E 1264 pattern designation (CE) as specified by product designation.

Color: White.

Light Reflectance Coefficient: Not less than LR 0.85.

Noise Reduction Coefficient: NRC 0.70.

Ceiling Attenuation Class: Not less than CAC 40.

Edge Detail: Square.

Thickness: 15/16 inch.

Size: 24" x 48" x 3/4".

Flamespread: 25 or less (class A).

Smoke Density: 50 or less (class A).

END OF SECTION 095113

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Divisions 0 & 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes, but is not limited to, the following:
 - 1. Ceilings consisting of acoustical tiles directly attached to substrates with staples.
- B. Related Sections include the following:
 - 1. Division 8 Section "Access Doors" for access doors.
 - 2. Division 23 Section "Mechanical" for grilles, registers and diffusers in acoustic tile ceiling.
 - 3. Division 26 Section "Electrical" for lighting fixtures in acoustical tile ceilings.

1.3 SUBMITTALS

- A. Product Data: For each type of product specified see data sheet at end of this section.
- B. Samples for Initial Selection: Manufacturer's color charts consisting of actual acoustical tiles or sections of acoustical tiles and moldings showing the full range of colors, textures, and patterns available for each type of ceiling assembly indicated.
- C. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.
- D. Product Test Reports: Indicate compliance of acoustical tile ceilings and components with requirements based on comprehensive testing of current products.
- E. Research/Evaluation Reports: Evidence of acoustical tile ceiling's and components' compliance with building code in effect for Project, from a model code organization acceptable to authorities having jurisdiction.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced installer who has completed acoustical tile ceilings similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.
- B. Source Limitations for Ceiling Units: Obtain each acoustical ceiling tile from one source with resources to provide products of consistent quality in appearance and physical properties without delaying the Work.
- C. Source Limitations for Suspension System: Obtain each suspension system from one source with resources to provide products of consistent quality in appearance and physical properties without delaying the Work.

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1. Obtain both acoustical ceiling tiles and suspension system from the same manufacturer.
- D. Fire-Test-Response Characteristics: Provide acoustical tile ceilings that comply with the following requirements:
1. Fire-response tests were performed by UL, ITS/Warnock Hersey, or another independent testing and inspecting agency that is acceptable to authorities having jurisdiction and that performs testing and follow-up services.
 2. Surface-burning characteristics of acoustical tiles comply with ASTM E 1264 for Class I materials as determined by testing identical products per ASTM E 84.
 3. Products are identified with appropriate markings of applicable testing and inspecting agency.
- E. Preinstallation Conference: Conduct conference at Project site to comply with requirements of Division 1 Section "Project Meetings."

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver acoustical tiles and suspension system components to Project site in original, unopened packages and store them in a fully enclosed space where they will be protected against damage from moisture, direct sunlight, surface contamination, and other causes.
- B. Before installing acoustical tiles, permit them to reach room temperature and a stabilized moisture content.
- C. Handle acoustical tiles carefully to avoid chipping edges or damaging units in any way.

1.6 PROJECT CONDITIONS

- A. Environmental Limitations: Do not install acoustical tile ceilings until spaces are enclosed and weatherproof, wet-work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

1.7 COORDINATION

- A. Coordinate layout and installation of acoustical tiles and suspension system with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, fire-sprinkler system, and partition assemblies.

1.8 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed, are packaged with protective covering for storage, and are identified with labels describing contents.
 1. Acoustical Ceiling Units: Full-size units equal to 2.0 percent of amount installed.
 2. Suspension System Components: Quantity of each grid and exposed component equal to 2.0 percent of amount installed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, those indicated for each designation in the Acoustical Tile Ceiling Data Sheets at the end of Part 3.

2.2 ACOUSTICAL TILES, GENERAL

- A. Acoustical Tile Standard: Provide manufacturer's standard tiles of configuration indicated that comply with ASTM E 1264 classifications as designated by types, patterns, acoustical ratings, and light reflectances, unless otherwise indicated.
- B. Acoustical Tile Colors and Patterns: Match appearance characteristics indicated for each product type.
 - 1. Where appearance characteristics of acoustical tiles are indicated by referencing ASTM E 1264 pattern designations and not manufacturers' proprietary product designations, provide products selected by Architect from each manufacturer's full range of products that comply with requirements indicated for type, pattern, color, light reflectance, acoustical performance, edge detail, and size.
- C. Antimicrobial Treatment: Provide acoustical tiles treated with manufacturer's standard antimicrobial solution consisting of a synergistic blend of substituted ammonium salts of alkylated phosphoric acids admixed with free alkylated phosphoric acid that inhibits fungus, mold, mildew, and gram-positive and gram-negative bacteria.
- D. Tile Characteristics: Comply with requirements indicated in the Acoustical Tile Ceiling Schedule at the end of Part 3, including those referencing ASTM E 1264 classifications.

2.3 MISCELLANEOUS MATERIALS

- A. Staples: 5/16-inch- (8-mm-) long, divergent-point staples.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and structural framing to which acoustical tile ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage, and other conditions affecting performance of acoustical tile ceilings.
 - 1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Coordination: Furnish layouts for preset inserts, clips, and other ceiling anchors whose installation is specified in other Sections.
 - 1. Furnish concrete inserts and similar devices to other trades for installation well in advance of time needed for coordinating other work.
- B. Testing Substrates: Before installing adhesively applied tiles on wet-placed substrates such as cast-in-place concrete or plaster, test and verify that moisture level is below tile manufacturer's recommended limits.
- C. Measure each ceiling area and establish layout of acoustical tiles to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width units at borders, and comply with layout shown on reflected ceiling plans.

3.3 INSTALLATION

- A. General: Install acoustical tile ceilings to comply with publications referenced below per manufacturer's written instructions and CISCA's "Ceiling Systems Handbook."
 - 1. Standard for Ceiling Suspension System Installations: Comply with ASTM C 636.
 - 2. Standard for Ceiling Suspension Systems Requiring Seismic Restraint: Comply with ASTM E 580.
 - 3. CISCA's Recommendations for Acoustical Ceilings: Comply with CISCA's "Recommendations for Direct-Hung Acoustical Tile and Lay-in Panel Ceilings--Seismic Zones 0-2."
 - 4. CISCA's Guidelines for Systems Requiring Seismic Restraint: Comply with CISCA's "Guidelines for Seismic Restraint of Direct-Hung Suspended Ceiling Assemblies--Seismic Zones 3 & 4."
 - 5. CBC 2019 Chapter 16 and 16A, DSA IR 25-2.10.
- B. Suspend ceiling hangers from building's structural members and as follows:
 - 1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.
 - 2. Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
 - 3. Splay hangers only where required and, if permitted with fire-resistance-rated ceilings, to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
 - 4. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards and publications.
 - 5. Secure wire hangers to ceiling suspension members and to supports above with a minimum of three tight turns. Connect hangers directly either to structures or to inserts, eye screws, or other devices that are secure; that are appropriate for substrate; and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
 - 6. Secure flat, angle, channel, and rod hangers to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices that are secure and appropriate for both structure to which hangers are attached and type of hanger involved. Install hangers in a manner that will not cause them to deteriorate or fail due to age,

- corrosion, or elevated temperatures.
7. Do not support ceilings directly from permanent metal forms or floor deck. Fasten hangers to cast-in-place hanger inserts, powder-actuated fasteners, or drilled-in anchors that extend through forms into concrete.
 8. Do not attach hangers to steel deck tabs.
 9. Do not attach hangers to steel roof deck. Attach hangers to structural members.
 10. Space hangers not more than 48 inches (1200 mm) o.c. along each member supported directly from hangers, unless otherwise indicated; and provide hangers not more than 8 inches (200 mm) from ends of each member.
- C. Secure bracing wires to ceiling suspension members and to supports with a minimum of four tight turns. Suspend bracing from building's structural members as required for hangers, without attaching to permanent metal forms, steel deck, or steel deck tabs. Fasten bracing wires into concrete with cast-in-place or postinstalled anchors.
- D. Install edge moldings and trim of type indicated at perimeter of acoustical tile ceiling area and where necessary to conceal edges of acoustical units.
1. Apply acoustical sealant in a continuous ribbon concealed on back of vertical legs of moldings before they are installed.
 2. Screw attach moldings to substrate at intervals not more than 16 inches (400 mm) o.c. and not more than 3 inches (75 mm) from ends, leveling with ceiling suspension system to a tolerance of 1/8 inch in 12 feet (3 mm in 3.6 m). Miter corners accurately and connect securely.
 3. Do not use exposed fasteners, including pop rivets, on moldings and trim.
- E. Install suspension system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.
- F. Arrange directionally patterned acoustical tiles as follows:
1. Install tiles in a basket-weave pattern.
- G. Stapled Installation: Fasten acoustical tile to substrate using a minimum of two staples per tile that are installed in flanges of tile and as follows:
1. Form double-lapped joint between tiles by securely pressing tile tongues into corresponding tile grooves.
 2. Maintain level of bottom surface of tiles to a tolerance of 1/8 inch in 12 feet (3 mm in 3.6 m) and not exceeding 1/4 inch (6.35 mm) cumulatively. Shim tile or correct substrate as required to maintain tolerance.
 3. Maintain tight butt joints, aligned in both directions and coordinated with ceiling fixtures.

3.4 CLEANING

- A. Clean exposed surfaces of acoustical tile ceilings, including trim, edge moldings, and suspension system members. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage. Remove and replace tiles and other ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

ACOUSTICAL TILE CEILING DATA SHEET (TYPE B)

Where this designation is indicated, provide acoustical panels complying with the following:

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

Armstrong World Industries, Inc., "Fine Fissured" #741
Celotex Corporation (The).
USG Interiors, Inc.

Classification: Panels fitting ASTM E 1264 for Type III, mineral base with factory applied painted finish; Form 2, wet formed mineral fiber (Class A: Flame spread 25 or under).

Pattern: Panels fitting ASTM E 1264 pattern designation (CE) as specified by product designation.

Color: White.

Light Reflectance Coefficient: Not less than LR 0.82.

Noise Reduction Coefficient: NRC 0.55.

Ceiling Attenuation Class: Not less than CAC 35.

Edge Detail: Beveled Togue and Groove (Staple application)

Thickness: 1/2".

Size: 12" x 12" x 1/2".

Treatment: Anti-Microbial Treatment.

END OF SECTION 095123

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Divisions 0 & 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes, but is not limited to, the following:
 - 1. Resilient wall base.
 - 2. Resilient flooring accessories.
 - 3. Resilient carpet accessories.
- B. Related Sections include the following:
 - 1. Division 9 Section "Carpet."

1.3 SUBMITTALS

- A. Product Data: For each type of product specified.
- B. Samples for Initial Selection: Manufacturer's standard sample sets consisting of sections of units showing the full range of colors and patterns available for each type of product indicated.
- C. Samples for Verification: In manufacturer's standard sizes, but not less than 12 inches (300 mm) long, of each product color and pattern specified.
- D. Product Certificates: Signed by manufacturers of resilient wall base and accessories certifying that each product furnished complies with requirements.
- E. Project Closeout Requirement:
 - 1. Cleaning and maintenance data.

1.4 QUALITY ASSURANCE

- A. Source Limitations: Obtain each type and color of product specified from one source with resources to provide products of consistent quality in appearance and physical properties without delaying the Work.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to Project site in manufacturer's original, unopened cartons and containers, each bearing names of product and manufacturer, Project identification, and shipping and handling instructions.

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- B. Store products in dry spaces protected from the weather, with ambient temperatures maintained between 50 and 90 deg F (10 and 32 deg C).
- C. Move products into spaces where they will be installed at least 48 hours before installation, unless longer conditioning period is recommended in writing by manufacturer.

1.6 PROJECT CONDITIONS

- A. Maintain a temperature of not less than 70 deg F (21 deg C) or more than 95 deg F (35 deg C) in spaces to receive resilient products for at least 48 hours before installation, during installation, and for at least 48 hours after installation, unless manufacturer's written recommendations specify longer time periods. After postinstallation period, maintain a temperature of not less than 55 deg F (13 deg C) or more than 95 deg F (35 deg C).
- B. Do not install products until they are at the same temperature as the space where they are to be installed.
- C. For resilient products installed on traffic surfaces, close spaces to traffic during installation and for time period after installation recommended in writing by manufacturer.
- D. Coordinate resilient product installation with other construction to minimize possibility of damage and soiling during remainder of construction period. Install resilient products after other finishing operations, including painting, have been completed.

1.7 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed, are packaged with protective covering for storage, and are identified with labels describing contents.
 - 1. Furnish not less than 10 linear feet (3 linear m) for each 500 linear feet (150 linear m) or fraction thereof, of each different type, color, pattern, and size of resilient wall base product installed.
 - 2. Deliver extra materials to Owner.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, those indicated in the Rubber Wall Base Product Data Sheets at the end of this Section.

2.2 RESILIENT WALL BASE

- A. Rubber Wall Base: Products complying with ASTM F-1861, Type **TS** or **TP** and with requirements specified in the Rubber Accessory Product Data Sheets.
 - 1. Minimum critical radiant flux and specific optical density smoke rating for CBC 804.4.1.

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2.3 RESILIENT ACCESSORIES

- A. Rubber Accessories: Products complying with requirements specified in the Rubber Wall Base Product Data Sheets and Accessory Schedule.
 - 1. Minimum critical radiant flux and specific optical density smoke rating for CBC 804.4.1.

2.4 INSTALLATION ACCESSORIES

- A. Trowelable Leveling and Patching Compounds: Latex-modified, portland-cement-based formulation provided or approved by resilient product manufacturer for applications indicated.
- B. Adhesives: Water-resistant type recommended by manufacturer to suit resilient products and substrate conditions indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions where installation of resilient products will occur, with Installer present, for compliance with manufacturer's requirements, including those for maximum moisture content. Verify that substrates and conditions are satisfactory for resilient product installation and comply with requirements specified. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. General: Comply with manufacturer's written installation instructions for preparing substrates indicated to receive resilient products.
- B. Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, and depressions in substrates.
- C. Remove coatings, including curing compounds, and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.
- D. Broom and vacuum clean substrates to be covered immediately before installing resilient products. After cleaning, examine substrates for moisture, alkaline salts, carbonation, or dust. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.3 INSTALLATION

- A. General: Install resilient products according to manufacturer's written installation instructions.
- B. Apply resilient wall base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.

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1. Install wall base in full lengths as long as practicable without gaps at seams and with tops of adjacent pieces aligned. Pre-mold corners to be installed at inside/outside corners. Use of multiple small pieces will not be accepted.
 2. Tightly adhere wall base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.
 3. Do not stretch base during installation.
- C. Place resilient products so they are butted to adjacent materials and bond to substrates with adhesive. Install reducer strips at edges of flooring that would otherwise be exposed.

3.4 CLEANING AND PROTECTING

- A. Perform the following operations immediately after installing resilient products:
1. Remove adhesive and other surface blemishes using cleaner recommended by resilient product manufacturers.
 2. Sweep or vacuum horizontal surfaces thoroughly.
 3. Do not wash resilient products until after time period recommended by resilient product manufacturer.
 4. Damp-mop or sponge resilient products to remove marks and soil.
- B. Protect resilient products against mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods indicated or recommended in writing by resilient product manufacturer.
1. Apply protective floor polish to vinyl resilient products installed on floors and stairs that are free from soil, visible adhesive, and surface blemishes, if recommended by manufacturer.
 - a. Coordinate selection of floor polish with Owner's maintenance service.
 2. Cover resilient products installed on floors with undyed, untreated building paper until inspection for Notice of Completion.
- C. Clean resilient products not more than 4 days before dates scheduled for inspections intended to establish date of Notice of Completion in each area of Project. Clean products according to manufacturer's written recommendations.
1. Before cleaning, strip protective floor polish that was applied to vinyl products on floors after completing installation only if required to restore polish finish and if recommended by resilient product manufacturer.
 2. After cleaning, reapply polish on vinyl products on floors to restore protective floor finish according to resilient product manufacturer's written recommendations. Coordinate with Owner's maintenance program.

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RUBBER WALL BASE PRODUCT DATA SHEET

Rubber Wall Base Designation: RWB

Style: Cove with top-set toe.

Minimum Nominal Thickness: 1/8 inch.

Height: 4 inches.

Lengths: Cut lengths 4 feet long.

Exterior Corners: Manufactured Pre-molded Corners.

Interior Corners: Manufactured Pre-molded or formed on job.

Color and Pattern: As selected by Architect from manufacturer's full range of colors and patterns produced for rubber wall base complying with requirements indicated.

Available Products: Burke
Armstrong
Roppe
Johnsonite

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RUBBER ACCESSORY PRODUCT DATA SHEET

Rubber Accessory Designation: RA

Product Description: See Reducer Strip/Floor Accessory Schedule.

Profile and Dimensions: As indicated.

Color: As selected by Architect from manufacturer's full range of colors produced for rubber accessories complying with requirements indicated.

Available Products: Mercer, Musson - see Schedule on Drawings.

END OF SECTION 096513

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 0 & 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes, but not limited to:
 - 1. Carpet tile.
- B. Related Requirements:
 - 1. Division 9 Section "Resilient Wall Base and Accessories" for resilient wall base and accessories installed with carpet tile.

1.3 SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include manufacturer's written data on physical characteristics, durability, and fade resistance.
 - 2. Include installation recommendations for each type of substrate.
- B. Samples: For each of the following products and for each color and texture required. Label each Sample with manufacturer's name, material description, color, pattern, and designation indicated on Drawings and in schedules.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Product Test Reports: For carpet tile, for tests performed by a qualified testing agency.

1.5 PROJECT CLOSEOUT

- A. Extra Materials:
 - 1. Deliver extra materials to Owner. Furnish extra materials matching products installed as described below, packaged with protective covering for storage and identified with labels describing contents, colors and dye lots.
 - a. Carpet Tile: Provide extra material equal to 5 percent of amount installed; of the same dye lot, but not less than 10 sq. yd. Deliver to M/O Director properly

packaged and identified. Submit Extra Material form found in Section 017700 signed by M/O Director.

B. Warranty:

1. Provide a standard, printed warranty from the Manufacturer agreeing to repair or replace unsatisfactory product caused by defective materials as indicated on Data Sheets. Warranty shall be non-prorated and include removal and replacement of carpet and related items.
2. All warranties to be sole source responsibility of the Manufacturer. Second source warranties or warranties that involve parties other than the manufacturer are unacceptable.
3. Warranties will be official, standard documents, not customized, and shall not be issued on a job-by-job basis. The following items shall be included in warranty:
 - a. Specification Warranty: The Manufacturer warrants that the carpet tile conforms to specifications established for the product identified in the execution section, subject to normal manufacturing tolerances.
 - b. Edge Ravel Warranty: The Manufacturer warrants that the carpet tile will not have continuous ends coming out at seams for the life of the carpet.
 - c. Zippering Warranty: The Manufacturer warrants that the carpet tile will not zipper or develop continuous “pile yarn runners” in the body of the carpet tile for the life of the product. The carpet tile at the time of the shipment must have an average “run resistance” in excess of 30 lbs. As tested in accordance with the Loop Pile Run Resistance Test (PT-155-Rev. 86).
 - d. Static Protection Warranty: The Manufacturer warrants that the carpet tile will not give static discharge in excess of 3.5KV when tested under the AATCC Test Method #134-1979 for the life of the carpet.
 - e. Colorfastness to Light Warranty: The Fiber Manufacturer warrants that when installed for indoor use only, the carpet tile will not display or significantly change color due to exposure to light for ten (10) years from the date of installation.
 - f. Colorfastness to Atmospheric Contaminants Warranty: The Fiber Manufacturer warrants that when installed for indoor use only, the carpet tile will not display or significantly change color due to the atmospheric contaminants (Ozone or Oxides of Nitrogen) for five (5) year from the date of installation.
 - g. Delamination Warranty: The Manufacturer warrants that the carpet tile will not delaminate for the life of the carpet.
4. All warranties shall be signed and notarized by a company representative.
5. Carpet tile installer to provide owner a written warranty that guarantees the completed installation be free from defects in materials and workmanship for a period of two (2) years after Notice of Completion

C. Maintenance Data: For carpet tiles to include in maintenance manuals. Include the following:

1. Methods for maintaining carpet tile, including cleaning and stain-removal products and procedures and manufacturer's recommended maintenance schedule.
2. Precautions for cleaning materials and methods that could be detrimental to carpet tile.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who is certified by the International Certified Floorcovering Installers Association at the Commercial II certification level.
- B. Fire-Test-Response Ratings: Where indicated, provide carpet tile identical to those of assemblies tested for fire response according to NFPA 253 by a qualified testing agency.

D. Performance Requirements:

1. Comply with the following performance requirements:

- a. Radiant Panel: ASTM E648: >.45 watts/sq. cm: Class 1
- b. Smoke Density: ASTM E662: 450 Flaming Mode - Maximum
- c. Static Generation: AATCC 134: 3.5 KV - Maximum
- d. Lightfastness: AATCC 16E: Min 4.0 at 40 hrs.
- e. Crocking: AATCC 165: 4.0 – Wet/Dry
- f. Cold Water Bleed: AATCC 107: 3.0 - Minimum
- g. Ozone Fade: AATCC 129: 3.0 - Minimum
- h. Soil Protection: AATCC 189: 500 PPM Min.
- i. CRI Green Label Plus Air Quality Certification: Pass
- j. CRI Appearance Retention Rating 3.0 minimum – Heavy Traffic
3.5 minimum – Severe Traffic
- k. Aachen Test:
ISO 2551 Less than .15% shrinkage or
growth
- l. Stain protection:
AATCC 175: Equal to or greater than 8.0 on
Red 40 stain test.

2. Comply with the following Construction performance requirements:

- a. Delamination: Pass 50,000 cycles roll stool test
- b. Compression Resistance Test: 7.5 lb/sq. in. minimum
- c. Compression Set: 10% Maximum
- d. Elongation: 60% Minimum
- e. Tensile Strength: 50 lb/ sq. in. minimum
- f. Moisture Barrier-non seam area: Passes British Spill Test

3. Special Performance Requirements

- a. Must have Soil and Stain Resist treatment
- b. Must have Trilobal cross-section
- c. Must have permanent anti-stat yarn.
- d. Must be type 6 fiber

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to project site in original factory wrappings and containers, labeled with identification of manufacturer, brand name, and lot number.
- B. Store materials in original undamaged packages and containers, inside well-ventilated area protected from weather, moisture, soilage, extreme temperatures, and humidity. Lay flat, blocked off ground. Maintain minimum temperature of 68 deg F (20 deg C) at least three days prior to and during installation in area where materials are stored.

1.8 FIELD CONDITIONS

- A. Comply with CRI 104 for temperature, humidity, and ventilation limitations.

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- B. Environmental Limitations: Do not deliver or install carpet tiles until spaces are enclosed and weathertight, wet work in spaces is complete and dry, and ambient temperature and humidity conditions are maintained at occupancy levels during the remainder of the construction period.
- C. Do not install carpet tiles over concrete slabs until slabs have cured and are sufficiently dry to bond with adhesive and concrete slabs have pH range recommended by carpet tile manufacturer.
- D. Substrate Conditions: No condensation within 48 hours on underside of 4-foot by 4-foot polyethylene sheet, fully taped at perimeter to substrate. Do not install carpet tiles over concrete slab until slab have pH range recommended by carpet tile manufacturer.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
 - 1. Carpet Tile: See Data Sheets at the end of this Section.

2.2 ACCESSORIES

- A. Leveling Compound: Latex type as recommended by carpet tile manufacturer; compatible with carpet adhesive and curling/sealing compound used on concrete.
- B. Carpet Tile Adhesive: Water resistant, low VOC modular adhesive, complying with CRI Green Label Certification Program, mildew resistant and nonstaining as recommended by carpet manufacturer for direct glue down of modular tiles.
- C. Trowelable Leveling and Patching Compounds: Latex-modified, hydraulic-cement-based formulation provided by or recommended by the following:
 - 1. Carpet manufacturer.

2.3 MISCELLANEOUS MATERIALS

- A. Floor Primer: Manufacturer's approved floor primer applied to all areas that are to receive carpeting.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for maximum moisture content, alkalinity range, installation tolerances, and other

conditions affecting carpet tile performance. Examine carpet tile for type, color, pattern, and potential defects.

- B. Concrete Subfloors: Verify that concrete slabs comply with ASTM F 710 and the following:
 - 1. Slab substrates are dry and free of curing compounds, sealers, hardeners, and other materials that may interfere with adhesive bond. Determine adhesion and dryness characteristics by performing bond and moisture tests recommended by carpet tile manufacturer.
 - 2. Subfloor finishes comply with requirements specified in Section 033000 "Cast-in-Place Concrete" for slabs receiving carpet tile.
 - 3. Subfloors are free of cracks, ridges, depressions, scale, and foreign deposits.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. General: Comply with CRI 104, Section 6.2, "Site Conditions; Floor Preparation," and with carpet tile manufacturer's written installation instructions for preparing substrates indicated to receive carpet tile installation.
- B. Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, depressions, and protrusions in substrates. Fill or level cracks, holes and depressions 1/8 inch (3 mm) wide or wider and protrusions more than 1/32 inch (0.8 mm) unless more stringent requirements are required by manufacturer's written instructions.
- C. Remove coatings, including curing compounds, and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, without using solvents. Use mechanical methods recommended in writing by carpet tile manufacturer.
- D. Broom and vacuum clean substrates to be covered immediately before installing carpet tile.

3.3 INSTALLATION

- A. General: Comply with CRI 104, Section 14, "Carpet Tiles," and with carpet tile manufacturer's written installation instructions.
- B. Installation Method: As recommended in writing by carpet tile manufacturer.
- C. Cut and fit carpet tile to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings. Bind or seal cut edges as recommended by carpet tile manufacturer.
- D. Extend carpet tile into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.
- E. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on finish flooring as marked on subfloor. Use nonpermanent, nonstaining marking device.

3.4 CLEANING AND PROTECTION

- A. Perform the following operations immediately after installing carpet tile:
 - 1. Remove excess adhesive, seam sealer, and other surface blemishes using cleaner recommended by carpet tile manufacturer.
 - 2. Remove yarns that protrude from carpet tile surface.
 - 3. Vacuum carpet tile using commercial machine with face-beater element.
- B. Protect installed carpet tile to comply with CRI 104, Section 16, and "Protecting Indoor Installations."
- C. Protect carpet tile against damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods indicated or recommended in writing by carpet tile manufacturer.

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Name	Stop Staring Modular
Style Number	DT158
Collection	Infatuations
Brand	Karastan
Product Type	Modular
SPECIFICATIONS	
Minimum Sq. Yd.	No minimum
Construction	Tufted
Surface Texture	Textured Patterned Cut and Loop
Gauge	1/12 (47.00 rows per 10 cm)
Density	7059
Weight Density	211,770
Sustainable Content	Contains a minimum 35% pre-consumer recycled content by total weight
Stitches Per Inch	10.8 (42.52 per 10 cm)
Finished Pile Thickness	.153" (3.89 mm)
Dye Method	Solution Dyed / Space Dyed
Backing Material	EcoFlex ICT
Face Yarn	Colorstrand® Nylon/Ultron® Nylon
Face Weight	30.0 oz. per sq. yd. (1017 g/m ²)
Pattern Repeat	Not Applicable
Size/Width	24" x 24" (.6096 m x .6096 m)
Protective Treatment	Sentry Plus
Installation Method	Quarter Turn or Monolithic
IAQ Green Label Plus	Green Label Plus 2771
Performance Rating	Heavy
PERFORMANCE	
Static	AATCC-134 Under 3.5 KV
Flammability	ASTM E 648 Class 1 (Glue Down)
Smoke Density	ASTM E 662 Less than 450

END OF SECTION 096813

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 0 & 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes, but not limited to, the following:
 - 1. Pre-decorated tack boards with the following material laminated to the surface on the finish side (face):
 - a. Vinyl wall covering.
 - 2. Trim and miscellaneous accessories.

1.3 SUBMITTALS

- A. Product Data for each predecorated tack board product specified.
- B. Samples for verification purposes in 12 inch square size units of each decorative facing material indicated, in each color, texture, and pattern specified.
- C. Project Closeout Requirements:
 - 1. Extra materials.
 - 2. Cleaning and maintenance data.

1.4 QUALITY ASSURANCE

- A. Fire Performance Characteristics: Provide predecorated tack boards that are identical to products tested for the following fire performance characteristics, per ASTM test method indicated below, by UL or other testing and inspecting organizations acceptable to authorities having jurisdiction:
 - 1. Surface Burning Characteristics: As follows, tested per ASTM E 84.
 - b. Flame Spread: 25 or less.
 - c. Smoke Developed: 45 or less.
- B. Single Source Responsibility: Obtain predecorated tack boards and related materials from a single manufacturer.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in original packages, containers or bundles bearing brand name and

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identification of manufacturer.

- B. Store materials inside under cover and keep them dry and protected against damage from weather, direct sunlight, surface contamination, corrosion, construction traffic and other causes. Neatly stack predecorated tack boards flat to prevent sagging.
- C. Handle predecorated tack boards to prevent damage to edges, ends, and surfaces. Do not bend or otherwise damage predecorated trim accessories.

1.6 PROJECT CONDITIONS

- A. Environmental Conditions, General: Establish and maintain environmental conditions for application of predecorated tack board to comply with manufacturer's recommendations.
- B. Minimum Room Temperatures: For adhesive attachment of predecorated tack board, maintain minimum temperatures to comply with manufacturer's directions.

1.7 EXTRA MATERIALS

- A. Deliver extra materials to Owner. Furnish extra materials described below matching products installed, packaged with protective covering for storage and identified with labels clearly describing contents.
 - 1. Predecorated Tack Board: Furnish quantity of full sized units equal to 2.0 percent of amount installed, minimum 2 full size units of each color selected. Allow for 4 color minimum. (8 sheet minimum)

PART 2 - PRODUCTS

2.1 PREDECORATED TACK BOARD

- A. Colors, Textures, and Patterns: For each weight and material indicated for facing of predecorated tack boards, provide colors, textures, and patterns to comply with the following:
 - 1. Provide selections made by Architect from manufacturer's full range of standard colors.
- B. Vinyl Covered Tack Board:
 - 1. Tack Board Type: Tack board - cellulose fiber insulation board per ASTM C208, C532 and D2277 Class A, 0.64 pounds per square foot.
 - 2. Vinyl wall covering: Koroseal, "Linden" "Sonesta", Type II Class A.
 - 3. Wood veneer, prefinished, Koroseal, full line of veneers
 - 4. Edges: Square, with vinyl wrapped, 2" minimum, around to back.
 - 5. Thickness: 1/2 inch, unless otherwise indicated.
 - 6. Size: 4 feet wide - verify height.
 - 7. Size: Install in full vertical length pieces - no splices (except at 10').
 - 8. Flamspread 10, smoke development 5.
- C. Available Products: Subject to compliance with requirements, predecorated tack board products which may be incorporated in the Work include, but are not limited to, the following:
 - 1. Lamvin, Inc. (800) 446-6329.
 - 2. Claridge Products & Equipment.

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3. Greensteel.
4. LEMCO.
5. TriAdco (602-842-1204).

2.2 MISCELLANEOUS MATERIALS

- A. Pre-finished Trim Accessories: Manufacturer's standard units, natural aluminum anodized color.
 1. Extruded Aluminum Trim: Slip-on type of predecorated extrusions for external corners, internal corners, exposed and semi-exposed board edges.
 2. Material thickness: .050 inch.
- B. Concealed Fasteners: Types and sizes recommended by predecorated tack board manufacturer, but not less than annularly threaded nails for applications over wood framing, and steel drill screws for applications over steel framing.
- C. Adhesives: Laminating and fastening adhesives as recommended by predecorated tack board manufacturer; in the form of either liquid or vinyl foam tape.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Plan layout and coordinate location of exposed joints in predecorated tack board installations to produce the best visual effect within each space, and to occur at building expansion and control joints and other interruptions in the predecorated tack board surfaces.

3.2 INSTALLATION OF PREDECORATED TACK BOARDS

- A. General: Install predecorated tack boards to comply with manufacturer's instructions, and other requirements indicated.
- B. Color match panels prior to installation in each area by first standing predecorated tack boards against wall, inverting alternate boards and then rearranging them to minimize color variations between adjacent boards to the maximum extent possible.
- C. Isolate perimeter of predecorated tack board construction from abutment with structure by use of space and trim accessories of types indicated or, if not indicated, as recommended by manufacturer.
 1. Where edges of predecorated tack board abut concrete at floor and ceiling, provide 1/8 inch minimum clearance between edges of boards and concrete surfaces to prevent potential wicking.
- D. Install wall and partition boards with vertical joints, and stagger joints with joints in backing boards where multi-ply applications are indicated.
 1. Adhesively to solid backing.
- E. Install predecorated trim to cover bottom and top edges of board at floor and ceiling, except at t-bar ceiling - install before grid and where RWB, install before RWB at floor. Treat joints between boards and other edges as follows:

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1. Pre-finished butt joints - wrapped 2" behind.
 2. Cover corners with predecorated corner trim.
 3. Carry tack board into recesses, sills, jambs, and other wall areas.
- F. Install trim accessories where required and elsewhere as indicated to conceal fasteners and board edges. Comply with manufacturer's instructions for securing trim units and jointing trim. Provide trim in longest lengths available to eliminate or minimize the number of running trim joints.

3.3 CLEANING AND PROTECTION:

- A. Clean dust, excess adhesive, marks and other compounds and stains from exposed faces of installed predecorated tack boards; comply with predecorated tack board manufacturer's recommendations for cleaning methods and materials.
- B. Provide final protection and maintain conditions, in a manner acceptable to Installer, which ensures predecorated tack board construction being without damage or deterioration at time of Notice of Completion.

END OF SECTION 097723

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 0 & 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes, but is not limited to, surface preparation and field painting of the following:
 - 1. Exposed exterior items and surfaces.
 - 2. Exposed interior items and surfaces.
 - 3. Surface preparation, priming, and finish coats specified in this Section are in addition to shop priming and surface treatment specified in other Sections.
- B. Paint exposed surfaces, except where the paint schedules indicate that a surface or material is not to be painted or is to remain natural. If the paint schedules do not specifically mention an item or a surface, paint the item or surface the same as similar adjacent materials or surfaces whether or not schedules indicate colors. If the schedules do not indicate color or finish, the Architect will select from standard colors and finishes available.
- C. Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels.
- D. Related Sections include the following:
 - 1. Division 2 Section "Hot-Mix Asphalt Paving" for traffic-marking paint.
 - 2. Division 3 Section "Cast-In-Place Concrete" for concrete floor sealer.
 - 3. Division 5 Section "Structural Steel" for shop priming structural steel.
 - 4. Division 5 Section "Metal Fabrications" for shop priming ferrous metal.
 - 5. Division 6 Section "Exterior Architectural Woodwork" for shop priming exterior architectural woodwork.
 - 6. Division 6 Section "Interior Architectural Woodwork" for shop priming interior architectural woodwork.
 - 7. Division 8 Section "Standard Steel Doors and Frames" for shop priming steel doors and frames.
 - 8. Division 8 Section "Flush Wood Doors" for wood doors, prefinished.
 - 9. Division 9 Section "Gypsum Board Assemblies" for surface preparation for gypsum board.
 - 10. Division 9 Section "Lath and Plaster" for painting cement plaster over factory color coat.

1.3 DEFINITIONS

- A. General: Standard coating terms defined in ASTM D 16 apply to this Section.
 - 1. Flat refers to a lusterless or matte finish with a gloss range below 15 when measured at an 85-degree meter.
 - 2. Eggshell refers to low-sheen finish with a gloss range between 5 and 20 when measured at

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- a 60-degree meter.
3. Satin refers to low-sheen finish with a gloss range between 15 and 35 when measured at a 60-degree meter.
4. Semigloss refers to medium-sheen finish with a gloss range between 30 and 65 when measured at a 60-degree meter.
5. Full gloss refers to high-sheen finish with a gloss range more than 65 when measured at a 60-degree meter.

1.4 SUBMITTALS

- A. Product Data: For each paint system specified.
 1. Material List: Provide an inclusive list of required coating materials. Indicate each material and cross-reference specific coating, finish system, and application. Identify each material by manufacturer's catalog number and general classification.
 2. Certification by the manufacturer that products supplied comply with federal, state and local regulations controlling use of volatile organic compounds (VOCs).
- B. Samples for Initial Selection: Manufacturer's color charts showing the full range of colors available for each type of finish-coat material indicated.
- C. Project Closeout Requirement:
 1. Extra materials.

1.5 QUALITY ASSURANCE

- A. Source Limitations: Obtain block fillers, primers, and undercoat materials for each coating system from the same manufacturer as the finish coats.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to the Project Site in manufacturer's original, unopened packages and containers bearing manufacturer's name and label, and the following information:
 1. Product name or title of material.
 2. Product description (generic classification or binder type).
 3. Manufacturer's stock number and date of manufacture.
 4. Contents by volume, for pigment and vehicle constituents.
 5. Thinning instructions.
 6. Application instructions.
 7. Color name and number.
 8. VOC content.
- B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg F (7 deg C). Maintain containers used in storage in a clean condition, free of foreign materials and residue.
 1. Protect from freezing. Keep storage area neat and orderly. Remove oily rags and waste daily. Take necessary measures to ensure that workers and work areas are protected from fire and health hazards resulting from handling, mixing, and application.

1.7 PROJECT CONDITIONS

- A. Apply water-based paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 50 and 90 deg F (10 and 32 deg C).
- B. Apply solvent-thinned paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 45 and 95 deg F (7.2 and 35 deg C).
- C. Do not apply paint in snow, rain, fog, or mist; or when the relative humidity exceeds 85 percent; or at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.
 - 1. Painting may continue during inclement weather if surfaces and areas to be painted are enclosed and heated within temperature limits specified by manufacturer during application and drying periods.

1.8 EXTRA MATERIALS

- A. Furnish extra paint materials from the same production run as the materials applied in the quantities described below. Package paint materials in unopened, factory-sealed containers for storage and identify with labels describing contents. Deliver extra materials to the Owner.
 - 1. Quantity: Furnish the Owner with extra paint materials in the quantities indicated below:
 - a. Wall Paint: Two (2) gallons unopened of each color applied.
 - b. Door/Trim: Two (2) gallons unopened of each color applied.
 - c. Stain: Two (2) gallons unopened of each color applied.
 - d. Exterior: Two (2) gallons unopened of each color applied.
 - e. Exterior Trim: Two (2) gallons unopened of each color applied.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products listed in the paint schedules.
- B. Manufacturers Names: The following manufacturers are referred to in the paint schedules by use of shortened versions of their names, which are shown in parentheses:
 - 1. PPG Paints (PPG).
 - 2. Benjamin Moore & Co. (Moore).
 - 3. Pratt & Lambert, Inc. (P & L).
 - 4. Sherwin-Williams Co. (S-W).

2.2 PAINT MATERIALS, GENERAL

- A. Material Compatibility: Provide block fillers, primers, undercoats, and finish-coat materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.

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- B. Material Quality: Provide manufacturer's best-quality paint material of the various coating types specified. Paint-material containers not displaying manufacturer's product identification will not be acceptable.
 - 1. Proprietary Names: Use of manufacturer's proprietary product names to designate colors or materials is not intended to imply that products named are required to be used to the exclusion of equivalent products of other manufacturers. Furnish manufacturer's material data and certificates of performance for proposed substitutions.
- C. Colors: Provide color selections made by the Architect.
 - 1. Allow for colors as follows:
 - a. Each room shall have one (1) field color and one (1) accent wall color. (This does not include doors, frames and miscellaneous items.
 - b. Rooms over 250 square feet, allow for one (1) field color and two (2) accent wall colors.
 - a. Refer to plans for more restrictive requirement where more colors per room are required.
 - b. Rooms over 500 square feet, allow for one (1) field color and three (3) accent wall colors.
 - c. Allow for stain colors:
 - 1) Doors – One (1) color
 - 2) Caseworks – One (1) color
 - 3) Trims/ Custom Woodwork – One (1) color

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with the Applicator present, under which painting will be performed for compliance with paint application requirements.
 - 1. Do not begin to apply paint until unsatisfactory conditions have been corrected and surfaces receiving paint are thoroughly dry.
 - 2. Start of painting will be construed as the Applicator's acceptance of surfaces and conditions within a particular area.
- B. Coordination of Work: Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.
 - 1. Notify the Architect about anticipated problems using the materials specified over substrates primed by others.

3.2 PREPARATION

- A. General: Remove hardware and hardware accessories, plates, machined surfaces, lighting

fixtures, and similar items already installed that are not to be painted. If removal is impractical or impossible because of the size or weight of the item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations in each space or area, reinstall items removed using workers skilled in the trades involved.
- B. Cleaning: Before applying paint or other surface treatments, clean the substrates of substances that could impair the bond of the various coatings. Remove oil and grease before cleaning.
1. Schedule cleaning and painting so dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.
- C. Surface Preparation: Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition and as specified.
1. Provide barrier coats over incompatible primers or remove and reprime.
 2. Cementitious Materials: Prepare concrete, concrete masonry block, cement plaster, and mineral-fiber-reinforced cement panel surfaces to be painted. Remove efflorescence, chalk, dust, dirt, grease, oils, and release agents. Roughen as required to remove glaze. If hardeners or sealers have been used to improve curing, use mechanical methods of surface preparation.
 - a. Use abrasive blast-cleaning methods if recommended by paint manufacturer.
 - b. Determine alkalinity and moisture content of surfaces by performing appropriate tests. If surfaces are sufficiently alkaline to cause the finish paint to blister and burn, correct this condition before application. Do not paint surfaces where moisture content exceeds that permitted in manufacturer's written instructions.
 - c. Clean concrete floors to be painted with a 5 percent solution of muriatic acid or other etching cleaner. Flush the floor with clean water to remove acid, neutralize with ammonia, rinse, allow to dry, and vacuum before painting.
 3. Wood: Clean surfaces of dirt, oil, and other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sand surfaces exposed to view smooth and dust off.
 - a. Scrape and clean small, dry, seasoned knots, and apply a thin coat of white shellac or other recommended knot sealer before applying primer. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood filler. Sand smooth when dried.
 - b. Prime, stain, or seal wood to be painted immediately on delivery. Prime edges, ends, faces, undersides, and backsides of wood, including cabinets, counters, cases, and paneling.
 - c. When transparent finish is required, backprime with spar varnish.
 - d. Backprime paneling on interior partitions where masonry, plaster, or other wet wall construction occurs on backside.
 - e. Seal tops, bottoms, and cutouts of unprimed wood doors with a heavy coat of varnish or sealer immediately on delivery.
 4. Ferrous Metals: Clean ungalvanized ferrous-metal surfaces that have not been shop coated; remove oil, grease, dirt, loose mill scale, and other foreign substances. Use solvent or mechanical cleaning methods that comply with the Steel Structures Painting Council's (SSPC) recommendations.
 - a. Treat bare and sandblasted or pickled clean metal with a metal treatment wash coat before priming.

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- b. Touch up bare areas and shop-applied prime coats that have been damaged. Wire-brush, clean with solvents recommended by paint manufacturer, and touch up with the same primer as the shop coat.
 - c. Apply stripe coat (second coat of primer) on edges, bolts, angles, and welds.
5. Galvanized Surfaces: Clean galvanized surfaces with nonpetroleum-based solvents so surface is free of oil and surface contaminants. Remove pretreatment from galvanized sheet metal fabricated from coil stock by mechanical methods.
- D. Materials Preparation: Mix and prepare paint materials according to manufacturer's written instructions.
1. Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.
 2. Stir material before application to produce a mixture of uniform density. Stir as required during application. Do not stir surface film into material. If necessary, remove surface film and strain material before using.
 3. Use only thinners approved by paint manufacturer and only within recommended limits.
- E. Tinting: Tint each undercoat a lighter shade to simplify identification of each coat when multiple coats of the same material are applied. Tint undercoats to match the color of the finish coat, but provide sufficient differences in shade of undercoats to distinguish each separate coat.

3.3 APPLICATION

- A. General: Apply paint according to manufacturer's written instructions. Use applicators and techniques best suited for substrate and type of material being applied.
1. Paint colors, surface treatments, and finishes are indicated in the schedules.
 2. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.
 3. Provide finish coats that are compatible with primers used.
 4. The term "exposed surfaces" includes areas visible when permanent or built-in fixtures, convactor covers, covers for finned-tube radiation, grilles, and similar components are in place. Extend coatings in these areas, as required, to maintain the system integrity and provide desired protection.
 5. Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces. Before the final installation of equipment, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
 6. Paint interior surfaces of ducts with a flat, nonspecular black paint where visible through registers or grilles.
 7. Paint back sides of access panels and removable or hinged covers to match exposed surfaces.
 8. Finish exterior doors on tops, bottoms, and side edges the same as exterior faces.
 9. Finish interior of wall and base cabinets and similar field-finished casework to match existing.
 10. Sand lightly between each succeeding enamel or varnish coat.
- B. Scheduling Painting: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.
1. The number of coats and the film thickness required are the same regardless of application method. Do not apply succeeding coats until the previous coat has cured as recommended

- by the manufacturer. If sanding is required to produce a smooth, even surface according to manufacturer's written instructions, sand between applications.
2. Omit primer on metal surfaces that have been shop primed and touchup painted.
 3. If undercoats, stains, or other conditions show through final coat of paint, apply additional coats until paint film is of uniform finish, color, and appearance. Give special attention to ensure edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.
 4. Allow sufficient time between successive coats to permit proper drying. Do not recoat surfaces until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and where application of another coat of paint does not cause the undercoat to lift or lose adhesion.
- C. Application Procedures: Apply paints and coatings by brush, roller, spray, or other applicators according to manufacturer's written instructions.
1. Brushes: Use brushes best suited for the type of material applied. Use brush of appropriate size for the surface or item being painted.
 2. Rollers: Use rollers of carpet, velvet back, or high-pile sheep's wool as recommended by the manufacturer for the material and texture required, except on smooth metal surfaces.
 3. Spray Equipment: Use airless spray equipment with orifice size as recommended by the manufacturer for the material and texture required. Use spray equipment on smooth metal surfaces.
- D. Minimum Coating Thickness: Apply paint materials no thinner than manufacturer's recommended spreading rate. Provide the total dry film thickness of the entire system as recommended by the manufacturer.
- E. Mechanical and Electrical Work: Painting of mechanical and electrical work is limited to items exposed in equipment rooms and in occupied spaces.
- F. Mechanical items to be painted include, but are not limited to, the following:
1. Piping, pipe hangers, and supports exposed and not galvanized.
 2. Heat exchangers.
 3. Tanks.
 4. Ductwork exposed except do not paint in mechanical rooms.
 5. Access doors.
 6. Grilles to match ceiling color--spray application, unless ceiling is white.
 7. Motors and mechanical equipment.
 8. Accessory items.
- G. Electrical items to be painted include items may be prefinished, if so, match Architect's color selected regardless of factory options, but are not limited to, the following:
1. Exposed conduit and fittings that are not galvanized or plastic.
 2. Switchgear - spray application – interior/ exterior
 3. Panel boards - spray application – interior/exterior
 4. Transformers - exterior
- H. Block Fillers: Apply block fillers to concrete masonry block at a rate to ensure complete coverage with pores filled.
- I. Prime Coats: Before applying finish coats, apply a prime coat of material, as recommended by the manufacturer, to material that is required to be painted or finished and that has not been prime coated by others. Recoat primed and sealed surfaces where evidence of suction spots or

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unsealed areas in first coat appears, to ensure a finish coat with no burn through or other defects due to insufficient sealing.

- J. Pigmented (Opaque) Finishes: Completely cover surfaces as necessary to provide a smooth, opaque surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.
- K. Transparent (Clear) Finishes: Use multiple coats to produce a glass-smooth surface film of even luster. Provide a finish free of laps, runs, cloudiness, color irregularity, brush marks, orange peel, nail holes, or other surface imperfections. Provide stain coat on all transparent finishes.
 - 1. Provide satin finish for final coats, unless noted otherwise.
- L. Stipple Enamel Finish: Roll and redistribute paint to an even and fine texture. Leave no evidence of rolling, such as laps, irregularity in texture, skid marks, or other surface imperfections.
- M. Completed Work: Match approved samples for color, texture, and coverage. Remove, refinish, or repaint work not complying with requirements.

3.4 CLEANING

- A. Cleanup: At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from the site.
 - 1. After completing painting, clean glass and paint-spattered surfaces. Remove spattered paint by washing and scraping. Be careful not to scratch or damage adjacent finished surfaces.

3.5 PROTECTION

- A. Protect work of other trades, whether being painted or not, against damage by painting. Correct damage by cleaning, repairing or replacing, and repainting, as approved by Architect.
- B. Provide "Wet Paint" signs to protect newly painted finishes. Remove temporary protective wrappings provided by others to protect their work after completing painting operations.
 - 1. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces. Comply with procedures specified in PDCA P1.

3.6 SHEEN SCHEDULE - OPAQUE FINISH

ITEM	SHEEN
<u>Interior:</u>	
Walls, Type A finish	Eggshell
Ceiling, Type A finish	Eggshell
Walls, Type B finish	Semi-gloss
Ceiling, Type B finish	Semi-gloss
HM Doors and HM Frames	Semi-gloss
Window Frames, wood	Semi-gloss
Wood Trim, base and standing rails	Semi-gloss
Wood Paneling/Plywood	Eggshell

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Wood Cabinets	Semi-gloss
Wood Doors	Semi-gloss
<u>Exterior:</u>	
HM Doors and HM Frames	Semi-gloss
Window Frames, wood	Semi-gloss
Plaster/Stucco	Flat
Sheet Metal and Flashing	Eggshell

3.7 SHEEN SCHEDULE - TRANSPARENT FINISH/WITH STAIN

ITEM	SHEEN
Wood Cabinets	Semi-gloss
Wood Doors	Prefinished
Wood Trim and Base	Semi-gloss
Wood Paneling	Semi-gloss

3.8 EXTERIOR PAINT SCHEDULE

- A. Concrete, Stucco, and Masonry (Other than integral color Concrete Masonry Units): Provide the following finish systems over exterior concrete, stucco, and brick masonry surfaces:
1. Eggshell Acrylic Finish: 2 finish coats over a primer.
 - a. Primer: Alkali-resistant, exterior, acrylic-latex primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.3 mils (0.033 mm).
 - 1) PPG: 4-603 Perma-Crete Interior/Exterior Alkali Resistant Primer.
 - 2) Moore: High Build Acrylic Masonry Primer #068.
 - 3) P & L: Z/F 1001 Supreme "1" Multi-Purpose 100 Percent Acrylic Primer.
 - 4) S-W: Loxon Concrete & Masonry Primer/Sealer LX02W0050.
 - b. First and Second Coats: Eggshell, exterior, acrylic-latex paint applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.3 mils (0.058 mm).
 - 1) PPG: 76-45 Sun-Proof Exterior House & Trim Acrylic Satin Latex.
 - 2) Moore: Super Spec Acrylic Low Lustre House Paint #N185.
 - 3) P & L: Z/F 1800 Series Aqua-Shell Exterior Latex Eggshell Paint.
 - 4) S-W: A-100 Acrylic Satin A82W51.
 2. Flat Elastomeric Finish: Two finish coats over a primer.
 - a. Primer: Alkali-resistant, exterior, acrylic-latex primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.3 mils (0.033 mm).

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- 1) PPG: 4-603 Perma-Crete Interior/Exterior Alkali Resistant Primer
 - 2) Moore: High Build Masonry Primer #068.
 - 3) P & L: Z/F 1001 Supreme "1" Multi-Purpose 100 Percent Acrylic Primer.
 - 4) S-W: Loxon Concrete & Masonry Primer/Sealer LX02W0050.
- b. First and Second Coats: Flat finish, exterior, elastomeric coating applied at spreading rate of 80-100 square feet per gallon per coat to achieve a total dry film thickness of not less than 14 mils.
- 1) PPG: 4-110 Perma-Crete Pitt-Flex Elastomeric Coating.
 - 2) Moore: Moorlastic Acrylic Elastomeric Waterproof Coating Flat #056.
 - 3) P & L: Verify name of product
 - 4) S-W: Conflex Sherlastic Elastomeric Coating System CF16W51 or Conflex™ UltraCrete™ System CF17W8 Series (Texture).
3. Semi-gloss, Acrylic-Enamel Finish: 2 finish coats over a rust-inhibitive primer.
- a. Primer: Rust-inhibitive metal primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.3 mils (0.033 mm).
- 1) PPG: 90-912 Series Pitt-Tech Plus Interior/Exterior Primer/Finish DTM.
 - 2) Moore: DTM Acrylic Semi Gloss #P29.
 - 3) P & L: S/D 1009 Supreme "9" Interior/Exterior Alkyd Metal Primer.
 - 4) S-W: Pro Industrial ProCryl Primer B66 Series.
- b. First and Second Coats: Semi-gloss, exterior, acrylic-latex enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.6 mils (0.066 mm).
- 1) PPG: 78-45 Sun-Proof Semi-Gloss Acrylic Latex House and Trim Paint.
 - 2) Moore: DTM Acrylic Semi Gloss #P29.
 - 3) P & L: Z/F 3100 Series Aqua Royal Latex House & Trim Finish.
 - 4) S-W: Pro Industrial DTM Acrylic Semi-Gloss B66-1150.
- B. Concrete Masonry Units: Provide the following finish systems over painted exterior concrete masonry units:
1. Eggshell Acrylic Finish: 2 finish coats over a block filler.
 - a. Block Filler: High-performance, latex block filler applied at spreading rate recommended by the manufacturer to achieve a total dry mill thickness of not less than 4.0 mils (0.102 mm).
- 1) PPG: 6-7 Speedhide Interior/Exterior Masonry Latex Block Filler.
 - 2) Moore: Moorcraft Interior & Exterior Block Filler #285.
 - 3) P & L: Z/F 98 Pro-Hide Plus Block Filler.
 - 4) S-W: Preprite Block Filler B25W25.
- b. First and Second Coats: Eggshell, exterior, acrylic-latex paint applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.3 mils (0.058 mm).
- 1) PPG: 76-45 Sun-Proof Exterior House & Trim Acrylic Satin Latex.

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- 2) Moore: Super Spec Acrylic Low Lustre House Paint #N185.
- 3) P & L: Z/F 1800 Series Aqua-Shell Exterior Latex Eggshell Paint.
- 4) S-W: A-100 Acrylic Satin A82W51.

2. Flat Elastomeric Finish: Two finish coats over a block filler.

- a. Block Filler: High-performance, latex block filler applied at spreading rate recommended by the manufacturer to achieve a total dry mill thickness of not less than 4.0 mils (0.102 mm).

- 1) PPG: 6-7 Speedhide Interior/Exterior Masonry Latex Block Filler.
- 2) Moore: Moorcraft Interior & Exterior Block Filler #285.
- 3) P & L: Z/F 98 Pro-Hide Plus Block Filler.
- 4) S-W: Preprite Block Filler B25W25.

- b. First and Second Coats: Flat finish, exterior, elastomeric coating applied at spreading rate of 80 square feet per gallon per coat to achieve a total dry film thickness of not less than 20 mils.

- 1) PPG: 4-110 Perma-Crete Pitt-Flex Elastomeric Coating.
- 2) Moore: Moorlastic Acrylic Elastomeric Waterproof Coating Flat #056.
- 3) P & L: Verify name of product.
- 4) S-W: Conflex Sherlastic Elastomeric Coating System CF16W51 or Conflex™ UltraCrete™ System CF17W8 Series (Texture).

C. Smooth Wood: Provide the following finish systems over smooth wood siding and other smooth, exterior wood surfaces:

1. Eggshell Acrylic Finish: 2 finish coats over a primer.

- a. Primer: Exterior, acrylic primer, as recommended by the manufacturer for this substrate, applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.5 mils (0.038 mm).

- 1) PPG: 17-921 Series Seal Grip Universal Primer.
- 2) Moore: Super Spec Busan Acrylic Exterior Primer #166.
- 3) P & L: S/D 1002 Suprime “2” Exterior Latex Wood Primer.
- 4) S-W: Exterior Latex Wood Primer B42W8141.

- b. First and Second Coats: Eggshell, exterior, latex paint applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.3 mils (0.058 mm).

- 1) PPG: 76-45 Sun-Proof Exterior House & Trim Acrylic Satin Latex.
- 2) Moore: Super Spec Acrylic Low Lustre House Paint #N185.
- 3) P & L: Z/F 1800 Series Aqua-Shell Exterior Latex Eggshell Paint.
- 4) S-W: A-100 Acrylic Satin A82W51.

2. Semi-gloss, Acrylic-Enamel Finish: 2 finish coats over a rust-inhibitive primer.

- a. Primer: Rust-inhibitive metal primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.3 mils (0.033 mm).

- 1) PPG: 90-912 Pitt-Tech Plus Interior/Exterior Primer/Finish DTM.

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- 2) Moore: DTM Acrylic Semi-Gloss #P29.
- 3) P & L: Verify name of product.
- 4) S-W: Pro Industrial ProCryl Primer B66 Series

- b. First and Second Coats: Semi-gloss, exterior, acrylic-latex enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.6 mils (0.066 mm).

- 1) PPG: 90-1210 Series Pitt-Tech Plus Interior/Exterior Semi-Gloss DTM.
- 2) Moore: DTM Acrylic Semi-Gloss #P29.
- 3) P & L: Verify name of product.
- 4) S-W: Pro Industrial DTM Acrylic Semi-Gloss B66-1150.

- D. Wood Trim: Provide the following finish systems over exterior wood trim:

1. Medium-Shade, Semi-Gloss, Acrylic Enamel Finish: 2 finish coats over a primer.

- a. Primer: Exterior, acrylic primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.5 mils (0.038 mm).

- 1) PPG: 17-921 Series Seal Grip Universal Primer.
- 2) Moore: Super Spec Busan Acrylic Exterior Primer #166.
- 3) P & L: Verify name of product.
- 4) S-W: Exterior Latex Wood Primer B42W8141.

- b. First and Second Coats: Medium-shade, semi-gloss, exterior, ready-mixed, acrylic enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 3.0 mils (0.076 mm).

- 1) PPG: 76-45 Sun-Proof Exterior House and Trim Acrylic Satin Latex.
- 2) Moore: Super Spec Latex House and Trim Paint Semi-Gloss #170.
- 3) P & L: Verify name of product.
- 4) S-W: A-100 Acrylic Satin A82W51.

2. Deep-Color, Semi-Gloss, Acrylic Enamel Finish: 2 finish coats over a primer.

- a. Primer: Exterior, acrylic primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.5 mils (0.038 mm).

- 1) PPG: 17-921 Series Seal Grip Universal Primer.
- 2) Moore: Super Spec Busan Acrylic Exterior Primer #166.
- 3) P & L: Verify name of product.
- 4) S-W: Exterior Latex Wood Primer B42W8141.

- b. First and Second Coats: Deep-color, semi-gloss, exterior, acrylic enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 3.2 mils (0.081 mm).

- 1) PPG: 76-45 Sun-Proof Exterior House and Trim Acrylic Satin Latex.
- 2) Moore: Super Spec Latex House and Trim Paint Semi-Gloss #170.
- 3) P & L: Verify name of product.
- 4) S-W: A-100 Acrylic Satin A82W51.

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3. Flat Acrylic Finish: 2 finish coats over a primer to be applied over the factory primer as required in Section 062013.
 - a. Primer: Exterior, latex primer, as recommended by the manufacturer for this substrate, applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.5 mils (0.038 mm).
 - 1) S-W: Exterior Latex Wood Primer B42W8141.
 - a. First and Second Coats: Flat, exterior, latex paint applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.3 mils (0.058 mm).
 - 1) S-W: Super Paint Exterior Acrylic Latex.
- E. Plywood: Provide the following finish systems over exterior plywood:
 1. Eggshell Finish: 2 finish coats over a primer.
 - a. Primer: Exterior, acrylic, wood primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.5 mils (0.038 mm).
 - 1) PPG: 17-921 Series Seal Grip Universal Primer.
 - 2) Moore: Fresh Start All Purpose Acrylic Primer #023.
 - 3) P & L: S/D 1002 Suprime "2" Exterior Latex Wood Primer.
 - 4) S-W: Exterior Wood Primer B42W8141.
 - b. First and Second Coats: Eggshell, exterior, acrylic-emulsion paint applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.8 mils (0.071 mm).
 - 1) PPG: 76-45 Sun-Proof Exterior House & Trim Acrylic Satin Latex.
 - 2) Moore: Super Spec Acrylic Low Lustre House Paint #N185.
 - 3) P & L: Z/F 1800 Series Aqua Shell Exterior Latex Eggshell Paint.
 - 4) S-W: A-100 Acrylic Satin A82W51.
 2. Semi-Gloss, Acrylic Enamel Finish: 2 finish coats over a rust-inhibitive primer.
 - a. Primer: Rust-inhibitive metal primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.3 mils (0.033 mm).
 - 1) PPG: 90-912 Series Pitt-Tech Plus Interior/Exterior Primer/Finish DTM.
 - 2) Moore: DTM Acrylic Semi-Gloss #P29.
 - 3) P & L: Verify name of product.
 - 4) S-W: DTM Acrylic Semi-Gloss B66-1150.
 - b. First and Second Coats: Semi-gloss, exterior, acrylic enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 3.0 mils (0.076 mm).
 - 1) PPG: 90-1210 Series Pitt-Tech Plus Interior/Exterior Semi-Gloss DTM.
 - 2) Moore: DTM Acrylic Semi-Gloss #P29.
 - 3) P & L: Verify name of product.

- 4) S-W: DTM Acrylic Semi-Gloss B66-1150.

F. Stained Wood: Provide the following stain finish systems over exterior wood:

- 1. Flat Acrylic Finish: One-coat, semitransparent, exterior, acrylic, penetrating wood stain.
 - a. First Coat: Semi-transparent, exterior, acrylic wood stain applied at spreading rate recommended by the manufacturer.
 - 1) PPG: 77-1460 Sun-Proof Deck, Fence & Siding Semi-Transparent Stain.
 - 2) Moore: Arborcoat Semi-Transparent Stain # 638
 - 3) P & L: Verify name of product.
 - 4) S-W: WoodSpaces Exterior Semi-Transparent Stain A15T5.
 - b. Second Coat:
 - 1) Moore: Arborcoat Protective Clear Coat # 636

G. Textured Wood: Provide the following finish systems over textured wood siding and other textured, exterior wood surfaces:

- 1. Flat Acrylic Finish: 2 finish coats over a primer over the factory primer as required in Section 062013.
 - a. Primer: Exterior, Latex primer, as recommended by the manufacturer for this substrate, applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.5 mils (0.038 mm).
 - 1) S-W: Exterior Latex Wood Primer.
 - b. First and Second Coats: Flat, exterior, latex paint applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.3 mils (0.058 mm).
 - 1) S-W: Super Paint Exterior Acrylic Latex.

H. Ferrous Metal: Provide the following finish systems over exterior ferrous metal. Primer is not required on shop-primed items.

- 2. Semi-Gloss, Acrylic-Enamel Finish: 2 finish coats over a rust-inhibitive primer.
 - a. Primer: Rust-inhibitive metal primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.3 mils (0.033 mm).
 - 2) PPG: 90-912 Series Pitt-Tech Plus Interior/Exterior Primer/Finish DTM.
 - 2) Moore: DTM Acrylic Semi Gloss #P29.
 - 3) P & L: Verify name of product.
 - 4) S-W: Pro Industrial ProCryl Primer B66 Series.
 - b. First and Second Coats: Semigloss, exterior, acrylic-latex enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.6 mils (0.066 mm).

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- 1) PPG: 90-1210 Series Pitt-Tech Plus Interior/Exterior Semi-Gloss DTM.
- 2) Moore: DTM Acrylic Semi Gloss #P29.
- 3) P & L: Z/F 3100 Series Aqua Royal Latex House & Trim Finish.
- 4) S-W: Pro Industrial DTM Acrylic Semi-Gloss B66-1150.

- I. Zinc-Coated Metal: Provide the following finish systems over exterior zinc-coated (galvanized) metal surfaces:

1. Semi-gloss, Acrylic-Enamel Finish: 2 finish coats over a galvanized metal primer.

- a. Primer: Galvanized metal primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.2 mils (0.031 mm).

- 1) PPG: 90-912 Pitt-Tech Plus Interior/Exterior Primer/Finish DTM Industrial Enamel.
- 2) Moore: DTM Acrylic Semi Gloss #P29.
- 3) P & L: Z/F 1003 Supreme "3" Interior/Exterior Latex Metal Primer.
- 4) S-W: Pro Industrial ProCryl Primer B66 Series.

- b. First and Second Coats: Semi-gloss, exterior, acrylic-latex enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.6 mils (0.066 mm).

- 1) PPG: 90-1210 Series Pitt-Tech Plus Interior/Exterior Semi-Gloss DTM.
- 2) Moore: DTM Acrylic Semi Gloss #P29.
- 3) P & L: Z/F 3100 Series Aqua Royal Latex House & Trim Finish.
- 4) S-W: Pro Industrial DTM Acrylic Semi-Gloss B66-1150.

3.9 INTERIOR PAINT SCHEDULE

- A. Concrete and Masonry (Other than Concrete Masonry Units): Provide the following paint systems over interior concrete and brick masonry surfaces:

1. Flat Acrylic Finish: 2 finish coats over a primer.

- a. Primer: Alkali-resistant, acrylic-latex, interior primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.0 mil (0.025 mm).

- 1) PPG: 4-603 Perma-Crete Interior/Exterior Alkali Resistant Primer.
- 2) Moore: Fresh Start All Purpose Acrylic Primer #023.
- 3) P & L: Z/F 1004 Supreme "4" Interior Latex Wall Primer.
- 4) S-W: Loxon Concrete & Masonry Primer/Sealer LX02W0050.

- b. First and Second Coats: Flat, latex-based, interior paint applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.5 mils (0.064 mm).

- 1) PPG: 6-4110 Series Speedhide Zero Interior Wall Flat Latex.
- 2) Moore: Super Spec Latex Flat #275.
- 3) P & L: Z/F 2000 Series Vapex Latex Flat Wall Finish.
- 4) S-W: ProMar 200 Flat B30W251.

2. Eggshell, Acrylic-Enamel Finish: 2 finish coats over a primer.

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- a. Primer: Alkali-resistant, acrylic-latex, interior primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.0 mil (0.025 mm).
 - 1) PPG: 4-603 Perma-Crete Interior/Exterior Alkali Resistant Primer.
 - 2) Moore: Fresh Start All Purpose Acrylic Primer #023.
 - 3) P & L: Z/F 1004 Supreme "4" Interior Latex Wall Primer.
 - 4) S-W: Loxon Concrete & Masonry Primer/Sealer LX02W0050.

 - b. First and Second Coats: Eggshell, acrylic-latex, interior enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.8 mils (0.071 mm).
 - 1) PPG: 6-4310 Series Speedhide Zero Interior Enamel Eggshell Latex.
 - 2) Moore: Super Spec Latex Eggshell #274.
 - 3) P & L: Z/F 4000 Series Accolade Interior Velvet.
 - 4) S-W: Pro Mar 200 Eggshell B20W2251.
- B. Concrete Masonry Units: Provide the following finish systems over interior concrete masonry block units:
1. Flat Acrylic Finish: 2 finish coats over a block filler.
 - a. Block Filler: High-performance, latex-based, block filler applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 5.0 mils (0.13 mm).
 - 1) PPG: 6-7 Speedhide Interior/Exterior Masonry Latex Block Filler.
 - 2) Moore: Moorcraft Interior & Exterior Block Filler #285.
 - 3) P & L: Z 98 Pro-Hide Plus Latex Block Filler.
 - 4) S-W: Preprite Block Filler B25W25.

 - b. First and Second Coats: Flat, latex-based, interior paint applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.5 mils (0.064 mm).
 - 1) PPG: 6-4110 Series Speedhide Zero Interior Wall Flat Latex.
 - 2) Moore: Super Spec Latex Eggshell #275.
 - 3) P & L: Z/F 2000 Series Vapex Latex Flat Wall Finish.
 - 4) S-W: Pro Mar 200 Eggshell B20W2251.

 2. Eggshell, Acrylic-Enamel Finish: 2 finish coats over a block filler.
 - a. Block Filler: High-performance, latex-based, block filler applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 5.0 mils (0.13 mm).
 - 1) PPG: 6-7 Speedhide Interior/Exterior Masonry Latex Block Filler.
 - 2) Moore: Moorcraft Interior & Exterior Block Filler #285.
 - 3) P & L: Z 98 Pro-Hide Plus Latex Block Filler.
 - 4) S-W: Preprite Block Filler B25W25.

 - b. First and Second Coats: Eggshell, acrylic-latex, interior enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not

less than 2.8 mils (0.071 mm).

- 1) PPG: 6-4310 Series Speedhide Zero Interior Enamel Eggshell Latex.
- 2) Moore: Super Spec Latex Enamel #274.
- 3) P & L: Z/F 4000 Series Accolade Interior Velvet.
- 4) S-W: Pro Mar 200 Eggshell B20W2251.

C. Gypsum Board: Provide the following finish systems over interior gypsum board surfaces:

1. Flat Acrylic Finish: 2 finish coats over a primer.

- a. Primer: Latex-based, interior primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.2 mils (0.031 mm).

- 1) PPG: 6-2 Speedhide Interior Quick-Drying Latex Primer-Sealer.
- 2) Moore: Super Spec Latex Enamel Undercoater and Primer Sealer #253.
- 3) P & L: Z/F 1004 Supreme "4" Interior Latex Wall Primer.
- 4) S-W: PrepRite 200 Primer B28W2600.

- b. First and Second Coats: Flat, acrylic-latex-based, interior paint applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.5 mils (0.064 mm).

- 1) PPG: 6-4110 Series Speedhide Zero Interior Wall Flat Latex.
- 2) Moore: Super Spec Latex Flat #275.
- 3) P & L: Z/F 2000 Series Vapex Latex Flat Wall Finish.
- 4) S-W: Pro Mar 200 Flat B30W251.

2. Eggshell, Acrylic-Enamel Finish: 2 finish coats over a primer.

- a. Primer: Latex-based, interior primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.2 mils (0.031 mm).

- 1) PPG: 6-2 Speedhide Interior Quick –Drying Latex Sealer.
- 2) Moore: Super Spec Latex Enamel Undercoat and Primer Sealer # 253.
- 3) P & L: Z/F 1004 Supreme "4" Interior Latex Wall Primer.
- 4) S-W: Promar 200 Primer B28W2600.

- b. First and Second Coats: Eggshell, acrylic-latex, interior enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.8 mils (0.071 mm).

- 1) PPG: 6-4310 Series Speedhide Zero Interior Enamel Eggshell Latex.
- 2) Moore: Super Spec Latex Eggshell # 274.
- 3) P & L: Z/F 4000 Series Accolade Interior Velvet.
- 4) S-W: Pro Mar 200 Eggshell B20W2200.

3. Semi-gloss, Acrylic-Enamel Finish: 2 finish coats over a primer.

- a. Primer: Latex-based, interior primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.2 mils (0.031 mm).

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- 1) PPG: 6-2 Speedhide Interior Quick –Drying Latex Sealer.
- 2) Moore: Super Spec Latex Enamel Undercoater and Primer Sealer #253.
- 3) P & L: Z/F 1004 Suprime "4" Interior Latex Wall Primer.
- 4) S-W: Promar 200 Primer B28W2600.

- b. First and Second Coats: Semi-gloss, acrylic-latex, interior enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.8 mils (0.071 mm).

- 1) PPG: 6-4510 Series Speedhide Zero Interior Semi-Gloss Acrylic Latex.
- 2) Moore: Super Spec Latex Semi-Gloss #276.
- 3) P & L: Verify name for Semi-gloss.
- 4) S-W: Pro Mar 200 Semi-Gloss B31W251.

- D. Plaster: Provide the following finish systems over new, interior plaster surfaces:

1. Flat Acrylic Finish: 2 finish coats over a primer.

- a. Primer: Alkali-resistant, acrylic-latex, interior primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.4 mils (0.036 mm).

- 1) PPG: 4-603 Perma-Crete Interior/Exterior Alkali Resistant Primer.
- 2) Moore: Fresh Start All Purpose Acrylic Primer #023.
- 3) P & L: Z/F 1001 Supreme "1" 100 Percent Acrylic Multi-Purpose Primer.
- 4) S-W: PrepRite 200 Primer B28W200.

- b. First and Second Coats: Flat, acrylic-latex, interior paint applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.5 mils (0.064 mm).

- 1) PPG: 6-4110 Series Speedhide Zero Interior Wall Flat Latex.
- 2) Moore: Super Spec Latex Flat #275.
- 3) P & L: Z/F 2000 Series Vapex Latex Flat Wall Finish.
- 4) S-W: Pro Mar 200 Flat B30W251.

2. Eggshell, Acrylic-Enamel Finish: 2 finish coats over a primer.

- a. Primer: Alkali-resistant, alkyd- or latex-based, interior primer, as recommended by the manufacturer for this substrate, applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.2 mils (0.031 mm).

- 1) PPG: 4-603 Perma-Crete Interior/Exterior Alkali Resistant Primer.
- 2) Moore: Fresh Start All Purpose Acrylic Primer #023.
- 3) P & L: Z/F 1001 Supreme "1" 100 Percent Acrylic Multi-Purpose Primer.
- 4) S-W: PrepRite 200 Primer B28W200.

- b. First and Second Coats: Eggshell, acrylic-latex, interior enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.8 mils (0.071 mm).

- 1) PPG: 6-4310 Series Speedhide Zero Interior Enamel Eggshell Latex.
- 2) Moore: Super Spec Latex Eggshell #274.
- 3) P & L: Z/F 4000 Series Accolade Interior Velvet.

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4) S-W: Pro Mar 200 Eggshell B20W2251.

E. Woodwork and Hardboard: Provide the following paint finish systems over new, interior wood surfaces:

1. Eggshell, Acrylic-Enamel Finish: 2 finish coats over a primer.

a. Primer: Alkyd- or acrylic-latex-based, interior wood primer, as recommended by the manufacturer for this substrate, applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.4 mils (0.036 mm).

- 1) PPG: 17-921 Seal-Grip Universal Primer.
- 2) Moore: Fresh Start All Purpose Alkyd Primer #C024.
- 3) P & L: Z/F 1001 Supreme "1" 100 Percent Acrylic Multi-Purpose Primer.
- 4) S-W: Premium Wall & Wood Primer B28W8111.

b. First and Second Coats: Eggshell, acrylic-latex, interior enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.8 mils (0.071 mm).

- 1) PPG: 6-4310 Series Speedhide Zero Interior Enamel Eggshell Latex.
- 2) Moore: Super Spec Latex Eggshell #274.
- 3) P & L: Z/F 4000 Series Accolade Interior Velvet.
- 4) S-W: Pro Classic Satin B20W51.

2. Semi-Gloss, Acrylic Enamel Finish: 2 finish coats over a primer.

a. Primer: Alkyd- or acrylic-latex-based, interior wood primer, as recommended by the manufacturer for this substrate, applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.4 mils (0.036 mm).

- 1) PPG: 17-921 Seal-Grip Universal Primer.
- 2) Moore: Fresh Start All Purpose Alkyd Primer # C024.
- 3) P & L: Verify name of semi gloss.
- 4) S-W: Premium Wall & Wood Primer B28W8111.

b. First and Second Coats: Semi gloss acrylic enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.8 mils (0.071 mm).

- 1) PPG: 6-4510 Series Speedhide Zero Interior Semi-Gloss Acrylic Latex.
- 2) Moore: Super Spec Latex Semi-Gloss #276.
- 3) P & L: Verify name of semi gloss.
- 4) S-W: Pro Classic Semi-Gloss B31W51.

F. Stained Woodwork: Provide the following stained finishes over new, interior woodwork:

1. Alkyd-Based, Satin-Varnish Finish: 2 finish coats of an alkyd-based, clear-satin varnish over a sealer coat and an alkyd-based, interior wood stain. Wipe wood filler before applying stain.

a. Filler Coat: Paste-wood filler applied at spreading rate recommended by the

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manufacturer.

- 1) PPG: None required.
- 2) Moore: Benwood Paste Wood Filler.
- 3) P & L: None required.
- 4) S-W: Minwax Stainable Wood Filler (Product #428).

b. Stain Coat: Alkyd-based, interior wood stain applied at spreading rate recommended by the manufacturer.

- 1) PPG: 44500 Olympic Interior Oil Stain – Low VOC.
- 2) Moore: Benwood Penetrating Stain #234.
- 3) P & L: S-Series Tonetic Wood Stain.
- 4) S-W: Minax Performance Series Tintable Wood Stain 250 VOC.

c. Sealer Coat: Clear sanding sealer applied at spreading rate recommended by the manufacturer.

- 1) PPG: 41060 Olympic Interior Oil Based Sanding Sealer.
- 2) Moore: Moore's Interior Wood Finishes Quick-Dry Sanding Sealer #413.
- 3) P & L: H-40 Sanding Sealer.
- 4) S-W: Minwax Water Based Helmsman Spar Urethane.

d. First and Second Finish Coats: Alkyd-based or polyurethane varnish, as recommended by the manufacturer, applied at spreading rate recommended by the manufacturer.

- 1) PPG: 43886 Olympic Interior Oil based Polyurethane Satin.
- 2) Moore: Benwood Stays Clear Acrylic Polyurethane #423.
- 3) P & L: H24 38 Clear Finish Gloss.
- 4) S-W: Minwax Water Based Helmsman Spar Urethane.

2. Waterborne, Satin-Varnish Finish: 2 finish coats of a waterborne, clear-satin varnish over a sealer coat and a waterborne, interior wood stain. Wipe wood filler before applying stain.

a. Filler Coat: Paste-wood filler applied at spreading rate recommended by the manufacturer.

- 1) PPG: None required.
- 2) Moore: Benwood Paste Wood Filler #238.
- 3) P & L: None required.
- 4) S-W: Minwax Stainable Wood Filler (Product #428).

b. Stain Coat: Waterborne, interior wood stain applied at spreading rate recommended by the manufacturer.

- 1) PPG: 44500 Olympic Interior Oil Stain – Low VOC.
- 2) Moore: Benwood Penetrating Stain #234.
- 3) P & L: Z 197 Acrylic Latex Stain Interior.
- 4) S-W: Minax Performance Series Tintable Wood Stain 250 VOC.

c. Sealer Coat: Clear sanding sealer applied at spreading rate recommended by the manufacturer.

- 1) PPG: 41061 Olympic Water Based Sanding Sealer.

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- 2) Moore: Moore's Interior Wood Finishes Quick-Dry Sanding Sealer #413.
 - 3) P & L: Z 7520 Latex Sanding Sealer.
 - 4) S-W: Minwax Water Based Helmsman Spar Urethane.
- d. First and Second Finish Coats: Waterborne, varnish finish applied at spreading rate recommended by the manufacturer.
- 1) PPG: 42786 Olympic Water-Based Polyurethane Satin.
 - 2) Moore: Benwood Stays Clear Acrylic Polyurethane #423.
 - 3) P & L: Z 17 Acrylic Latex Varnish, Satin.
 - 4) S-W: Minwax Water Based Helmsman Spar Urethane.
3. Water-Based, Semi-Gloss, Varnish Finish: 2 finish coats of a waterborne, clear, full-gloss varnish over a sealer coat and a interior wood stain. Wipe filler before applying stain.
- a. Filler Coat: Paste-wood filler applied at spreading rate recommended by the manufacturer.
- 1) PPG: None required.
 - 2) Moore: Benwood Paste Wood Filler #238.
 - 3) P & L: None required.
 - 4) S-W: Minwax Stainable Wood Filler (Product #428).
- b. Stain Coat: Interior wood stain applied at spreading rate recommended by the manufacturer.
- 1) PPG: 44500 Olympic Interior Oil Stain – Low VOC.
 - 2) Moore: Benwood Penetrating Stain #234.
 - 3) P & L: Z 197 Acrylic Latex Stain Interior.
 - 4) S-W: Minax Performance Series Tintable Wood Stain 250 VOC.
- c. Sealer Coat: Clear sanding sealer applied at spreading rate recommended by the manufacturer.
- 1) PPG: 41061 Olympic Water Based Sanding Sealer.
 - 2) Moore: Moore's Interior Wood Finishes Quick-Dry Sanding Sealer #413.
 - 3) P & L: Z 7520 Latex Sanding Sealer.
 - 4) S-W: Minwax Water Based Helmsman Spar Urethane.
- d. First and Second Finish Coats: Waterborne finish applied at spreading rate recommended by the manufacturer.
- 1) PPG: 42784 Olympic Water-Based Polyurethane Gloss.
 - 2) Moore: Stays Clear Acrylic Polyurethane #422, Gloss.
 - 3) P & L: Z 24 Acrylic Latex Varnish, Gloss.
 - 4) S-W: Minwax Water Based Helmsman Spar Urethane.
- G. Natural-Finish Woodwork: Provide the following natural finishes over new, interior woodwork:
1. Alkyd-Based, Satin-Varnish Finish: 2 finish coats of an alkyd-based, clear-satin varnish over a sanding sealer. Provide wood filler on open-grain wood before applying first varnish coat.
 - a. Filler Coat: Paste-wood filler applied at spreading rate recommended by the manufacturer.

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- 1) PPG: None required.
 - 2) Moore: Benwood Paste Wood Filler #238.
 - 3) P & L: None required.
 - 4) S-W: Minwax Stainable Wood Filler (Product #428).
- b. Sealer Coat: Clear sanding sealer applied at spreading rate recommended by the manufacturer.
- 1) PPG: 41060 Olympic Oil Based Sanding Sealer.
 - 2) Moore: Moore's Interior Wood Finishes Quick-Dry Sanding Sealer #413.
 - 3) P & L: H-40 Sanding Sealer.
 - 4) S-W: Minwax Water Based Helmsman Spar Urethane.
- c. First and Second Finish Coats: Alkyd-based or polyurethane varnish, as recommended by the manufacturer, applied at spreading rate recommended by the manufacturer.
- 1) PPG: 43886 Olympic Oil Based Polyurethane Satin.
 - 2) Moore: Benwood Stays Clear Acrylic Polyurethane #423.
 - 3) P & L: H24 38 Clear Finish Gloss.
 - 4) S-W: Minwax Water Based Helmsman Spar Urethane.
- H. Natural-Finish Woodwork: Provide the following natural finishes over existing, interior woodwork:
2. Water Based-Varnish Finish: 2 finish coats of water borne, clear-semi gloss varnish. Provide wood filler on open-grain wood before applying first varnish coat.
- d. Filler Coat: Paste-wood filler applied at spreading rate recommended by the manufacturer.
- 2) PPG: None required.
 - 3) Moore: Benwood Paste Wood Filler #238.
 - 3) P & L: None required.
 - 4) S-W: Minwax Stainable Wood Filler (Product #428).
- e. First and Second Finish Coats: water borne polyurethane varnish, as recommended by the manufacturer, applied at spreading rate recommended by the manufacturer.
- 1) S-W: Minwax Water Based Helmsman Spar Urethane.
- I. Ferrous Metal: Provide the following finish systems over ferrous metal:
1. Eggshell, Acrylic-Enamel Finish: 2 finish coats over a primer.
- a. Primer: Quick-drying, rust-inhibitive, alkyd-based or epoxy-metal primer, as recommended by the manufacturer for this substrate, applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.5 mils (0.038 mm).
- 1) PPG: 90-912 Series Pitt-Tech Plus Interior/Exterior Primer/Finish DTM.
 - 2) Moore: Acrylic Metal Primer #P04..
 - 3) P & L: Verify name of product.
 - 4) S-W: Pro Industrial ProCryl Primer B66 Series.

- b. First and Second Coats: Eggshell, acrylic-latex, interior enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.8 mils (0.071 mm).
 - 1) PPG: 90-1110 Series Pitt-Tech Plus Interior/Exterior Satin DTM.
 - 2) Moore: Super Spec Latex Eggshell #274.
 - 3) P & L: Z/F 4000 Series Accolade Interior Velvet.
 - 4) S-W: Pro Industrial DMT Acrylic Eg-Shel B66-661.

- 2. Semi-Gloss, Acrylic-Enamel Finish: 2 finish coats over a primer.
 - a. Primer: Quick-drying, rust-inhibitive, alkyd-based or epoxy-metal primer, as recommended by the manufacturer for this substrate, applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.5 mils (0.038 mm).
 - 1) PPG: 90-912 Series Pitt-Tech Plus Interior/Exterior Primer/Finish DTM.
 - 2) Moore: DTM Acrylic Semi-Gloss #P29.
 - 3) P & L: Verify name of product.
 - 4) S-W: Pro Industrial ProCryl Primer B66 Series.

 - b. First and Second Coats: Semi-gloss, acrylic-latex, interior enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.5 mils (0.064 mm).
 - 1) PPG: 90-1210 Series Pitt-Tech Plus Interior/Exterior Semi-Gloss DTM.
 - 2) Moore: DTM Acrylic Semi-Gloss #P29.
 - 3) P & L: Z/F 4400 Series Accolade Interior High Gloss.
 - 4) S-W: Pro Industrial DTM Acrylic Semi-Gloss B66-1150.

- J. Zinc-Coated Metal: Provide the following finish systems over zinc-coated metal:
 - 1. Flat Acrylic Finish: 2 finish coats over a primer.
 - a. Primer: Galvanized metal primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.2 mils (0.031 mm).
 - 1) PPG: 90-912 Pitt-Tech Plus Pack Interior/Exterior Primer/Finish DTM Industrial Enamel.
 - 2) Moore: Acrylic Metal Primer #P04.
 - 3) P & L: Z/F 1003 Supreme "3" Interior/Exterior Latex Metal Primer.
 - 4) S-W: Pro Industrial ProCryl Primer B66 Series.

 - b. First and Second Coats: Flat, acrylic-latex, interior paint applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.5 mils (0.064 mm).
 - 1) PPG: 90-912 Pitt-Tech Plus Pack Interior/Exterior Primer/Finish DTM Industrial Enamel.
 - 2) Moore: Super Spec Latex Flat #275.
 - 3) P & L: Z/F 4600 Series Accolade Interior Flat Enamel.
 - 4) S-W: DTM Primer Finish B66W1.

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2. Eggshell, Acrylic-Enamel Finish: 2 finish coats over a primer.
 - a. Primer: Galvanized metal primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.2 mils (0.031 mm).
 - 1) PPG: 90-912 Pitt-Tech Plus Interior/Exterior Primer/Finish DTM Industrial Enamel.
 - 2) Moore: Acrylic Metal Primer #P04.
 - 3) P & L: Z/F 1003 Supreme "3" Interior/Exterior Latex Metal Primer.
 - 4) S-W: Pro Industrial ProCryl Primer B66 Series.
 - b. First and Second Coats: Eggshell, acrylic-latex, interior enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.8 mils (0.071 mm).
 - 1) PPG: 90-1110 Series Pitt-Tech Plus Interior/Exterior Satin DTM.
 - 2) Moore: Super Spec Latex Eggshell #274.
 - 3) P & L: Z/F 4000 Series Accolade Interior Velvet.
 - 4) S-W: Pro Industrial DMT Acrylic Eg-Shel B66-661.
3. Semi-Gloss, Acrylic-Enamel Finish: 2 coats over a primer.
 - a. Primer: Galvanized metal primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.2 mils (0.031 mm).
 - 1) PPG: 90-912 Pitt-Tech Plus Interior/Exterior Primer/Finish DTM Industrial Enamel.
 - 2) Moore: DTM Acrylic Semi-Gloss #P29.
 - 3) P & L: Z/F 1003 Supreme "3" Interior/Exterior Latex Metal Primer.
 - 4) S-W: Pro Industrial ProCryl Primer B66 Series.
 - b. First and Second Coats: semi-gloss, acrylic-latex, interior enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.5 mils (0.064 mm).
 - 1) PPG: 90-1210 Series Pitt-Tech Plus Interior/Exterior Semi-Gloss DTM.
 - 2) Moore: DTM Acrylic Semi Gloss #P29.
 - 3) P & L: Z/F 4400 Series Accolade Interior High Gloss.
 - 4) S-W: Pro Classic Semi-Gloss B31W51 or Pro Industrial DTM Acrylic Semi Gloss B66-1150.

END OF SECTION 099000

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 0 & 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes, but not limited to, the following:
 - 1. Fire extinguishers and cabinets.
 - 2. Coat hooks.
 - 3. Vinyl-fabric-faced tackboards.
 - 4. Detectable warning mats.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 6 Section "Rough Carpentry" for wood backing for installation.
 - 2. Division 22 Section "Plumbing," for plumbing fixtures that receives pre-formed trap/stop insulation.
 - 3. Division 26 Sections for electrical wiring, connections, and installation of power at accessories requiring electrical service.

1.3 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.
- B. Product data for each type of material/product specified.
- C. Wiring diagram for electrically operated products and requirements for type of power and connections required for operation.
- D. Project Closeout Requirement:
 - 1. Cleaning and maintenance data.

1.4 QUALITY ASSURANCE

- A. Single Source Responsibility: Obtain each type of product required from a single manufacturer as a complete unit, including necessary mounting hardware and accessories.
- B. Coordination of Work: Coordinate layout and installation of products with other construction supported by, or penetrating through, ceilings, walls, floor, and etc.

1.5 DELIVERY, STORAGE, AND HANDLING

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- A. Do not deliver items until building is enclosed, other construction within spaces where items will be installed is substantially complete, and installation of items is ready to take place.
- B. Protect items from damage during delivery, handling, storage, and installation.
- C. Store products in manufacturer's protective packages in a position that complies with product manufacturer's directions. Keep units in manufacturer's protective packages until time of installation.

PART 2 - PRODUCTS

2.1 FIRE EXTINGUISHERS AND CABINETS

A. Portable Fire Extinguisher:

- 1. (4-A: 80-B: C) 10 pound nominal capacity UL rating of 4A:80B:C, FM approval, 20" high 5" cylinder diameter, hose discharge. Glossy red polyester coated steel cylinder with pressure gage. Fully charged.
 - a. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
 - 1) Potter Roemer, "# 3010"
 - 2) Larsen's, "# MP10"
 - 3) JL Industries Inc. "Cosmic 10E", (use bracket MB846C where no cabinet)
- 2. (60-B:C) 10 pound nominal capacity UL rating of 60B:C, FM approval, 20" high 5" cylinder diameter, hose discharge. Glossy red polyester coated steel cylinder with pressure gage. Fully charged with surface mounting bracket.
 - a. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
 - 1) Potter Roemer, "# 3310" with #3904 bracket
 - 2) Larsen's, "# DC10" with JL Industries MB810 bracket
 - 3) JL Industries Inc. "Galaxy 10" with MB810 bracket

B. Manufacturers for surface mounted brackets for fire extinguishers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:

- 1. "MB" series, JL Industries, Inc. (Marine/vehicle bracket series)

2.2 DETECTABLE WARNING MAT/TRUNCATED DOMES

- A. Detectable warning shall consist of a surface of truncated domes aligned in a square grid pattern. Dome size: Truncated domes in a detectable warning surface shall have a base diameter of 0.9 in (22.9 mm) minimum to 0.92 inches (23.4 mm) maximum, a top diameter of 50% (0.45") of the base diameter minimum to 65% (0.47") of the base diameter maximum and a height of 0.18

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inches (4.6 mm) minimum to 0.22 inches (5.6 mm) maximum.

B. Materials:

1. Detectable Warning Mat:

a. Size: 36" x 48" mat with 481 truncated domes:

1) Truncated dome specification:

- Base Diameter 0.9" (22.9 mm) to 0.92" (23.4 mm)
- Top Diameter 0.45" (11.4 mm) to 0.47" (11.9 mm)
- Height 0.18" (4.6 mm) to 0.22" (5.6 mm)
- Spacing 2.3" (58 mm) to 2.4" (61 mm), (center-to-center, in-line)

b. Thickness 1/4 inch, top of dome to bottom of mat.

c. Color and Design: As selected by Architect. Color to be FS33538 of Federal Standard 595C and have a 70% visual contrast with adjacent surface.

a. Composition: Rubber, contains 10% recycled material.

1. DPS Ground Sealant/Adhesive: Synthetic rubber base all-weather adhesive. Protects against water/moisture. Prevents any movement of product. Bonds to numerous/types of surfaces.

2. DPS Seam Sealer: Sealant and mat vulcanize. 1 oz./15-20 mat seams.

3. Distributor/Manufacturer: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:

a. "ADA Solutions, Inc. (800) 372-0519".

4. DPS/Detectable Warning Mat - ASTM #1028-89.

C. Examination:

1. Verify applied surface(s) are free of dust, grease, oil, water and any other moisture-bearing substances.

2. Green concrete curing period (minimum) fourteen (14) to twenty-one (21) days before installing Detectable Warning Mat. If installing on salt finishes or exposed aggregate, surface shall be prepared with a sealant per manufacturer.

3. Verify surfaces are free of substances that may impair adhesion of new adhesive and finish material.

4. Asphalt/curing period: The same period as if striping fresh asphalt.

D. Preparation and Installation:

1. Fill cracks, joints, holes and other defects with the applied surface to achieve a smooth, flat, moisture free, hard surface.

a. Do not water down the area. Surface must be completely dry.

2. Prohibit traffic until filler is cured. Do not install Mats on painted surfaces. Remove all paint and allow sufficient drying time.

3. Wire brush entire area where Mats are to be installed.

4. Sweep area clean of all dirt and debris.

5. Lay out the Mats in the area to be installed. Do not stretch Mats.

6. Apply 2-inch wide masking tape around perimeter of Mat(s), leaving less than a 1/4-inch space between edges of Mat(s) and edge of tape. Remove Mat(s).

7. Remove the backing from the Mat(s), enabling the Mat adhesive to relax.

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8. Apply an even, light coat of DPS ground sealant/adhesive to area. Spread with a squeegee. Also, with a paint brush, apply a thin coat of adhesive to the back of the Mat(s). Allow ground sealant/adhesive to dry until "tacky". (Squeegee one Mat area at a time with an overlap into next Mat(s) area.)
9. Install one Mat at a time to marked off area. Apply pressure to top of domes and areas between domes to achieve 100% adhesion. Press firmly--100% pressure over entire area is vital.
10. Wipe seams clean. When installing two or more Mats together, DPS clear seam sealer shall be used. Apply 2" masking tape to both sides of the seam, 1/8" away from the seam. This will leave a 1/4-inch area for application of the clear seam sealer. Apply a very small, continuous string of seam sealer to all inside seams. Spread seam sealer with a clean 1" putty knife, or equivalent. As seam sealer is being applied, pull up the tape, allowing a clean appearance. Seams shall be 100% sealed to prevent leakage of moisture/water. Allow to dry thoroughly, approximately two (2) minutes.
11. Remove masking tape from the perimeter of Mat(s).
12. Apply a small continuous bead of caulking (GE 100% clear rubber silicone) to the entire perimeter of Mat(s). Wipe with putty knife at a 45-degree angle.
13. Prohibit traffic on Detectable Warning Mat until silicone is completely dry.

E. Special Warranty:

1. Special warning surfaces shall comply with CBC Sections 11B-705 Provide minimum 5-year warranty per DSA Bulletin.

2.3 COAT HOOKS

- A. Surface-mounted coat hooks. Peter Pepper is used as a standard for selection. See Plans for types/locations/model numbers.
- B. Basis-of- Design Product: The design for each piece of coat hooks is based on the product named. Subject to compliance with requirements, provide either the named product or an approved comparable product by one of the other manufactures specified. Subject to compliance with requirements, manufacturers offering coat hooks that may be incorporated into the Work include, but are not limited to, the following. Model numbers for coat hooks manufactured by Peter Pepper are listed to establish a standard of quality for design, function, materials and workmanship. Other manufacturers may be submitted for evaluation by the Architect. Approval shall be obtained 45 days after Contract date. The Architect shall be the sole judge as to the acceptability of all products submitted for substitution.
 1. Model number: See Accessory Schedule.

2.4 VINYL-FABRIC-FACED TACKBOARDS

- A. Provide mildew-resistant, washable, vinyl fabric complying with FS CCC-W-408, Type II, weighing not less than 13 ounces per square yard, laminated to 1/4-inch thick cork sheet. Provide fabric that has a flame spread rating of 25 or less when tested in accordance with ASTM E 84. Provide color and texture as scheduled or as selected from the manufacturer's standards.
 1. Backing: Make panels rigid by factory laminating cork face sheet under pressure to 1/4-inch thick hardboard backing.
- B. Manufacturers:
 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:

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- a. Tackboards:
 - 1) Best-Rite Chalkboard Co.
 - 2) Carolina Chalkboard Co.
 - 3) Claridge Products and Equipment, Inc.
 - 4) Greensteel, Inc.
 - 5) Weber Costello Co.

ACCESSORIES AND MISCELLANEOUS MATERIALS

A. Adhesive Epoxy

- 1. Description:
 - a. High performance pre-thickened, two-part epoxy adhesives for secondary bonding of laminated composites, steel, aluminum, cast iron, concrete, stone, and most wood species. Adhesives will bond these materials, to one another in any combination
 - b. Shear thinning resins and hardeners are thixotropic gels. The mixture fills gaps and will not sag on vertical surfaces. The material wets out the substrate, making priming or pre-wetting unnecessary on most surfaces, while ensuring a good bond.
 - c. Fast cure speed hardener provides approximately 20 minutes of working time at 72°F (22°C). A bead will gel in 3 to 4 hours.
- 2. Basis-of-Design Product: The design for each piece of Adhesive Epoxy is based on the product named. Subject to compliance with requirements, provide either the named product or an approved comparable product by one of the other manufactures specified. Subject to compliance with requirements, manufacturers offering Adhesive Epoxy that may be incorporated into the Work include, but are not limited to, the following. Model numbers for Adhesive Epoxy manufactured by Pro-Set Inc. are listed to establish a standard of quality for design, function, materials and workmanship. Other manufacturers may be submitted for evaluation by the Architect. Approval shall be obtained 45 days after Contract date. The Architect shall be the sole judge as to the acceptability of all products submitted for substitution.
 - a. “ADV-175-ADV-273”

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Install items at locations indicated.

3.2 PROTECTION AND CLEANING

- A. Protect items after installation from damage during construction. If despite such protection damage occurs, remove and replace damaged components or entire unit as required to provide units in their original, undamaged condition.

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1. Provide temporary covering of products until time of Notice of Completion. Use type of covering approved by screen manufacturer that will effectively protect product from abrasion, breakage, or other damage.
- B. Wash items on both faces immediately prior to date scheduled for inspection intended to establish date of Notice of Completion. Use methods and cleaning materials recommended by manufacturer, taking care not to scratch or damage items in any way.

END OF SECTION 100000

SECTION 101423 - SIGNS

4/18/17

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 0 & 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes, but not limited to, the following items:
 - 1. Frameless door signs in aluminum frames.
 - 2. Door pictograms.
- B. Related Sections: The following sections contain requirements that relate to this section:
 - 1. Division 10 Section "Exterior Post and Panel Signs" for exterior signs.
 - 2. Division 22 Section "Mechanical" for labels, tags, and nameplates for mechanical equipment.
 - 3. Division 26 Section "Electrical" for labels, tags, and nameplates for electrical equipment.

1.3 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of the Contract and Division 1 Specification Sections.
- B. Product Data: Include manufacturer's construction details relative to materials, dimensions of individual components, profiles, and finishes for each type of sign required.
- C. Shop Drawings: Provide shop drawings for fabrication and erection of signs. Include plans, elevations, and large-scale sections of typical members and other components. Show anchors, grounds, reinforcement, accessories, layout, and installation details.
 - 1. Provide message list for each sign required, including large-scale details of wording and layout of lettering.
 - 2. For signs supported by or anchored to permanent construction, provide setting drawings, templates, and directions for installation of anchor bolts and other anchors to be installed as a unit of Work in other Sections.
 - 3. Samples for verification of color, pattern, and texture selected, and compliance with requirements indicated:
 - a. Cast Lexan Sheet and Plastic Laminate: Provide a sample panel not less than 8-1/2 inches by 11 inches for each material indicated. Include a panel for each color, texture, and pattern required. On each panel include a representative sample of the graphic image process required, showing graphic style, and colors and finishes of letters, numbers, and other graphic devices.
 - b. Dimensional Letters: Provide full-size representative samples of each dimensional letter type required, showing letter style, color, and material finish and method of attachment.

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D. Project Closeout Requirements:

1. Cleaning and maintenance data.
2. 5-year warranty.

1.4 QUALITY ASSURANCE

- A. Design Criteria: The drawings indicate size, profiles, and dimensional requirements of signs and are based on the specific design indicated. Signs by other manufacturers may be considered provided that deviations in dimensions and profiles are minor and do not change the design concept as judged by the Architect. The burden of proof of equality is on the proposer.
- B. All signs text, Braille, raised copy, mounting heights/requirements shall be per ADA Compliance and CBC Sections 11B-216.2 through 11B-216.3, 11B-216.3 through 11B-216.10 and 11B-703.1 through 11B-703.7.2.7.

1.5 PROJECT CONDITIONS

- A. Field Measurements: Take field measurements prior to preparation of shop drawings and fabrication to ensure proper fitting. Show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delay.
- B. Sign Contractor shall meet with Architect and Owner, at project site at no cost, to discuss text of signs and review optional text to fit format of signs.

1.6 WARRANTY

- A. All signs shall be under warranty for peeling, fading, defects, and cracking for five (5) years from Notice of Completion date.
- B. The warranty submitted under this Section shall not deprive the Owner of other rights or remedies that the Owner may have under other provisions of the Contract Documents and is in addition to and runs concurrent with other warranties made by the Contractor under requirements of the Contract Documents.

1.7 REGULATORY REQUIREMENTS

- A. All signage and related items shall comply with the California Building Code as follows:
 1. All signage shall conform to 2019 CBC Sections 11B-216.8 and 11B-703.
 2. Tactile exit signage shall be provided per CBC Sections 1143A, 1011.4 and 11B-703.2.
 3. All sign text, Braille, raised copy, mounting heights/requirements shall be per ADA Compliance and CBC Sections 11B-216.2 through 11B-216.3, 11B-216.3 through 11B-216.10 and 11B-703.1 through 11B-703.7.2.7.
 4. Character Type: Characters on signs shall be raised 1/32 inch (0.794mm) minimum and shall be sans serif uppercase characters accompanied by Grade 2 Braille (see below).
 5. Character Size: Raised characters shall be a minimum of 5/8 inch (15.9 mm) and a maximum of 2 inches (51 mm) high.
 6. Finish and Contrast: Contrast between characters, symbols and their background must

- be 70% minimum and have a non-glare finish. CBC Sections 11B-703.5.1, 11B-703.6.2 and 11B-703.7.1.
7. Proportions: Characters on signs shall have a width-to-height ratio of between 3:5 (60%) and 11:10 (110%) and a stroke thicker-to-height ratio of 3:20 per CBC Sections 11B-703.2.4 and 11B-703.2.6.
All letters measured must be uppercase. After choosing a typestyle to test, begin by printing the letters I, X, and O at 1 inch height. Place the template's 11:10 (110%) square over the X or O, whichever is narrower. If the character is not wider than 1 inch, nor narrower than the 3:5 (60%) rectangle, the proportions are correct. Use the 3:20 (15%) rectangle to determine if the stroke of the "I" is too broad or too narrow. If all the tests are passed, the typestyle is compliant with proportion code.
 8. Braille: California Contracted Grade 2 Braille shall be used whenever Braille is required. Dots shall be spaced 0.10 inch (2.50 mm) on center in each cell, with 0.20 inch (5.18 mm) space between cells, measured from the second column of dots in the first cell to the first column of dots in the second cell. Braille with multiple lines to be spaced between 0.395 inch (10 mm) and 0.4 inch (10.2 mm) between corresponding dots from one cell directly below. Dots shall be raised between 0.025 inch (0.6mm) and 0.037 inch (0.9mm) above background with domed or round tops. CBC Section 11B-703.3.9.
 9. All Interior fire alarm signage shall conform to CFC 509.1.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers and specific designs on Drawings are not limited to, the following:
 1. Manufacturers of Panel Signs:
 - a. ASI Sign Systems, Inc.
 - b. Acclaim Signs (530 346-9660)

2.2 PANEL SIGNS

- A. Panel Signs: Comply with requirements indicated for materials, thicknesses, finishes, colors, designs, shapes, sizes, and details of construction.
 1. Produce smooth, even, level sign panel surfaces, constructed to remain flat under installed conditions within a tolerance of plus or minus 1/16 inch measured diagonally.
 2. Provide additional backing in sign for sign surface to remain flat with a 15# load to front face.
- B. Laminated Sign Panels: Permanently laminate face panels to backing sheets of material and thickness indicated using the manufacturer's standard process.
- C. Graphic Content and Style: Provide sign copy that complies with the requirements indicated for size, style, spacing, content, position, material, finishes, and colors of letters, numbers, and other graphic devices.
- D. Subsurface Copy: Apply copy to the back face of clear Lexan sheet forming the panel face by process indicated to produce precisely formed opaque images, free from rough edges.

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- E. Braille: California Contracted Grade 2 Braille, embedded balls, finish Lexan. Dots shall be 0.10 inch (2.50 mm) on center each cell with 0.20 inch (3.08 mm) spaces between cells. Braille with multiple lines to be spaced between 0.395 inch (10 mm) and 0.4 inch (10.2 mm) between corresponding dots from one cell directly below. Dots shall be raised between 0.025 inch (0.6mm) and 0.037 inch (0.9mm) above background.
- G. Raised Letters/Graphics/Pictograms: 1/32" (0.794 mm) raised item laminated to sign surface ABS 500 Natural Extrusion Mfg. by Don Chemical.
 - 1. Character shall be 5/8" (15.9 mm) minimum height and 2" (51 mm) maximum height.
 - 2. Character shall be Helvetica Medium uppercase characters.
 - 3. Contrast between characters, symbols and background shall be light on dark background or dark on light background and non-glare finish.
 - 4. Characters on signs shall have a width-to-height ratio between 3:5 60% and 11:10 110% and a stroke thickness-to-height ratio of 3:20 (15%).

2.3 FINISHES

- A. Colors and Surface Textures: For exposed sign material that requires selection of materials with integral or applied colors, surface textures or other characteristics related to appearance, provide color matches indicated, or if not indicated, as selected by the Architect from the manufacturer's standards.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Locate sign units and accessories where indicated, using mounting methods of the type described and in compliance with the manufacturer's instructions.
 - 1. Install signs level, plumb, and at the height indicated, with sign surfaces free from distortion or other defects in appearance.
 - 2. Provide additional shims and sign integral backing material such that sandwiched sign assembly has no movement front to rear,
- B. Wall Mounted Panel Signs: Attach panel signs to wall surfaces using the methods indicated below:
 - 1. Attach the plate with concealed fasteners and anchors suitable for secure attachment to the substrate.

3.2 CLEANING AND PROTECTION

- A. At completion of the installation, clean soiled sign surfaces in accordance with the manufacturer's instructions. Protect units from damage until acceptance by the Owner.

END OF SECTION 101423

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 0 & 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes, but not limited to, the following:
 - 1. Nonilluminated panel type post and panel exterior signs.
 - 2. Access signs at entrances.
- B. Related Sections: The following sections contain requirements that relate to this Section:
 - 1. Division 1 Section "Temporary Facilities" for temporary project identification signs.
 - 2. Division 3 Section "Cast-in-Place Concrete" for concrete fill in post holes.
 - 3. Division 9 Section "Electrostatic Powder Coating" for requirements for EPC site signage.
 - 4. Division 10 Section "Signs," for wall-mounted and panel interior signs to be installed at exterior locations.
 - 5. Division 21 Section "Wet Pipe Sprinkler System" for custom signs. Provide by fire sprinkler contractor.
 - 6. Division 33 Section "Water Distribution" for custom signs. Provide by site water utility contractor.

1.3 SYSTEM PERFORMANCE REQUIREMENTS

- A. Design Criteria: Design, fabricate, and install exterior post and panel-type signs to withstand a wind pressure of 85 mph on the total sign area in all directions with minimum 30 psf.
 - 1. Exterior panel signs shall have high intensity retroreflective material, which meets California MUTCD (Manual on Uniform Traffic Control Devices) regulations.

1.4 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of the Contract under Division 1 and Specification Sections.
- B. Product Data: Include manufacturer's construction details relative to materials, dimensions of individual components, profiles, and finishes for each type of sign required. Provide manufacturer's recommendations for maintenance and cleaning requirements for exterior sign surfaces.
- C. Shop Drawings: Include plans, elevations, and not less than 3/4-inch scale sections of typical members and other components. Show anchors, reinforcement, accessories, layout, and installation details..

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1. Provide message list, including not less than half-size details of wording and lettering layout. Include full-size details of special graphics.
 - a. Furnish full-size templates for cutout letters, numbers, and other graphic symbols.
 2. Provide setting drawings, templates, and directions for installation of anchor bolts and other anchors to be installed as a unit of Work in other Sections.
- D. Samples: For each sign component provide the following samples showing finishes, colors, and surface texture.
1. For initial selection of color, pattern, and texture:
 - a. Graphic Symbols: Manufacturer's color charts showing full range of colors available. Include representative samples of available type styles and graphic symbols. (No die cut vinyl letters, all graphics shall be screened/ paint.)
- E. Project Closeout Requirements:
1. 5-year warranty.
 2. Cleaning and maintenance data.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced Installer who is an authorized representative of the sign manufacturer and has completed installation of exterior post and panel signs similar in material, design, and extent to those indicated for the Project and that has resulted in construction with a record of successful in-service performance.
1. The installer shall be capable of providing replacement message bars within 10 working days of receipt of an order.
- B. Single-Source Responsibility: Obtain exterior post and panel signs from one source from a single manufacturer.
- C. Design Concept: The drawings indicate the size, profiles, and dimensional requirements of post and panel signs and are based on the specific type and model indicated. Signs by other manufacturers may be considered provided deviations in dimensions and profiles are minor and do not change the design concept as judged by the Architect. The burden of proof of equality is on the proposer.

1.6 DELIVERY AND HANDLING

- A. Delivery: Provide protective covering or crating as recommended by the manufacturer to protect sign components and surfaces against damage during transportation and delivery.
1. Coordinate time of delivery so that pylon signs can be installed within 24 hours of receipt at the project site.
- B. Handle signs carefully to prevent breakage, surface abrasion, denting, soiling, and other defects. Comply with the manufacturer's handling instructions for unloading components subject to

damage.

1. Inspect sign components for damage upon delivery. Do not install damaged sign components. Repair minor damage to signs, provided the finished repair is equal in all respects to the original work and is acceptable to the Architect; otherwise remove and replace damaged sign components.

1.7 WARRANTY

- A. All signs shall be under warranty for peeling, fading, defects and cracking for five (5) years from Notice of Completion date.
- B. The warranty submitted under this Section shall not deprive the Owner of other rights or remedies that the Owner may have under other provisions of the Contract Documents and is in addition to and runs concurrent with other warranties made by the Contractor under requirements of the Contract Documents.

1.8 REGULATORY REQUIREMENTS

- A. All signage and related items shall comply with the California Building Codes and CFC:
 1. All fire lane signage shall conform to CFC 503.3 and CVC 22500.1.
 2. All High security key box signage shall conform to CFC 506.1
 3. All exterior fire alarm signage shall conform to CFC 509.1.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the work include, but are not limited to, the following:
 1. Andco Industries Corp.
 2. APCO Graphics Inc.
 3. ASI Sign Systems, Inc.
 4. Spanjer Brothers, Inc.
 5. Seton (Formerly Champion America) (800-243-6624)
 6. Acclaim Signs - (530) 346-9660

2.2 MATERIALS

- A. Aluminum Sheet or Plate: Provide alloy and temper recommended by the aluminum producer or finisher for the type of use and finish indicated and with not less than the strength and durability properties specified in ASTM B 209 for 5005-H15.
- B. Aluminum Extrusions: Provide alloy and temper recommended by the aluminum producer or finisher for the type of use and finish indicated and with not less than the strength and durability properties specified in ASTM B 221 for 6063-T5.

- C. Steel Tubing: Provide cold-formed steel tubing conforming to ASTM A 500, Grade B.
- D. Steel Tubing: Provide cold-formed steel tubing conforming to ASTM A 500, Grade B, hot-dipped galvanized after fabrication with a minimum of 2.0-oz. zinc per sq. ft. of surface area conforming with ASTM A 123.
- E. Fasteners: Unless otherwise indicated, use concealed fasteners fabricated from metals that are noncorrosive to either the sign material or the mounting surface.
- F. Anchors and Inserts: Use nonferrous metal or hot-dipped galvanized anchors and inserts for exterior installations and elsewhere as required for corrosion resistance. Use toothed steel or lead expansion bolt devices for drilled-in-place anchors. Furnish inserts, as required, to be set into concrete.
- G. Paint: Paint for post and signs shall be automotive type paint. Provide PPG primer/sealer. (Architect will accept electrostatic powder coating with UV protection as acceptable alternative.)
 - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
 - a. Electrostatic powder coating, exterior painting with UV protective coat.

2.3 SPEED LIMIT SIGN - Speed Limit 15" 18"x24" reflectorized sheeting on aluminum.

- A. #L73557S09TEDRAH Seton (800-243-6624), www.seton.com
 - 1. Material: Aluminum
 - 2. Reflective Type: High Intensity
 - 3. Laminated

2.4 NO PARKING SIGN - "No Parking any Time" 18"x24" baked enamel on aluminum.

- A. #L5942S09TEDRAH Seton (800-243-6624), www.seton.com
 - 1. Material: Aluminum
 - 2. Reflective Type: High Intensity
 - 3. Laminated

2.5 CUSTOM SIGN Entrance TOW-Away Jigr

- A. 18" X 24" Size as indicated on plans reflective aluminum, background color as selected. Letter/border color as selected. Sign wording see details. Drill holes for mounting for post configuration.
 - 1. #L644S09TEDRAH Seton (800-243-6624), www.seton.com
 - 2. Material: Aluminum
 - 3. Reflective Type: High Intensity
 - 4. Laminated

2.6 STOP SIGN

- A. 24" x 24" reflecterized sheeting on aluminum.
 - 1. #4242D Seton (800-243-6624), www.seton.com.

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2. Material: Aluminum
3. Reflective Type: High Intensity
4. Laminated

2.7 ACCESSIBLE PARKING SIGN (12" W x 18"H)

- A. #L6291S04TEDRAH Seton (800-243-6624), www.seton.com

1. Material: Aluminum
2. Reflective Type: High Intensity
3. Laminated

2.8 ACCESSIBLE VAN ACCESSIBLE SIGN (12" W x 6"H)

- A. #L6601S86TEDRAH Seton (800-243-6624), www.seton.com

1. Material: Aluminum
2. Reflective Type: High Intensity
3. Laminated

2.9 Minimum Fine \$250 (12" W x 6"H)

- A. #6611S49TEDRAH Seton (800-243-6624), www.seton.com

1. Material: Aluminum
2. Reflective Type: High Intensity
3. Laminated

2.10 FIRE LANE SIGN (12" W x 18"H)

- A. #L6099S04TEDRAH Seton (800-243-6624), www.seton.com

1. Material: Aluminum
2. Reflective Type: High Intensity
3. Laminated

2.11 REFLECTOR SIGNS

- B. Seton (800-243-6624), www.seton.com

1. Material: Aluminum
2. Reflective Type: High Intensity
3. Laminated

2.12 COMPONENTS

- A. Posts: .125" square aluminum tubing posts in length adequate for mounting method specified. Include post caps, fillers, spacers, junction boxes, access panels, and related accessory items required for a complete installation. Comply with the following requirements for post shape, finish, and mounting method indicated:

1. Size: 2-inch by 2-inch square.
2. Finish: Electrostatic powder coating.

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- B. Panels: Provide smooth, even, level sign panel surfaces constructed to remain flat under installed conditions within a tolerance of plus or minus 1/16 inch measured diagonally from corner to corner.
1. Unframed Single-Sheet Panels: Provide unframed single-sheet sign panels with edges mechanically and smoothly finished to conform with the following requirements:
 - a. Panel Material: .090 thickness aluminum plate.
 - 1) Finish: Clear anodized aluminum.
 - b. Edge Condition: Square cut - eased edges.
 - c. Corner Condition: Square corners.
 2. Framed Single-Sheet Panels: Provide framed single-sheet sign panels with edges mechanically and smoothly finished to conform with the following requirements:
 - a. Panel Material: .090 thickness aluminum plate, unless otherwise on plan.
 - 1) Finish: Electrostatic Powder Coating.
- C. Graphic Content and Style: Provide sign copy to comply with the requirements indicated for sizes, styles, spacing, content, positions, materials, finishes, and colors of letters, numbers, symbols, and other graphic devices.

2.13 FABRICATION

- A. General: Provide the manufacturer's standard double post, single-panel-type post, and panel signs. The completed sign assembly shall consist of a message panel supported between two posts. Comply with requirements indicated for materials, thicknesses, finishes, colors, designs, shapes, sizes, and details of construction.
1. Allow for thermal movement resulting from a maximum ambient temperature change (range) of 100 deg F (55.5 deg C). Design, fabricate, and install post and panel sign assemblies to prevent buckling, opening up of joints, and overstressing welds and fasteners.
 - a. Base design on actual surface temperatures of metals due to both solar heat gain and nighttime sky heat loss.
 2. Welded Connections: Comply with AWS for recommended practices in shop welding. Provide welds behind finished surfaces without distortion or discoloration of the exposed side. Clean exposed welded surfaces of welding flux and dress on all exposed and contact surfaces.
 3. Mill joints to a tight, hairline fit. Form joints exposed to the weather to exclude water penetration.
 4. Preassemble post and panel signs in the shop to the greatest extent possible to minimize field assembly. Disassemble signs only as necessary for shipping and handling limitations. Clearly mark units for reassembly and installation, in a location not exposed to view after final assembly.
 5. Conceal fasteners where possible; otherwise locate fasteners where they will be inconspicuous.

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- B. Posts: Fabricate posts to lengths required for mounting method indicated.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Furnish templates, anchor bolts, internal reinforcing, and other items required to be set in concrete post foundations at proper time for setting.

3.2 INSTALLATION

- A. General: Locate sign units and accessories where indicated, using mounting methods of the type described and in compliance with the manufacturer's instructions.
- B. Excavation: In firm undisturbed or compacted soil, drill or (using a post-hole digger) hand-excavate holes for posts to diameters and spacing indicated.
- C. Setting Posts: Center and align posts in holes 3 inches above bottom of the excavation.
 - 1. Protect portion of posts above ground from concrete splatter. Place concrete around posts and vibrate or tamp for consolidation. Check each post for vertical and top alignment and hold in position until concrete has achieved its initial set.
- D. Install signs level, plumb, and at the height indicated, with sign surfaces free from distortion or other defects in appearance.

3.3 CLEANING

- A. At completion of the installation, clean soiled surfaces of sign units in accordance with the manufacturer's instructions.

3.4 PROTECTION

- A. Protect installed sign units from damage until acceptance by the Owner.

END OF SECTION 101426

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 0 & 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes, but not limited to, stock, manufactured toilet compartments.
- B. Types of toilet compartments include:
 - 1. Solid plastic, homogenous color.
- C. Styles of toilet compartments include:
 - 1. Floor-anchored, overhead-braced.
 - 2. Wall-hung.
- D. Related sections: The following sections contain requirements that relate to this sections:
 - 1. Division 6 Section "Rough Carpentry" for wood backing where detailed.
 - 2. Division 10 Section "Toilet and Bath Accessories" for toilet accessories such as toilet paper holders, grab bars and related items.

1.3 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.
- B. Product data for materials, fabrication, and installation including catalog cuts of anchors, hardware, fastenings, and accessories.
- C. Shop drawings for fabrication and erection of toilet compartment assemblies not fully described by product drawings, templates, and instructions for installation of anchorage devices built into other work.
- D. Samples of full range of colors for each type of unit required. Submit 6-inch-square samples of each color and finish on same substrate to be used in work, for color verification after selections have been made.
- E. Project Closeout Requirement:
 - 1. Cleaning and maintenance data.

1.4 QUALITY ASSURANCE

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- A. Field Measurements: Take field measurements prior to preparation of shop drawings and fabrication, where possible, to ensure proper fitting of work. However, allow for adjustments where taking of field measurements before fabrication might delay work.
- B. Coordination: Furnish inserts and anchorages which must be built into other work for installation of toilet compartments and related items. Coordinate delivery with other work to avoid delay.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the Work include, but are not limited to, the following:
 - 1. Solid Plastic – Homogenous color:
 - a. Scranton Products.
 - b. Accurate Partition Corp.
 - c. Metpar Corporation (Sanymetal).

2.2 MATERIALS

- A. General: Provide materials which have been selected for surface flatness and smoothness. Exposed surfaces which exhibit pitting, seam marks, roller marks, stains, discolorations, telegraphing of core material, or other imperfections on finished units are not acceptable.
- B. Solid Plastic: High density, solid polymer resin with homogenous color throughout. Provide material not less than 1 inch thick with seamless construction with edges eased.
- C. Pilaster Shoes and Caps: ASTM A 167, Type 302/304 stainless steel, not less than 3 inches high, 0.0396 inch thick (20 gage), finished to match hardware.
- D. Stirrup Brackets: Manufacturer's continuous design for attaching panels to walls and pilasters, either chromium-plated nonferrous cast alloy ("Zamac") or anodized aluminum.
- E. Hardware and Accessories: Manufacturer's standard design, heavy duty operating hardware and accessories of chromium-plated, nonferrous cast alloy ("Zamac").
- F. Overhead Bracing: Continuous extruded aluminum, antigrip profile, with clear anodized finish.
- G. Anchorages and Fasteners: Manufacturer's standard exposed fasteners of stainless steel, finished to match hardware, with theft-resistant-type heads and nuts. For concealed anchors, use hot-dip galvanized, cadmium-plated, stainless steel or other rust-resistant protective-coated steel.

2.3 FABRICATION

- A. General: Furnish standard doors, panels, screens, and pilasters fabricated for compartment system. Furnish units with cutouts, drilled holes, and internal reinforcement to receive partition-mounted hardware, accessories, and grab bars, as indicated.

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- B. Door Dimensions: Unless otherwise indicated, furnish 24-inch-wide in-swinging doors for non-disabled toilet stalls.
1. Accessible person stall doors clearances and latches:
 - a) Accessible toilet stalls shall have slide bolt door latch, U-shape or wire pulls both sides of the door and self-closing hinges. Door hardware shall be mounted at 30" to 44" above finished floor. Doors at front entry stalls shall have 32" minimum clear width when the door is open 90°. Doors at side entry shall have 34" minimum clear width when the door is open 90°.
- C. Overhead-Braced Compartments: Furnish galvanized steel supports and leveling bolts at pilasters as recommended by manufacturer to suit floor conditions. Make provisions for setting and securing continuous, extruded, aluminum, antigrip, overhead bracing at top of each pilaster. Provide shoe at each pilaster to conceal supports and leveling mechanism.
- D. Floor-Supported Compartments: Furnish galvanized steel anchorage devices complete with threaded rods, lock washers, and leveling adjustment nuts at pilasters to permit structural connection at floor. Provide shoe at each pilaster to conceal anchorage.
- E. Hardware: Furnish hardware for each compartment to comply with ANSI A117.1 for disabled person accessibility and as follows:
1. Hinges: Pin and Barrel spring loaded Continuous hinge to hold door open at any angle up to 90 degrees. Provide gravity type, spring-action cam type, or concealed torsion rod type to suit manufacturer's standards – self-closing door. The continuous stainless steel hinge is surface mounted and fastened with stainless steel torx head screws. Each hinge has removable covers that are applied after mounting and set with a setscrew.
 - a. Assa, Abloy Marker FS902SS partition hinge.
 - b. Select Hinges SL902.
 2. Latch and Keeper: Manufacturer's standard surface-mounted slide bolt dock latch unit, designed for accessibility, not requiring grasping, pinching or twisting with combination rubber-faced door strike and keeper.
 3. Coat Hook: Manufacturer's standard unit, combination hook and rubber-tipped bumper, sized to prevent door hitting mounted accessories. Mount at 48 inches above floor in disabled access toilet compartments on wall--do not mount on door. If door swings out, add additional hook on partition inside accessible stall. Mount on door at 48 inches above floor in non-disabled toilet compartments.
 4. Door Pull: Manufacturer's standard unit for out-swinging doors, mount 38" AFF.
 5. Accessible Stall Door Pulls: On both faces of compartments, provide U-shaped pull devices. Mount pulls directly beneath the latch. Comply with CBC Section 11B-404.2.7.

2.4 FINISH

- A. Colors: One of manufacturer's colors from full range of available colors in each toilet room, as indicated or, if not indicated, as selected by the Architect.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Comply with manufacturer's recommended procedures and installation sequence.

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Install compartment units rigid, straight, plumb, and level. Provide clearances of not more than 1/2 inch between pilasters and panels, and not more than 1 inch between panels and walls. Secure panels to walls with continuous brackets attached near top and bottom of panel. Secure panels to pilasters with continuous brackets located to align with brackets at wall. Secure panels in position with manufacturer's recommended anchoring devices.

- B. Overhead-Braced Compartments: Secure pilasters to floor and level, plumb, and tighten installation with devices furnished. Secure overhead brace to each pilaster with not less than two fasteners. Hang doors and adjust so that tops of doors are parallel with overhead brace when doors are in closed position.
- C. Hinges: The continuous hinge is surface mounted and fastened with 3/4" torx head screws. Each hinge has removable covers that are applied after mounting and set with a setscrew.

3.2 ADJUST AND CLEAN

- A. Hardware Adjustment: Adjust and lubricate hardware for proper operation. Set hinges on in-swinging doors to hold open approximately 30 degrees from closed position when unlatched. Set hinges on out-swinging doors (and entrance swing doors) to return to fully closed position.
- B. Clean exposed surfaces of partition systems using materials and methods recommended by manufacturer, and provide protection as necessary to prevent damage during remainder of construction period.

END OF SECTION 102113

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Divisions 0 & 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes, but is not limited to, the following:
 - 1. Toilet accessories
 - 2. Accessories furnished by Owner, installed by Contractor (FOIC)
 - 3. Hand dryers
- B. Related Sections include the following:
 - 1. Division 6 Section "Rough Carpentry" for wood backing.
 - 2. Division 9 Section "Tile" for ceramic toilet and bath accessories.
 - 3. Division 10 Section "Toilet Compartments" for compartments and screens.
 - 4. Division 26 Section "Electrical" for electrical wiring connections and installation of power.

1.3 SUBMITTALS

- A. Product Data: Include construction details, material descriptions and thicknesses, dimensions, profiles, fastening and mounting methods, specified options, and finishes for each type of accessory specified.
- B. Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required. Use designations indicated in the Accessory Schedule and room designations indicated on Drawings in product schedule.
- C. Maintenance Data: For accessories to include in maintenance manuals specified in Division 1. Provide lists of replacement parts and service recommendations.
- D. Project Closeout Requirements:
 - 1. 3-year warranty for all accessories
 - 2. 10-year warranty for dryer
 - 3. 15-year warranty for all mirror
 - 4. Cleaning and maintenance data.

1.4 QUALITY ASSURANCE

- A. Source Limitations: Provide products of same manufacturer for each type of accessory unit and for units exposed to view in same areas, unless otherwise approved by Architect.
- B. Product Options: Accessory requirements, including those for materials, finishes, dimensions, capacities, and performance, are established by specific products indicated in the Toilet and Bath

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Accessory Schedule.

1. Other manufacturers' products with equal characteristics may be considered.
2. Do not modify aesthetic effects, as judged solely by Architect, except with Architect's approval. Where modifications are proposed, submit comprehensive explanatory data to Architect for review.

1.5 REFERENCES

- A. ANSI A117 - 1986 Specifications for Making Buildings and Facilities Accessible.
- B. CBC - Requirements for Disabled Persons.
- C. Title 24, California Code of Regulations, Parts 2, 3 and 5.
- D. ADA, Accessibility Guidelines for Building and Facilities, Federal Register Volume 59 Number 144, Rules and Regulations.

1.6 COORDINATION

- A. Coordinate accessory locations with other work to prevent interference with clearances required for access by disabled persons, proper installation, adjustment, operation, cleaning, and servicing of accessories.
- B. Deliver inserts and anchoring devices set into concrete or masonry as required to prevent delaying the Work.

1.7 WARRANTY

- A. General Warranty: Special warranty specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.
- B. Manufacturer's Mirror Warranty: Written warranty, executed by mirror manufacturer agreeing to replace mirrors that develop visible silver spoilage defects within minimum warranty period indicated.
 1. Minimum Mirror Warranty Period: 15 years from the date of Notice of Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis-of-Design Product: The design for each piece of toilet and bath accessories is based on the product named. Subject to compliance with requirements, provide either the named product or an approved comparable product by one of the other manufactures specified. Subject to compliance with requirements, manufacturers offering toilet accessories that may be incorporated into the Work include, but are not limited to, the following. Model numbers for washroom accessories manufactured by Bobrick Washroom Equipment, Inc. are listed to establish a standard of quality for

design, function, materials and workmanship. Other manufacturers may be submitted for evaluation by the Architect. Approval shall be obtained 45 days after Contract date. The Architect shall be the sole judge as to the acceptability of all products submitted for substitution.

- B. Available Products: Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:
 - 1. World Dryer Corp.

2.2 MATERIALS

- A. Stainless Steel: ASTM A 666, Type 304, with No. 4 finish (satin), in 0.0312-inch (0.8-mm) minimum nominal thickness, unless otherwise indicated.
- B. Brass: ASTM B 19, leaded and unleaded flat products; ASTM B 16 (ASTM B 16M), rods, shapes, forgings, and flat products with finished edges; ASTM B 30, castings.
- C. Sheet Steel: ASTM A 366/A 366M, cold rolled, commercial quality, 0.0359-inch (0.9-mm) minimum nominal thickness; surface preparation and metal pretreatment as required for applied finish.
- D. Galvanized Steel Sheet: ASTM A 653/A 653M, G60 (Z180).
- E. Chromium Plating: ASTM B 456, Service Condition Number SC 2 (moderate service), nickel plus chromium electrodeposited on base metal.
- F. Baked-Enamel Finish: Factory-applied, gloss-white, baked-acrylic-enamel coating.
- G. Mirror Glass: ASTM C 1036, Type I, Class 1, Quality q2, nominal 6.0 mm thick, with silvering, electroplated copper coating, and protective organic coating complying with FS DD-M-411.
- H. Galvanized Steel Mounting Devices: ASTM A 153/A 153M, hot-dip galvanized after fabrication.
- I. Fasteners: Screws, bolts, and other devices of same material as accessory unit, tamper and theft resistant when exposed, and of galvanized steel when concealed.

2.3 FABRICATION

- A. General: One, maximum 1-1/2-inch- (38-mm-) diameter, unobtrusive stamped manufacturer logo, as approved by Architect, is permitted on exposed face of accessories. On interior surface not exposed to view or back surface of each accessory, provide printed, waterproof label or stamped nameplate indicating manufacturer's name and product model number.
- B. Surface-Mounted Toilet Accessories: Unless otherwise indicated, fabricate units with tight seams and joints, and exposed edges rolled. Hang doors and access panels with continuous stainless-steel hinge. Provide concealed anchorage where possible.
- C. Recessed Toilet Accessories: Unless otherwise indicated, fabricate units of all-welded construction, without mitered corners. Hang doors and access panels with full-length, stainless-steel hinge. Provide anchorage that is fully concealed when unit is closed.
- D. Framed Glass-Mirror Units: Fabricate frames for glass-mirror units to accommodate glass edge protection material. Provide mirror backing and support system that permits rigid, tamper-resistant glass installation and prevents moisture accumulation.
- E. Mirror-Unit Hangers: Provide mirror-unit mounting system that permits rigid, tamper- and theft-

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resistant installation, as follows:

1. One-piece, galvanized steel, wall-hanger device with spring-action locking mechanism to hold mirror unit in position with no exposed screws or bolts.
- F. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of six keys to Owner's representative.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights specified per drawings.
- B. Secure mirrors to walls in concealed, tamper-resistant manner with special hangers, toggle bolts, or screws. Set units level, plumb, and square at locations indicated, according to manufacturer's written instructions for substrate indicated.
- C. Install grab bars to withstand a downward load of at least 250 lbf (1112 N), when tested according to method in ASTM F 446.
- D. Toilet accessories required to be accessible shall be mounted at heights according to CBC Section 11B-603.5.
- E. Toilet paper and feminine napkin dispensers located on the grab bar side of the accessible toilet room or stall should not project more than the grab bar. The accessory shall not be located closer than 1-1/2" clear of the tangent point of the grab bar. Accessories surface mounted above grab bar shall be located a minimum of 12" clear above the grab bar.

3.2 ADJUSTING AND CLEANING

- A. Adjust accessories for unencumbered, smooth operation and verify that mechanisms function properly. Replace damaged or defective items.
- B. Remove temporary labels and protective coatings.
- C. Clean and polish exposed surfaces according to manufacturer's written recommendations.

END OF SECTION 102800

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 0 & 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes, but is not limited to, the following:
 - 1. Fixed, formed-metal louvers with insect screens set in hollow metal frames.
- B. Related Sections include the following:
 - 1. Division 7 Section "Joint Sealants" for sealants installed in perimeter joints between louver frames and adjoining construction.
 - 2. Division 8 Section "Standard Steel Doors and Frames" for louvers in hollow-metal doors and frames.
 - 3. Division 9 Section "Painting" for field painting louvers.
 - 4. Division 15 Sections for louvers that are a part of mechanical equipment.

1.3 DEFINITIONS

- A. Louver Terminology: Definitions of terms for metal louvers contained in AMCA 501 apply to this Section, unless otherwise defined in this Section or in referenced standards.
- B. Standard Free Area: Free area of a louver 48 inches (1220 mm) wide by 48 inches (1220 mm) high, identical to that provided.
- C. Drainable-Blade Louver: Louver designed to collect and drain water to exterior at sill by means of gutters in front edges of blades and channels in jambs and mullions.

1.4 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Provide exterior metal louvers capable of withstanding the effects of loads and stresses from wind and normal thermal movement without evidencing permanent deformation of louver components including blades, frames, and supports; noise or metal fatigue caused by louver blade rattle or flutter; or permanent damage to fasteners and anchors.
 - 1. Wind Load: Uniform pressure (velocity pressure) of 30 lbf/sq. ft. (1440 Pa), acting inward or outward.

1.5 SUBMITTALS

- A. Product Data: For each type of product specified.

1.6 QUALITY ASSURANCE

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- A. Source Limitations: Obtain louvers and vents through one source from a single manufacturer where alike in one or more respects regarding type, design, or factory-applied color finish.
- B. SMACNA Standard: Comply with SMACNA's "Architectural Sheet Metal Manual" recommendations for fabrication, construction details, and installation procedures.

1.7 PROJECT CONDITIONS

- A. Field Measurements: Verify louver openings by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
 - 1. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish opening dimensions and proceed with fabricating louvers without field measurements. Coordinate construction to ensure that actual opening dimensions correspond to established dimensions.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Airolite Co.
 - 2. Construction Specialties, Inc.
 - 3. Industrial Louvers, Inc.
 - 4. Ruskin Manufacturing; Tomkins Industries, Inc.
- B. Size: As indicated on plans.

2.2 MATERIALS

- A. Galvanized Steel Sheet: ASTM A 653/A 653M, G90 (Z275) zinc coating, mill phosphatized.
- B. Fasteners: Of same basic metal and alloy as fastened metal or 300 series stainless steel, unless otherwise indicated. Do not use metals that are incompatible with joined materials.
- C. Anchors and Inserts: Of type, size, and material required for loading and installation indicated. Use nonferrous metal or hot-dip galvanized anchors and inserts for exterior installations and elsewhere as needed for corrosion resistance. Use toothed steel or expansion bolt devices for drilled-in-place anchors.

2.3 FABRICATION, GENERAL

- A. Assemble louvers in factory to minimize field splicing and assembly. Disassemble units as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.
- B. Maintain equal louver blade spacing, including separation between blades and frames at head and sill, to produce uniform appearance.
- C. Maintain equal louver blade spacing to produce uniform appearance.

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- D. Include supports, anchorages, and accessories required for complete assembly.
- E. Provide vertical mullions of type and at spacings indicated, but not more than recommended by manufacturer, or 72 inches (1830 mm) o.c., whichever is less. At horizontal joints between louver units, provide horizontal mullions, unless continuous vertical assemblies are indicated.
- F. Join frame members to one another and to fixed louver blades with fillet welds concealed from view, unless otherwise indicated or size of louver assembly makes bolted connections between frame members necessary.

2.4 FIXED, FORMED-METAL LOUVERS

- A. Louver Construction: Provide fixed-blade louvers with frames and blades formed from metal sheet of metal indicated.
- B. Horizontal Louvers: Either drainable- or nondrainable-blade type complying with the following:
 - 1. Louver Depth: 4 inches (100 mm), unless otherwise indicated.
 - 2. Frame and Blade Material: Galvanized steel sheet, 0.052 inch (1.3 mm) for frames and 0.040 inch (1.0 mm) for blades.

2.5 LOUVER SCREENS

- A. General: Provide each exterior louver with louver screens complying with the following requirements:
 - 1. Screen Location for Fixed Louvers: Interior face.
 - 2. Screening Type: Insect screening where indicated.
- B. Secure screens to louver frames with stainless-steel machine screws, spaced a maximum of 6 inches (150 mm) from each corner and at 12 inches (300 mm) o.c.
- C. Louver Screen Frames: Fabricate screen frames with mitered corners to louver sizes indicated and to comply with the following requirements:
 - 1. Metal: Same kind and form of metal as indicated for louver to which screens are attached.
 - a. Reinforce extruded-aluminum screen frames at corners with clips.
 - 2. Finish: Same finish as louver frames to which louver screens are attached.
 - 3. Type: Rewirable frames with a driven spline or insert for securing screen mesh.
- D. Louver Screening for Galvanized Steel Louvers: As follows:
 - 1. Insect Screening: Galvanized steel, 18-by-14 (1.4-by-1.8-mm) mesh, 0.011-inch (0.28-mm) wire.

2.6 FINISHES, GENERAL

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Finish louvers after assembly.

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2.7 GALVANIZED STEEL SHEET FINISHES

- A. Baked-Enamel Finish: Immediately after cleaning and pretreating, apply manufacturer's standard two-coat, baked-enamel finish consisting of prime coat and thermosetting topcoat, with not less than 1.0-mil (0.025-mm) dry film thickness for topcoat. Comply with paint manufacturer's written instructions for applying and baking to achieve a minimum dry film thickness of 2.0 mils (0.05 mm).
 - 1. Color and Gloss: Custom colors as selected by Architect.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Coordinate Setting Drawings, diagrams, templates, instructions, and directions for installation of anchorages that are to be embedded in concrete or masonry construction. Coordinate delivery of such items to Project site.

3.2 INSTALLATION

- A. Locate and place louver units level, plumb, and at indicated alignment with adjacent work.
- B. Use concealed anchorages where possible. Provide brass or lead washers fitted to screws where required to protect metal surfaces and to make a weathertight connection.
- C. Form closely fitted joints with exposed connections accurately located and secured.
- D. Repair finishes damaged by cutting, welding, soldering, and grinding. Restore finishes so no evidence remains of corrective work. Return items that cannot be refinished in the field to the factory, make required alterations, and refinish entire unit or provide new units.
- E. Install concealed gaskets, flashings, joint fillers, and insulation, as louver installation progresses, where weathertight louver joints are required. Comply with Division 7 Section "Joint Sealants" for sealants applied during louver installation.

3.3 ADJUSTING, CLEANING, AND PROTECTING

- A. Periodically clean exposed surfaces of louvers and vents that are not protected by temporary covering to remove fingerprints and soil during construction period. Do not let soil accumulate until final cleaning.
- B. Before final inspection, clean exposed surfaces with water and a mild soap or detergent not harmful to finishes. Thoroughly rinse surfaces and dry.
- C. Protect louvers and vents from damage during construction. Use temporary protective coverings where needed and approved by louver manufacturer. Remove protective covering at the time of Substantial Completion.
- D. Restore louvers and vents damaged during installation and construction so no evidence remains of corrective work. If results of restoration are unsuccessful, as determined by Architect, remove damaged units and replace with new units.
 - 1. Clean and touch up minor abrasions in finishes with air-dried coating that matches color and gloss of, and is compatible with, factory-applied finish coating.

END OF SECTION 103600

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 0 & 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes portable assistive listening devices.
- B. Related Sections:
 - 1. xxxxxxxxxxxxxxxxxxxx

1.3 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.
- B. Product data for each type of portable assistive listening devices specified. Include printed data on physical characteristics.

1.4 QUALITY ASSURANCE

- A. Code Requirement:
 - 1. Provide Assistive Listening System per CBC Section 11B-219 and 11B-706. The minimum number of receiver shall be equal to 4% of the seating, but no less than two.
- B. Single-Source Responsibility: Obtain portable assistive listening devices from one source of a single manufacturer.

1.5 PROJECT CONDITIONS

- A. Field Measurements: Check openings by field measurements before fabrication. Show recorded measurements on shop drawings. Coordinate fabrication schedule with construction progress to avoid delay in the Work.
 - 1. Where field measurements cannot be made without delaying the Work, guarantee opening dimensions and proceed with fabrication of blinds without field measurements. Coordinate wall and ceiling construction to ensure that actual opening dimensions correspond to guarantee dimensions.

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PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Products: Subject to compliance with requirements, vertical louver blinds that may be incorporated in the Work include, but are not limited to, the products specified in each Vertical Louver Blind Product Data Sheet at the end of this Section.

1. "Listening Technologies" www.assistedaudio.com , (888) 629-4368.

2.2 EQUIPMENT

- A. Designed for an individual user, the LS-05-72 Personal Listen System operates on the 72 MHz frequency. System shall be equipped with (1) speaker and (4) receivers (listeners).
- B. The speaker wears the body-pack transmitter and a clip-on microphone. The speaker's voice is broadcast as an FM Radio signal over a distance of up to 150 feet. The listeners uses the pocket receiver and earphone or headphone to hear the speaker's voice directly, with reduced background noise.
- C. System includes:
1. Portable transmitter (1)
 2. Microphone (1)
 3. LR-400 Display Receiver -72 MHz (4)
 4. LA-164 Ear Speaker (4)
 5. LA-306 Soft Carrying Case (4)
 6. LA-361 AA Alkaine Batteries

PART 3 - EXECUTION

3.1 FIELD TEST

- A. Field test Portable Assistive Listening Device in prior to delivery to Owner.
- B. Remove surplus materials, packaging, rubbish and debris resulting from the installation. Leave areas where installation occurred neat, clean, and ready for use.

END OF SECTION 117100

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SECTION 220000 - PLUMBING

PART 1 – GENERAL

A. DIVISIONS 00 AND 01 ARE A PART OF THIS SECTION

B. SCOPE.

1. Work Included. Provide all labor, materials and services necessary for complete, lawful and operating systems as shown or noted on the drawings or as specified here. The work includes, but is not necessarily limited to, the following:
 - a. Demolition of all plumbing fixtures, equipment and piping systems indicated or required to be removed or modified.
 - b. A complete remodel of sanitary soil, waste and vent piping including connection existing P.O.C.'s, waste, and drain connections to all fixtures and equipment.
 - c. A complete remodel of hot and cold water piping including connection to existing P.O.C.'s, and connections to fixtures and equipment.
 - d. Condensate drains from air conditioning units.
 - e. Acceptance testing as required under California Building Energy Efficiency Standards, Title 24.

C. CODES AND STANDARDS

1. All work and materials shall conform with current rules and regulations of applicable codes. Nothing in these Drawings or Specifications is to be construed to permit work not conforming to these codes. Should the Drawings or Specifications call for material or methods of construction of a higher quality or standard than required by these codes, the Drawings and Specifications shall govern.
 - a. Applicable codes and standards shall include but are not necessarily limited to:
 - i. California Code Of Regulations:
 1. Title 8, Industrial Relations
 2. Title 17, Public Health
 3. Title 19, Public Safety
 4. Title 21, Public Works
 5. Title 24, Energy Regulations
 - ii. California Building Code.

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- iii. California Mechanical Code
- iv. California Plumbing Code
- v. American Society for Testing and Materials (ASTM)
- vi. American Water Works Association (AWWA)
- vii. Cast Iron Soil Pipe Institute (CISPI)
- viii. National Electrical Code (NEC)
- ix. National Electrical Manufacturers Association (NEMA)
- x. National Fire Protection Association (NFPA)
- xi. National Sanitation Foundation (NSF)
- xii. Occupational Safety and Health Act (OSHA)
- xiii. Plumbing and Drainage Institute (PDI)
- xiv. Americans with Disabilities Act. Accessibility Guidelines for Buildings and Facilities. (ADAAG).

D. PERMITS AND FEES

1. The Contractor shall take out all permits and arrange for all tests in connection with such work as required. All charges are to be included in the work. All charges or fees for service connections, meters, etc., shall be included in the work.

E. COORDINATION OF WORK

1. Before starting any work, thoroughly examine all existing and newly completed underlying and adjoining work and conditions upon which the installation of this work is in any way dependent for the workmanship required by the Contract Documents. Report to the Architect and Engineer in writing any and all conditions which might adversely affect this work and limit ability to perform the required workmanship.
2. Layout of materials, equipment and systems is generally diagrammatic unless specifically dimensioned. The actual locations of all materials, piping, ductwork, fixtures, equipment, supports, etc., shall be carefully planned, prior to installation of any work, to avoid all interference's with each other, or with structural, electrical or architectural elements. Verify the proper voltage and phase of all equipment with the electrical plans. All conflicts shall be called to the attention of the Engineer prior to the installation of any work or the ordering of any equipment.
3. Because of the small scale of the drawings, it is not possible to indicate all offsets, fittings, and accessories that may be required. Carefully investigate the mechanical, electrical, structural, architectural drawings and field conditions that could affect the work to be performed and arrange such work accordingly. Provide the required piping and ductwork offsets, fittings, and accessories to meet such conditions.

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4. Spaces provided in the design of the building shall be utilized and the work shall be kept within walls or furring lines established on the drawings. Any discrepancy between Architectural or Mechanical drawings with respect to wall or furring locations and dimensions shall be brought to the Architect's attention for resolution before proceeding with installation.
5. Any work which is done as an addition, expansion, or remodel of an existing system shall be compatible with that system

F. MANUFACTURER'S RECOMMENDATIONS

1. All material, equipment, and devices, etc., shall be installed in a manner meeting approval of the manufacturer of the particular item. The Contractor shall make himself available of all installation manuals, brochures, and procedures that the manufacturer issues for the equipment and material. Contractor shall be held responsible for all installations contrary to the manufacturer's recommendations. Contractor shall make all necessary changes and revisions to achieve such compliance.

G. GUARANTEE

1. Guarantee shall be in accordance with the General Conditions. These Specifications may extend the period of the guarantee for certain items. Where such extensions are called for, or where items are normally provided with guarantee periods in excess of that called for in the General Conditions, the certificate of guarantee shall be furnished to the Owner.

H. QUIETNESS

1. Piping of all types, ductwork, and equipment shall be arranged and supported so that the vibration is at a minimum and is not transmitted to the building structure.

I. DAMAGES BY LEAKS

1. The Contractor shall be responsible for damages caused by leaks in the temporary or permanent piping or mechanical systems prior to completion of work and during the period of the guarantee.

J. SUBMITTALS

1. Shop Drawings. Within 30 days of contract award, the Contractor shall submit six copies of shop drawings for all materials, equipment, etc., proposed for use on this project. Material or equipment shall not be ordered or installed until written review is processed by the Engineer. Any item omitted from the submittal shall be provided as specified without substitution. All shop drawings must comply with the following:
 - a. Shop drawings are required for all material and equipment items and shall include manufacturer's name and catalog numbers, dimensions, capacities, performance curves, and all other characteristics and accessories as listed in the contract documents. Descriptive literature shall be current manufacturer's brochures and submittal sheets.

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- b. All shop drawings shall be submitted at one time in a three hole binder with title sheet including Project Title, Architect, Engineer, Contractor, table of contents, and indexed tabs dividing each group of materials or item of equipment. All items shall be identified by the specification paragraph number for which they are proposed. All equipment shall also be identified by the mark number as indicated on drawings. Submittals shall bear the stamp of certification by the Contractor as evidence that the Contract Documents (Specifications and Drawings) have been thoroughly checked.
 - c. All capacities, characteristics, and accessories called for in the specifications or on the drawings shall be high-lighted, circled or underlined on the shop drawings. Data must be complete enough to permit detailed comparison of every significant characteristic which is specified, scheduled or detailed.
 2. Review. Submittals will be reviewed for general conformance with the design concept, but this review does not guarantee quantity shown, nor does it supersede the responsibility of the Contractor to provide all materials, equipment and installation in accordance with the drawings and specifications. The Contractor shall agree that shop drawing submittals processed by the Engineer are not Change Orders; that the purpose of shop drawing submittals by the Contractor is to demonstrate to the Engineer that the Contractor understands the design concept, that he demonstrates his understanding by indicating which equipment and material he intends to furnish and install and by detailing the fabrication and installation methods he intends to use.
 - a. If deviations, discrepancies or conflicts between shop drawings and design drawings and specifications are discovered either prior to or after shop drawing submittals are processed by the Engineer, the design drawings and specifications shall control and shall be followed. Submittals for products and equipment offered as an alternate to that specified will require, if accepted by the Engineer, resubmission of the Title 24 Energy Compliance Calculations if the specified product or equipment was included within the scope of the approved calculations on file with the reviewing authority. The cost of preparing resubmission will be the responsibility of the Contractor.

K. OPENINGS, CUTTING AND PATCHING

1. The locations and dimensions for openings through walls, floors, ceilings, foundations, footings, etc. required to accomplish the work under this Specification Division shall be provided under this Division. Except as noted below, the actual openings and the required cutting and patching shall be provided by other Divisions. Coring through existing concrete or masonry walls, floors or asphaltic concrete required to accomplish the work under this Specification Division shall be provided under this Division. Restoration of all surfaces shall be provided by other Divisions. Cutting or coring shall not impair the strength of the structure. Any damage resulting from this work shall be repaired at the Contractor's expense to the satisfaction of the Architect and Engineer.

L. DEMOLITION

1. Existing equipment, ducts, piping, valves, fittings, devices, etc., requiring removal shall be removed and delivered to the Owner at a location on the job site to be determined by the Owner. Those items determined by the Owner to be of no value shall become the property of the Contractor and shall be removed from the job site by the Contractor at the Contractor's expense.

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2. Existing piping, ducts, and services, etc., requiring capping or plugging shall be capped or plugged below floors, behind walls, above ceilings or above roof unless otherwise noted.

M. EXCAVATION AND BACKFILLING

1. Excavation and backfilling for work to be done under this Specification Section shall be done under this Section. All underground lines outside buildings shall be 2'-0" minimum backfill cover unless a greater depth of cover is recommended by the pipe manufacturer for the particular application. Width at top of pipe shall be 16" plus the outside width of pipe. Provide all shoring where required by site conditions.
2. Backfill
 - a. 6" Below, Around, and to 12" Above Pipe. Material shall be sand. Place Carefully around and on top of pipe, taking care not to disturb piping, consolidate with vibrator.
 - b. One Foot Above Pipe to Grade. Material shall be sandy or silty loam, free of lumps, laid in 6" layers, uniformly mixed to proper moisture and compacted to required density. If backfill is determined to be suitable and required compaction is demonstrated by laboratory test, water compaction in 6" layers may be used, subject to review by Engineer.
3. Compaction. Compact to density of 95% within building and under walkways, driveways, traffic areas, paved areas, etc. and to 90% elsewhere. Demonstrate proper compaction by testing at 8" above top of pipe. Perform test at every 100' of trench. If a test fails, the compaction shall be re-worked in both directions back to test points that passed, before re-testing.
4. Electrical conduit shall not be run in excavations provided for mechanical systems.
5. Excavation and backfilling in a public right-of-way shall be done in strict accordance with the agency having jurisdiction.

N. HANGERS AND SUPPORTS.

1. Provide all hangers, bracing, and supports for the proper installation of equipment and materials under this Section of the Specification.
2. Any structural element required to properly hang or support piping, ducts, or equipment, etc., provided under this Specification Section and not shown on the Architectural or Structural Drawings shall be provided under this Specification Section.
3. Hangers for ducts less than six sq. ft. in cross sectional area shall have hangers per SMACNA Duct Construction Standards, (current) Edition.
4. All plumbing piping shall be supported and seismically braced in compliance with HCAI (OSHDP) Pre-Approval No. OPM-0052-13 the "B-Line / Tolco Industries Seismic Restraint System". or other OSHDP pre-approved system. Copies of the above publication and details shall be provided by the Contractor and maintained at the project site until final acceptance.

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O. FLASHING

1. Whenever any part of the Plumbing System(s) must penetrate the roof or outside wall, the openings shall be flashed and counter-flashed absolutely water tight with minimum 22 gauge galvanized sheet metal, prime coated. Flashing aprons shall extend not less than eight inches (8") from the pipe or supporting member in all directions unless detailed otherwise. All penetrations shall be flashed following the procedures of the National Roofing Contractor's Association

P. PAINTING

1. Paint all black iron supports, hangers, anchors, etc., and all uninsulated black iron pipe work installed in weather exposed locations with one coat of rust resisting primer.

Q. CONTINUITY OF SERVICES

1. All existing services and systems shall be maintained except for short intervals when connections are to be made. The contractor shall be responsible for any interruptions of services and shall repair damage done to any existing service caused by the work.
2. If utilities not indicated on the drawings are uncovered during excavation, the Contractor shall notify the architect immediately for further instructions.

R. DEFINITIONS

1. Provide. The term "provide" as used in these specifications or on the Drawing shall mean furnish and install.
2. Piping. The term "piping" as used in these Specifications or on the Drawings shall mean all pipe, fittings, nipples, valves, unions, hangers, and thermal insulation, etc., as may be required for a complete and functional system.
3. Wiring. The term "wiring" shall include the provision of all necessary products which are required for a complete installation and shall include products such as conduit, electrical boxes, connections, transformers, relays and switches.

S. PAINTING

1. Paint all black iron supports, hangers, anchors, etc., and all uninsulated black iron pipe work installed in weather exposed locations with one coat of rust resisting primer.

T. ACCESS DOORS AND PANELS

1. Provide access doors as required where equipment, piping, valves, ductwork, etc. are not otherwise accessible. Access doors shall match the wall or ceiling finish and fire rating as indicated on the Architectural drawings or as required to match wall construction. 16-gauge steel frame and 14-gauge steel panel with paintable finish, except in ceramic tile, where panel shall be 16-gauge stainless steel with satin finish. Continuous hinge. Screwdriver latch. Deliver panels to the General Contractor for installation. Provide Zurn Z-1460-4 for square

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doors and Z-1460-5 for rectangular doors, Karp, or equivalent. Unless otherwise noted , the minimum sizes shall be as follows:

- | | |
|-------------------------------|---------|
| a. 1 valve up to 1-1/2" | 12"x12" |
| b. 1 valve up to 3" | 16"x16" |
| c. Fire damper, VAV box, coil | 16"x16" |

U. SYSTEM IDENTIFICATION

1. Above Grade Piping. Provide markers on piping which is either exposed or concealed in accessible spaces. For piping systems, other than drain and vent lines, indicate the fluid conveyed or its abbreviation, by stenciled marking or decals, and include arrows to indicated direction of flow. Locate markers at end of lines, near major branches and other interruptions including equipment in the line, where lines pass through floors, walls or ceilings or otherwise pass into inaccessible spaces, and at 50' maximum intervals along exposed portions of lines. Marking of short branches and repetitive branches of equipment connections are not required. Decals pasted, glued, or adhered to piping or insulation shall be Seton "Setmark", or equivalent. Decals or stencils shall be applied after the painting of all piping systems is complete and after preliminary acceptance of piping system. Decals and stencils shall comply with ANSI and OSHA specifications with respect to marker size, color, and legend.

V. PROJECT CLOSE-OUT

1. Record Drawings
 - a. Provide in accordance with general conditions of the specifications.
2. Operation and Maintenance Manual for Mechanical Systems
 - a. Provide three (3) copies of Operation and Maintenance Manuals to the Engineer for review and acceptance. Provide the Owner's designated representative with one copy of the approved O & M manual. Bind Operation and Maintenance Manuals for each Mechanical System (Plumbing, Air Conditioning, etc.) in a hard-backed binder. Cover of each binder shall have the following lettering:

OPERATION
AND
MAINTENANCE
MANUAL
(project site name)
(project site address)
BAKERSFIELD CITY SCHOOL DISTRICT
BAKERSFIELD, CALIFORNIA

Provide a transmittal letter at the beginning of the manual on the Contractor's letterhead. Letter shall be signed by a contractor principal (Owner or Corporate Officer) and shall be countersigned by the Owner's designated representative and shall indicate the date when the mechanical systems were shown and explained in

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detail to the Owner's designated representative. (The Engineers office shall be notified 48 hours minimum prior to the owner-contractor meeting.)

Provide a master index at the beginning of Manual showing items included. Use plastic tab indexes for the sections of the Manual.

Section 1, General. Provide:

Name of Architect, Mechanical Engineer, Contractor and Mechanical Sub-Contractor.

A complete list of installed equipment with project mark number, indicating name of vendor, address and phone number.

A sub-section with manufacturer's descriptive literature for each item of installed equipment with model, capacities, and all other pertinent information highlighted.

Section 2, Operating instructions. Provide:

General description of each separate system and sub-system.

Step by step procedure to follow in putting each piece of mechanical equipment into operation. Start-up sheets must be signed by the owner of the installing contractor certifying that the start-up has been completed per manufacturer's written instruction.

Schematic as-built control diagrams for each separate system. Diagrams shall bear the date of the acceptance of the project. Include all temperature control panels and their respective functions.

Section 3, Maintenance Instructions. Provide:

Summary list of mechanical equipment used indicating name, model, serial number, and nameplate date of each item together with number and name associated with each system item.

Manufacturer's maintenance instructions for each piece of mechanical equipment installed in project. Instructions shall include name of vendor, installation instructions, parts numbers and lists, operation instructions of equipment and maintenance and lubrication instructions.

Section 4, Warranties. Provide:

A copy of each manufacturer's warranty statement, completely filled out and indicating date forwarded to the respective manufacturer.

PART 2 MATERIALS

A. PIPING

1. Domestic Cold Water

a. Inside Building, Above Grade or Slab

- i. Type "L" hard drawn copper tubing with wrought copper solder joint fittings, NIBCO, ANACONDA, or acceptable equivalent. Joints shall be made with

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95.5 solder, such as Silavoy Streamline 122, Silvabrite 100 or acceptable "lead free" equivalent. Pipe to be reamed to full bore, de-burred, and joint area cleaned with a Trisodiumphosphate solution prior to joining.

- ii. Where allowed under local and state building codes: Pro-Press pipe joining system for copper piping.
- b. Outside Building, Below Grade, Slab, and Paved Areas.
 - i. Schedule 40 galvanized steel with galvanized malleable iron banded 150 lb. fittings. Pipe shall be protected as specified elsewhere in this section.
 - ii. Polyvinylchloride (PVC) pressure rated Schedule 40, ASTM D 2241, with rubber rings, ASTM D 1869. Piping shall be equivalent to Johns-Manville "Ring-Tite" and shall be installed in strict compliance with Manufacturer's Installation Guide. Where sizes shown are smaller than those available with "Ring-Tite" pipe, use schedule 80 PVC glued pipe and fittings. Piping option only where local codes allow its use.
 - iii. Type "K" hard drawn. All else per copper specification above.
- 2. Domestic Hot Water.
 - a. Inside Building, Above grade or slab
 - i. Same as Cold Water Piping - Inside Building.
- 3. Soil Waste and Vent Piping
 - a. Inside Building and Within 5 Feet of Building Wall
 - i. Coated standard weight cast iron pipe and fittings, CISPI Standard 301 and ASTM A-888. Joints shall be ABI "No-Hub" stainless steel band, mechanically assembled (no welds), conforming to ASTM C564.
 - ii. Vent piping and waste piping above floor 2-1/2" diameter maximum may be standard weight galvanized steel pipe.
 - b. Outside Building
 - i. Johns-Manville ring-tite, or equivalent, polyvinylchloride (PVC) gravity pipe, where permitted by local codes, complying with ASTM 03034-SDR 35 with joints using flexible elastomeric seals meeting requirements of ASTM D-3212.
- 4. Condensate Drains
 - a. Type "L" hard drawn copper tubing with wrought copper solder joint fittings. All changes in direction of condensate drain shall be accomplished with plugged tees. Drains shall be extended as indicated on drawings or to nearest acceptable fixture or vent if not indicated.
- 5. Exposed Pipe at Fixtures

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- a. Chrome plated red brass pipe, iron pipe size, with threaded cast bronze chromium plated couplings and fittings. Any pipe required to extend from finish wall into exposed view within Toilet Rooms shall be chrome plated.

6. Piping Protective Wrap

- a. All galvanized or black steel piping buried below grade shall be factory coated with Scotchkote 101 Epoxy Resin as manufactured by 3M Company, or "X-tru-Coat" as manufactured by Pipe Line Service Corp. Field joints shall be wrapped by Scotchrap #50 or coated with Scotchkote 302 as recommended by manufacturer. In lieu of above, pipe may be machine-wrapped with Scotchrap #51. 50% lapped with joints per above.
- b. Provide a continuous test of all pipe covering, including field joints, prior to backfilling. This test shall be made using a "Holiday Detector" as manufactured by Tinker and Rascor Co., or approved equal. Test at an electrical voltage of 10,000 volts D.C.. Any wrap holiday found shall be patched and retested. This test shall be done in the presence of the owner's inspector

B. Valves

1. General

- a. Manufacturer's model numbers are listed to complete description. Equivalent models of Crane, Grinnell, Nibco, or Stockham are acceptable. Use ball valves for 1-1/2" and smaller domestic hot and cold water, and gate valves for 2" and larger size.

2. Gate Valve

- a. 2" and Smaller. All bronze, Malleable iron hand wheel, Rising stem, Union bonnet, Wedge disc, 200 psi WOG, Stockham B-105.
- b. 2-1/2" and Larger. Iron body, bronze mounted, Non-rising stem, Wedge disc, 200 psi WOG, Flanged or AWWA hub end as applicable. Stockham G-612. Underground valves shall have square operating nut. Provide one operating "T" handle for underground valves.

3. Check Valves

- a. 2" and Smaller. All bronze swing check, regrinding. 200 psi WOG. Stockham B-319.
- b. 2-1/2" and Larger. Swing check, iron body, brass mounted seats, Class 125. Stockham G-931.

4. Ball Valve.

- a. Bronze body, cap, stem, disk and ball. Screwed connection. Lever handle TFE seat. O-ring seals. 600 psi WOG. Consolidated Brass "Apollo", Grinnell,

C. Insulation

1. General

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- a. All insulation shall comply with the requirements per the California Building energy Efficiency standards, Title 24. Refer to Table 120.3-A, Pipe Insulation Thickness
- b. All insulation shall be provided in accordance with the "National Insulation Contractors Association" manuals. Insulation shall be applied by a contractor holding a valid California C-2 License.
- c. All insulation jackets and lapsal adhesives shall be tested as a composite product in accordance with UBC Standard No. 42-1 and shall have a flame spread of not more than 25 and a smoke developed rating of not more than 50.
- d. All domestic hot water piping, fittings and accessories shall be insulated. All circulating piping shall be insulated. Cold water piping in ventilated attic shall be insulated.

2. Interior Piping, Fittings and Valves

- a. Shall be insulated with 1" thick Fiberglass ASJ/SSL U.L. rated pipe insulation through 1" diameter pipe, 1-1/2" thick for 1-1/4" diameter pipe and above. Fittings shall be hard molded plastic flush. Do not insulate flanges or valves unless water temperature exceeds 140°F or the piping is exposed to weather.

3. Piping Exposed to Weather or View

- a. All piping and fittings exposed to weather shall have, in addition to the above-described insulation, aluminum jacketing. 0.016" thickness for straight pipe. 0.024" thickness for fittings. Integral moisture barrier. Provide pre-fabricated aluminum strapping and seals by same manufacturer, "Childers" or equal. Secure in place with factory supplied straps. Install all joints to prevent water entry. All joints shall be sealed with outdoor mastic. Benjamin Foster 65-07 or equal.
- b. For Miscellaneous fittings for which aluminum jackets are not available or where proximity of fittings precludes a neat-appearing installation, the Contractor may cover the insulation with stretchable glass fabric and at least two coats of outdoor mastic.
- c. Additional Finish for Exposed Piping and Equipment: All piping and equipment exposed to view but protected from the weather such as in equipment rooms shall be given an additional finish of PVC jackets.

4. Hot Water Supply/Drain Piping and Handicap Fixtures "Handi Lav-Guard" insulating kits by Truebro, Inc. or "Trap Wrap" as manufactured by Brocar Industries. Pre-formed insulation and materials to cover hot water, cold water, and drain piping. Must conform to ADA and California codes. Pressure sensitive expanded poly foam tape will not be accepted.

D. Cleanouts

1. Style shall be ZURN as follows (equivalent models of Smith are acceptable):
 - a. For vinyl tile use #ZN-1400-6
 - b. For carpeted areas use #ZN-1400-14
 - c. For terrazzo areas use #ZN-1400-10
 - d. For ceramic tile or finished concrete use #ZN-1420-2

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- e. Grade cleanouts (Non-Traffic areas) use #ZN-1400-25
- f. Grade cleanouts (Traffic areas) use #ZN-146-15W/Z-1450-8
- g. For wall cleanouts use #ZN-1460-8

2. Cleanout Box.

- a. Precast reinforced concrete. Cast iron lid marked for service.

E. Fixtures and Trim

1. General

- a. Provide Rough-in for and install all plumbing fixtures shown on drawings. All trim not concealed shall be brass with polished chrome plate finish unless noted otherwise. Waste shall be chrome plated 17 gauge P-trap shall have clean-out and escutcheon at tailpiece. All enameled fixtures to be acid resisting. Standard color is white unless otherwise noted.
- b. All drinking water faucet products shall be certified to NSF Standard 61 section 9 Drinking Water Components. The brass casting shall contain no more than two tenths of one percent lead by dry weight.
- c. Other brass components which contact water within the faucet shall be from brass which contains no more than three percent lead by dry weight. All faucets exempt from NSF Standard 61 Section 9 shall meet the same lead content criteria.

2. Supplies

- a. Standard compression stop, straight pattern, loose key, chromium plated with stuffing box.
- b. All exposed fixture supplies to lavatories, sink-sand water closets shall be Brass-Craft "Speedway" flexible supplies with metal compression ring connection at all stops or fittings as designated by part number, and shall have a rigid metal to metal connection to fixture valves. For lavatories & sinks use STR 1715A and for tank-type water closets use STR 1712DL.

3. Air Chambers

- a. Zurn Z-1700 "Shoktrol" complete with shut-off valve on branch to air chamber and screwdriver stop stainless steel access panel. Provide where noted on drawings and upstream at every quick-closing manual, solenoid or flush valve. Install per manufacturers instructions locating chamber between the last two fixtures on a 20' or shorter header, or use (2) chambers (calculated for the total fixture unit count) for headers over 20' in length with locations in the middle and between the last two fixtures on the header.

F. Backflow Preventers

1. General

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- a. Backflow preventers shall be provided on building domestic water service as may be required by the local utility and shall also be provided in all branch lines serving any new or existing boiler, cooling tower, evap. condenser or other device requiring chemical water treatment.
2. Reduced Pressure Type: Two spring loaded "Y" pattern check valves, differential relief valve mechanism, inlet and outlet shut-off valves, and four test cocks. Approved by AWWA. Febco, Beeco, or equivalent.
3. Double Check Type: Two spring loaded "Y" pattern check valves, inlet and outlet shut-off valves, and four test cocks. Approved by AWWA. Febco, Beeco, or equivalent.
4. Pressure Type Vacuum Breaker: Spring loaded check valve assembly, air inlet port and poppet, inlet and outlet shut-off valves, and two test cocks. Febco, Beeco or equivalent.
5. Domestic Water Heater Expansion Tank: Provide expansion tank on cold water supply to any water heater if backflow prevention is required at site water connection. "Amtrol" ST series sized per manufacturer's recommendations.

G. Strainers

1. Threaded strainers are to be of the gasketed capped cover extra heavy iron body type - Similar to Mueller Fig. #11. Provide gate valve and pipe nipple with 3/4" hose connection on each strainer for blow-off.

H. Floor, Ceiling, and Wall Plates

1. Beaton and Cadwell No. 10, steel flange with locking device and polished chromium plated finish. Provide plates on any finished surface through which pipe passes.

I. Insulating Fitting

1. Epco dielectric unions with Epconite insulating gasket selected for applicable duty. Provide wherever pipes of different metals are joined.

J. Pipe Markers

1. One inch (1") high minimum, stenciled letters, located every 6'-0". Markers shall indicate piping service such as domestic cold water supply, etc., and shall have directional flow arrow at each location of stenciled letters. Decals pasted, glued, or adhered to piping or insulation are not acceptable unless decal wraps entirely around pipe or insulation such as Seton "Set mark", or equivalent. Decals shall be applied after painting of all piping systems is complete and after preliminary acceptance of piping system. Decals shall comply with ANSI and OSHA specifications with respect to marker size, color, and legend

K. Union

1. 2" and smaller - AAR malleable iron, bronze to iron ground seat. 30 psi. Size 2-1/2" and larger - Grooved pipe, synthetic gasket, malleable iron housing. Victaulic Style 77, Type "E" gasket, Grinnell.

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L. Pipe Hangers and Supports

1. General

- a. All plumbing piping shall be supported and seismically braced in compliance with the OSHPD Pre-Approval No. OPM-0052-13 the "B-Line / Tolco Industries Seismic Restraint System". Copies of the above publication and details shall be provided by the Contractor and maintained at the project site until final acceptance.

2. Steel pipe and Cast Iron Soil Pipe

- a. 1/2" through 4" pipe. Provide B-line B3690 J-style hanger, with standard electro-plated finish.
- b. 5" and larger pipe. B-line B3100 Clevis-Style pipe hanger with standard electro-plated finish.

3. Copper Tubing

- a. Provide B-line B3690F felt-lined hanger for copper tubing with standard electro-plated finish.

4. Insulated Pipe & Tubing

- a. Provide B-line B3380 thru B3384 360° calcium silicate shield. The hanger and shield shall be fitted to the outside of the pipe insulation.

5. Cast Iron Pressure Piping

- a. Provide B-line B3102 Clevis-Type hangers sized for water works piping.

6. Hanger Rod Sizing

- a. Hanger rods shall be roll threaded mild steel with electro-galvanized finish and shall meet or exceed the following table:

Piping or Tubing Size	Hanger Rod Size
1/2" through 2"	3/8"
2-1/2" through 5"	1/2"
6" through 10"	5/8"

7. Hanger Spacing

- a. Provide at least one hanger per branch and independently support all line-mounted equipment. Provide a hanger within 12" of elbow at riser or drop. Spacing of hangers along the run of the pipe shall not exceed the following table:

Pipe or Tubing Size	Steel Pipe	Copper Tube	CI Pipe
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1/2" through 3/4"	7'-0"	5'-0"	5'-0"
1" through 1-1/4"	7'-0"	6'-0"	5'-0"
1-1/2" through larger	10'-0"	10'-0"	5'-0"

8. Trapeze Hangers

- a. Trapeze hangers shall be fabricated from galvanized channel. Stress on the installed channel shall not exceed 25,000 psi. Deflection on the installed channel shall not be greater than 1/240th of the span length. For load calculations, all piping to be assumed to be water-filled unless handling a heavier liquid. Hanger rods for trapeze hangers shall be limited to 9,000 psi stress based on the area at the root of the threads. Minimum hanger rod size shall be 3/8"

M. Flashings

1. Vent flashing shall be 4 lb. seamless lead, 16" sq. flange, length sufficient to be turned down 2" into vent. Oatey. Provide 24"x24" 4 lb. lead flashing at each roof drain. Flashing for other piping through roof shall be prefabricated galvanized steel roof-jacks with 16" sq. flange. Provide storm collar and seal water tight with mastic

N. Yard Boxes and Covers

1. One piece precast concrete with cast iron cover labeled "Sewer", "Gas", "Water", etc., as required. Provide traffic weight cover in traffic areas. Provide 6" minimum length "Thinwall" series 2000 6" diameter pipe extension to valves installed deeper than boxes. Install in workman like manner. Multiple boxes located on same centerline parallel to building exterior wall. Provide 6" concrete apron in non-paved areas.

PART 3 EQUIPMENT

A. General Requirements

1. Capacity. Capacities and efficiencies shall be in accordance with schedules shown on drawings. Scheduled numbers are to be considered minimum.
2. Dimensions. Equipment must conform to space requirements and limitations indicated on drawings and as required for operation and maintenance. Equipment that does not readily conform to space conditions is unacceptable. Prepare and submit layout drawings for all proposed equipment substitutes showing actual job conditions, required clearances for proper operation, maintenance, etc.

PART 4 INSTALLATION

A. Equipment Connections

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1. Water and drain connections shall be provided for each piece of equipment as required. Provide shut- off valve or fixture stop for each water supply to each piece of equipment whether or not equipment is furnished in this Specification Section.
2. Provide a backflow preventer at each connection to equipment as required by code whether or not equipment is provided in this specification section.
3. Provide a regulating valve at drinking fountain supplies. Valve, supply piping, and electrical connector shall be installed so as not to be visible.
4. Ratings
 - a. Gas. Natural gas burning equipment shall be furnished with 100% safety gas shut-off, intermittent pilot ignition, and be approved by AGA.
 - b. Electrical. Equipment shall be in accordance with NEMA standards and U.L. listed where applicable standards have been established.
5. Piping.
 - a. Each item or assembly of items shall be furnished completely piped for connection to services. Control valves and devices shall be furnished, installed, and wired except where noted by others on drawings

B. Fixtures

1. Piping beyond finished wall at each fixture shall be chrome plated.
2. All piping supporting flush valves, hose bibbs, etc., shall be securely fastened to the building structure at each device to prevent movement of piping. All supplies to individual and/or adjacent fixtures shall be at same height and on center line of waste insofar as possible. Fixture height shall be as indicated on architectural drawings
3. Wall hung fixtures shall have space between fixture and wall surface caulked with white silicone caulk.
4. Rough-in and connection for trim and other fixtures supplied by others shall be included in this specification section.
5. Where aerators are scheduled for the various fixtures, provide Chicago "Lam-A-Flo" Laminar flow controls.
6. Floor Drains or Floor Sinks shall be placed parallel to room surfaces, set level, flush with floor and adjusted to proper height to drain. Cover openings during construction to keep all foreign matter out of drain line.

C. Piping

1. Constantly coordinate work with that of other trades so as to prevent any interference with this installation.

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2. Install cleanouts at ends of sewer lines, at changes of direction greater than 45 degrees, and at not greater than 100 foot intervals. Locate interior cleanouts in accessible locations and bring flush to finished surface.
3. Vents shall terminate not less than 6" above the roof nor less than 12" from any vertical surface nor within 10' of any outside air intake. Install horizontal vent lines at 1/4" per foot pitch. Offset vents 2' minimum from gutters, parapets, ridges and roof flashing.
4. Condensate Drain Piping shall be installed with constant pitch of 1/8" per foot minimum. Provide tee with clean-out plug at all changes of direction. Provide a trap at each air handling unit to prevent air leakage. Connections to equipment mounted on vibration isolators shall be made with flexible connections.
5. Freeze Protection
 - a. All piping two inch and smaller located outside building and above ground and where exposed to freezing conditions shall be neatly wrapped with refrigerant insulated tape for freeze protection.
6. Sterilization of Piping
 - a. Disinfect all domestic hot and cold water piping systems in accordance with 2013 CPC 609.9, "Standard for Disinfecting Water Mains". Disinfecting process shall be performed by contractor and witnessed by a representative of the Engineer. During procedure signs shall be posted at each water outlet stating, "Chlorinating - Do not drink". After disinfecting, water samples shall be collected and sent to an independent lab for bacteriological analysis. Certificate of Bacteriological Purity shall be obtained from lab and delivered to the Owner through the Engineer.
7. Tests and Adjustments
 - a. Sanitary Sewer. All ends of the sanitary sewer system shall be capped and lines filled with water to the top of the highest vent, 10' above grade minimum. This test shall be made before any fixtures are installed. Test shall be maintained until all joints have been inspected, but no less than 2 hours. Grade tests will be allowed on "ring-tite" PVC pipe.
 - b. Condensate Drain. Similar to Sanitary Sewer.
 - c. Domestic Hot and Cold Water Piping: Maintain 100 psig water pressure for 4 hours.

END OF SECTION 220000

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SECTION 230000 - HEATING, VENTILATING & AIR CONDITIONING

PART 1 – GENERAL

A. DIVISIONS 00 AND 01 ARE A PART OF THIS SECTION

B. SCOPE.

1. Work Included. Provide all labor, materials and services necessary for complete, lawful and operating systems as shown or noted on the drawings or as specified here. The work includes, but is not necessarily limited to, the following:
 - a. Demolition as indicated on drawings and / or as required based on field conditions.
 - b. Air distribution systems.
 - c. All equipment as shown or noted on the drawings or as specified.
 - d. System energy balance.
 - e. HVAC controls based on Pelican wireless. See plans for details.
 - f. Start-up and commissioning of systems.
 - g. Acceptance testing in accordance with California Energy Regulations.

C. CODES AND STANDARDS

1. All work and materials shall conform with current rules and regulations of applicable codes. Nothing in these Drawings or Specifications is to be construed to permit work not conforming to these codes. Should the Drawings or Specifications call for material or methods of construction of a higher quality or standard than required by these codes, the Drawings and Specifications shall govern.
 - a. Applicable codes and standards shall include but are not necessarily limited to:
 - i. California Code Of Regulations:
 1. Title 8, Industrial Relations
 2. Title 17, Public Health
 3. Title 19, Public Safety
 4. Title 21, Public Works
 5. Title 24, Energy Regulations

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- ii. California Building Code.
- iii. California Mechanical Code
- iv. California Plumbing Code
- v. Local Codes and Ordinances
- vi. Air Moving and Conditioning Association (AMCA)
- vii. American National Standards Institute (ANSI)
- viii. Air Conditioning and Refrigeration Institute (ARI)
- ix. American Society of Heating, Refrigerating, and Air Conditioning Engineers
- x. American Society of Mechanical Engineers (ASME)
- xi. American Society for Testing and Materials (ASTM)
- xii. American Water Works Association (AWWA)
- xiii. National Electrical Code (NEC)
- xiv. National Electrical Manufacturers Association (NEMA)
- xv. National Fire Protection Association (NFPA)
- xvi. Occupational Safety and Health Act (OSHA)
- xvii. Sheet Metal and Air Conditioning Contractors National Association (SMACNA)
- xviii. Americans with Disabilities Act. Accessibility Guidelines for Buildings and Facilities. (ADAAG).

D. PERMITS AND FEES

1. The Contractor shall take out all permits and arrange for all tests in connection with such work as required. All charges are to be included in the work. All charges or fees for service connections, meters, etc., shall be included in the work.

E. COORDINATION OF WORK

1. Before starting any work, thoroughly examine all existing and newly completed underlying and adjoining work and conditions upon which the installation of this work is in any way dependent for the workmanship required by the Contract Documents. Report to the Architect and Engineer in writing any and all conditions which might adversely affect this work and limit ability to perform the required workmanship.
2. Layout of materials, equipment and systems is generally diagrammatic unless specifically dimensioned. The actual locations of all materials, piping, ductwork, fixtures, equipment, supports, etc., shall be carefully planned, prior to installation of any work, to avoid all

interference's with each other, or with structural, electrical or architectural elements. Verify the proper voltage and phase of all equipment with the electrical plans. All conflicts shall be called to the attention of the Engineer prior to the installation of any work or the ordering of any equipment.

3. Because of the small scale of the drawings, it is not possible to indicate all offsets, fittings, and accessories that may be required. Carefully investigate the mechanical, electrical, structural, architectural drawings and field conditions that could affect the work to be performed and arrange such work accordingly. Provide the required piping and ductwork offsets, fittings, and accessories to meet such conditions.
4. Spaces provided in the design of the building shall be utilized and the work shall be kept within walls or furring lines established on the drawings. Any discrepancy between Architectural or Mechanical drawings with respect to wall or furring locations and dimensions shall be brought to the Architect's attention for resolution before proceeding with installation.
5. Any work which is done as an addition, expansion, or remodel of an existing system shall be compatible with that system.

F. MANUFACTURER'S RECOMMENDATIONS

1. All material, equipment, and devices, etc., shall be installed in a manner meeting approval of the manufacturer of the particular item. The Contractor shall make himself available of all installation manuals, brochures, and procedures that the manufacturer issues for the equipment and material. Contractor shall be held responsible for all installations contrary to the manufacturer's recommendations. Contractor shall make all necessary changes and revisions to achieve such compliance

G. GUARANTEE

1. Guarantee shall be in accordance with the General Conditions. These Specifications may extend the period of the guarantee for certain items. Where such extensions are called for, or where items are normally provided with guarantee periods in excess of that called for in the General Conditions, the certificate of guarantee shall be furnished to the Owner.

H. QUIETNESS

1. Piping of all types, ductwork, and equipment shall be arranged and supported so that the vibration is at a minimum and is not transmitted to the building structure.

I. DAMAGES BY LEAKS

1. The Contractor shall be responsible for damages caused by leaks in the temporary or permanent piping or mechanical systems prior to completion of work and during the period of the guarantee.

J. SUBMITTALS

1. Shop Drawings. Within 30 days of contract award, the Contractor shall submit six copies of shop drawings for all materials, equipment, etc., proposed for use on this project. Material or equipment shall not be ordered or installed until written review is processed by the Engineer. Any item omitted from the submittal shall be provided as specified without substitution. All shop drawings must comply with the following:
 - a. Shop drawings are required for all material and equipment items and shall include manufacturer's name and catalog numbers, dimensions, capacities, performance curves, and all other characteristics and accessories as listed in the contract documents. Descriptive literature shall be current manufacturer's brochures and submittal sheets.
 - b. All shop drawings shall be submitted at one time in a three hole binder with title sheet including Project Title, Architect, Engineer, Contractor, table of contents, and indexed tabs dividing each group of materials or item of equipment. All items shall be identified by the specification paragraph number for which they are proposed. All equipment shall also be identified by the mark number as indicated on drawings. Submittals shall bear the stamp of certification by the Contractor as evidence that the Contract Documents (Specifications and Drawings) have been thoroughly checked.
 - c. All capacities, characteristics, and accessories called for in the specifications or on the drawings shall be high-lighted, circled or underlined on the shop drawings. Data must be complete enough to permit detailed comparison of every significant characteristic which is specified, scheduled or detailed.
2. Review. Submittals will be reviewed for general conformance with the design concept, but this review does not guarantee quantity shown, nor does it supersede the responsibility of the Contractor to provide all materials, equipment and installation in accordance with the drawings and specifications. The Contractor shall agree that shop drawing submittals processed by the Engineer are not Change Orders; that the purpose of shop drawing submittals by the Contractor is to demonstrate to the Engineer that the Contractor understands the design concept, that he demonstrates his understanding by indicating which equipment and material he intends to furnish and install and by detailing the fabrication and installation methods he intends to use.
 - a. If deviations, discrepancies or conflicts between shop drawings and design drawings and specifications are discovered either prior to or after shop drawing submittals are processed by the Engineer, the design drawings and specifications shall control and shall be followed. Submittals for products and equipment offered as an alternate to that specified will require, if accepted by the Engineer, resubmission of the Title 24 Energy Compliance Calculations if the specified product or equipment was included within the scope of the approved calculations on file with the reviewing authority. The cost of preparing resubmission will be the responsibility of the Contractor.

K. OPENINGS, CUTTING AND PATCHING

1. The locations and dimensions for openings through walls, floors, ceilings, foundations, footings, etc. required to accomplish the work under this Specification Division shall be provided under this Division. Except as noted below, the actual openings and the required cutting and patching shall be provided by other Divisions. Coring through existing concrete or masonry walls, floors or asphaltic concrete required to accomplish the work under this Specification Division shall be provided under this Division. Restoration of all surfaces shall

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be provided by other Divisions. Cutting or coring shall not impair the strength of the structure. Any damage resulting from this work shall be repaired at the Contractor's expense to the satisfaction of the Architect and Engineer.

L. DEMOLITION

1. Existing equipment, ducts, piping, valves, fittings, devices, etc., requiring removal shall be removed and delivered to the Owner at a location on the job site to be determined by the Owner. Those items determined by the Owner to be of no value shall become the property of the Contractor and shall be removed from the job site by the Contractor at the Contractor's expense.
2. Existing piping, ducts, and services, etc., requiring capping or plugging shall be capped or plugged below floors, behind walls, above ceilings or above roof unless otherwise noted.

M. HANGERS AND SUPPORTS.

1. Provide all hangers, bracing, and supports for the proper installation of equipment and materials under this Section of the Specification.
2. Any structural element required to properly hang or support piping, ducts, or equipment, etc., provided under this Specification Section and not shown on the Architectural or Structural Drawings shall be provided under this Specification Section.
3. All ductwork shall be supported and seismically braced in compliance with OSHPD Pre-Approval No. OPM-0052-13 the "B-Line / Tolco Seismic Restraint System" or other OSHPD pre-approved system. Copies of the above publication and details shall be provided by the Contractor and maintained at the project site until final acceptance.

N. CONTINUITY OF SERVICES

1. All existing services and systems shall be maintained except for short intervals when connections are to be made. The contractor shall be responsible for any interruptions of services and shall repair damage done to any existing service caused by the work.
2. If utilities not indicated on the drawings are uncovered during excavation, the Contractor shall notify the architect immediately for further instructions.

O. ELECTRICAL CONNECTIONS

1. Provide under Specification Division 15000 all required control conduit, wiring, controls and control panels as indicated on the drawings or as may be required for system operation.
2. No control device shall be mounted with rigid connections on vibration isolated mechanical equipment. No field furnished control device shall be mounted on any piece of equipment so that it interferes with physical access of air or water flow, or covers any portions of nameplates or access doors.
3. Electrical Coordination

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- a. Prior to commencing construction arrange a conference with the electrical and mechanical trades as well as equipment suppliers and verify types, sizes, locations, voltage requirements, controls and diagrams of all equipment furnished by them. In writing, inform the Architect that all phases of coordination of this equipment have been covered and if there are any unusual conditions or problems they shall be enumerated at this time.

P. FLASHING

1. Whenever any part of the Mechanical System(s) must penetrate the roof or outside wall, the openings shall be flashed and counter-flashed absolutely water tight with minimum 22 gauge galvanized sheet metal, prime coated. Flashing aprons shall extend not less than eight inches (8") from the duct, pipe, or supporting member in all directions unless detailed otherwise. All penetrations shall be flashed following the procedures of the National Roofing Contractor's Association

Q. PAINTING

1. Paint all black iron supports, hangers, anchors, etc., and all uninsulated black iron pipe work installed in weather exposed locations with one coat of rust resisting primer.

R. SYSTEM IDENTIFICATION

1. Equipment. All equipment shall be identified with a plastic laminated engraved nameplate which bears the unit number marked as indicated on the drawings (e.g. HP-1) Provide 1/2" high lettering - white on black background. Nameplates shall be permanently secured to the unit.

S. DEFINITIONS

1. Provide. The term "provide" as used in these specifications or on the Drawing shall mean furnish and install.
2. Piping. The term "piping" as used in these Specifications or on the Drawings shall mean all pipe, fittings, nipples, valves, unions, hangers, and thermal insulation, etc., as may be required for a complete and functional system.
3. Ductwork. The terms "duct" or "ductwork" as used in these Specifications or on the drawings shall mean all ducts, fittings, joints, dampers, hangers, and thermal insulation, etc., and other devices as may be required to make a complete and functional system.
4. Wiring. The term "wiring" shall include the provision of all necessary products which are required for a complete installation and shall include products such as conduit, electrical boxes, connections, transformers, relays and switches.

T. PROJECT CLOSE-OUT

1. Record Drawings
 - a. Provide in accordance with general conditions of the specifications.

2. Operation and Maintenance Manual for Mechanical Systems

- a. Provide three (3) copies of Operation and Maintenance Manuals to the Engineer for review and acceptance. Provide the Owner's designated representative with one copy of the approved O & M manual. Bind Operation and Maintenance Manuals for each Mechanical System (Plumbing, Air Conditioning, etc.) in a hard-backed binder. Cover of each binder shall have the following lettering:

OPERATION
AND
MAINTENANCE
MANUAL
(project site name)
(project site address)
BAKERSFIELD CITY SCHOOL DISTRICT
BAKERSFIELD, CALIFORNIA

Provide a transmittal letter at the beginning of the manual on the Contractor's letterhead. Letter shall be signed by a contractor principal (Owner or Corporate Officer) and shall be countersigned by the Owner's designated representative and shall indicate the date when the mechanical systems were shown and explained in detail to the Owner's designated representative. (The Engineers office shall be notified 48 hours minimum prior to the owner-contractor meeting.)

Provide a master index at the beginning of Manual showing items included. Use plastic tab indexes for the sections of the Manual.

Section 1, General. Provide:

Name of Architect, Mechanical Engineer, Contractor and Mechanical Sub-Contractor.

A complete list of installed equipment with project mark number, indicating name of vendor, address and phone number.

A sub-section with manufacturer's descriptive literature for each item of installed equipment with model, capacities, and all other pertinent information highlighted.

Section 2, Operating instructions. Provide:

General description of each separate system and sub-system.

Step by step procedure to follow in putting each piece of mechanical equipment into operation. Start-up sheets must be signed by the owner of the installing contractor certifying that the start-up has been completed per manufacturer's written instruction.

Schematic as-built control diagrams for each separate system. Diagrams shall bear the date of the acceptance of the project. Include all temperature control panels and their respective functions.

Section 3, Maintenance Instructions. Provide:

Summary list of mechanical equipment used indicating name, model, serial number, and nameplate date of each item together with number and name associated with each system item.

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Manufacturer's maintenance instructions for each piece of mechanical equipment installed in project. Instructions shall include name of vendor, installation instructions, parts numbers and lists, operation instructions of equipment and maintenance and lubrication instructions.

Section 4, Air Conditioning System Balance and Test Run Reports. Provide:

One-half size reproduction of air conditioning plans annotated to match tabulated measurements.

Tabulated and summarized measurements.

Section 5, Warranties. Provide:

A copy of each manufacturer's warranty statement, completely filled out and indicating date forwarded to the respective manufacturer.

PART 2 - MATERIALS.

A. Ductwork.

1. General.

- a. Construct ductwork to meet all functional criteria defined in section VII, of the SMACNA "HVAC Duct Construction Standards Metal and Flexible". This shall subsequently be referred to as the SMACNA manual.
- b. Interior ducts shall be constructed with G-60 or better galvanized steel (ASTM 527) LFQ, chem treat. Exterior ductwork or any duct exposed to high humidity conditions (i.e. dishwasher exhaust) shall be G-90 or better.
- c. Support, access doors not part of ducts, bar or angle reinforcing damper rods and items made of uncoated mild steel shall be painted with two coats of two coats primer or provide galvanized equivalent.

2. Rectangular Ducts.

- a. Construct ductwork and supports to meet all functional criteria defined in section VII, of the SMACNA "HVAC Duct Construction Standards Metal and Flexible" 2005 Edition. Hanger spacing shall not exceed 8'.

3. Ells. Rectangular ells of ninety degrees shall be mitered and fitted with AERO/DYNE, "HEP" or equivalent, adjustable turning vane of airfoil contour design. Side rails shall be installed so that vane at heel of elbow shall fit snugly without air passing on the back side. Spacing of vanes according to manufacturers recommendations.

4. Round Ducts.

- a. Galvanized.

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- i. Spiral lockseam with standing rib duct. For round ducts, 8" diameter or less, provide Noll or Young and company snap-lock galvanized steel.
- ii. Round elbows shall be pleated or welded gore (5 piece ells). Non-welded gore elbows for use with snap lock ducts shall be taped at gore intersections.

5. Duct Joints.

- a. Rectangular. All ducts shall utilize "Ductmate 25/35" factory fabricated duct joint connectors with #440 gasket tape. Flanged interior gaskets shall be Ductmate #440 or Butyl Rubber Gasket which meets Mil-C 18969B, Type II Class B, and TTS-S-001657 must also pass UL-723. The material must not contain any vehicle that will support fungal or bacterial growth. Formed on flanges shall not be accepted for any duct exceeding 42" in width or any duct subjected to greater than 2" W.G..
- b. Round. All round ducts shall utilize male-female slip joints with minimum three (3) sheet metal screws. 0-20" ducts shall utilize sealing compound applied continuously around joint before assembling and after fastening. Wrap joints with 3" wide duct tape. 21" – 72" ducts, use 3-piece, gasketed, flanged joints consisting of two internal flanges (with integral mastic sealant), and one external closure band. Ductmate Spiralmate or equal.

6. Sealing.

- a. Interior to Building - Hardcast fiber tape and liquid adhesive. DT-5300 or DT-540 tape. FTA-20 adhesive. Ductmate PROseal.
- b. Exterior to Building - For joints exposed to weather, sealant shall be G.E. silicone. For joints not exposed to weather, sealant shall be Eco-Duct Seal 44-60, or United Sheet Metal.
- c. Exposed Ducts. All joints shall use Hardcast Galva-Grip or equivalent. Joint shall be finished clean from outward appearance.

7. Flexible Insulated Ducts.

- a. Shall be J.P. Lamborn Company Type AMF or Thermoflex M-KE acoustical low pressure duct. Duct shall be listed and labeled UL-181 Air Duct; meet NFPA-HUD minimum standards and comply with UMC 6. Duct factory R-value 4.2 minimum. In un-conditioned spaces, R-8 minimum.
- b. Hangers shall consist of minimum 3" wide 28 gauge galvanized steel and shall be spaced a maximum of 36" on center. Flexible duct shall be installed in compliance with the manufacturer's latest installation instructions. No kinks or sharp bends allowed. Turning radius shall be a minimum of 1.5 times diameter of duct. A copy of which shall be at the site during and after installation. Provide a minimum of at least one hanger per duct section.
- c. Connections to round ducts or collars shall be made with galvanized or stainless steel worm clamps or "Panduit" adjustable clamps listed by UL-181.

- d. Unless indicated otherwise on the drawings, flexible duct shall be limited to the final 5 foot portion of the duct system connecting to the supply diffuser or return grille. Flex duct shall be limited to factory cut pieces with factory applied end connections.
8. Fire Dampers.
 - a. Fire damper assembly shall bear the U.L. 555 Label and the California State Fire Marshall listing number. Provide duct access door to fire damper as required by job conditions in compliance with Title 24, California Mechanical Code. Fire dampers shall be installed in all rated walls and ceilings penetrated by ducts, grilles and diffusers. Fire damper shall have rating equivalent to construction. Dampers shall be installed in strict compliance with manufacturer's installation instructions.
 9. Fire/Smoke Dampers.
 - a. Damper Assembly shall bear the U.L. 555S Label and State Fire Marshall listing number. Provide access door to smoke damper as required by job conditions in compliance with Title 24, California Mechanical Code. Means of disconnect shall be provided between detector and damper(s), where detector is included as factory mounted and wired. Dampers shall meet most current standard for UL testing. UL555 and UL555S. Dampers shall be suitable for a dynamic system. See details on plans for leakage and velocity requirements. If not listed on plans, provide leakage class I and velocity level at 3,000 FPM.
 10. Volume Dampers.
 - a. Branch Duct Volume Damper - Volume control damper (VCD) in square or rectangular ducts shall be as follows: Opposed blade, 6" maximum blade width, 16- gauge blade, 48" maximum length, nylon or oil impregnated bronze bearings, 1/2" diameter pin shaft, 16-gauge channel frame, actuating rod out of air stream. VCD in round duct shall be as follows: Damper blade full height of branch and 1" less than branch width. All branch dampers shall have regulator with spring loaded shaft nut and serrated self-locking die cast core. Ventlok 640. Provide remote ceiling operator with chrome plated or painted cover where shown on drawings or where damper control is otherwise inaccessible.
 11. Back-draft Dampers.
 - a. Unless otherwise noted on drawings: .025 aluminum counter-balanced blades with felt strip on mating edges, and machined brass mounted in six gauge steel channel frame, Pacific Model PRO 1100AI or equal. Normally closed back-draft dampers are required at all roof exhaust fans and all outside air intakes.
 12. Duct Fire Caulking.
 - a. All ductwork passing through rated assemblies that do not have a fire or fire/smoke damper shall be installed with a U.L. listed fire caulking assembly. Exact details of U.L. listed assembly shall be followed. Provide inspector of record and project engineer submittal showing U.L. listed fire caulking detail that the contractor intends to use for each condition. In lieu of fire caulking, at contractors option, provide fire damper installed in accordance with U.L. listing
 13. Filters.

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a. Pre-Filters.

- i. Minimum of MERV 13 filter, consisting of a nominal 2" thick, pleated type, panel filter, CSFM listed. Initial resistance at 500 feet per minute face velocity shall not exceed 0.30" w.g. Provide one complete change of all filters after air balance is completed and prior to final acceptance

B. Piping.

1. Refrigerant Piping.

- a. General. Copper Type "L", hard drawn, ASTM B88 with wrought copper fittings, silver alloy brazed 1100°F., joints, Sil-Fos or equal. Size 3/8" O.D. and smaller to be refrigerant tube ASTM B 280. All elbows to have long radius.

C. INSULATION.

1. All insulation shall be in strict compliance with California Building Energy Efficiency Standards, 2019 Edition, Title 24.
2. Refer to table 120.3-A for pipe insulation thickness required. This shall be a minimum. If construction documents call for a higher rating, the higher rating shall apply.
3. Insulation shall have a flame spread of not more than 25 and a smoke developed rating of not more than 50.
4. Ducts.
 - a. General. All supply, return, exhaust ducts and plenums shall be insulated externally and/or lined internally as specified herein or as indicated on the drawings. Ducts in directly or indirectly conditioned spaces shall be insulated to a minimum level of R4.2. Ductwork in unconditioned spaces such as an attic where the roof insulation is at the ceiling level or where located outdoors shall have an insulation level of R8 minimum.
 - b. Ducts in Attics. All supply and return ducts shall be insulated externally with 2" thick fiberglass 3/4# density. Where rectangular ducts are lined internally, they shall be wrapped on the exterior with 1" thick fiberglass, 3/4# minimum density.
 - c. Exposed Ducts Within Conditioned Spaces. Shall not require external insulation unless noted on the drawings.
 - d. Ducts Exposed to Weather. All supply and return ducts shall be lined internally with 2" thick Manville "Permacote Linacoustic" glass fiber and thermosetting resin duct liner, R-8. Provide with antimicrobial edge coating, Johns Manville Superseal Edge Treatment or Superseal HV. Coating edges with adhesive is not acceptable. All field cut edges must be coated prior to delivering duct to job site. Any lined duct left untreated that has been subjected to dirt and / or dust will be rejected, and will not be accepted for installation. Edges must be treated so that complete coverage is obtained, with no raw edges. Apply as directed by manufacturer's literature.
 - e. Interior Duct Surfaces. All supply, return, or exhaust duct connections to air conditioning units or fans shall be internally lined for a minimum distance of ten lineal feet upstream and downstream of fan unless otherwise indicated on the drawings.

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Interior duct liner where applied for attenuation purposes only shall be 1" thick Manville "Permacote Linacoustic" glass fiber and thermosetting resin duct liner, R-4.2. Provide with antimicrobial edge coating. See paragraph above.

- f. Duct Wrap. Shall be tightly wrapped around ducts to prevent sagging with longitudinal and transverse lap of at least 6". Laps shall be wired or stapled to eliminate gaps. Insulation shall be secured by wrapping with 18 gauge galvanized wire 12 o.c. adhesive. Insulation shall be applied with density identification exposed.
- g. Duct Liner Shall be adhered to clean metal with minimum 100% coverage of adhesive such as 3M Adhesive #38, additionally secured with approved mechanical clips or welded pins per SMACNA standards. Provide with antimicrobial edge coating. Apply per paragraph 2 d) above. Coating edges with adhesive is not acceptable.

5. Piping

- a. Refrigerant. Cover piping with foamed plastic insulation. Longitudinal and end seams shall be thoroughly cemented with adhesive in accordance with manufacturer's recommendations. Cover all fittings, unions, valves and connections. Piping exposed to weather shall be covered with at least two coats of protective finish. Piping exposed to weather shall be Aluma-Clad with .016" jacket.

PART 3- EQUIPMENT.

A. General Requirements

- 1. Start-up. All equipment shall be started and tested in strict accordance with the manufacturer's written instructions. Provide the inspector of record factory start-up literature for each mechanical item. Demonstrate to inspector that strict compliance to the start-up procedure has been completed for each item. Start-up sheets must be completed and turned in with the O&M manuals. Start-up sheets must be signed by the owner of the installing contractor certifying that the start-up has been completed per manufacturer's written instruction.
- 2. Acceptance Testing. Complete acceptance testing of all systems and equipment as required under the Building Energy Efficiency Standards, 2013 Edition, Title 24. Submit all completed and signed forms to the building department or the Division of the State Architect, where applicable.
- 3. Capacity. Capacities shall be in accordance with schedules shown on drawings. Capacities are to be considered minimum.
- 4. Dimensions. Equipment must conform to space requirements and limitations as indicated on drawings and as required for operation and maintenance. Where architectural screening is indicated, equipment shall not extend above or beyond screening. Equipment is not acceptable that does not readily conform with the space conditions. Prepare and submit layout drawings for all proposed equipment (different than scheduled units) showing actual job conditions, required clearances for proper operation, maintenance, etc.
- 5. Ratings.
 - a. Gas. Natural gas burning equipment shall be furnished with 100% safety gas shut-off, intermittent pilot ignition, and be approved by AGA.

- b. Electrical. Electrical equipment shall be in accordance with NEMA Standards and UL listed where applicable standards have been established.
6. Piping. Each item or assembly of items shall be furnished completely piped for connection to services. control valves and devices shall be provided. Equipment requiring domestic water for none-potable use shall be provided with backflow preventer acceptable for intended use by local governing authorities.
7. Electrical.
- a. General. Each item or assembly of items shall be furnished completely wired to individual terminal blocks for connection to single branch electrical circuit. All electrical accessories and controls required by equipment shall be provided. Provide terminal blocks for controls and interlocks not included in equipment package.
 - b. Wiring. Conductors, conduit, and wiring shall be in accordance with Electrical Specifications. Individual items within assembly shall be separately protected with dead front, fused disconnect, fuse block, or circuit breaker for each underground conductor. Switches, contacts and other devices shall be in undergrounded conductors.
 - c. Motors. Shall be rated, constructed and applied in accordance with NEMA and ANSI Standards without using service factor. Single-phase motor shall be of type to suit application. Three- phase motors shall be of type to suit application. Three-phase motors shall be open drip proof, NEMA B design on pumps and fans, NEMA C on reciprocating equipment, sealed ball bearing, three-phase indication. Insulation shall be double dip and bake with Class F thermal polyester non-hygroscopic epoxy base insulating materials. Design shall limit starting inrush current and running current to values shown on drawings. Motors exposed to weather shall be open drip-proof approved by manufacturer for this type of service. All motors 1 horsepower and larger shall be the high efficiency type with efficiency and power factor equal or exceeding Century E-Plus.
8. Fan Selection.
- a. Fan Curves. Performance curves shall be submitted for all units of 3000 CFM or greater. Operating point for forward curved fans shall be from point of maximum efficiency toward increased CFM limited by horsepower scheduled. Operating point for backward inclined fans shall be selected near point of maximum efficiency. Curves shall plot CFM verses static pressure with constant brake horsepower, RPM and efficiency lines.
 - b. Static Pressure. Unless otherwise noted, pressure scheduled as external static pressure (ESP) includes all ductwork and accessory losses external to the unit housing. Unless otherwise noted, pressure scheduled as total static pressure includes all ductwork, filter, coil, cabinet, damper and other accessory losses. Unless otherwise noted, pressure scheduled as duct static pressure includes all supply and return ductwork and accessory losses external to the unit housing and plenum (as applicable). The allowance for filter losses is 0.3" WC, unless otherwise noted. Submit itemized static pressure losses for all components.

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9. Screens. All duct or louver openings to the outside shall be covered with 1/4" galvanized screen.

PART 4 - INSTALLATION

A. Ductwork.

1. Installation shall conform with NFPA 90A and SMACNA Low Pressure Duct Construction Standards 2005 Edition. Provide mounting and supporting of Ductwork and accessories including, but not limited to, structural supports, hangers, vibration isolators, stands, clamps and brackets, access doors, and dampers. Install ductwork accessories as indicated in accordance with the manufacturer's printed instruction. Allow clearance for inspection, repair, replacement, and service. Ductwork and accessories shall be installed in a manner to prevent vibration and rattling.
2. Deflectors. Provide in rectangular elbows, duct mounted supply outlets, take-off or extension collars to supply outlets, and tap-in branch take-off connections. 45 degree take-off is an acceptable alternative for low velocity systems (below 1,500 FPM).
3. Grilles. Each air inlet and outlet shall be flush with finished surface of wall or ceiling and shall be securely attached thereto. Provide plaster grounds at locations of all wall and hard surfaced ceiling grilles.
4. Branch Take-Offs. All branch ducts from main supply air and to return air trunk duct shall be provided with splitter blade full height of branch take-off and 1" less than branch width. Regulators to be Young or equal. Dampers located in inaccessible areas shall have extended shafts with concealed regulator in adjacent ceiling or wall.
5. Dampers. Install volume control damper and damper regulator on all branch ducts.
6. Flexible Glass Fiber Duct. The use of flexible duct is limited to the last 5 feet of each branch duct (i.e. one 5 foot section of flexible duct may used to connect the grille to the sheet metal branch duct). No joints permitted in 5' length. Joints shall be installed with metal bands and fiber tape and adhesive. Minimum turn radius shall be in accordance with SMACNA Standards (turn radius of duct centerline not less than 1.5 times the duct diameter).
7. All [ducts] and [mechanical / plumbing piping] shall be supported and seismically braced in compliance with OSHPD Pre-Approval No. OPM-0052-13 the "B-Line / Tolco Seismic Restraint System" or other OSHPD pre-approved system. Copies of the above publication and details shall be provided by the Contractor and maintained at the project site until final acceptance.

B. Insulation.

1. See materials section of this specification for installation requirements.

C. Equipment Installation.

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1. It shall be the responsibility of the equipment installer to ensure that no work done under other specification sections shall in any way block or otherwise hinder the equipment. All equipment shall be securely anchored in place.

D. System Air and Water Balance.

1. General.

- a. The contractor shall employ the services of an independent system balancing company registered by AABC, NBC, or NEBB. The balancing contractors shall be limited to one of the following:
 - i. Air Control Services 515 E. 19th St., Bakersfield, CA 93305 (661) 327-8755
 - ii. Air Control Balancing 1959 N. Gateway #103, Fresno, Ca. 93727 (559) 454-8000
 - iii. American Air Balance 4721 E. Hunter, Anaheim, Ca. 92807 (714) 693-3700
 - iv. Los Angeles Air Balance Co. 1848 W. 11 St., Upland, Ca. 91786 (909) 931-1114
 - v. RS Analysis 111 Natoma Street, Folsom, Ca. 95630 (916) 351-9842
 - vi. National Air Balance 4171 Business Center Drive, Fremont, Ca. 94538 (510) 623-7000
- b. Submit within thirty (30) days after receipt of contract, submittal data forms of the selected balance company for the testing and balancing of the air conditioning, heating, and ventilation systems.
- c. After development of the balancing procedure to be followed for each respective system, a representative of the system balancing company shall periodically visit the jobsite, particularly before any insulation is applied to ducts or piping, and confirm the suitability of the ducts, piping, accessories, hardware, and access panels installed for balancing. Any noted deficiencies shall be reported to the Contractor in writing with a copy to the Engineer. Noted deficiencies shall be corrected at this time by the Contractor.
- d. Final system testing and balance shall not begin until the system has been completed and is in full working order. The Contractor shall put all heating, ventilating, and air conditioning systems and equipment into full operation and shall continue the operation each working day during the balancing procedure. The balancing company shall be responsible for all adjustments to the heating, cooling and ventilating equipment necessary for the system to operate as specified. Upon completion conduct a running test under substantial load conditions demonstrating to the satisfaction of the Owner's representative that all equipment and controls are operating as intended and have been properly adjusted for these conditions.
- e. The system balance company shall include an extended warranty of one hundred eighty (180) days after completion and acceptance of test and balance work, during which time the Engineer at his discretion may request a recheck, or resetting of any outlet, fan, etc., as listed in report. The system balance company shall provide

technicians to assist the Engineer in any re-test required during this period. Seasonal re-balance during the first year of operation is part of the scope of this specification.

- f. The flow quantities shown on the drawings are not to be considered absolute. If changes in flow quantities are required to attain comfort conditions in any area, the balancing company shall make the required changes at no extra cost.

2. Procedure.

- a. The testing and balancing of the systems, including all equipment, ducts, piping, and accessories shall be done in strict compliance with the latest edition of the Procedural Standards for Testing, Adjusting, Balancing of Environmental Systems as published by National Environmental Balancing Bureau or equivalent AABC standard.

3. Acceptance of Tests.

- a. In the event any tests or inspections prove unsatisfactory, such shall be made a matter of record. Acceptance of the system shall be postponed until all defects or improper adjustments have been corrected and the work is again inspected and tests satisfactorily repeated.

4. Data to be Furnished.

- a. At completion of running tests two (2) complete sets of data listed below for all items of equipment shall be furnished for incorporation in Owner's Equipment Manual for the project:
- b. Manufacturer's equipment outline drawings.
- c. Manufacturer's performance curves for fans, pumps, and flow control devices and capacity tables for equipment.
- d. Pertinent running test data; such as system test points, test point data, horsepower, RPM, FLA, etc., including final instrument set points and adjustments as left.

E. Temperature Controls:

1. General.

- a. A complete system of automatic temperature control shall be provided. Complete system shall consist of the existing plus that which is necessary for proper function and operation
- b. All conduit and wiring shall be installed in strict compliance with spec division 26, electrical.
- a. Sequence of Operation. Refer to temperature control diagram on the drawings. With initial submittal and on record drawings include narrative of system operation describing start-up, automatic operation, and shut-down.

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2. Electrical Wiring. All electrical wiring and conduit in connection with the drawings shall be provided under Specification Division 23. Any wiring not shown on the drawings but required for proper operation of the automatic temperature control system shall be performed under this Section.

END OF SECTION 230000

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SECTION 260000 - ELECTRICAL

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

Work in general includes, but is not limited to, the following:

- A. Underground Service – 277/408 volt, three phase, four wire.
- B. Grounding of equipment, service, etc.
- C. Complete lighting and power system as shown on Drawings and specified herein, including conduit, wiring, panelboards, transformers, circuit breakers, relays, switches, receptacles, and other items necessary for complete and operable systems.
- D. Electrical connection of equipment furnished by others as shown on the Drawings.
- E. Trenching and backfill as required for electrical Work.

1.03 SITE VISITS, COORDINATION OF CONTRACT DOCUMENTS, VERIFICATION OF DIMENSIONS

- A. Examine existing conditions as applicable. Become acquainted with Specifications and Drawings for all portions of the Project. Notify Project Manager of apparent discrepancies and of inconsistency between the Specifications and the existing conditions. Secure and follow Project Manager's instructions. The Drawings serve as working drawings only, indicating diagrammatically the general layout of the systems and their various components and equipment.
- B. Scaled and figured dimensions are approximate and are given for estimate purposes only. Carefully check and verify dimensions and sizes in order to determine if equipment and materials will fit together and if the dimensions of the assembly are compatible with the space provided. Where equipment is furnished by others, verify that dimensions and requirements for assembly are compatible with the space provided before proceeding with the roughing-in connections. Field verifications of locations shown on Drawings are necessary since actual locations, distances, mounting heights, etc., may be affected by field conditions. The right is reserved to make reasonable changes in locations of equipment or other features shown on Drawings prior to rough-in without additional cost to the Owner.
- C. Where apparatus and equipment have been indicated on the Drawings, dimensions have been taken from typical equipment of the class indicated. Carefully check the Drawings to see that the contemplated equipment will fit into the spaces provided, regardless of whether or not it may have been approved for quality and utility as an equal.
- D. Rough in all equipment, fixtures, etc., as designated on the Drawings and as specified herein. The Drawings indicate only the approximate location of rough-ins. The exact rough-in locations must be determined from large-scale certified Drawings. The Contractor shall obtain all certified rough-in information before progressing with any Work for rough-in connections.

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- E. Be responsible for providing outlets and services of proper size at the required locations.
- F. Coordinate requirements of equipment furnished by others, prior to ordering and installation.
- G. No allowance will be made for extra expense due to failure or neglect to follow foregoing directives.

1.04 RULES AND REGULATIONS

- A. Materials and installation shall be in accordance with current rules and requirements of California Code of Regulations and local codes and ordinances including, but not necessarily limited to, the current editions of the following:
 - 1. The California Electrical Code (CEC).
 - 2. Title 8, Chapter 4, California Code of Regulations (Low Voltage Electrical Safety Orders).
 - 3. California State Fire Marshal.
 - 4. California Statewide Qualified Product List (QPL), Title 20.
 - 5. Design Lights Consortium (DLC).
 - 6. NEMA (National Electrical Manufacturers Assoc.).
 - 7. IEEE (Institute of Electrical and Electronic Engineers).
 - 8. California Green Building Code.
 - 9. ANSI (American National Standards Institute).
 - 10. ASTM (American Society for Testing and Materials).
 - 11. UL (Underwriters Laboratories).
 - 12. OSHA (Occupational Safety & Health Act) Federal.
 - 13. Title 24, California Code of Regulations, California Building Code.
 - 14. NFPA (National Fire Protection Association).
 - 15. NESC (National Electrical Safety Code).
 - 16. NECA Standards of Installation.
 - a. NECA 400-2018, Standard for Installing and Maintaining Switchboards (ANSI).
 - b. NECA 409-2018, Recommended Practice for Installing and Maintaining Dry-Type Transformers (ANSI).
 - c. NECA/IESNA 500-2006, Standard for Installing Indoor Lighting Systems.
 - d. NECA/IESNA 501-2006 Standard for Installing Exterior Lighting Systems.
 - e. NECA 331-2018, Standard for Building and Service Entrance Grounding and Bonding
- B. Where these Specifications call for a higher standard than the above-mentioned rules, the Specifications shall govern.

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- C. Should there be any direct conflict between the above-mentioned rules and these Specifications, the rules shall govern.
- D. Nothing in the Drawings or Specifications is to be construed to permit Work not conforming to the rules, codes, and regulations.
- E. All materials utilized shall be new and the best of their respective grades or kinds.

1.05 DEFINITIONS

- A. Article 100 of the California Electrical Code shall serve as a guide for definitions.
- B. Industry standard definitions.
- C. Specific Definitions:
 - 1. Concealed: Hidden from sight, as in trenches, chases, hollow construction, above furred spaces, suspended 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.
 - 2. Exposed: Not concealed.
 - 3. 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, floor or ceilings, or specifically mentioned as "unfinished".
 - 4. Finished Spaces: Any space ordinarily visible to the visiting public, including exterior areas.

1.06 RULES OF LOCAL UTILITY COMPANIES

- A. Comply with rules and regulations of the serving utility companies, and before submitting bid, check and include applicable service costs for the Project.

1.07 RECOGNIZED TEST LAB

- A. All equipment specified or installed under this project shall be listed by a recognized test lab and bear that label of approval.

1.08 PERMITS AND FEES

- A. Procure licenses and permits necessary for the completion of the Work, and inspection and other applicable fees. Before final payment, deliver to the Owner certificates and permits, approved and signed by the authorities having jurisdiction.

1.09 RECORD DRAWINGS

- A. Include under this Work complete and accurate record information both during construction and before final acceptance by the Owner, and costs associated therewith shall be included under this Work.
- B. Obtain from the Project Manager, at cost, a complete, full size set of prints. On these prints, systematically and accurately keep an up-to-date and legible dimensional record of Work installed differently from the location or manner indicated by the Drawings, as well as exact locations of stub-outs and hidden or underground features. Have these Drawings readily

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available for reference and review. When job status permits, submit them to the Project Manager and amend or correct and re-submit if requested.

- C. When the above information is complete and acceptable, deliver Record Drawings to the Project Manager.

1.10 SUBMITTALS - SUBSTITUTIONS

- A. Bids shall be based on Drawings and Specifications and references exactly as shown except as substitutions are permitted under terms of the Instructions to Bidders. Acceptance by the Project Manager of a variation or alternate shall not of itself waive other requirements of the Drawings and Specifications.
- B. Before a substitute is used, it shall be equal in quality and utility to the material or make of equipment specified, and furthermore, shall be suitable for the particular application. The decision of the Project Manager as to the quality and utility of the substitute offered shall be final.
- C. When submitting a substitute to a specified item, provide complete data for both the specified item and the substitute. Complete data includes:
 - 1. Catalog cuts with complete dimensions, characteristics, electrical properties, Underwriter's Laboratory listing, harmonics, light output, mounting and support requirements.
 - 2. Calculations, photometrics, system load data, energy effect on system, etc.

If the substitute is not deemed equal in both utility and quality to the specified item, the specified item will be approved and it shall be provided by the Contractor.

- D. Submit in one package complete systematized lists of equipment and Drawings, catalog cuts, brochures, capacity tables and curves, descriptive information, performance data and guarantees and warranties referenced either to applicable Specification paragraphs or to item numbers as shown on the Drawings, or both. Submit six (6) copies.
- E. Do not order or install equipment until submittals have been reviewed and approved.
- F. Where accepted materials or equipment other than is specified or shown on the Drawings require redesign of structural, architectural, electrical or mechanical features or layouts, such changes shall be made by, or at the expense of the Contractor - all subject to complete review by the Project Manager.
- G. Because of the contingencies involved, review and general acceptance of proposed substitutes shall not relieve the Contractor's responsibility under this Work for ensuring in all respects the suitability of such materials and equipment for the particular Project requirements.

1.11 SHOP DRAWINGS

- A. Prepare shop Drawings of items as required by the Project Manager or by Drawings and Specifications; submit six (6) copies of each to the Project Manager as part of the submittal package, sufficiently in advance of construction, if necessary.
- B. The shop drawings shall be submitted sufficiently in advance of construction to allow time for review and for resubmission, if necessary.
- C. Submit all shop drawings and data at one time for equipment provided under this Section. The complete electrical shop drawings shall be bound in one pamphlet or binder indexed to this Section.

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- D. Shop drawing submittals processed are not change orders. The purpose of shop drawing submittals by the Contractor is to demonstrate that the Contractor understands the design concept; he demonstrates his understanding by indicating which equipment and material he intends to furnish and install and by detailing the fabrication and installation methods he intends to use. If deviations, discrepancies or conflicts between shop Drawings and Specifications are discovered, either prior to or after shop drawing submittals are processed, the design Drawings and Specifications shall control and shall be followed.
- E. Manufacturers' 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.
- F. Index all submittals and reference to these Specifications.

1.12 COMPLETION DATA

- A. Submit completion data to the Project Manager in acceptable quantity and form before requesting a final inspection. Such submittal shall be corrected, amended, or completed before final acceptance of the Work.
- B. Include Record Drawings, maintenance manuals, and data; test results; control and wiring diagrams.

1.13 CUTTING, PATCHING, AND REPAIRING

- A. Cutting, patching, and framing of wood members to accommodate this Work shall be done by the Contractor and shall be in conformance with Sections 613 and 617 (F) and (K), Title 24, California Code of Regulations. All such cutting, patching and framing shall be approved by the Project Manager.
- B. Do minor miscellaneous cutting, drilling, and patching necessary and normally required at the time of actually installing this Work. Patching shall be of the same materials, workmanship, and finish as the original or surrounding Work to the complete satisfaction of the Project Manager. Comply with Division-1 CUTTING AND PATCHING Section.
- C. Adequately inform other trades of openings and framing requirements for this Work and provide suitable instructions for establishing locations and sizes of openings or sleeves so that these may be provided in the proper location at the proper time. Concrete shall not be cut, except where approved by the Project Manager.

1.14 SIMILARITY OF MATERIALS

- A. Unless specified otherwise, fixtures, fittings, hangers, and respective type features and equipment, of a similar type or having similar operative or functional features, shall be of the same manufacturer throughout the Project.

1.15 MANUFACTURERS' DIRECTIONS

- A. Follow manufacturers' directions and recommendations in all cases where the manufacturers' equipment or articles are used for this Work. Compliance with the manufacturer's direction is a requirement for that product's listing with a recognized test lab.

1.16 VERIFICATION OF DIMENSIONS

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- A. Scaled and figured dimensions are approximate only. Before proceeding with Work, carefully check and verify dimensions, etc., on architectural Drawings, and be responsible for properly fitting equipment and materials together and to the structure in spaces provided.
- B. 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 locations, routes, building obstructions, etc., and install apparatus and equipment in available locations. Install apparatus and equipment in manner and locations to avoid obstructions, preserve headroom, and keep openings and passageways clear.

1.17 IDENTIFICATION OF EQUIPMENT

- A. All electrical equipment shall be labeled, tagged, stamped, or otherwise identified in accordance with the following schedule:
 - 1. Branch Circuit Panelboards:
 - a. Panel identification shall be P-Touch $\frac{3}{4}$ " label.
 - b. Circuit directory shall be a two-column, 8-1/2 x 11" sheet attached to the inside of the door. Each odd numbered circuit shall be in sequence in the left column and the even numbered circuit in the right column (e.g., 1, 3, 5..., 2, 4, 6...). Each circuit shall be identified as to the use and room name(s) or area(s). Confirm room names and/or room numbers with the Project Manager prior to project completion. Circuit breaker identification shall be by permanently installed metal numbers or plastic numbers under acrylic plastic. "Paste-on" numbers will not be accepted. Refer to "Panelboards" section for additional requirements.
 - 2. Distribution Panelboards: Identification shall be with 1" x 4" laminated, white on black, micarta nameplates on each major component, each with name and/or number of unit and other pertinent data as required. Emergency power distribution panels shall be identified with white on red micarta nameplates. Letters shall be no less than 3/8" high.
 - 3. Circuit breakers shall be identified by number and name with 3/4" x 1-1/2" laminated micarta nameplates with 3/16" high letters mounted adjacent to circuit breaker or switch.
 - 4. Miscellaneous equipment (electrical), such as individually mounted safety switches, starters, step-down transformers, pull boxes, junction boxes, etc., shall be identified by the use of such equipment with P-Touch labels as required.
 - 5. In general, the installed nameplates, as herein called for shall also clearly indicate its use, area served, circuit identification, voltage and any other useful data.
 - 6. All auxiliary systems, including communications, shall be labeled to indicate function.
 - 7. Motor control and motor control centers shall be labeled with the identification given on drawing schedules.

1.18 ARC FLASH LABELING

- A. All panels, circuit breaker enclosures, switchboards and motor control centers shall be labeled with Arc Flash Warning Stickers.
- B. These labels shall contain the following:

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1. Arc Flash Boundary
2. Minimum arc rating
3. Personal Protective Equipment Level, PPE
4. Shock Hazard Level
5. Available Fault Current
6. Date

1.19 CLOSING IN OF UNREVIEWED WORK

- A. Do not allow or cause any of this Work to be covered up or enclosed until it has been reviewed by the Project Manager. Should any of this Work be enclosed or covered up before such review, uncover the Work and make repairs with such materials as may be necessary to restore the Work and that of the other trades to its original and proper condition at no additional cost to the Owner.

1.20 SAFETY PRECAUTIONS

- A. It is intended that within the scope of this Work during construction and until final acceptance, strict attention be given to matters pertaining to public safety and to safety of the construction workers and complementing personnel; and to other health and building safety requirements as specified and indicated including, but not limited to: Protection of openings in fire-rated construction; clearances from and/or protection of combustibles; proper securement for fixtures, equipment materials; method of performing the Work, operational and safety check of electrical devices, etc.; erection and maintenance of suitable barriers, protective devices, lights and warning signs and adequate provisions for storage and protection of Work, materials and equipment.
- B. It is understood that the responsibility for the proper attention to the above stipulations is included under this Work.

1.21 WIRING OF EQUIPMENT FURNISHED UNDER OTHER SECTIONS

- A. All electrical wiring including power wiring and control wiring (except as specified under Automatic Temperature Control), including raceways, wiring, outlet and junction boxes, and labor for installation of the wiring and equipment shall be included in this section of the Specifications.
- B. All control devices, and starters not in motor control centers, for equipment furnished under the Air Conditioning section (except as specified under Automatic Temperature Control paragraph), Plumbing section, Fire Sprinkler or Lawn Sprinkler section are to be furnished under that particular section and installed under this section.
- C. Wiring diagrams complete with all connection details shall be furnished under each respective section.
- D. Coordinate requirements and locations for all equipment prior to ordering and installation.
- E. Comply with requirements of Article 430 of the California Electrical Code.

1.22 EXCAVATION AND BACKFILL

- A. Do excavation, trenching, and backfilling required for this Work. Do shoring, pumping, or draining that is necessary to keep the excavations and trenches safe and free from water. Where possible and practical, avoid planted or paved areas, walkways, floors, and other finished surfaces. See CONDUITS Sections for depth of conduits. Remove all excess excavated materials from the site, unless otherwise directed by the Project Manager.

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- B. Where required, do cutting and drilling of walls, pavements, walkways, etc., by means of cutting and drilling (coring) machines unless specifically approved otherwise.

Excavation, trenching, and backfill methods and procedures shall be in strict accordance with industry standards and local requirements.

- C. Backfilling shall be done in one-foot layers, with each layer tamped before another layer is added. No stones or coarse lumps shall be laid directly on conduits.

1.23 BORING/HORIZONTAL DRILLING

- A. Where approved as an alternate to trenching, provide boring plans. These plans shall be reviewed and approved before any boring operations may commence.

- B. Boring plans shall include:

1. Bore pit location(s).
2. Receiving pit location(s).
3. Method of boring.
4. Procedure for protecting/avoiding existing lines.
5. Procedure for emergency repair of any damaged lines.

- C. Obtain as-built plans of all site utilities before boring.

- D. Call USA Dig or use a locator service to identify underground utilities before boring.

1.24 CONCRETE

- A. Where used for structures to be provided under the contract such as bases, etc., concrete work and associated reinforcing shall be as specified under that Division.

- B. See other sections for additional requirements for underground vaults, cable ducts, etc.

1.25 PROTECTION OF EXISTING LINES

- A. Exercise special care to avoid damaging and to maintain in operation, all existing utility runs during the construction period. Also avoid damaging existing piping, conduits, or equipment that is to remain, whether or not specifically indicated on the Drawings. Existing utilities, piping, conduits, and equipment may or may not be shown on the Drawings. The Drawings only reflect information intended to suggest the probable extent and possible location of indicated runs and equipment. There may be other runs. There may be other locations. Neither the Owner nor the Project Manager represents that either has any precise knowledge as to either the full extent or exact location of equipment and runs that may fall within the building or Project Site.

- B. Execute excavation and demolition on the Site and in the building with extreme care (by hand or small tools wherever appropriate) and at the sole risk of the Contractor and the workers involved.

- C. Locate all known existing installations before proceeding with construction operations which may cause damage to such installations. The existing installations shall be kept in service where possible and damage to them shall be repaired at no increases in Contract Sum.

- D. If other structures or utilities are encountered, request Project Manager to provide direction on how to proceed with the Work.

1.26 MOUNTING

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- A. Provide materials and accessories necessary to properly mount and secure equipment furnished and/or installed under the electrical Work. This includes but is not limited to such items as conduit, outlets, junction boxes, switches, relays, disconnect switches, lighting fixtures, cabinets, and transformers.
- B. Inserts and Anchors shall be:
 - 7. Furnished and installed for support of Work under this Division.
 - 8. Adjustable concrete hanger inserts installed in new concrete work as manufactured by Hilti or as approved.
 - 9. Installed in locations as approved by Project Manager.
 - 10. Expandable lead type anchors installed in existing concrete with minimum surface damage, as manufactured by Hilti.
 - 11. Toggle bolts, or "molly anchors", where installed in concrete block walls.
 - 12. Complete with 3/16" or heavier steel backup plate where used to support heavy items. Through-bolts or backup plate shall be concealed from view, except as otherwise indicated.
- C. Mounting of equipment that is of such size as to be freestanding 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, Unistrut or as approved.
- D. Furnish and install sleeves for the installation of Work under all sections of this Division. Sleeves through floors, roof and walls shall be as described in conduit section.

1.27 MOUNTING HEIGHTS

- A. Receptacles shall be mounted no lower than 15" to the bottom of the device.
- B. Switches and lighting control stations shall be mounted no higher than 48" to the top of the device.
- C. Overcurrent devices and circuit breakers or disconnect switches shall be mounted no higher than 6 feet-7 inches.
- D. Refer to the Drawings for specific mounting heights.

1.28 ACCESSIBILITY

- A. Install all control devices or other specialties requiring reading, adjustment, inspection, repairs, removal or replacement conveniently and accessibly throughout the project.
- B. All required access doors or panels in walls and ceilings are to be furnished and installed as part of the Work under this Division.
- C. Provide doors which pierce a fire separation with the same fire rating as the separation.
- D. Refer to "Finish Schedule" for types of walls and ceiling in each area and architectural Drawings for rated wall construction.

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- E. Coordinate Work of the various sections to locate specialties requiring accessibility with others to avoid unnecessary duplication of access doors.

1.29 FIRE-RATED PENETRATIONS

- A. All penetrations in fire-rated assemblies shall be accomplished using a UL listed method and materials.
- B. Fire-rated assembly penetrations shall be accomplished per details on the Drawings.

1.30 FLASHING

- A. Flash and counterflash all conduits penetrating roofing membrane.

1.31 TESTS

- A. Perform electrical tests as required or directed. Provide materials, labor, and equipment necessary for performances of these tests, and at completion of the Work perform a complete "in-service" operation of the entire electrical and power system to show compliance with the Drawings and Specifications. Replace Work showing faults under tests without additional cost to the Owner. Test system voltage at switchboards at completion of Work and provide a written report to the Project Manager.

1.32 EQUIPMENT LISTS AND MAINTENANCE MANUALS

- A. Prior to completion of job, Contractor shall compile a complete equipment list and maintenance manual. The equipment list shall include the following items for every piece of material and equipment supplied under this section of the Specifications.
 - 1. Name, model and manufacturer.
 - 2. Complete parts Drawings and list.
 - 3. Local supply for parts and replacement and telephone number.
 - 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.
- B. Maintenance manuals shall be furnished for each applicable section of the Specifications, shall be suitably bound with hard covers, and shall include all available manufacturers' operation and maintenance instructions, together with as-built Drawings and lists hereinbefore specified and other diagrams and instructions necessary to properly operate and maintain the equipment. The equipment lists and maintenance manuals shall be submitted in duplicate to 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 number of the General Contractor and all subcontractors involved in any of the Work specified herein. The maintenance manuals shall be finally provided in four copies.

1.33 CLEANING

- A. During construction on a daily basis, and upon completion of the Work, remove from the site all debris and excess materials, tools, and removed items, resulting from this Work. Clean equipment, including lighting fixtures, free of dust, dirt, grease, paint, etc.

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1.34 SALVAGE

- A. Deliver salvaged equipment and material deemed salvageable by Project Manager to location designated by Project Manager. Remove other removed material and equipment from site.

1.35 GUARANTEE

- A. Leave the entire installation in complete working order, free from defects in materials, workmanship or finish. Guarantee to repair or replace parts that may develop defects due to faulty materials, equipment, or workmanship within a period of one year after the Work is accepted by the Owner. Also, guarantee to repair or replace with like materials, other existing Work in the building damaged from or during the repair of any such defective equipment, materials, or workmanship.

1.36 INSTALLERS QUALIFICATIONS

- A. Installer must have electrical certification per California Labor Code Section 3099.2.
- B. All work described in the Electrical Specifications and shown on Electrical Drawings shall be performed by California State Certified Electricians.
- C. All electrical foremen shall have a minimum of 500 hours of documented classroom training.
- D. All electrical foremen shall have a minimum of 3,000 hours of documented on-the-job training.
- E. At the time equipment submittals are made, provide copies of State Certification and training documents for electricians working on this project

PART 2 – PRODUCTS AND EXECUTION

2.01 GROUNDING

- A. Grounding shall be executed in accordance with applicable codes and regulations of the State of California, California Electrical Code and local authorities having jurisdiction as well as any additional provisions specified or shown on Drawings.
- B. Grounding bushings shall be used wherever conduits are grounded. Feeder conduits to panels and air conditioners shall have grounding bushings.
- C. Grounding conductors should be located to permit, the shortest and most direct path to ground. Connections shall be readily accessible for inspection and connections shall not be permanently concealed in floors or walls.
- D. Non-current carrying metallic parts of electrical equipment and raceways shall be securely grounded to the common system ground. In all locations, ground conductors shall be run through conduits and shall be securely bonded to the conduit at the entrance and exit. The conduit for the grounding conductors shall be continuous from the point of attachment to cabinets or equipment to the grounding electrode, and shall be securely fastened to the ground clamp fittings.
- E. Ground connections to equipment shall be made with an approved type of exothermic weld or shall be bolted or clamped to equipment or conduit. Sheet metal strap types of ground clamps shall not be used. Contact surfaces shall be thoroughly cleaned and bright before connection is made so as to ensure a good metal to metal contact.

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- F. Where nonmetallic conduit is used, ground shall be achieved through use of a separate, green-insulated, copper, code-size, ground conductor included in the conduit.
- G. Bonding of cold water piping system shall be achieved at the service entrance. A copper saddle shall be installed over the copper pipe at the location of the clamp to avoid damage to the pipe.

2.02 CONDUIT

A. Rigid Steel Conduit:

1. Rigid steel conduit shall have zinc coated exterior, zinc or enamel interior, standard weight, zinc coated couplings, locknuts and bushings and shall bear the U.L. label. Rigid conduit shall not be installed underground.
2. Use rigid conduit only for exposed exterior conduit runs, wherever subject to physical damage, or where specifically called for on the Drawings or required by a serving utility.
3. Intermediate metallic conduit (I.M.C.) may be used in lieu of rigid steel conduit.

B. Electrical Metallic Tubing:

1. Electrical metallic tubing (E.M.T.) shall bear the U.L. label and shall be zinc coated thinwall conduit with zinc-coated couplings and connections. "Indent" type fittings shall not be used.
2. E.M.T. may be used where rigid, flexible or non-metallic conduit is not required.
3. E.M.T. shall be used for interior dry locations. EMT shall be used where no specified conduit type is called for on the Drawings.

C. Flexible Metallic Conduit:

1. Flexible metallic conduit shall be galvanized steel and bear the U.L. label. Fittings for flexible conduit shall be squeeze type. Screw-in connectors and other connectors that decrease the interior diameter of the conduit shall not be used unless specifically approved by the Project Manager.
2. Liquid-tight flexible conduit shall bear the U.L. label and be plastic jacketed moisture and oil resistant with oil and vapor tight connectors.
3. Use flexible conduit for final connection to equipment where vibration may injure direct conduit connection. It may be used for indoor dry locations, for fixture whips not to exceed 72 inches and in other locations where structural conditions will not permit the use of EMT not to exceed six feet, only if approved by the Project Manager.
4. Use liquid-tight flexible conduit in lieu of flexible conduit for wet, damp, or outdoor areas or where weatherproof flexible conduit is called for on the Drawings or by code.

D. Plastic Conduit:

1. Plastic conduit shall be rigid polyvinyl chloride (PVC) Underwriter's approval, Schedule 40. Connections and fittings shall be "outside" type assembled in accordance with the recommended methods of the manufacturer.

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2. Underground PVC conduit shall be buried a minimum of 24 inches below grade. Where more than two conduits are installed adjacently underground, use factory made conduit spacers.
 3. PVC conduit shall be used for underground conduit runs in lieu of wrapped rigid conduit except as noted otherwise on the Drawings or required by the serving utility.
 4. Provide a code size ground conductor in each conduit.
 5. Only braided polyethylene or similar pull rope shall be used.
- E. Installation of Conduit:
1. Underground conduit.
 - a. Keep interior of conduit clean and clear. Clean underground conduits by pulling a mandrel through conduit run followed with a swab before pulling wire.
 - b. Reroute conduit from locations shown on the Drawings where it is necessary to clear obstructions.
 - c. Provide junction or pull boxes where required for pulling conductors due to excessive number of bends or length of conduit runs.
 - d. Bury underground conduit, except those under buildings, a minimum of 24 inches below finished grade. Conduits under roadways shall be a minimum of 36 inches below finished grade. Conduit runs $\frac{3}{4}$ inch and smaller in slabs shall be located above vapor barriers. Bury conduit runs larger than $\frac{3}{4}$ inch to a minimum depth of 12 inches below floor slabs.
 - e. Standard factory ells shall not be used in underground service conduits or other long underground runs. Field bends shall not be flattened or kinked and shall not materially reduce the internal diameter of the conduit. Bends in long underground runs shall be made in long sweeping bends. Do not bend at couplings. Approved conduit bending methods shall be used.
 - f. All conduit runs shall have a code size insulated grounding conductor.
 - g. Properly separate two or more conduits installed underground in a common concrete envelope with approved factory made conduit spacers.
 - h. Locate conduit stub-outs dimensionally from building or curb lines on Record Drawings.
 - i. Pull wires shall be installed in empty conduits including telephone conduits and stub-outs, No. 12 AWG, type "THWN" insulated copper wire or 1/8-inch polyethylene rope shall be used.
 - j. Spare underground conduits shall be sealed with duct plugs that have pull tabs. Duct tape shall not be used to seal unused conduits.
 2. Exposed/Concealed Conduit:
 - a. Provide secure mounting facilities for conduits. Wire or plumbers tape shall not be used for hanging conduit. Strap shall be factory made of the one hole malleable iron or two-hole galvanized clamp type.

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- b. Provide expansion couplings wherever conduits cross expansion joints.
- c. Run conduit at right angles or parallel to structural members, walls, floors and ceilings. Where several conduits are run together or suspended, they shall be hung on Unistrut trapezes with minimum 3/8-inch rod hangers.
- d. Cut ends of conduit square and ream to remove burrs or sharp edges. Terminate conduits properly with bushings, locknuts, etc. Terminate one (1) inch and larger conduits with insulated bushings.
- e. Render conduits projecting through the roofing watertight by proper flashings. Securely fasten a sheet metal cap and tighten bank or storm collar to the conduits. Extend flashing a minimum of six (6) inches in all directions. Coordinate and install roof flashing for conduits to the satisfaction of the Project Manager.
- f. All conduit runs shall have a code size insulated grounding conductor.
- g. Pull wires shall be installed in empty conduits including telephone conduits and stub-outs, No. 12 AWG, type "THWN" insulated copper wire or 1/8-inch polyethylene rope shall be used.
- h. Flexible conduit connections shall comply with NEC Section 350-22.
- i. Provide Dura Block or similar support for roof-mounted conduits.

2.03 OUTLET, JUNCTION AND PULL BOXES

- A. Outlet boxes and junction boxes shall be galvanized one-piece pressed steel, knockout type. The size of each box shall be determined by the number of wires or conduits or size of conduits entering the box, but shall not be less than 4" square and 1-1/2" deep unless otherwise noted. All boxes shall be UL listed.
- B. Minimum box size for data and telephone outlets shall be 4" square and 2-1/8" deep.
- C. Single gang boxes in concrete, for fixture outlets, shall be 4-3/8" octagonal concrete boxes, 2-1/2" deep minimum.
- D. Single gang boxes in concrete, for wiring devices, shall be 3-1/2" deep, 3-3/4" long and 1-7/8" wide.
- E. Single gang outlet boxes installed in concrete or masonry walls shall be a minimum of 3-1/2" deep, 4" long and 2" wide, set flush with the wall and provided with a single gang wall plate.
- F. Install wood blocking for outlet boxes in a rigid, workmanlike manner using new material where wood studs are used. Provide rigid support to avoid twisting of outlet boxes where steel studs are used. Boxes shall be secured such that they are level and plumb.
- G. Locknuts shall be used on both sides of conduit connections to box or panel, in addition to bushing. Where a larger size opening occurs than size of conduit, use reducing washers.
- H. Exposed boxes shall be weatherproof, threaded or hub conduit with gasketed conduit cover suitable for device installed or with blank cover plate when conduit is used as a junction box. Conduit wire fill capacity shall not be exceeded.

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- I. Recessed weatherproof outlets or junction boxes shall be equipped with neoprene gasketed covers.
- J. Large size junction or pull boxes shall be fabricated from code gauge sheet steel. Where located indoors, finish shall be gray enamel and covers shall be secured with screws. Where exposed to weather, they shall be weatherproof, NEMA 3R, and rain-tight and hot-dip galvanized after fabrication; also, they shall have weatherproof gaskets, flat covers and galvanized iron screws. Provide knockouts and/or threaded hubs as required for the conduit used. Boxes in finished areas shall be prime painted.
- K. Any unused, removed knockouts shall be filled with a K.O. cover.
- L. Provide bonding or grounding from metal conduit terminating in junction with concentric KO's.
- M. Install boxes and rings such that finished installation is flush with finished surface.

2.04 OUTDOOR FLUSH PULLBOXES

- A. Outdoor flush pullboxes shall be installed per details on the Drawings.

2.05 PLATES AND DEVICE COVERS

- A. Plates for switches, receptacles, telephone and blank outlets shall be stainless steel, Hubbell 302/304 alloy or Legrand "S" line, unless otherwise noted. Plates shall be engraved per Drawings or as covered under the Article of this Specification titled "Identification of Equipment".

2.06 RECEPTACLES

- A. Duplex convenience outlets shall be specification grade, backwire, three wire, NEMA #5-20R, self-grounding type, 20 ampere, 125 volt parallel slots, polarized, in white. Additional receptacles shall be as indicated on the Drawings. Receptacles shall be Hubbell #5253W.
- B. Receptacles indicated weatherproof shall have lift cover plates that are weatherproof "while in use" Hubbell/Taymac expandable flat ML450W or equal.
- C. Ground fault current interrupter receptacles shall be self-testing, Hubbell # GFR5352WST.
- D. Outdoor ground fault circuit interrupter receptacles shall be Hubbell #GFW RST 20W or equal.
- E. USB receptacles shall be Hubbell #USB8200W or equal.

2.07 LIGHTING SWITCHES

- A. Line voltage lighting switches shall be specification grade, quiet type, 20 amp. 120/277 volt A.C. white handled, unless otherwise noted. Switches shall be Hubbell #CS1221W.
- B. Dimmers shall be specification grade 20 amp, 120/277 volt, white. Specific attributes of dimmers: types, loads, configuration, shall be as shown on the drawings. Dimmers shall match the drivers in the light fixtures that they feed.
- C. A neutral conductor shall be routed to each switch and dimmer location.

2.08 WIRE AND CABLE

- A. 600 Volt Conductors:
 - 1. Conductors shall be copper and delivered to the site in their original, unbroken packages plainly marked or tagged with U.L. label, size, kind, insulation, name of manufacturer and trade name of the wire.

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2. Type "THWN/THHN", 600-volt insulation shall be used for all locations.
 3. Minimum size conductor shall be #12.
 4. Conductors shall be stranded.
 5. Ground conductors shall be bare copper or have green insulation.
 6. 120 volt and 277 volt circuits shall have separate neutrals.
- B. MC Luminary Cable:
1. MC Luminary cable may be used for line voltage and 0-10 volt wiring between light fixtures and dimmers.
 2. MC Luminary cable shall be UL listed.
 3. MC Luminary cable shall be properly supported along its route between fixtures and dimmers.
 4. Acceptable manufacturers: Manufacturers shall be one of the following, but not limited to:
 - a. AFC
 - b. Southwire
 - c. General Cable
 5. MC Cable sizes shall be as shown on the Drawings.
- C. Installation:
1. Conductors shall be continuous between outlets or junction boxes and no splices shall be made except in outlet boxes, pull boxes, panelboard gutters or handholes.
 2. Joints, splices and taps No. 10 or smaller (including fixture pigtails) shall be connected with "floating spring" type connectors. No. 8 and larger shall be connected with solderless connectors of 100% electrolytic copper. Split-bolt connectors are not acceptable.
 3. Tighten pressure type lugs on panels and equipment, and then retighten 24 hours or more later after energizing. Provide written report of torque values on lugs.
 4. Oil or grease shall not be used when pulling conductors. Use U.L. approved cable lubrication only.
 5. Lace or train conductors neatly in panels, cabinets and equipment. Use plastic wire ties to route conductors at edge of enclosure away from overcurrent devices.
 6. Branch circuits shall be color coded in compliance with Section 210-5 of the California Electrical Code. Colored tape is not acceptable.
 7. All wiring, both line and low voltage, shall be installed in conduit unless otherwise noted.
 8. Conductors from different panels or from different power sources shall not be installed in the same conduit, junction box, gutter, or raceway.
- D. Tag:
1. Branch circuits shall be left tagged with circuit numbers in gutters and junction boxes where unused circuits terminate.
 2. Feeder conductors shall be tagged as phase "A" or "B" or "C".

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3. The method of tagging shall be with adhesive preprinted tape numbered or lettered wrap around tags. Colored tape is not acceptable.
 4. Tagging shall be applied after wire is installed in conduit.
 5. Feeders in panel or equipment shall be tagged by phase letter in each panel or equipment.
 6. Where it is impractical to use printed markers on certain wires or cables, use blank tape with identification marked thereon with indelible pen or pencil.
- E. Color Coding for Phase Identification: Color code secondary service, feeder, and branch circuit conductors with factory applied color as follows:

<u>208y/120Volts</u>	<u>Phase</u>	<u>480y/277Volts</u>
Black	A	Yellow
Red	B	Brown
Blue	C	Orange
White	Neutral	Gray
Green	Ground	Green

2.09 DISCONNECT SWITCHES

- A. Non-fusible or fusible as shown on the Drawings, heavy duty, 250 or 600 volts as required, NEMA Type 1 enclosure, except where WP is indicated or required by code, use NEMA Type 3R enclosure.

2.10 LIGHTING FIXTURES

- A. Lighting fixtures shall be of manufacture and type as specified in the Fixture Schedule, and shall have all parts and fittings necessary to completely and properly install the fixture. Fixtures of the same type shall be of one manufacturer and of identical finish and material.
- B. Lighting fixtures shall bear Underwriter's Laboratories labels. Interior light fixtures shall be on the California Energy Commission approved list. Exterior light fixtures shall be on the DLC list.
- C. Fixtures shall be furnished and installed as indicated on the Drawings, including hangers, glassware, auxiliary equipment, drivers, adapters, connectors for continuous installation, etc.
- D. Each fixture shall be wired with conductors suitable for the voltage, current and temperature to which the conductors will be subjected.
- E. If excessive driver flicker develops within 12 months after installation, the condition shall be corrected at no charge to the Owner. Flickering of the LED or failure of an LED array within 12 months of substantial completion shall also be corrected at no charge to the Owner.
- F. Proper LEDs of type, size, color temperature and wattage indicated shall be furnished and installed in each fixture and shall be manufactured by Phillips, Sylvania, Cree, Sora or Bridgelux. The Contractor shall replace LED arrays which have been burned out prior to final completion. Clean dust, dirt, fingerprints and grease from fixtures before final completion.
- G. Install trims, reflectors, lenses and diffusers with care. Wear cloth or surgical gloves when installing these to avoid leaving fingerprints.
- H. Follow manufacturer's installation instructions when installing light fixtures.

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2.11 PANELBOARDS

A. Section Includes:

1. Power Distribution Panelboard: Furnish and install distribution panelboard(s) as specified herein and where shown on the associated schedules on Drawings.
2. Lighting and Appliance Panelboard: Furnish and install lighting and appliance panelboard(s) as specified herein and where shown on the associated schedules on Drawings.

B. References: The panelboard(s) and circuit breaker(s) referenced herein are designed and manufactured according to the latest revision of the following Specifications.

1. NEMA PB-1 - Panelboards.
2. NEMA PB-1.1 - Instructions for Safe Installation, Operation and Maintenance of Panelboards Rated 600 Volts or Less.
3. NEMA AB 1 - Molded Case Circuit Breakers.
4. NEMA KS 1 - Enclosed and Miscellaneous Distribution Equipment Switches (600 Volts Maximum).
5. UL 50 - Enclosures for Electrical Equipment.
6. UL 67 - Panelboards.
7. UL 489 - Molded-Case Circuit Breakers and Circuit Breaker Enclosures.

C. Power Distribution Panelboards: (Square D I-Line, no equal)

1. Interior:
 - a. Shall be rated 600 VAC. Continuous main current ratings as indicated on associated schedules on Drawings not to exceed 1200 amperes maximum. Panelboard bus current ratings shall be determined by heat-rise tests conducted in accordance with UL 67.
 - b. Provide UL Listed short circuit current ratings (SCCR) as indicated on the associated schedules on Drawings not to exceed the lowest interrupting capacity rating of any circuit breaker installed with a maximum of 200,000 rms symmetrical amperes. Main lug and main breaker panelboards shall be suitable for use as Service Equipment when application requirements comply with UL 67 and NEC Articles 230-F and -G.
 - c. The panelboard interior shall have three flat bus bars stacked and aligned vertically with glass reinforced polyester insulators laminated between phases. The molded polyester insulators shall support and provide phase isolation to the entire length of bus.
 - d. The bussing shall be fully rated with sequentially phased branch distribution. Panelboard bussing rated 100 through 600 amperes shall be plated copper. Bussing rated 800 amperes and above shall be plated copper. The entire interleaved assembly shall be contained between two (2) U-shaped steel channels,

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permanently secured to a galvanized steel-mounting pan by fasteners employing the use of a tamper-resistant warning label.

- e. Interior trim shall be of dead-front construction to shield user from all energized parts. Main circuit breakers through 800 amperes shall be vertically mounted. Main circuit breaker and main lug interiors shall be field convertible for top or bottom incoming feed.
 - f. Equipment ground bar shall be insulated or bonded as shown on the Drawings. Ground bar shall be copper. Solid neutral shall be equipped with a full capacity grounding strap for service entrance applications. Gutter-mounted neutral will not be acceptable.
 - g. Nameplates shall contain system information and catalog number or factory order number. Interior wiring diagram, neutral wiring diagram, UL Listed label, and Short Circuit Current Rating shall be provided. Leveling provisions shall be provided for flush mounted applications.
 - h. Arc Flash labeling shall be provided in accordance with Section 1.18 of these specifications.
 - i. Panelboard lugs shall be tightened with a torque wrench to values listed on the equipment.
2. Molded Case Circuit Breakers - Mains and Branches:
- a. Common Characteristics:
 - 1) Circuit breakers shall be constructed in accordance with the following standards:
UL 489 Federal Specification W-C-375B/GEN
NEMA AB1 CSA 22.2, No. 5-M91
IEC 157-1 BS 4752
 - 2) Circuit breakers shall be constructed using glass reinforced polyester insulating material providing superior dielectric strength. Current-carrying components shall be completely isolated from the handle and the accessory mounting area.
 - 3) Circuit breakers shall have an overcenter, trip-free, toggle operating mechanism which will provide quick-make, quick-break contact action. The circuit breaker shall have common tripping of all poles.
 - 4) Circuit breakers shall have a push-to-trip button for maintenance and testing purposes.
 - 5) Circuit breaker escutcheon shall have international I/O markings, in addition to standard ON/OFF markings. Circuit breaker handle accessories shall provide provisions for locking handle in the ON or OFF position.
 - 6) Breaker faceplate shall indicate rated ampacity. Breaker faceplate shall indicate UL and IEC certification standards with applicable voltage systems and corresponding AIR ratings.

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- 7) Circuit breakers shall be factory sealed and shall have a date code on the face of the circuit breaker. Poles shall be labeled with respective phase designations.
 - (a) Circuit breakers shall be UL Listed for use with the following accessories: Shunt Trip, Under Voltage Trip, Auxiliary Switch, Alarm Switch, Ground Fault Shunt Trip, Electrical Operators, Cylinder Locks, Mechanical Lugs Kits, Compression Lugs Kits, and Handle Accessories.
- 8) Lugs shall be UL Listed to accept solid or stranded copper conductors only. Lugs shall be suitable for 90° C rated wire, sized according to the 75° C temperature rating per NEC Table 310-16. Lug body shall be bolted in place; snap-in designs are not acceptable. Lugs shall be torqued with a torque wrench to the value listed on the circuit breaker.
- 9) Two- and three-pole circuit breakers shall have an internal common trip crossbar to provide simultaneous tripping. Circuit breaker frame sizes above 100 amperes shall have a single magnetic trip adjustment located on the front of the breaker, which allows the user to simultaneously select the desired trip level of all poles.
- 10) Standard circuit breakers up to 250 amperes at 600 VAC shall be UL Listed with HACR ratings.
- 11) Enclosures:
 - (a) Type 1 Boxes:
 1. Boxes shall be galvanized steel constructed in accordance with UL 50 requirements. Zinc-coated galvanized steel will not be acceptable.
 2. Boxes shall have removable blank endwalls and interior mounting studs. Interior support bracket shall be provided for ease of interior installation.
 3. Maximum enclosure dimensions shall be 42 in. wide and 9.5 in. deep.
 - (b) Type 1 Trim Fronts:
 1. Trim front steel shall meet strength and rigidity requirements per UL 50 standards. Shall have an ANSI 49 medium gray enamel electrodeposited over cleaned phosphatized steel.
 2. Trim front shall be [4-piece surface] [1- piece with door] [hinged 1-piece with door] available in [flush] [surface] mount. Trim front door shall have rounded corners and edges free of burrs. A clear plastic directory cardholder shall be mounted on the inside of the door.
 3. Locks shall be cylindrical tumbler type with larger enclosures requiring sliding vault locks with 3-point latching. All lock assemblies shall be keyed alike. Two (2) keys shall be provided with each lock.
 - (c) Type 3R, 4, 4X and 12:

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1. Enclosures shall be constructed in accordance with UL 50 requirements. Endwalls shall be welded and sealed. Enclosures shall be painted with ANSI 49 gray enamel electrodeposited over cleaned phosphatized steel.
2. All doors shall be gasketed and be equipped with a tumbler type vault lock and two (2) additional trunk type latches. A clear plastic directory cardholder shall be mounted on the inside of door. All lock assemblies shall be keyed alike. Two (2) keys shall be provided with each lock.
3. Maximum enclosure dimensions shall not exceed 42 in. wide and 12.95 in. deep.

D. Lighting and Appliance Panelboard: (Square D NQOD, no equal)

1. Interior:

- a. Shall be rated for 240 VAC/48 VDC maximum. Continuous main current ratings, as indicated on associated schedules, not to exceed 600 amperes maximum.
- b. Minimum short circuit current rating: As indicated on schedules in rms symmetrical amperes at 240 VAC.
- c. Provide one (1) continuous bus bar per phase. Each bus bar shall have sequentially phased branch circuit connectors suitable for plug-on or bolt-on branch circuit breakers. The bussing shall be fully rated. Panelboard bus current ratings shall be determined by heat-rise tests conducted in accordance with UL 67. Bussing rated 100-400 amperes shall be copper. Bussing rated for 600 amperes shall be copper as standard construction. Panelboards shall be suitable for use as Service Equipment when application requirements comply with UL 67 and NEC Articles 230-F and G.
- d. All current-carrying parts shall be insulated from ground and phase-to-phase by Noryl high dielectric strength thermoplastic or equivalent.
- e. Split solid neutral shall be plated and located in the mains compartment up to 225 amperes so all incoming neutral cable may be of the same length.
- f. Interior trim shall be of dead-front construction to shield user from energized parts. Dead-front trim shall have pre-formed twistouts covering unused mounting space.
- g. Nameplates shall contain system information and catalog number or factory order number. Interior wiring diagram, neutral wiring diagram, UL Listed label and short circuit current rating shall be displayed on the interior or in a booklet format.
- h. Interiors shall be field converted for top or bottom incoming feed. Main and sub-feed circuit breakers shall be vertically mounted. Main lug interiors up to 400 amperes shall be field convertible to main breaker. Interior leveling provisions shall be provided for flush mounted applications.
- i. Panelboard lugs shall be tightened with a torque wrench to values listed on the equipment.
- j. Arc Flash labeling shall be provided in accordance with Section 1.18 of these specifications.

2. Main Circuit Breaker:

- a. Main circuit breakers shall have an overcenter, trip-free, toggle mechanism which will provide quick-make, quick-break contact action. Circuit breakers shall have a permanent trip unit with thermal and magnetic trip elements in each pole. Each thermal element shall be true rms sensing and be factory calibrated to operate in a 40° C ambient environment. Thermal elements shall be ambient compensating above 40° C.
- b. Two- and three-pole circuit breakers shall have common tripping of all poles. Circuit breakers frame sizes above 100 amperes shall have a single magnetic trip adjustment located on the front of the circuit breaker, which allows the user to simultaneously select the desired trip level of all poles. Circuit breakers shall have a push-to-trip button for maintenance and testing purposes.
- c. Breaker handle and faceplate shall indicate rated ampacity. Standard construction circuit breakers shall be UL Listed for reverse connection without restrictive line or load markings.
- d. Circuit breaker escutcheon shall have international I/O markings, in addition to standard ON/OFF markings. Circuit breaker handle accessories shall provide provisions for locking handle in the ON or OFF position.
- e. Lugs shall be UL Listed to accept solid or stranded copper conductors only. Lugs shall be suitable for 90° C rated wire, sized according to the 75° C temperature rating per NEC Table 310-16. Lug body shall be bolted in place; snap-in designs are not acceptable. Lugs shall be torqued with a torque wrench to the value listed on the main circuit breaker.

3. Branch Circuit Breakers:

- a. Circuit breakers shall be UL Listed with amperage ratings, interrupting ratings, and number of poles as indicated on the panelboard schedules.
- b. Molded case branch circuit breakers shall have bolt-on type bus connectors.
- c. Circuit breakers shall have an overcenter toggle mechanism which will provide quick-make, quick-break contact action. Circuit breakers shall have thermal and magnetic trip elements in each pole. Two- and three-pole circuit breakers shall have common tripping of all poles.
- d. There shall be two forms of visible trip indication. The breaker handle shall reside in a position between ON and OFF.
- e. The exposed faceplates of all branch circuit breakers shall be flush with one another.
- f. Lugs shall be UL Listed to accept solid or stranded copper conductors only. Lugs shall be suitable for 90° C rated wire, sized according to the 75° C temperature rating per NEC Table 310-16. Lugs shall be torqued with a torque wrench to the value listed on the main circuit breaker.

4. Enclosures:

- a. Type 1 Boxes:

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- 1) Boxes shall be galvanized steel constructed in accordance with UL 50 requirements. Galvanized steel will not be acceptable.
 - 2) Boxes shall have removable endwalls with knockouts located on one end. Boxes shall have welded interior mounting studs. Interior mounting brackets are not required.
 - 3) Box width shall be [20 in wide] [14 in wide] [8.625 in wide - NQOB column width only].
- b. Type 1 Fronts:
- 1) Front shall meet strength and rigidity requirements per UL 50 standards. Fronts shall have ANSI 49 gray enamel electrodeposited over cleaned phosphatized steel.
 - 2) Fronts shall be hinged 1-piece with door. Mounting shall be as indicated on associated schedules.
- c. Type 3R, 3S, 5, and 12:
- 1) Enclosures shall be constructed in accordance with UL 50 requirements. Enclosures shall be painted with ANSI 49 gray enamel electrodeposited over cleaned phosphatized steel.
 - 2) All doors shall be gasketed and equipped with a tumbler type vault lock and two (2) additional trunk type latches. All lock assemblies shall be keyed alike. Two (2) keys shall be provided with each lock. A clear plastic directory cardholder shall be mounted on the inside of door.
 - 3) Maximum enclosure dimensions shall not exceed 20 in. wide and 6.5 in. deep.

2.11 SURGE PROTECTIVE DEVICES (SPD) (TVSS)

- A. Surge protective devices shall be panel integrated.
- B. SPDs shall be provided and installed in the panel by the manufacturer.
- C. SPD size/rating shall be as shown on the Drawings.
- D. SPDs shall be UL listed.
- E. Where independent SPDs are used, they shall be installed adjacent to the equipment they serve. The conductor length from the circuit breaker to the SPD shall be minimized.

2.12 MAIN SWITCHBOARD "MSB"

- A. The main switchboard shall have a dead front, dead rear with floor standing standardized sections, including underground pull section, metering and distribution section. The bus size and circuit breaker trip settings shall be as indicated on the Drawings. Circuit breakers shall be provided with means for padlocking in the "Off" position. Sections shall be provided with full height bussing. The switchboard shall have facilities for the power company's meters and test apparatus. Sequence of metering shall be as required by the serving utility company. All sections shall be finished in baked grey enamel. Bussing shall be copper. Ground bus and solid neutral shall be provided. Provide plastic laminated nameplate. Support switchboard in accordance with manufacturer's requirements. Provide all required seismic bracing.

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- B. Main circuit breaker shall be listed and marked for service entrance.
- C. Circuit breakers shall be bolt-on type, plastic molded case, trip free with quick-make, quick break operating mechanism.
- D. The switchboard sections shall be constructed to conform to the latest sections of applicable IEEE Standards and ANSI Standards. The circuit breakers shall have short-circuit AIC ratings as indicated on the Drawings.
- E. Provide plastic, engraved, laminated nameplates for switchboard identification as well as each circuit breaker. Provide a separate plastic, engraved, laminated nameplate with the meter's address.
- F. The main switchboard shall have an arc flash label in accordance with Part I, 1.18 Arc Flash Labeling.

END OF SECTION 260000

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SECTION 267200 - FIRE DETECTION SYSTEMS

PART 1 - GENERAL

1.01 DESCRIPTION

- A. The fire alarm system shall comply with requirements of 2016 CBC/CFC and NFPA Standard 72 for Protected Premises Emergency Communications Signaling Systems except as modified and supplemented by this specification. The system shall be electrically supervised and monitor the integrity of all conductors.
- B. The facility shall have an emergency voice alarm communication system. Digitally stored message sequences shall notify the building occupants that a fire or life safety condition has been reported. Message generator(s) shall be capable of automatically distributing up to eight (8) simultaneous, unique messages to appropriate audio zones within the facility based on the type and location of the initiating event. The Fire Command Center (FCC) shall also support Emergency manual voice announcement capability for both system wide or selected audio zones, and shall include provisions for the system operator to override automatic messages system wide or in selected zones.
- C. The system shall be support additional, alternate Fire Command Centers, which shall be capable of simultaneous monitoring of all system events. Alternate Fire Command Centers shall also support an approved method of transferring the control functions to an alternate Fire Command Center when necessary. All Fire Command Centers shall be individually capable of assuming Audio Command functions such as Emergency Paging, audio zone control functions, and Firefighter's Telephone communication functions.
- D. Each designated zone shall transmit separate and different alarm, supervisory and trouble signals to the Fire Command Center (FCC) and designated personnel in other buildings at the site via a multiplex communication network.
- E. The fire alarm system shall be manufactured by an ISO 9001:2008 certified company and meet the requirements of BS EN9001: ANSI/ASQC Q9001-1994
- F. The FACP and peripheral devices shall be manufactured 100% by a single U.S. manufacturer (or division thereof). It's acceptable for peripheral devices to be manufactured outside of the U.S. by a division of the U.S. based parent company.
- G. The system and its components shall be Underwriters Laboratories, Inc. listed under the appropriate UL testing standard as listed herein for fire alarm applications and the installation shall be in compliance with the UL/CSFM listing, per CFC 907.1.3.
- H. The installing company shall employ NICET (minimum Level II Fire Alarm Technology) technicians on site to guide the final checkout and to ensure the systems integrity. Apprentice blue card certified for life safety.

1.02 GUARANTY

- A. The fire alarm control panel, voice panels and any head-end equipment shall have a manufacturer's warranty of a minimum of 3 years.

1.03 POST CONTRACT MAINTENANCE:

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- A. Complete maintenance and repair service for the fire detection system shall be available from a factory trained authorized representative of the manufacturer of the major equipment for a period of five (5) years after expiration of the guaranty.
- B. As part of the bid/proposal, include a quote for a maintenance contract to provide all maintenance, required tests, and list pricing for any replacement products included on the bill of materials, along with the list pricing for products not on the bill of materials; if test and inspection rates are different than full service rates the bid/proposal shall include pricing for all levels for a minimum period of five (5) years Rates and costs shall be valid for the period of five (5) years after expiration of the guaranty.
- C. Include also a quote for unscheduled maintenance/repairs, including hourly rates for technicians trained on this equipment, and response travel costs for each year of the maintenance period. Submittals that do not identify all post contract maintenance costs will not be accepted. Rates and costs shall be valid for the period of five (5) years after expiration of the guaranty.

1.04 APPLICABLE STANDARDS AND SPECIFICATIONS:

- A. The specifications and standards listed below form a part of this specification. The system shall fully comply with the latest issue of these standards, if applicable.
- B. National Fire Protection Association (NFPA) - USA:

No. 12	Extinguishing Systems (low and high)
No. 12A	Halon 1301 Extinguishing Systems
No. 13	Sprinkler Systems
No. 15	Water Spray Systems
No. 16	Foam / Water Deluge and Spray Systems
No. 17	Dry Chemical Extinguishing Systems
No. 17A	Wet Chemical Extinguishing Systems
No. 2001	Clean Agent Extinguishing Systems
No. 70	National Electric Code
No. 90A	Air Conditioning Systems
No. 92A	Smoke Control Systems

- C. Underwriters Laboratories Inc. (UL) - USA:

No. 268	Smoke Detectors for Fire Protective Signaling Systems
No. 864	Control Units for Fire Protective Signaling Systems
No. 2572	Mass Notification Systems
No. 217	Smoke Detectors, Single and Multiple Station
No. 228	Door Closers - Holders for Fire Protective Signaling Systems
No. 268A	Smoke Detectors for Duct Applications
No. 521	Heat Detectors for Fire Protective Signaling Systems
No. 464	Audible Signaling Appliances
No. 38	Manually Actuated Signaling Boxes
No. 1481	Power Supplies for Fire Protective Signaling Systems
No. 346	Waterflow Indicators for Fire Protective Signaling Systems
No. 1076	Control Units for Burglar Alarm Proprietary Protective Signaling Systems
No. 1971	Visual Notification Appliances
No. 2017	Standard for General-Purpose Signaling Devices and Systems
No.60950	Safety of Information Technology Equipment

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- D. Local and State Building Codes.
- E. All requirements of the Authority Having Jurisdiction (AHJ).

1.5 APPROVALS:

- A. The system shall have proper listing and/or approval from the following nationally recognized agencies:

UL	Underwriters Laboratories, Inc
ULC	Underwriters Laboratories Canada
FM	Factory Mutual
NYFD	New York Fire Department
CSFM	California State Fire Marshal

- B. The system shall be approved for use in Marine applications by the following agencies.

United States Coast Guard
Lloyd's Register
American Bureau of Shipping

- C. The system shall be certified for seismic applications in accordance with the International Building Code (IBC). For OSHPD applications in California the system shall be Pre-Approved for seismic applications. The basis for qualification of seismic approval shall be via shake table testing.

PART 2 - PRODUCTS

2.01 MAIN FIRE ALARM CONTROL PANEL OR NETWORK NODE

- A. Main FACP or network node shall be a NOTIFIER Model Inspire N16 and shall contain a microprocessor based Central Processing Unit (CPU) and power supply in an economical space saving single board design. The CPU shall communicate with and control the following types of equipment used to make up the system: intelligent addressable smoke and thermal (heat) detectors, addressable modules, printer, annunciators, and other system controlled devices.

2.02 SYSTEM CAPACITY AND GENERAL OPERATION

- A. The FACP shall be capable of communicating on Noti-Fire-Net over a Local Area Network (LAN) or Wide Area Network (WAN) utilizing a peer-to-peer, inherently regenerative communication format and protocol. The network shall support communication speed up to 100 Mb and support up to 200 panels / nodes per network.
- B. Each network node shall provide, or be capable of 318 intelligent / addressable devices per SLC loop. The Notification Appliance Circuits shall be programmable to Synchronize with System Sensor, Gentex and Wheelock Notification Appliances.
- C. The system shall include a full featured operator interface control and annunciation panel that shall include a backlit Liquid Crystal Display (LCD), individual color coded system status LEDs, and an alphanumeric keypad with easy touch rubber keys for the field programming and control of the fire and gas and gas detection system.

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- D. The system shall be programmable, configurable, and expandable in the field without the need for special tools, PROM programmers or PC based programmers. It shall not require replacement of memory ICs to facilitate programming changes.
- E. The system shall allow the programming of any input to activate any output or group of outputs. Systems that have limited programming (such as general alarm), have complicated programming (such as a diode matrix), or require a laptop personal computer are not considered suitable substitutes.
- F. The FACP shall support up to 20 logic equations, including "and," "or," and "not," or time delay equations to be used for advanced programming. Logic equations shall require the use of a PC with a software utility designed for programming.
- G. The FACP or each network node shall provide the following features:
 - 1. Drift compensation to extend detector accuracy over life. Drift compensation shall also include a smoothing feature, allowing transient noise signals to be filtered out.
 - 2. Detector sensitivity test, meeting requirements of NFPA 72.
 - 3. Maintenance alert, with two levels (maintenance alert/maintenance urgent), to warn of excessive smoke detector dirt or dust accumulation.
 - 4. Up to nine sensitivity levels for alarm, selected by detector. The alarm level range shall be 0.5 to 2.35 percent per foot for photoelectric detectors, 0.5 to 2.5 percent per foot for ionization detectors, 0.5 to 4.0 percent per foot for acclimate detectors and 1.0 to 4.0 percent per foot for multi-criteria (IntelliQuad and IntelliQuad PLUS) detectors. The system shall also support sensitive advanced detection laser detectors with an alarm level range of .02 percent per foot to 2.0 percent per foot. The system shall also include up to nine levels of Pre-alarm, selected by detector, to indicate impending alarms to maintenance personnel.
 - 5. The ability to display or print system reports.
 - 6. Alarm verification, with counters and a trouble indication to alert maintenance personnel when a detector enters verification 20 times.
 - 7. PAS presignal, meeting NFPA 72 requirements.
 - 8. Self-optimizing pre-alarm for advanced fire warning, which allows each detector to learn its particular environment and set its prealarm level to just above normal peaks.
 - 9. Cross zoning with the capability of counting: two detectors in alarm, two software zones in alarm, or one smoke detector and one thermal detector.
 - 10. Control-by-time for non-fire operations, with holiday schedules.
 - 11. Day/night automatic adjustment of detector sensitivity.
 - 12. Device blink control for sleeping areas.
 - 13. The FACP shall be capable of coding main panel node notification circuits in March Time (120 PPM), Temporal (NFPA 72 A-2-2.2.2), and California Code. Panel notification circuits (NAC 1, 2, 3 and 4) shall also support Two-Stage operation, Canadian Dual Stage (3 minutes) and Canadian Dual Stage (5 minutes). Two stage operation shall allow 20 Pulses per Minute (PPM) on alarm and 120 PPM

after 5 minutes or when a second device activates. Canadian Dual stage is the same as Two-Stage except will only switch to second stage by activation of Drill Switch 3 or 5 minute timer. The panel shall also provide a coding option that will synchronize specific strobe lights designed to accept a specific "sync pulse."

14. Network Communication. The FACP shall be capable of communicating with a Distributed Control System
 15. For flexibility and to ensure program validity, an optional Windows(TM) based program utility shall be available. This program shall be used to off-line program the system with batch upload/download, and have the ability to upgrade the manufacturers (FLASH) system code changes. This program shall also have a verification utility, which scans the program files, identifying possible errors. It shall also have the ability to compare old program files to new ones, identifying differences in the two files to allow complete testing of any system operating changes. This shall be in compliance with the NFPA 72 requirements for testing after system modification.
 - a. This utility shall provide the ability to create and print NFPA style Test and Inspection reports
 - b. This utility shall provide the ability to create and print Device Maintenance information
- H. The 80-character display keypad shall be an easy to use QWERTY type keypad, similar to a PC keyboard. This shall be part of the standard system and have the capability to command all system functions, entry of any alphabetic or numeric information, and field programming. Two different password levels shall be provided to prevent unauthorized system control or programming.
- I. When configured with an optional 640-character display the display shall use 10 "soft" keys for screen navigation or to accomplish dedicated programming functions. Full programming access shall require use of a laptop and the proper programming utility. With the 640 display option the system shall support distributed audio amplifiers on the digital audio loop of the Digital Voice Command.
- J. Signaling Line Circuits (SLC):
1. Each FACP or FACP network node shall support up to two SLCs. Each SLC interface shall provide power to and communicate with up to 159 intelligent detectors (ionization, photoelectric, multi-criteria, thermal, laser, fire/CO) and 159 intelligent modules (monitor, control, relay, releasing) for a loop capacity of 318 devices. The addition of the optional second loop shall double the device capacity, supporting a total of 636 devices. Each SLC shall be capable of NFPA 72 Style 4, Style 6, or Style 7 (Class A or B) wiring.
 2. CPU shall receive analog information from all intelligent detectors to be processed to determine whether normal, alarm, prealarm, or trouble conditions exist for each detector. The software shall automatically maintain the detector's desired sensitivity level by adjusting for the effects of environmental factors, including the accumulation of dust in each detector. The analog information shall also be used for automatic detector testing and for the automatic determination of detector maintenance requirements.
- K. Serial Interfaces:

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1. The system shall include two serial EIA-232 interfaces. Each interface shall be a means of connecting UL Listed Information Technology Equipment (ITE) peripherals.
 - a. EIA-232 interface shall be used to connect an UL-Listed 40 or 80 column printer. Printers that are not UL-Listed are not considered acceptable substitutes.
 - b. The system shall include an EIA-485 port for the serial connection of optional annunciators and remote LCD displays.
 - c. The EIA-485 interface may be used for network connection to a proprietary-receiving unit.

L. Digital Voice Command Center:

1. The Digital Voice Command Center located with the FACP, shall contain all equipment required for all audio control, emergency telephone system control, signaling and supervisory functions. This shall include speaker zone indication and control, telephone circuit indication and control, digital voice units, microphone and main telephone handset. The DVC shall support up to 8 channels of voice when configured with Digital Audio Amplifiers and 4 channels of voice when employing the optional analog output card. Each DVC shall support up to 32 digital audio amplifiers.
2. Function: The Voice Command Center equipment shall perform the following functions:
 - a. Operate as a supervised multi-channel emergency voice communication system.
 - b. Operate as a two-way emergency telephone system control center. Audibly and visually annunciate the active or trouble condition of every speaker circuit and emergency telephone circuit.
 - c. Audibly and visually annunciate any trouble condition for digital tone and voice units required for normal operation of the system.
 - d. Provide all-call Emergency Paging activities through activation of a single control switch.
 - e. As required, provide vectored paging control to specific audio zones via dedicated control switches.
 - f. Provide a factory recorded "library" of voice messages and tones in standard WAV. File format, which may be edited and saved on a PC running a current Windows® operating system.
 - g. Provide a software utility capable of off-line programming for the DVC operation and the audio message files. This utility shall support the creation of new programs as well as editing and saving existing program files. Uploading or downloading the DVC shall not inhibit the emergency operation of other nodes on the fire alarm network.
 - h. Support an optional mode of operation with four analog audio outputs capable of being used with UL 864 fire-listed analog audio amplifiers and SLC controlled switching.
 - i. The Digital Voice Command shall be modular in construction and shall be capable of being field programmable without requiring the return of any components to the manufacturer and without requiring use of any external computers or other programming equipment.
 - j. The Digital Voice Command and associated equipment shall be protected against unusually high voltage surges or line transients.

3. The emergency voice alarm communication system shall incorporate a Two-way emergency telephone communication system.
 - b. Two-way emergency telephone communication circuits shall be supervised for open and short circuit conditions.
 - c. Two-way emergency telephone (Fire Fighter Telephone) communication shall be supported between the Digital Voice Audio Command Center and up to seven (7) remote Fire Fighter's Telephone locations simultaneously on a telephone riser.
 - d. Means shall be provided to connect FFT voice communications to the speaker circuits in order to allow voice paging over the speaker circuit from a telephone handset.

M. Audio Amplifiers:

1. The Audio Amplifiers will provide Audio Power (@25 Volt RMS or 70 RMS) for distribution to speaker circuits.
2. Multiple audio amplifiers may be mounted in a single enclosure, either to supply incremental audio power, or to function as an automatically switched backup amplifier(s).
3. The audio amplifier shall include an integral power supply, and shall provide built-in LED indicators for the following conditions:
 - a. Earth Fault on DAP A (Digital Audio Port A)
 - b. Earth Fault on DAP B (Digital Audio Port B)
 - c. Audio Amplifier Failure Detected Trouble
 - d. Active Alarm Bus input
 - e. Audio Detected on Aux Input A
 - f. Audio Detected on Aux Input B
 - g. Audio Detected on Firefighter's Telephone Riser
 - h. Receiving Audio from digital audio riser
 - i. Short circuit on speaker circuit 1
 - j. Short circuit on speaker circuit 2
 - k. Short circuit on speaker circuit 3
 - l. Short circuit on speaker circuit 4
 - m. Data Transmitted on DAP A
 - n. Data Received on DAP A
 - o. Data Transmitted on DAP B
 - p. Data Received on DAP B
 - q. Board failure
 - r. Active fiber optic media connection on port A (fiber optic media applications)
 - s. Active fiber optic media connection on port B (fiber optic media applications)
 - t. Power supply Earth Fault
 - u. Power supply 5V present
 - v. Power supply conditions - Brownout, High Battery, Low Battery, Charger Trouble

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4. The audio amplifier shall provide the following built-in controls:
 - a. Amplifier Address Selection Switches
 - b. Signal Silence of communication loss annunciation Reset
 - c. Level adjustment for background music
 - d. Enable/Disable for Earth Fault detection on DAP A
 - e. Enable/Disable for Earth Fault detection on DAP A
 - f. Switch for 2-wire/4-wire FFT riser
5. Adjustment of the correct audio level for the amplifier shall not require any special tools or test equipment.
6. Includes audio input and amplified output supervision, back up input, and automatic switch over function, (if primary amplifier should fail).
7. System shall be capable of backing up digital amplifiers.
8. One-to-one backup shall be provided by either a plug-in amplifier card or a designated backup amplifier of identical model as the primary amplifier.
9. One designated backup amplifier shall be capable of backing up multiple primary amplifiers mounted in the same or adjacent cabinets.
10. Multi-channel operation from a single amplifier shall be supported by the addition of an optional plug-in amplifier card.

N. Audio Message Generator (Prerecorded Voice)/Speaker Control:

1. Each initiating zone or intelligent device shall interface with an emergency voice communication system capable of transmitting a prerecorded voice message to all speakers in the building.
2. Actuation of any alarm initiating device shall cause a prerecorded message to sound over the speakers. The message shall be repeated four (4) times. Pre- and post-message tones shall be supported.
3. A built-in microphone shall be provided to allow paging through speaker circuits.
4. System paging from emergency telephone circuits shall be supported.
5. The audio message generator shall have the following indicators and controls to allow for proper operator understanding and control:
 - a. Lamp Test
 - b. Trouble
 - c. Off-Line Trouble
 - d. Microphone Trouble
 - e. Phone Trouble
 - f. Busy/Wait
 - g. Page Inhibited
 - h. Pre/Post Announcement Tone

O. Controls with associated LED Indicators:

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1. Speaker Switches/Indicators
 - a. The speaker circuit control switches/indicators shall include visual indication of active and trouble status for each speaker circuit in the system.
 - b. The speaker circuit control panel shall include switches to manually activate or deactivate each speaker circuit in the system.
 2. Emergency Two-Way Telephone Control Switches/Indicators
 - a. The emergency telephone circuit control panel shall include visual indication of active and trouble status for each telephone circuit in the system.
 - b. The telephone circuit control panel shall include switches to manually activate or deactivate each telephone circuit in the system.
- P. Specific System Operations
1. Smoke Detector Sensitivity Adjust: A means shall be provided for adjusting the sensitivity of any or all addressable intelligent detectors in the system from the system keypad. Sensitivity range shall be within the allowed UL window and have a minimum of 9 levels.
 2. Alarm Verification: Each of the intelligent addressable smoke detectors in the system may be independently selected and enabled to be an alarm verified detector. The alarm verification delay shall be programmable from 0 to 60 seconds and each detector shall be able to be selected for verification. The FACP shall keep a count of the number of times that each detector has entered the verification cycle. These counters may be displayed and reset by the proper operator commands.
 3. Point Disable: Any addressable device in the system may be enabled or disabled through the system keypad.
 4. Point Read: The system shall be able to display or print the following point status diagnostic functions:
 - a. Device status
 - b. Device type
 - c. Custom device label
 - d. View analog detector values
 - e. Device zone assignments
 5. System History Recording and Reporting: The fire alarm control panel shall contain a history buffer that will be capable of storing up to 800 events. Up to 200 events shall be dedicated to alarm and the remaining events are general purpose. Systems that do not have dedicated alarm storage, where events are overridden by non-alarm type events, are not suitable substitutes. Each of these activations will be stored and time and date stamped with the actual time of the activation. The contents of the history buffer may be manually reviewed, one event at a time, or printed in its entirety. The history buffer shall use non-volatile memory. Systems that use volatile memory for history storage are not acceptable substitutes.
 6. Automatic Detector Maintenance Alert: The fire alarm control panel shall automatically interrogate each intelligent detector and shall analyze the detector

responses over a period of time. If any intelligent detector in the system responds with a reading that is above or below normal limits, then the system will enter the trouble mode, and the particular detector will be annunciated on the system display, and printed on the optional printer. This feature shall in no way inhibit the receipt of alarm conditions in the system, nor shall it require any special hardware, special tools or computer expertise to perform.

7. Pre-Alarm Function: The system shall provide two levels of pre-alarm warning to give advance notice of a possible fire situation. Both pre-alarm levels shall be fully field adjustable. The first level shall give an audible indication at the panel. The second level shall give an audible indication and may also activate control relays. The system shall also have the ability to activate local detector sounder bases at the pre-alarm level, to assist in avoiding nuisance alarms.
 8. Software Zones: The FACP shall support 142 independent programmable software zones
 9. The fire alarm control panel shall include a walk test feature. It shall include the ability to test initiating device circuits and notification appliance circuits from the field without returning to the panel to reset the system. Operation shall be as follows:
 - a. Alarming an initiating device shall activate programmed outputs, which are selected to participate in walk test, for 3 seconds.
 - b. Introducing a trouble into the initiating device shall activate the programmed outputs for 8 seconds.
 - c. All devices tested in walk test shall be recorded in the history buffer.
 10. Multiple agent releasing zones: The system shall support up to 10 releasing zones to protect against 10 independent hazards. Releasing zones shall provide up to three cross-zone and four abort options to satisfy any local jurisdiction requirements.
 11. Mass Notification Override: The system shall be UL 2572 listed for Mass Notification and shall be capable, based on the Risk Analysis, of being programmed so that Mass Notification/Emergency Communications events take precedence over fire alarm events.
- Q. Conventional Aspirating Detection:
1. An optional air aspiration detection system shall be available.
 2. The aspirating system shall support multiple sensitivity settings.
 3. The aspirating system shall operate from 24 VDC.
 4. The aspirating system shall provide alarm and trouble relays used to activate a fire alarm control panel.
- R. Aspiration System Interface: The system shall be capable of supporting Interface Modules for integrating Vesda Aspiration detectors into SLC loop of the fire alarm control panel. The Interface Module shall support up to 19 detectors, each SLC loop shall support one interface module.
- S. High Level Aspiration System Interface: The system shall be capable of supporting a High Level Interface for Vesda Aspirating Detection Systems. The interface shall support up to 100 detectors and allow the fire alarm network to monitor and control events on the

aspiration system.

T. Fixed Emergency Telephone Handset:

1. The telephone cabinet shall be painted red and clearly labeled as "Emergency Telephone." The cabinets shall be located where shown on drawings.
2. The handset cradle shall have a switch connection so that lifting the handset off of the cradle shall send a signal to the fire command center, which shall audibly and visually indicate its on-line (off-hook) condition.
3. On activating the remote phone, the phone earpiece shall sound a telephone ring signal until the master handset is lifted.
4. The two-way emergency telephone system shall support a minimum of seven (7) handsets on line without degradation of the signal.

U. All interfaces and associated equipment are to be protected so that they will not be affected by voltage surges or line transients consistent with UL standard 864.

V. Communicators:

1. The UDACT shall be compact in size, mounting in a standard module position of the fire alarm control cabinet. Optionally, the UDACT shall have the ability for remote mounting, up to 6,000 feet from the fire alarm control panel. The wire connections between the UDACT and the control panel shall be supervised with one pair for power and one pair for multiplexed communication of overall system status. Systems that utilize relay contact closures are not acceptable.
2. The UDACT shall include connections for dual telephone lines (with voltage detect), per UL/NFPA/FCC requirements. It shall include the ability for split reporting of panel events up to two different telephone numbers. The UDACT shall be capable of transmitting events in 4+2, SIA, and Contact ID. Communication shall include vital system status such as:
 - a. Independent Zone (Alarm, trouble, non-alarm, supervisory)
 - b. Independent Addressable Device Status
 - c. AC (Mains) Power Loss
 - d. Low Battery and Earth Fault
 - e. System Off Normal
 - f. 12 and 24 Hour Test Signal
 - g. Abnormal Test Signal (per UL requirements)
 - h. EIA-485 Communications Failure
 - i. Phone Line Failure
3. The UDACT shall support independent zone/point reporting when used in the Contact ID format. In this format the UDACT shall support transmission of up to 3,064 points. This enables the central station to have exact details concerning the origin of the fire or response emergency.
4. The UDACT shall be capable of being programmed with the same programming utility as the host FACP, and saved, edited and uploaded and downloaded using the utility. UDACT shall be capable of being programmed online or offline. The programming utility shall also support upgrading UDACT operating firmware.
5. The UDACT shall be capable of generating Central Station reports providing detailed programming information for each point along with the central station point address.
6. An IP or IP/GSM Communicator option shall be available to interface to the UDACT and be capable of transmitting signals over the internet/intranet or Cellular (GSM)

network to a compatible receiver.

2.04 SYSTEM COMPONENTS - ADDRESSABLE DEVICES

A. Addressable Devices – General:

1. Addressable devices shall use simple to install and maintain decade, decimal address switches. Devices shall be capable of being set to an address in a range of 001 to 159.
2. Addressable devices, which use a binary-coded address setting method, such as a DIP-switch, are not an allowable substitute. Addressable devices that require the address be programmed using a special tool or programming utility are not an allowable substitute.
3. Detectors shall be intelligent (analog) and addressable, and shall connect with two wires to the fire alarm control panel Signaling Line Circuits.
4. Addressable smoke and thermal detectors shall provide dual alarm and power/polling LEDs. Both LEDs shall flash green under normal conditions, indicating that the detector is operational and in regular communication with the control panel, and both LEDs shall be placed into steady red illumination by the control panel, indicating that an alarm condition has been detected. If required, the LED flash shall have the ability to be removed from the system program. An output connection shall also be provided in the base to connect an external remote alarm LED.
5. The fire alarm control panel shall permit detector sensitivity adjustment through field programming of the system. The panel on a time-of-day basis shall automatically adjust sensitivity.
6. Using software in the FACP, detectors shall automatically compensate for dust accumulation and other slow environmental changes that may affect their performance. The detectors shall be listed by UL as meeting the calibrated sensitivity test requirements of NFPA Standard 72.
7. The detectors shall be ceiling-mount and shall include a separate twist-lock base with tamper proof feature. Base options shall include a sounder base with a built-in (local) sounder rated at 85 DBA minimum, a relay base and an isolator base designed for Style 7 applications. The system shall also support an intelligent program-mable sounder base, the programmable sounder base shall be capable of providing multiple tones based on programming and at a minimum be capable of providing a Temp-4 tone for CO (Carbon Monoxide) activation and a Temp-3 tone for fire activations and be capable of being synchronized with other programmable sounder bases and common area notification appliances; 85 DBA minimum.
8. The detectors shall provide a test means whereby they will simulate an alarm condition and report that condition to the control panel. Such a test may be initiated at the detector itself (by activating a magnetic switch) or initiated remotely on command from the control panel.
9. Detectors shall also store an internal identifying type code that the control panel shall use to identify the type of device (ION, PHOTO, THERMAL).
10. Detectors will operate in an analog fashion, where the detector simply measures its designed environment variable and transmits an analog value to the FACP based on real-time measured values. The FACP software, not the detector, shall make the alarm/normal decision, thereby allowing the sensitivity of each detector to be set in the FACP program and allowing the system operator to view the current analog value of each detector.
11. Addressable devices shall store an internal identifying code that the control panel shall use to identify the type of device.
12. A magnetic test switch shall be provided to test detectors and modules. Detectors

- shall report an indication of an analog value reaching 100% of the alarm threshold.
13. Addressable modules shall mount in a 4-inch square (101.6 mm square), 2-1/8 inch (54 mm) deep electrical box. An optional surface mount Lexan enclosure shall be available.
- B. Addressable Manual Fire Alarm Box (manual station):
1. Addressable manual fire alarm boxes shall, on command from the control panel, send data to the panel representing the state of the manual switch and the addressable communication module status; NOTIFIER model # NBG-12LX. They shall use a key operated test-reset lock, and shall be designed so that after actual emergency operation, they cannot be restored to normal use except by the use of a key.
 2. All operated stations shall have a positive, visual indication of operation and utilize a key type reset.
 3. Manual fire alarm boxes shall be constructed of Lexan with clearly visible operating instructions provided on the cover. The word FIRE shall appear on the front of the stations in raised letters, 1.75 inches (44 mm) or larger.
- C. Intelligent Photoelectric Smoke Detector: The intelligent photoelectric smoke detector shall be NOTIFIER model # FSP-851 and shall use the photoelectric (light-scattering) principal to measure smoke density and shall, on command from the control panel, send data to the panel representing the analog level of smoke density.
- D. Intelligent VIEW® Laser Photo Smoke Detector: The intelligent laser photo smoke detector shall be a spot type detector, NOTIFIER model # FSL-751, that incorporates an extremely bright laser diode and an integral lens that focuses the light beam to a very small volume near a receiving photo sensor. The scattering of smoke particles shall activate the photo sensor.
1. The laser detector shall have conductive plastic so that dust accumulation is reduced significantly.
 2. The intelligent laser photo detector shall have nine sensitivity levels and be sensitive to a minimum obscuration of 0.02 percent per foot.
 3. The laser detector shall not require expensive conduit, special fittings or PVC pipe.
 4. The intelligent laser photo detector shall support standard, relay, isolator and sounder detector bases.
 5. The laser photo detector shall not require other cleaning requirements than those listed in NFPA 72. Replacement, refurbishment or specialized cleaning of the detector head shall not be required.
 6. The laser photo detector shall include two bicolor LEDs that flash green in normal operation and turn on steady red in alarm.
- E. Intelligent Thermal Detectors: The intelligent thermal detectors shall be NOTIFIER FST-series addressable devices rated at 135 degrees Fahrenheit (58 degrees Celsius) and have a rate-of-rise element rated at 15 degrees F (9.4 degrees C) per minute. A high heat thermal detector rated at 190 degrees Fahrenheit shall also be available. The thermal detectors shall connect via two wires to the fire alarm control panel signaling line circuit.
- F. Intelligent Duct Smoke Detector: The smoke detector housing shall accommodate an intelligent photoelectric detector that provides continuous analog monitoring and alarm verification from the panel. When sufficient smoke is sensed, an alarm signal is initiated at the FACP, and appropriate action taken to change over air handling systems to help prevent the rapid distribution of toxic smoke and fire gases throughout the areas served

by the duct system. The Intelligent Duct Smoke Detector shall support the installation of addressable Photoelectric detector capable or being tested remotely. The Intelligent Duct Detector housing shall be model # DNR(W) and the remote test capable photoelectric smoke detector shall be NOTIFIER model # FSP-851R.

- G. Intelligent Addressable Aspiration Detector: The intelligent aspiration detector shall be NOTIFIER model # FSA-8000 an addressable aspiration detector that communicates directly with the fire alarm control panel via the SLC communication protocol, no modules or high level interfaces shall be required. The fire alarm control panel shall support up to thirty one intelligent aspiration detectors per SLC loop. The aspiration detector shall have dual source (blue LED and infra-red laser) optical smoke detection for a wide range of fire detection with enhanced immunity to nuisance particulates. The FACP shall be capable of monitoring and annunciating up to five smoke event thresholds and eleven trouble conditions. Each event threshold shall be capable of being assigned a discrete type ID at the FACP.
- H. Addressable Dry Contact Monitor Module:
1. Addressable monitor modules shall be provided to connect one supervised IDC zone of conventional alarm initiating devices (any N.O. dry contact device) to one of the fire alarm control panel SLCs. The addressable monitor module shall be NOTIFIER model # FMM-1 or FMM-101 (Class B)
 2. The IDC zone shall be suitable for Style B/Class B operation. An LED shall be provided that shall flash under normal conditions, indicating that the monitor module is operational and in regular communication with the control panel.
 3. For difficult to reach areas, the monitor module shall be available in a miniature package and shall be no larger than 2-3/4 inch (70 mm) x 1-1/4 inch (31.7 mm) x 1/2 inch (12.7 mm). This version need not include Style D or an LED.
 4. For multiple dry contact monitoring a module shall be available that provides 10 Style B or 5 Style D input circuits; NOTIFIER model # XP10-M.
- I. Two Wire Detector Monitor Module:
1. Addressable monitor modules shall be provided to connect one supervised IDC zone of conventional 2-wire smoke detectors or alarm initiating devices (any N.O. dry contact device); NOTIFIER model # FZM-1.
 2. The IDC zone may be wired for Class B (Style D or Style B) operation. An LED shall be provided that shall flash under normal conditions, indicating that the monitor module is operational and in regular communication with the control panel.
 3. For multiple 2-wire smoke detector circuit monitoring a module shall be available that provides 3 Style D/Class B input circuits; NOTIFIER model # XP6-MA
- J. Addressable Relay Module:
1. Addressable Relay Modules shall be available for HVAC control and other network building functions; NOTIFIER model # FRM-1.
 2. The module shall provide two form C relays rated at up to 3 Amps resistive and up to 2.0 Amps inductive.

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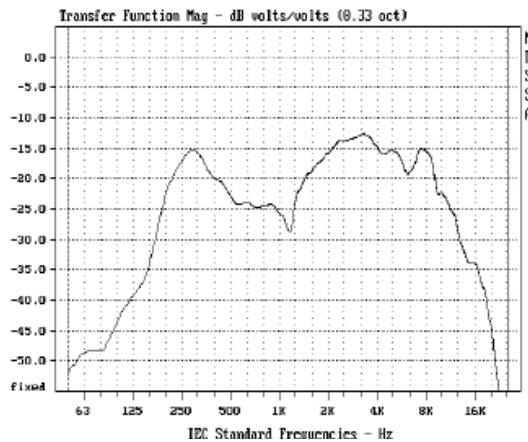
3. The relay coil shall be magnetically latched to reduce wiring connection requirements, and to insure that 100% of all auxiliary devices energize at the same time on the same pair of wires.
4. For multiple relay control a module shall be available that provides 6 programmable Form-C relays; NOTIFIER model # XP6-R.

K. SpectrAlert Advance Speakers:

1. The Speaker appliance shall be System Sensor SpectrAlert Advance model SPKR Speaker. The speaker shall be listed to UL 1480 for Fire Protective Signaling Systems. It shall be a dual-voltage transformer speaker capable of operation at 25.0 or 70.7 nominal Vrms. The speaker shall have a frequency range of 400 to 4,000 Hz and shall have an operating temperature between 32°F and 120°F. It shall mount to a 4x4x2-1/8-inch back box.
2. A universal mounting plate shall be used for mounting ceiling and wall speaker products. The notification appliance circuit and amplifier wiring shall terminate at the universal mounting plate.
3. Speakers shall be plug-in and shall have the ability to check wiring continuity via a shorting spring on the universal mounting plate. The shorting spring shall also provide tamper resistance via an open circuit if the device is removed. Speaker design shall isolate speaker components to reduce ground fault incidents.
4. The speaker shall have power taps (from ¼ watt to 2 watts) and voltage that are selected by rotary switches. All models shall have a maximum sound output of 86 dB at 10 feet and shall incorporate an open back construction.
5. All notification appliances shall be backward compatible.

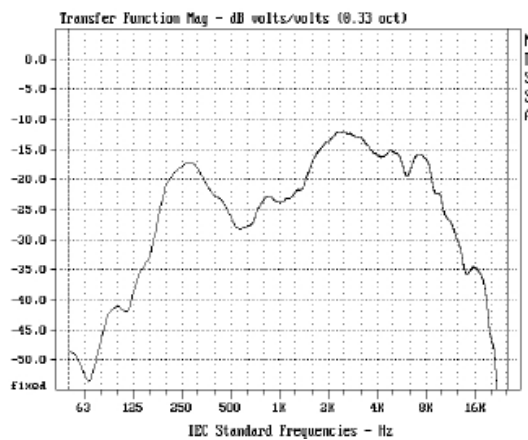
Ceiling Speaker

Wide Band Frequency Response



Wall Speaker

Wide Band Frequency Response



Note: The wide band frequency response is derived using MLS methods

L. SpectrAlert Advance Speaker Strobes:

1. The Speaker Strobe appliance shall be System Sensor SpectrAlert Advance model SPSR & SPSCR Speaker Strobe. The speaker strobe shall be listed to UL 1971 and UL 1480 and be approved for fire protective signaling systems. It shall be a

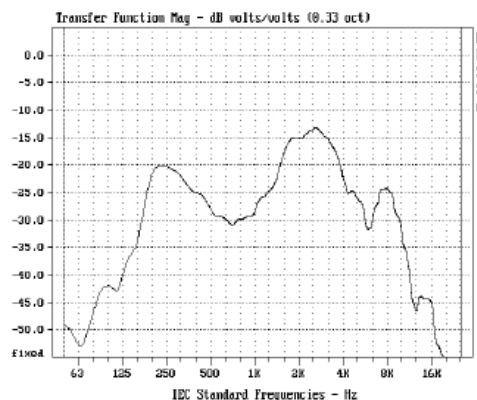
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dual-voltage transformer speaker strobe capable of operation at 25.0 or 70.7 nominal Vrms. The speaker shall have a frequency range of 400 to 4,000 Hz and shall have an operating temperature between 32°F and 120°F. It shall mount to a 4 x 4 x 2 1/8-inch back box.

2. A universal mounting plate shall be used for mounting ceiling and wall speaker strobe products. The notification appliance circuit and amplifier wiring shall terminate at the universal mounting plate. Also, SpectrAlert Advance speaker strobes and the Sync•Circuit™ Module MDL3 accessory, if used, shall be powered from a non-coded notification appliance circuit output and shall operate on a nominal 12 or 24 volts (includes fire alarm panels with built in sync). When used with the Sync•Circuit Module MDL3, 12-volt rated notification appliance circuit outputs shall operate between 8.5 and 17.5 volts; 24-volt rated notification appliance circuit outputs shall operate between 16.5 to 33 volts. If the notification appliances are not UL 9th edition listed with the corresponding panel or power supply being used, then refer to the compatibility listing of the panel to determine maximum devices on a circuit.
3. Speaker strobes shall be plug-in and shall have the ability to check wiring continuity via a shorting spring on the universal mounting plate. The shorting spring shall also provide tamper resistance via an open circuit if the device is removed. Speaker strobe design shall isolate speaker components to reduce ground fault incidents.
4. The speaker strobe shall have power taps (from ¼ watt to 2 watts) and voltage that are selected by rotary switches. All models shall have a maximum sound output of 86 dB at 10 feet and shall incorporate an open back construction. The strobe shall consist of a xenon flash tube with associated lens/reflector system and operate on either 12V or 24V. The strobe shall also feature selectable candela output, providing options for 15 or 15/75 candela when operating on 12V and 15, 15/75, 30, 75, 110, or 115 when operating on 24V. The strobe shall comply with NFPA 72 and the Americans with Disabilities Act requirement for visible signaling appliances, flashing at 1 Hz over the strobe’s entire operating voltage range.
5. All notification appliances shall be backward compatible.

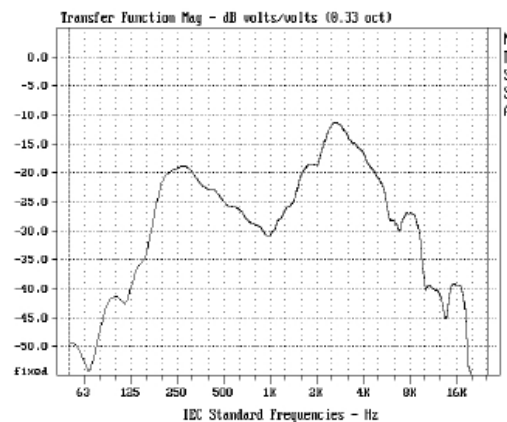
Ceiling Speaker Strobe

Wide Band Frequency Response



Wall Speaker Strobe

Wide Band Frequency Response



Note: The wide band frequency response is derived using MLS methods

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6. Strobe lights shall meet the requirements of the ADA, UL Standard 1971 and be fully synchronized.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Installation shall be in accordance with the NEC, NFPA 72, local and state codes, as shown on the drawings, and as recommended by the major equipment manufacturer.
- B. All conduit, junction boxes, conduit supports and hangers shall be concealed in finished areas and may be exposed in unfinished areas. Smoke detectors shall not be installed prior to the system programming and test period. If construction is ongoing during this period, measures shall be taken to protect smoke detectors from contamination and physical damage.
- C. All fire detection and alarm system devices, control panels and remote annunciators shall be flush mounted when located in finished areas and may be surface mounted when located in unfinished areas.
- D. Manual fire alarm boxes shall be suitable for surface mounting or semi-flush mounting as shown on the plans, and shall be installed not less than 42 inches (1067 mm), nor more than 48 inches (122 mm) above the finished floor.

3.02 TEST

- A. The service of a competent, factory-trained engineer or technician authorized by the manufacturer of the fire alarm equipment shall be provided to technically supervise and participate during all of the adjustments and tests for the system. All testing shall be in accordance with NFPA 72, Chapter 7.
 1. Before energizing the cables and wires, check for correct connections and test for short circuits, ground faults, continuity, and insulation.
 2. Close each sprinkler system flow valve and verify proper supervisory alarm at the FACP.
 3. Verify activation of all waterflow switches.
 4. Open initiating device circuits and verify that the trouble signal actuates.
 5. Open and short signaling line circuits and verify that the trouble signal actuates.
 6. Open and short notification appliance circuits and verify that trouble signal actuates.
 7. Ground all circuits and verify response of trouble signals.
 8. Check presence and audibility of tone at all alarm notification devices.
 9. Check installation, supervision, and operation of all intelligent smoke detectors using the walk test.
 10. Each of the alarm conditions that the system is required to detect should be

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introduced on the system. Verify the proper receipt and the proper processing of the signal at the FACP and the correct activation of the control points.

11. When the system is equipped with optional features, the manufacturer's manual shall be consulted to determine the proper testing procedures. This is intended to address such items as verifying controls performed by individually addressed or grouped devices, sensitivity monitoring, verification functionality and similar.

3.03 FINAL INSPECTION

- A. At the final inspection, a factory-trained representative of the manufacturer of the major equipment shall demonstrate that the system functions properly in every respect.

3.04 INSTRUCTION:

- A. Instruction shall be provided as required for operating the system. Hands-on demonstrations of the operation of all system components and the entire system including program changes and functions shall be provided.
- B. The contractor and/or the systems manufacturer's representatives shall provide a typewritten "Sequence of Operation."

END OF SECTION 267200

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 0 & 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes, but not limited to, the following:
 - 1. Hot-mixed asphalt paving over prepared subbase.
 - 2. Heavy body slurry seal asphalt coating
 - 3. Slurry seal asphalt fiberated coating.
 - 4. Grinding of existing stripes/graphics.
 - 5. Pavement markings.
 - 6. Crack filler - cracks larger than 1/16-inch.
 - 7. Concrete wheel stops/bumpers.
 - 8. Painting curbs.
 - 9. Redwood headers.
 - 10. Fog seal.
- B. Related Sections include the following:
 - 1. Division 2 Section "Selective Demolition" for pavement removal and related demolitions.
 - 2. Division 31 Section "Earthwork" for aggregate subbase and base courses and related items.
 - 3. Division 31 Section "Portland Cement Concrete Paving" for concrete pavement and related items.

1.3 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.
- B. Material Certificates signed by material producer and Contractor, certifying that each material item complies with or exceeds specified requirements.
- C. Design Data:
 - 1. Submit a job-mix formula, prepared within three years of submittal, for approval by the Architect prior to preparing and placing the bituminous mixture. Design mix using procedures contained in Chapter III, Marshall Method of Mix Design, AI MS-22, January, 1983, ASTM D 1559 and ASTM D 3515. Formulas shall indicate physical properties of the mixes as shown by tests made by a commercial laboratory approved by the Architect, using materials identical to those to be provided on this project. Aggregate gradations will be current within the last six months. Job-mix formula for each mixture shall be in effect until modified in writing by the Contractor and approved by the Architect. Provide a new job-mix formula for each source change.

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2. The job-mix formula shall show the following required data:
 - a. Source and proportions, percent by weight, of each ingredient of the mixture.
 - b. Correct gradation, the percentages passing each size sieve listed in the specifications for the mixture to be used, for the aggregate and mineral filler for each separate source and from each different size to be used in the mixture and for the composite mixture.
 - c. Amount of material passing the No. 200 sieve determined by dry sieving.
 - d. Number of blows of hammer compaction per side of molded specimen.
 - e. Temperature viscosity relationship of the asphalt cement.
 - f. Stability, flow, percent voids in mineral aggregate, percent air voids, unit weight.
 - g. Asphalt absorption by the aggregate.
 - h. Effective asphalt content as percent by weight of total mix.
 - i. Temperature of the mixture immediately upon completion of mixing.
 - j. Asphalt viscosity grade.
 - k. Plotted curves to show the effect on the test properties of at least four different percentages of asphalt on the items required in "f" above; each point on the curves shall represent the average of at least three specimens.
3. Plot and submit, on Bureau of Public Roads 0.45 power gradation chart paper, the specified aggregate gradation band, the job-mix gradation and the job-mix tolerance band.
4. Selection of optimum asphalt content: Base selection on percent of total mix and the average of values at the following points of the curve for each mix.
 - a. Stability: Peak.
 - b. Unit Weight: Peak.
 - c. Percent Air Voids: Median.
5. Test Reports:
 - a. Specific gravity test of asphalt.
 - b. Course aggregate tests.
 - c. Weight of slag test.
 - d. Percent of crushed pieces in gravel.
 - e. Fine aggregate tests.
 - f. Specific gravity of mineral filler.
 - g. Bituminous mixture tests.

1.4 SITE CONDITIONS

- A. Weather Limitations: Apply prime and tack coats when ambient temperature is above 50 deg F (10 deg C) and when temperature has not been below 35 deg F (1 deg C) for 12 hours immediately prior to application. Do not apply when base is wet or contains an excess of moisture.
- B. Construct hot-mixed asphalt surface course when atmospheric temperature is above 50 deg F (4 deg C) and when base is dry. Base course may be placed when air temperature is above 45 deg F (minus 1 deg C) and rising.
- C. Grade Control: Establish and maintain required lines and elevations.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General: Use locally available materials and gradations that exhibit a satisfactory record of previous installations.
- B. Aggregate: Aggregate for asphaltic concrete paving. Grade and proportion aggregates and filler so that combined mineral aggregate conforms to specified grading. Where AC paving is for offsite use, confirm local jurisdiction requirements. More restrictive higher quality requirements will prevail for offsite paving.

- 1. Coarse Aggregate: ASTM D 692, ASTM C 131, ASTM C 88.
- 2. Fine Aggregate: ASTM D 1073.
- 3. Mineral Filler: ASTM D 242.
- 4. Gradation of Aggregates: ASTM C 136, ASTM D 3515.
Aggregates shall have a gradation within the limits designated in Table 1 or 2, ASTM D 3515 and shall not vary from the low limit on one sieve to the high limit on the adjacent sieve or vice versa, but grade uniformly from coarse to fine.
- 5. Quantity of Bituminous Material: ASTM D 3515
Mix asphalt cement with aggregates of corresponding mixes as indicated in Table 1 or 2, ASTM D 3515.
- 6. Composition of Mixture: ASTM D 3515
Gradation of mineral aggregate shall be as specified in Table 1 or 2, ASTM D 3515. The percentage of bituminous material provided in the bituminous mixtures shall be within the limits specified. Mixtures shall have the following physical properties:

<u>Test Property</u>	<u>Values</u>
Stability, ASTM D 1559	Figure 3.19, AI MS-22
Flow (0.01 inch), ASTM D 1559	Figure 3.19, AI MS-22
Percent Air Voids, ASTM D 3203	Figure 3.19, AI MS-22
Percent Voids in Mineral Aggregate	Figure 3.2, AI MS-22

- 7. Index of Retained Strength: ASTM D 1075.
75 or greater.
- 8. Variations from Formula:
The job-mix formula tolerances indicated in Table 3, ASTM D 3515, shall be applied to the job-mix formula to establish the job control gradation band. The full tolerances of the gradations still will apply if application of the job-mix tolerances result in a job control grading band outside the master gradation band.
- 9. Source Quality Control:
Use materials for testing that are identical to materials to be provided in this project. Employ a commercial laboratory approved by the Architect to perform testing.
- 10. Tests:
Perform testing in accordance with the following.
 - a. Specific gravity test of asphalt: ASTM D 70
 - b. Coarse aggregate tests:
 - 1) Bulk Specific Gravity: ASTM C 127.
 - 2) Abrasion Loss: ASTM C 131.
 - 3) Soundness Loss: ASTM C 88.
 - c. Weight of slag test: ASTM C 29/C 29M.

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- d. Percent of crushed pieces in gravel: Count by observation and weight.
- e. Fine aggregate tests:
 - 1) Bulk Specific Gravity: ASTM C 128.
 - 2) Soundness Loss: ASTM C 88.
- f. Specific gravity of mineral filler: ASTM C 188 or D 854.
- g. Bituminous mixture tests:
 - 1) Bulk Specific Gravity: ASTM D 1188 or D 2726.
 - 2) Theoretical Maximum Specific Gravity: ASTM D 2041.
 - 3) Index of Retained Strength: ASTM D 1075.
- C. Asphalt Cement: Comply with provisions of Asphalt Institute Specifications PMCQS1H - Polymerized Asphalt:
 - 1. Asphalt Cement: Penetration grade 50/60 using AR 8000 oil April to September, and AR 4000 oil, October to March.
- D. Fog Seal:
 - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the work include, but are not limited, to the following:
 - a. "Topein C"; Paramount Petroleum, 661-978-9357
- E. Herbicide Treatment: Commercial chemical for weed control, registered by Environmental Protection Agency. Provide granular, liquid, or wettable powder form.
 - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the work include, but are not limited to, the following:
 - a. Ciba-Geigy Corp.
 - b. Dow Chemical U.S.A. "Treflan".
 - c. E.I. Du Pont de Nemours & Co., Inc.
 - d. FMC Corp.
 - e. Thompson-Hayward Chemical Co.
 - f. U.S. Borax and Chemical Corp.
- F. Lane Marking Paint: Water borne, rapid dry - 100% acrylic polymer emulsion type, ready-mixed complying with TT-P-141a. Test as per Federal Spec. Std.
 - 1. Properties of material:

a. Pigment % by wt.	55-60
b. Vehicle % by wt.	40-45
c. Nonvolatile % by wt. of paint	75.0
d. Pounds per gallon	13.5+/- .2
e. Viscosity, K.U.	70-85
f. Fineness of grind	3 (minimum)
g. No Tracking Time @ 15 mils wet film at normal field condition	1-5 minutes
h. Dry time, 77 deg.F without beads ASTM D-711 (maximum) when heating equip. is available	10 minutes 4 minutes

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- @ 140-160 deg.F
- i. VOC (Volatile Organic Content) 115 gms/liter
- j. Thinner water
- k. Contrast ratio (white) 0.98 minimum
Coverage: 100 sq. ft. per gallon
at 15 mils wet.

2. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
 - a. Pervo Paint Company (213) 758-1147.
 - b. Morton Traffic Markings (800) 835-3357.
3. Colors: As indicated on Drawings.
 - a. Blue Disabled Color: color FS15090 per Federal Standard 595C.
4. Painted lines and markings on pavement shall be 3” minimum wide and blue in color equal to FS15090 per Federal Standard 595C. Accessible parking spaces shall be marked according to CBC Section 11B-502.6.4 and 11B-502.8. Painted lines and markings shall be in conformance to CBC Section 11B-705.1.2 and ADA Standards.

G. Aggregate Base: Class 2 aggregate base, Cal Trans standards.

1. Aggregate Grading Requirements.

Percentage Passing:

<u>Sieve Sizes</u>	<u>3/4" Maximum Operating Range</u>	<u>Compliance</u>
1"	100	100
3/4"	90-100	87-100
No. 4	35-60	35-65
No. 30	10-30	5-35
No. 200	2-9	0-12

Quality Requirements:

<u>Tests</u>	<u>Operating Range</u>	<u>Compliance</u>
Resistance (R-value)	---	78 Min.
Sand Equivalent	25 Min.	22 Min.
Durability Index	82	

2. Aggregate for Class 2 aggregate base shall be free from organic matter and other deleterious substances, and shall be of such nature that it can be compacted readily under watering and rolling to form a firm, stable base.
 - a. Where existing ac paving is allowed to be grind on site, it shall be mixed with additional materials to meet requirements above.
 - b. Where existing aggregate base is to be recycled, it shall have additional materials to meet requirements above.

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H. Slurry Seal Asphalt Fiberated Coating: Slurry Seal shall consist of emulsified asphalt, copolymer additive, pigments and non-carcinogenic mineral fillers meeting A.S.M.A. standard specification. It shall have a smooth, creamy texture and shall be free from any lumps or balls. The Slurry Seal shall be batch mixed in enough quantities to complete the job and to insure consistence in color and wear. The Slurry Seal shall be constantly agitated in special mixer trucks during application to guard against settling and insure thorough mixing of all ingredients.

1. Physical Properties:

Color	Deep Black
Non-Volatile %	47% minimum
Non-Volatiles that are asphaltic %	25-45%
Density of liquid lb/gal	8.33-11.0
Cone penetration (D-5)	35-85
Wet Track Abrasion	8 to 50
Vinyl Acrylic Additives	1.0%

2. NO ASBESTOS, COAL, TAR OR ANY OTHER CARCINOGENIC MATERIALS SHALL BE USED.

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

a. #1002 Ace Seal, Asphalt Coatings Engineering.

I. Heavy Body Seal/Slurry - Asphalt Coating.

1. Description: This work shall consist of mixing asphaltic emulsion, aggregate, and water and spreading the mixture on a surfacing or pavement where shown on the Plans as specified in these specifications and the project's requirements.

2. Materials: The materials for slurry seal immediately prior to mixing shall conform to the following requirements:

a. Asphaltic Emulsion: Asphaltic emulsion shall be a quick-setting type conforming to the requirements for CQSIH grade in Section 94, "Asphaltic Emulsions," except that the test requirements for cement mixing and settlement shall not apply.

b. Water: Water shall be of such quality that the asphalt will not separate from the emulsion before the slurry seal is in place in the Work.

c. Aggregate: Aggregate shall consist of rock dust and plaster sand or other sands of similar nature, except that any aggregate or combination of aggregates used in the mixture shall contain not less than 50 percent (50%) of the product obtained by crushing rock. The material shall be free from vegetable matter and other deleterious substances.

The percentage composition by weight of the aggregate shall conform to one of the following gradings:

Sieve Sizes	<u>Percentage Passing</u> Type II
3/8"	100
No. 4	94-100
No. 8	65-90
No. 16	40-70
No. 30	25-50
No. 200	5-15

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The aggregate shall also conform to the following quality requirements:

Tests	Test	California	Requirements
	Sand Equivalent	217	45 Min.
	Film Stripping (test performed on the material passing the No. 8 sieve and retained on the No. 16 sieve)	302	25% Max.
	Durability Index.	229	60 Min.

- d. Proportioning: Asphaltic emulsion shall be added at a rate of from 11 to 25 percent by weight of the dry aggregate. The exact rate will be determined by field conditions.

If necessary for workability, a retarding agent, that will not adversely affect the seal, may be used.

Water, and retarder if used, shall be added to ensure proper workability and (1) permit uncontrolled traffic on the slurry seal no more than 3 hours after placement without the occurrence of bleeding, raveling, separation or other distress; and, (2) prevent development of bleeding, raveling, separation or other distress within 7 days after placing the slurry seal.

If more than one kind of aggregate is used, the correct amount of each kind of aggregate to product the required grading shall be proportioned separately in a manner that will result in a uniform and homogeneous blend.

Uniformity of distribution of asphalt will be determined by extraction tests in accordance with California Test 310. The bitumen ratio (pounds of asphalt per 100 pounds of dry aggregates) shall not vary more than 5 percent above or below the amount designated. This requirement shall apply to samples taken from any location or operation.

- J. Crack Filler: Hot-applied polymer modified asphalt product for filling/sealing cracks of asphalt surfaces.

- 1. Available Products: Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:
 - 1. "Flex-A-Fill®" Crack Sealant PL grade by Koch Materials Co. (800) 732-5268
 - 2. SealMaster® by ThorWorks Industries Inc. (800) 326-1994 www.thorworks.com

- K. Wheel Stops: 2,500-psi compressive strength precast, air-entrained concrete, approximately 5 inches high, 9 inches wide, and 3 feet long. Provide chamfered corners and drainage slots on underside.

- 1. Available Products: Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:
 - 1. "BMP3" Standard Parking Bumper by Bertelson Precast.

- L. Painted Concrete Curbs: Alkyd-Resin type, ready-mixed complying with AASHTO M 248, Type 1.

- 1. Color: Green, blue, yellow, red and as color as indicated/selected.

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2.2 ASPHALT-AGGREGATE MIXTURE

- A. Provide plant-mixed, hot-laid asphalt-aggregate mixture complying with ASTM D 3515 and as recommended by local paving authorities to suit project conditions and local jurisdiction requirements for offsite AC paving if applied to this project.

2.3 REDWOOD HEADERS

- A. Species: All heart redwood.
- B. Stakes: Wood, same species, 1 by 2 by 18 inches long in nominal size (19 by 38 by 460 mm long in actual dry size), with galvanized nails for anchoring headers and edging.

PART 3 - EXECUTION

3.1 SURFACE PREPARATION

- A. General: Remove loose material from compacted subbase surface immediately before applying herbicide treatment or prime coat.
- B. Proof-roll prepared subbase surface to check for unstable areas and areas requiring additional compaction.
- C. Notify Contractor of unsatisfactory conditions. Do not begin paving work until deficient subbase areas have been corrected and are ready to receive paving.
- D. After preparation of the subgrade and sawcutting/drilling of existing pavement, thoroughly scarify and sprinkle the entire area to be paved and then compact to a smooth, hard, even surface of 90% minimum compaction, unless noted greater, to receive the aggregates.
- E. Subbase (when required):
 - 1. Spread the specified subbase material to a thickness providing the compacted thickness shown on the Drawings.
 - 2. Compact to 90% minimum, unless noted greater.
- F. Base:
 - 1. Spread Class 2 aggregate base (Caltrans Standards), material to a thickness providing the finish grades shown on the Drawings.
 - 2. Compact to 95% minimum.
- G. Thickness tolerance: Provide the compacted thicknesses shown on the Drawings within a tolerance of minus 0.0" to plus 0.5".
- H. Smoothness tolerance: Provide the lines and grades shown on the Drawings within a tolerance of 3/8" in 10 feet.
- I. Herbicide Treatment: Apply chemical weed control agent in strict compliance with manufacturer's recommended dosages and application instructions. Apply to compacted, dry subbase prior to application of prime coat.

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- J. Exercise care in applying bituminous materials to avoid smearing of adjoining concrete surfaces. Remove and clean damaged surfaces.

3.2 PLACING MIX

- A. General: Place hot-mixed asphalt mixture on prepared surface, spread, and strike off. Spread mixture at minimum temperature of 225 deg F (107 deg C). Place areas inaccessible to equipment by hand. Place each course to required grade, cross-section, and compacted thickness.
- B. Paver Placing: Place in strips not less than 10 feet wide, unless otherwise acceptable to Architect. After first strip has been placed and rolled, place succeeding strips and extend rolling to overlap previous strips. Complete base course for a section before placing surface course.
- C. Immediately correct surface irregularities in finish course behind paver. Remove excess material forming high spots with shovel or lute.
- D. Joints: Make joints between old and new pavements, or between successive days' work, to ensure continuous bond between adjoining work. Construct joints to have same texture, density, and smoothness as other sections of hot-mixed asphalt course. Clean contact surfaces and apply tack coat.

3.3 ROLLING

- A. General: Begin rolling when mixture will bear roller weight without excessive displacement.
 - 1. Compacting of the asphalt concrete shall be accomplished in three distinct operations. The first operation shall consist of breakdown and initial compaction with an appropriate steel drum roller. The second operation shall consist of compaction with an appropriate pneumatic wheel roller. The final operation shall be finish rolling with a steel drum roller.
 - a. Finish pavements of 2 ½" unless Contractor has option to use steel drum roller in lieu of rubber tire roller.
- B. Compact mixture with hot hand tampers or vibrating plate compactors in areas inaccessible to rollers.
- C. Breakdown Rolling: Accomplish breakdown or initial rolling immediately following rolling of joints and outside edge. Check surface after breakdown rolling and repair displaced areas by loosening and filling, if required, with hot material.
- D. Second Rolling: Follow breakdown rolling as soon as possible, while mixture is hot. Continue second rolling until mixture has been evenly compacted.
- E. Finish Rolling: Perform finish rolling while mixture is still warm enough for removal of roller marks. Continue rolling until roller marks are eliminated and course has attained 95 percent laboratory density.
- F. Finish paving smoothness tolerance:
 - 1. Free from birdbaths.
 - 2. No deviations greater than 3/16" in 10 feet.

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- G. Patching: Remove and replace paving areas mixed with foreign materials and defective areas. Cut out such areas and fill with fresh, hot hot-mixed asphalt. Compact by rolling to specified surface density and smoothness.
- H. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.
- I. Fog Seal: Apply after paving has been completed and accepted per manufactures written instructions.
- J. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

3.4 TRAFFIC AND LANE MARKINGS

- A. Cleaning: Sweep and clean surface to eliminate loose material and dust.
- B. Striping: Use waterborne acrylic traffic lane-marking paint, factory-mixed, quick-drying, and nonbleeding.
- C. Do not apply traffic and lane marking paint until layout and placement have been verified with Architect.
- D. Apply paint with mechanical equipment to produce uniform straight edges. Apply at manufacturer's recommended rates to provide minimum 5 mils dry thickness.
- E. Painted lines and markings on pavement shall be 3" minimum wide and blue in color equal to Color No. 15090 per Federal Standard 595B. Parking spaces for the disabled shall be marked according to CBC Section 1129B.4. Tactile warning lines shall be in conformance to CBC Section 1133B.8.5 and ADA Standards.

3.5 FIELD QUALITY CONTROL

- A. General: Testing in-place hot-mixed asphalt courses for compliance with requirements for thickness and surface smoothness will be done by Owner's testing laboratory. Repair or remove and replace unacceptable paving as directed by the Architect.
- B. Thickness: In-place compacted thickness tested in accordance with ASTM D 3549 will not be acceptable if exceeding following allowable variations:
 - 1. Base Course: Plus or minus 1/2 inch.
 - 2. Surface Course: Plus or minus 1/4 inch.
- C. Surface Smoothness: Test finished surface of each hot-mixed asphalt course for smoothness, using 10-foot straightedge applied parallel with and at right angles to centerline of paved area. Surfaces will not be acceptable if exceeding the following tolerances for smoothness:
 - 1. Base Course Surface: 1/4 inch.
 - 2. Wearing Course Surface: 3/16 inch.
- D. Check surface areas at intervals as directed by the Architect.

3.6 FLOOD TEST

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- A. Prior to application of seal coat, perform a flood test in the presence of the Architect.
- B. Method:
 - 1. Flood the entire asphaltic concrete paved area with water by use of a tank truck or hoses.
 - 2. If a depression is found where water ponds to a depth of more than 1/8" in 6 feet, fill or otherwise correct to provide proper drainage.
 - 3. Feather and smooth the edges of fill so that the joint between fill and original surface is invisible.

3.7 EMULSIFIED REJUVENATING AGENT

- A. Application Rates and Temperatures: Ready to apply rejuvenator/preservative seal (1 part water to 1 part concentrate) will be applied at .05 to .15 gallons per square yard. The temperature of the product shall be between 140°F and 180°F when applied.

The application rate will be based upon a typical surface condition test site with application rate trials to determine needed rate. Application rates as specified in item A above shall be used. Any over-applied seal will be sanded as directed by the Project Inspector.

Application equipment for roads shall be used in accordance, specified in item E below.

- B. Portable heated or insulated tanks with pressure sprayer systems and hose and multiple nozzle attachments shall be used.

Before opening a treated area to traffic, the surface shall be checked for slipperiness and/or tackiness.

- C. Weather Limitations: The rejuvenator/preservative seal shall not be applied unless the pavement temperature is at least 50°F and rising. The mixture shall not be applied during unsuitable weather.
- D. Preparation of the Surface: Immediately before applying the rejuvenator/preservative seal, the area to be treated shall be cleaned of dirt, loose material, and other objectionable material by cleaning equipment as specified in item E. Water flushing will not be permitted in area where cracks are present in the pavement surface. The rejuvenator/preservative seal treatment shall not be applied until Inspector of Record has inspected the cleaned surface.
- E. Cleaning Equipment: Power brooms, pick-up brooms, air compressors, water flushing equipment, and hand brooms shall be suitable for cleaning the surface and cracks of the surface to be treated.
- F. Sanding: The asphalt pavement surface shall be checked prior to application of Rejuvenating Agent to determine if blotter sanding is necessary. If required shall be done as soon as possible after application of Rejuvenating Agent has turned from brown to black. The sand shall be applied at ½ to 2 pounds per square yard. Excess sand shall be swept clean within 48 hours after application.

3.8 SLURRY SEAL - ASPHALT FIBERATED COATING

- A. Preparation:
 - 1. Paved areas shall be thoroughly cleaned with air pressure and brooms. All cracks shall be

blown out with air pressure.

2. All places where weeds appear shall be sterilized with a water sterilant.
3. All large holes or eroded areas exceeding 1/2" in depth shall be repaved with A/C paving material and all rocks exceeding 1/4" shall be raked out of edges of patch material.
4. Crackfilling shall be done with Crackfiller specified with sand or State Spec. Rock Slurry (CA 37-2). Different crackfilling procedures on different areas will be reviewed with Architect. Fill all cracks 1/16-inch and larger.
5. New asphalt surfaces shall be allowed to cure a minimum of 7 days before application. Surface must be clean and free from all loose material, so that the sealer can adhere to asphalt surface.

B. Mixing:

1. 20 to 30 percent water is needed in the first coat and 20 to 25 percent in the second coat. An approved mixer is required to mix the sealer thoroughly after water is added to insure a consistent concentration before applying. The amount of water needed will vary depending on the temperature of the pavement and the temperature and humidity of the air. There shall be enough water added so that the sealer will flow into the pavement and give good adhesion. Dilute the concentrated seal with water as required to achieve ease of application. Aggregate has already been added to the seal to achieve a non-skid surface.

C. Application:

1. Two coats applied evenly over the entire surface. Apply by squeegee brush; mechanical spray. Apply second coat in cross direction of the first coat. Allow two to four hours drying time between the first and second coats making sure the first coat is dry to the touch or will support equipment without tracking before the second coat is applied. Coated surface shall be allowed to dry a minimum of 24 hours before opening to traffic.
2. For ease of application in hot weather, the surface can be fogged with water. Concentrated seal should not be applied in temperatures below 50 degrees, or where rain is imminent or forecast.
3. Depending on the porosity and roughness of the surface and the method of application, coverage for a two-coat application will vary between 25 and 45 square feet per gallon.
4. Concentrated seal must be kept from freezing. Wash tools in water after use. Use mineral spirits to clean tools if material has dried. Containers shall be kept tightly closed when not in use.

- D. Provide barricades and personnel to keep area from being tracked. Clean all tracks from anything that tracks through slurry.

3.9 HEAVY BODY SEAL/SLURRY - ASPHALT COATING

A. Mixing: The slurry seal shall be mixed in continuous pugmill mixers.

1. Continuous type pugmill mixers shall be equipped to proportion emulsion, water, and aggregate by volume. The emulsion shall be introduced into the mixer by a positive displacement pump. Water shall be introduced into the mixer through an indicating meter by centrifugal-type pumps. A means of weighing the delivery of emulsion and water to the mixer shall be provided in order that the accuracy of the pumps can be checked at intervals. Aggregate feeders shall be connected directly to the drive on the emulsion pump. The drive shaft of the aggregate feeder shall be equipped with a revolution counter reading to 1/10 of a revolution.

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2. The delivery rate of aggregate and emulsion per revolution of the aggregate feeder shall be calibrated at different gate settings for each truck used on the project.
- B. Spreading Equipment: The slurry mixture shall be uniformly spread by means of a controlled spreader box conforming to the following requirements:
1. The spreader shall be capable of spreading an 8 feet minimum width and shall have strips of flexible rubber belting or similar material on each side of the spreader box and in contact with the pavement to prevent loss of slurry from the box and the box shall have baffles, or other suitable means, to insure uniform application on superelevated sections and shoulder slopes.
 2. The rear flexible strike-off blade shall make close contact with the pavement and shall be capable of being adjusted to the various crown shapes so as to apply a uniform seal coat.
 3. Slurry mixture to be spread in areas accessible to the controlled spreader box, may be spread by other approved methods.
- C. Placing: Slurry seal shall not be placed when the atmospheric temperature is below 55 deg.F, or during unsuitable weather.
1. Before placing the slurry seal, the pavement surface shall be cleaned by sweeping, flushing, or other means necessary to remove all loose particles of paving, all dirt, and all other extraneous material.
 2. When there is a contract item of asphaltic emulsion to be used for paint binder, the pavement surface shall be coated with an SS or CSS grade asphaltic emulsion mixed in the proportion of one part of emulsion to 3 parts of water. The mixture shall be applied at the appropriate rate of 0.08- to 0.15-gallon per square yard.
 3. Unless otherwise specified in the special provisions, slurry seal shall be spread at a rate within the following ranges in pounds of dry aggregate per square yard. The exact rate will be determined by the Engineer. The spread rate shall be within 10 percent of the rate determined by the Engineer.
- | | |
|-------------------|--------|
| Type of Aggregate | Ranges |
| I | 8-12 |
- Hand tools shall be available in order to remove spillage. Ridges or bumps in the finished surface will not be permitted.
4. The mixture shall be uniform and homogeneous after spreading on the road and shall not show separation of emulsion and aggregate after setting.
 5. Adequate means shall be provided to protect the slurry seal from damage by traffic until such time that the mixture has cured sufficiently so that the slurry seal will not adhere to and be picked up by the tires of vehicles and foot traffic.
- D. Top Coat: Provide a Top Coat over heavy body slurry with fog seal material specified herein.

3.10 WHEEL STOPS

- A. General: Secure wheel stops to hot-mixed asphalt surface with epoxy adhesive entire contact area with asphalt surface unless driven rebar connection noted. Paint blue at disabled locations and other colors as indicated on plans.

END OF SECTION 321216

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 0 & 1 Specification Sections, apply to this section.

1.2 SUMMARY

- A. This section includes, but not limited to, the following:
 - 1. Extent of Portland cement concrete paving is shown on drawings:
 - a. Broom finish Portland Cement Concrete Paving.
 - b. Surface applied Tactile detectable warning surface tiles
 - c. Miscellaneous footing(s) for items.
 - d. Curbs, gutters, mowstrips, landscape curbs, walkways, drive approaches, pavement and miscellaneous site concrete.
- B. Related sections include the following:
 - 1. Concrete and related materials are specified in Division 3, Section "Cast-in-Place Concrete".
 - 2. Joint fillers and sealers are specified in Division 7, Section "Joint Sealants".

1.3 SUBMITTALS

- A. Provide samples, manufacturer's product data, test reports, and materials' certifications as required in referenced sections for concrete and joint fillers and sealers.
- B. Provide field samples of concrete finishes for Architect's review. Coordinate samples with Architect's normally scheduled job visits.
- C. Design Built Grades: Contractor shall submit to Architect existing and proposed grades. Architect shall review with comments, if any. Contractor shall make changes to grades as indicated in Architect's comments. Submit for final review/approval.

1.4 QUALITY ASSURANCE

- A. Codes and Standards: Comply with local governing regulations if more stringent than herein specified.
- B. All site components i.e. yard boxes, grates, utility boxes and other items shall be ADA compliant and installed within ADA requirements.

1.5 JOB CONDITIONS

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- A. Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other construction activities.
 - 1. Coordinate with requirements for "Temporary Facilities" specified in Division 1.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Forms: Steel, wood, or other suitable material of size and strength to resist movement during concrete placement and to retain horizontal and vertical alignment until removal. Use straight forms, free of distortion and defects.
- B. Coat forms with a nonstaining form release agent that will not discolor or deface surface of concrete.
- C. Reinforcing Bars: Deformed steel bars, ASTM A 615, Grade 60.
- D. Fabricated Bar Mats: Welded or clip-assembled steel bar or rod mats, ASTM A 184. Use ASTM A 615, Grade 60 steel bars, unless otherwise indicated.
- E. Joint Dowel Bars: Plain steel bars, A36. Cut bars true to length with ends square and free of burrs.
- F. Concrete Materials: Comply with requirements of applicable Division 3 sections for concrete materials, admixtures, bonding materials, curing materials, and others as required.
- G. Expansion Joint Materials: Comply with requirements of applicable Division 7 sections for preformed expansion joint fillers and sealers.
- H. Clear Liquid-Membrane Forming and Sealing Curing Compound: Comply with ASTM C 309, Type I, Class B, limited to maximum solvent content 1.6 pound per gallon, unless other type acceptable to Architect. Moisture loss no more than 0.055 gr./sq. cm. when applied at 200 sq. ft. / gal.
 - 1. Available Products: Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:
 - a. "Masterseal"; Master Builders.
 - b. "Aqua Cure"; Euclid Chemical Co.
 - c. "Vocomp 20.25" W.R. Meadows.
 - d. "Kure-N-Seal"; Sonneborn-Contech.
 - e. "Dress and Seal"; L & M Construction Chemicals.
- I. Yard Boxes / Catch Basins / Utility Boxes: Shall be concrete precast per ASTM C 478 or ASTM 858 min. 12" deep with added sections as required to get to depth of pipe, valve, etc. High density reinforced concrete, all boxes and covers/grates shall be heavy vehicular traffic rating.
 - 1. Utility Boxes: Refer to mechanical, plumbing, and/or electrical drawings for size of utility box. Cast iron lid unless noted otherwise. Heavy vehicular traffic rating.

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- a. Available Products: Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:
 - (1) Christy Concrete Products.
- 2. Valve Boxes: Refer to mechanical, plumbing, and/or electrical drawings for size of valve box. Cast iron lid. Heavy vehicular traffic rating.
 - a. Available Products: Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:
 - (1) Christy Concrete Products, “G8 Curb Valve Box”.
- J. Surface Applied Tactile Detectable warning surface tiles:
 - 1. Material: A homogeneous glass and carbon reinforced composite which is colorfast and UV stable. The tactile panel color is uniform throughout.
 - a. Color: Federal Yellow (Y) per Federal Standard 595B Table IV, Color No. 33538.
 - 2. Available Products: Subject to compliance with requirements, products which may be incorporated in the work include, but not limited to, the following:
 - a. ADA Solutions Inc., 800-372-0519
 - 3. SA Tile:
 - a. Rectangular SA Tile: 2.35” Dome Spacing: [24”x36”] [24”x48”] [24”x60”] [36”x48”] [36”x60”]. See drawings for tile size.
 - 4. Special warning for disabled persons shall comply with CBC Sections 1133B.8.5.
 - 5. Physical characteristics:

Compressive Strength	28,900 psi.	ASTM D 695
Flexural Strength	29,300 psi.	ASTM D 790
Water Absorption	.07%	ASTM D 570
Slip Resistance	1.18 Dry/ 1.05 Wet	ASTM C 1028
Flame Spread Index	20	ASTM E 84
Salt Spray	No Change (200 hours)	ASTM B 117
Chemical Stain Testing	No Deterioration	ASTM 1308
Abrasion Resistance	549	ASTM C 501
Accelerated Weathering	Delta E <5.0 (2,000 hours)	ASTM G155
Tensile Strength	11,600 psi.	ASTM D 638
Adhesion to Conc. (20-180 degrees)	No Delamination or Degredation	ASTM C 903
Freeze/ Thaw/ Heat	No Disintegration	ASTM C 1026
 - 6. Dome Geometry: Square grid pattern of raised truncated domes of 0.2”nominal height, base diameter of 0.9” and top diameter of 0.45”. The Federal Code of Regulations permits a truncated dome spacing range of 2.3”-2.4.” For superior wheelchair, walker and shopping cart mobility, the preferred truncated dome spacing shall have a center-to center (horizontally and vertically) spacing of 2.35”, measured between the most adjacent domes on square grid.
 - 7. Configuration: SA Tile sizes shall be as indicated on the Contract Drawings. The field area shall consist of a non-slip textured surface with a minimum static coefficient of friction of

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0.80, wet and dry. At a minimum, the thickness of the body of SA Tile shall measure 3/16” (nominal). The SA Tile thickness shall not exceed 1/2” maximum when measured from the curb ramp surface to the top of the truncated dome.

- a. Composite Tactile Warning Surface Tiles shall have a perimeter beveled edge with a maximum slope of 1:2.
8. Warranty: 5 years from date of Notice of Completion. The warranty includes installation defects, manufacturing defects, breakage, and deformation.
9. Install per manufacturer’s written requirements:
 - a. Fasteners: The Tactile Warning Surface Tile shall have minimum twelve (2’x3’ Tactile Warning Surface Tile) to twenty-four (3’x5’ Tactile Warning Surface Tile) countersunk fastening holes. Color matched, stainless steel 304, flat head drive anchor: 1/4” diameter x 1 1/2” long.
 - b. Adhesive: Polyether Structural Adhesive/Sealant by Chem Link (M-1). Urethane Elastomeric Adhesive by Bostik (Hydroment Ultra-Set Advanced or Durabond D-818) 3
 - c. Urethane Sealant such as Sikaflex 1a or BASF NP1 shall be applied to the edge treatment for a watertight Tactile Warning Surface Tile installation.
- K. Preformed Expansion Filler: Composed of cellular fibers securely bonded together and uniformly saturated with asphalt. It is non-extruding, resilient and when compressed to half its thickness, with a minimum recovery of 70%, will not deform, twist or break with ordinary handling.
 1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - a. "Sealtight Fibre Expansion Joint Filler," W. R. Meadows.
- L. Sand Cushion: Clean, manufactured or natural sand.

2.2 CONCRETE MIX, DESIGN, AND TESTING

- A. Comply with requirements of applicable Division 3 sections for concrete mix design, sampling and testing, and quality control and as herein specified.
- B. Design mix to produce normal-weight concrete consisting of Portland cement, aggregate, water-reducing or high-range water-reducing admixture (superplasticizer), air-entraining admixture, and water to produce the following properties:
 1. Compressive Strength: 4000 psi, minimum at 28 days, unless otherwise indicated.
 2. Slump Limits: 3 inches for other concrete.
 3. Air Content: 5 to 8 percent based on size of aggregate.

PART 3 - EXECUTION

3.1 SURFACE PREPARATION

- A. Remove loose material from compacted subgrade surface immediately before placing concrete.

3.2 FORM CONSTRUCTION

- A. Set forms to required grades and lines, braced and secured. Install forms to allow continuous

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progress of work and so that forms can remain in place at least 24 hours after concrete placement.

- B. Check completed formwork for grade and alignment to following tolerances:
 - 1. Top of forms to create a concrete grade tolerance of not more than 1/8 inch in 10 feet.
 - 2. Vertical face on longitudinal axis, not more than 1/4 inch in 10 feet.
- C. Clean forms after each use and coat with form release agent as required to ensure separation from concrete without damage.
- D. Slope step treads at 1/8 inch per foot to drain. Provide metal nosing at all steps with more than 1 riser, where indicated.

3.3 REINFORCEMENT

- A. Locate, place and support reinforcement as specified in Division 3 sections, unless otherwise indicated.

3.4 CONCRETE PLACEMENT

- A. General: Comply with requirements of Division 3 sections for mixing and placing concrete, and as herein specified.
- B. Do not place concrete until subgrade and forms have been checked for line and grade. Moisten subgrade if required to provide a uniform dampened condition at time concrete is placed. Do not place concrete around manholes or other structures until they are at required finish elevation and alignment.
- C. Place concrete by methods that prevent segregation of mix. Consolidate concrete along face of forms and adjacent to transverse joints with internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use only square-faced shovels for hand-spreading and consolidation. Consolidate with care to prevent dislocation of reinforcing, dowels, and joint devices.
- D. Use bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
- E. Deposit and spread concrete in a continuous operation between transverse joints as far as possible. If interrupted for more than 1/2 hour, place a construction joint.
- F. When adjacent pavement lanes are placed in separate pours, do not operate equipment on concrete until pavement has attained sufficient strength to carry loads without injury.

3.5 JOINTS (SEE DRAWINGS FOR MORE RESTRICTIVE SPACING)

- G. General: Construct expansion, weakened-plane (contraction), and construction joints true to line with face perpendicular to surface of concrete. Construct transverse joints at right angles to the centerline, unless otherwise indicated.
- H. When joining existing structures, place transverse joints to align with previously placed joints, unless otherwise indicated.

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- I. Weakened-Plane (Contraction) Joints: Provide weakened-plane (contraction) joints, sectioning concrete into areas as shown on drawings. Construct weakened-plane joints for a depth equal to at least 1/4 concrete thickness, as follows:
 - 1. Tooled Joints: Form weakened-plane joints in fresh concrete by grooving top portion with a recommended cutting tool and finishing edges with a jointer.
- J. Construction Joints: Place construction joints at end of placements and at locations where placement operations are stopped for more than 1/2 hour, except where such placements terminate at expansion joints.
 - 1. Construct joints as shown.
 - 2. Provide load transfer-slip dowel devices--#4 min. size @ 18" o.c. min., install so that one end of each dowel bar is free to move. Provide at all construction joints.
- K. Expansion Joints: Provide premolded joint filler for expansion joints abutting concrete curbs, catch basins, manholes, inlets, structures, walks, and other fixed objects, unless otherwise indicated.
 - 1. Locate expansion joints as indicated on drawings or 20' maximum, whichever is less.
 - 2. Start/finish of all radius and direction changes.
 - 3. Locate expansion joints as indicated on drawings for concrete paving or 20' maximum any direction--whichever is less.
- L. Extend joint fillers full width and depth of joint, not less than 1/2 inch or more than 1 inch below finished surface where joint sealer is indicated. If no joint sealer, place top of joint filler flush with finished concrete surface.
- M. Furnish joint fillers in one-piece lengths for full width being placed wherever possible. Where more than one length is required, lace or clip joint filler sections together.
- N. Protect top edge of joint filler during concrete placement with a metal cap or other temporary material. Remove protection after concrete has been placed on both sides of joint.
- O. Fillers and Sealants: Comply with requirements of applicable Division 7 sections for preparation of joints, materials, installation, and performance.

3.6 CONCRETE FINISHING

- A. After striking-off and consolidating concrete, smooth surface by screeding and floating. Use hand methods only where mechanical screeding and floating is not possible. Adjust floating to compact surface and produce uniform texture.
 - 1. Where medium or heavy broom finishes are required or indicated, concrete must be tamped to avoid brooming operations from exposing large aggregate.
- B. After floating, test surface for trueness with a 10-ft. straightedge. Distribute concrete as required to remove surface irregularities, and refloat repaired areas to provide a continuous smooth finish. No level deviation between pours will be accepted unless details on Plans specifically require.
 - 1. If non-slip aggregate is required or indicated, dust surface with 7.5 lbs of aggregate chips per 100 sq.ft. evenly. Do not wet non-slip aggregate prior to installation. (See also below for second application).
 - 2. Re-float concrete to imbed aggregate chips.

- C. Work edges of slabs, gutters, back top edge of curb, and formed joints with an edging tool, and round to 1/2-inch radius, unless otherwise indicated. Eliminate tool marks on concrete surface.
- D. After completion of floating and when excess moisture or surface sheen has disappeared, complete troweling and finish surface as follows:
 - 1. Where non-slip aggregate is required or indicated, (in addition to above during floating) dust surface with 7.5 lbs of aggregate chips per 100 sq.ft. evenly. Do not wet non-slip aggregate prior to installation.
 - 2. Hard trowel aggregate chips to imbed into concrete surface.
 - 3. Complete hard trowel finishing of surface, edges and joints. Eliminate all tool marks.
 - 4. Broom finish as indicated; otherwise finish concrete smooth, free of tool marks and voids in surface.
 - a. Broom finish- use fine, medium or heavy bristled broom specifically designed for type of concrete finish indicated.
 - 1) Medium broom finish on all surfaces less than 6% slopes.
 - 2) Heavy broom finish on all surfaces 6% and greater slopes.
 - b. Broom from one direction only. Broom a complete section at one time. Do not broom previously broomed section at a later time. This will produce a color and texture variation that may be cause for rejection.
 - c. Provide a uniform finish through out entire concrete operations of type of finish indicated. Provide line texture acceptable to the Architect.
 - d. Medium broom finish on all surfaces less than 6% slope.
 - e. Heavy broom finish on all surfaces greater than 6% slope.
 - 5. Broom finish:
 - a. For fine broom finish, wet broom, broom in one direction only. Wash broom after each stroke, shake off excess water.
 - b. Medium or heavy broom finish, start with damp broom, broom in one direction only. Shake off concrete laitance after each stroke. It is common to see concrete laitance ball up and fall off trailing edge of broom. Do not remove these laitance until such time as removal/clean up will not damage concrete surface or broom markings.
 - 6. All concrete brooming whether fine, medium or heavy will take place at the same set point of concrete cure as for fine broom finish.
 - 7. Tolerances:
 - a. Concrete Flatness Ft = 20.
 - b. Concrete Levelness FI = 25.
- E. Do not remove forms for 24 hours after concrete has been placed. After form removal, clean ends of joints and point-up any minor honeycombed areas. Remove and replace areas or sections with major defects, as directed by the Architect.

3.7 CURING

- A. Protect and cure finished concrete paving in compliance with applicable requirements of Division 3 sections. Use membrane-forming curing and sealing compound or approved moist-curing

methods.

3.8 REPAIRS AND PROTECTIONS

- A. Repair or replace broken or defective concrete, as directed by the Architect.
 - 1. Concrete damaged by construction or non-conforming work shall be removed/replaced to nearest full panel to control joint. Architect shall review aesthetic appearance of repair and work shall be approved by the Architect prior to being accepted.
- B. Drill test cores where directed by Architect when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory pavement areas with Portland cement concrete bonded to pavement with epoxy adhesive.
- C. Protect concrete from damage until acceptance of work. Exclude traffic from pavement for at least 14 days after placement. When construction traffic is permitted, maintain pavement as clean as possible by removing surface stains and spillage of materials as they occur.
- D. Sweep concrete pavement and wash free of stains, discolorations, dirt, and other foreign material just before final inspection.

3.9 TACTILE/DETECTABLE WARNING SURFACE

- A. Surface applied tile shall be installed per manufacturer's instructions.
 - a. To the maximum extent possible, the Tiles shall be oriented such that the rows of inline truncated domes are parallel with the direction of the ramp. When multiple Tiles regardless of size are used, the truncated domes shall be aligned between the tactile warning surface tiles and throughout the entire tactile warning surface installation. Cutting of Tiles may be required to accommodate specific site conditions. All possible attempts shall be made to minimize cutting of the Tiles. Minimum acceptable width of the cut Tile shall be 9".
 - b. Environmental Conditions: Air and substrate temperatures must exceed 40 degrees for at least 8 daytime hours for a sound and proper installation. A "weed torch" may be used to boost the substrate temperature to expedite cure of adhesives and sealants.
 - c. Immediately prior to installing the Tiles, the concrete surfaces must be inspected to ensure that they are clean, dry, free of voids, curing compounds, projections, loose material, dust, oil, grease, sealers and determined to be structurally sound with a minimum four (4) day concrete cure period (unless otherwise directed by the Tile manufacturer) and that the surface is flat. As necessary, substrate may be mechanically cleaned with a diamond cup grinder or shot blaster to remove any dirt or foreign material although a broom or leaf blower is usually adequate for cleaning of the substrate.
 - d. Apply adhesive on the backside of the Tiles full coverage adhesive.
 - e. Set the Tile(s) true and square to the curb ramp areas as detailed in the Drawings. Allow 1/8" separation between successive Tiles for expansion/contraction.
 - f. Drill holes true and straight to a depth of 2" by 1/4" using the recommended bit. As necessary, additional countersunk holes may be added to the Tile by using a 5 point 1/2" (82 degree) countersink to create the necessary holes.
 - g. Mechanically fasten Tile to the concrete substrate using a 32oz. to 48oz. hammer to set the composite sleeve anchors. Ensure that the fastener has been set to full depth, straight and true. Care should be taken when setting the fastener to avoid any advertent blows with the hammer to the Tile.
 - h. Following the installation of the Tile, the sealant system should be applied to the perimeter edge. Follow the Tactile Warning Surface manufacturer's recommendations when applying the sealant in a cove type profile to blend and seal the Tile edge to the adjoining surfaces.
 - i. Do not allow foot traffic on installed Tile until the perimeter edge sealant has cured

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sufficiently to avoid tracking. If the Tile must be placed into immediate pedestrian service, apply baby powder to the sealant to minimize the possibility of tracking while the sealant cures. Foot imprints may appear in the fully cured sealant application

- j. Sealant shall be applied to the edge treatment for a watertight Tactile Warning Surface Tile installation.

END OF SECTION 321313

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 0 & 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes, but not limited to, the following:
 - 1. Galvanized steel chain link fence and gates.
- B. Related Sections: The following sections contain requirements that relate to this section:
 - 1. Division 3 Section "Cast-in-Place Concrete" for concrete for post footings.

1.3 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.
 - 1. Product data in the form of manufacturer's technical data, specifications, and installation instructions for fence and gate posts, fabric, gates, and accessories.
 - 2. Shop drawings showing location of fence, gates, each post, and details of post installation, extension arms, gate swing, hardware, and accessories.

1.4 QUALITY ASSURANCE

- A. Single-Source Responsibility: Obtain chain link fences and gates as complete units, including necessary erection accessories, fittings, and fastenings from a single source or manufacturer.

PART 2 - PRODUCT

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
 - 1. Galvanized Steel Fencing and Fabric:
 - a. Allied Tube and Conduit Corp.

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- b. American Chain Link Fence Company
- c. American Tube Company
- d. Anchor Fence, Inc.
- e. Capitol Wire and Fence Co., Inc.
- f. Century Tube Corp.
- g. Cyclone Fence Div./USX Corp.

2.2 FABRIC

- A. Steel Fabric: Comply with Chain Link Fence Manufacturers Institute (CLFMI) Product Manual. Furnish one-piece fabric widths for fencing up to 12 feet high. Wire size includes zinc coating.
 - 1. Size: 2-inch mesh, 9-gage (0.148-inch diameter) wire.
 - 2. Galvanized Steel Finish: ASTM A 392, Class 2, with not less than 2.0 oz. zinc per sq. ft. of uncoated wire surface on wire coated before weaving or not less than 2.0 oz. zinc per sq. ft. of uncoated wire surface on wire of fabric coated after weaving as determined from the average of two or more samples and not less than 1.8 oz. zinc per sq. ft. of uncoated wire surface for any individual sample.

2.3 FRAMING

- A. Strength requirements for posts and rails conforming to ASTM F 669.
- B. Pipe shall be straight, true to section, material, and sizes specified, and shall conform to the following weights per foot:

<u>NPS in inches</u>	<u>Outside Diameter (OD) in inches</u>	<u>Type I Steel</u>
1	1.315	1.68
1-1/4	1.660	2.27
1-1/2	1.900	2.72
2	2.375	3.65
2-1/2	2.875	5.79
3	3.500	7.58
3-1/2	4.000	9.11
4	4.500	10.79
6	6.625	18.97
8	8.625	28.55

- C. Steel Framework, General: Posts, rails, braces, and gate frames.
 - 1. Type I Pipe: Hot-dipped galvanized steel pipe conforming to ASTM F 1043, plain ends, standard weight (schedule 40) with not less than 1.8 oz. zinc per sq. ft. of surface area coated, (Type A)
- D. End, corner, and pull posts for following fabric heights:
 - 1. Up to 6 feet: 2.375-inch OD Type I.
 - 2. Over 6 feet: 2.875-inch OD Type I.
- E. Line or intermediate posts for following fabric heights:

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1. Up to 6 feet: 1.90-inch OD Type I.
 2. Over 6 feet: 2.375-inch OD Type I.
- F. Gate Posts: Furnish posts for supporting single gate leaf, or one leaf of a double gate installation, for nominal gate widths as follows:
1. Up to 6 feet: 2.875-inch OD Type I.
 2. Over 6 feet to 13 feet: 4.00-inch OD Type I.
 3. Over 13 feet to 18 feet: 6.625-inch OD Type I steel pipe.
- G. Top Rail: Manufacturer's longest lengths, with expansion-type couplings, approximately 6 inches long, for each joint. Provide means for attaching top rail securely to each gate corner, pull, and end post.

2.4 FITTINGS AND ACCESSORIES

- A. Material: Comply with ASTM F 626. Mill-finished aluminum or galvanized iron or steel, to suit manufacturer's standards.
1. Zinc Coating: Unless specified otherwise, galvanize steel fence fittings and accessories in accordance with ASTM A 153, with zinc weights per Table I.
- B. Tension Wire: 0.177-inch-diameter metallic-coated steel marcelled tension wire conforming to ASTM A 824 with finish to match fabric.
1. Type II Zinc Coated in following class:
 - a. Class 2, with a minimum coating weight of 1.20 oz. per sq. ft. of uncoated wire surface.
- C. Post and Line Caps: Provide weathertight closure cap for each post.
- D. Tension or Stretcher Bars: Hot-dip galvanized steel with minimum length 2 inches less than full height of fabric, minimum cross-section of 3/16 inch by 3/4 inch and minimum 1.2 oz. zinc coating per sq. ft. of surface area. Provide one bar for each gate and end post, and two for each corner and pull post, except where fabric is integrally woven into post.
- E. Tension and Brace Bands: Minimum 3/4-inch-wide hot-dip galvanized steel with minimum 1.2 oz. zinc coating per sq. ft. of surface area.
1. Tension Bands: Minimum 14 gage (0.074 inch) thick.
 2. Tension and Brace Bands: Minimum 12 gage (0.105 inch) thick.

2.5 GATES

- A. Fabrication: Fabricate perimeter frames of gates from metal and finish to match fence framework. Assemble gate frames by welding. Provide horizontal and vertical members to ensure proper gate operation and attachment of fabric, hardware, and accessories. Space frame members maximum of 8 feet apart unless otherwise indicated.
3. Provide same fabric as for fence unless otherwise indicated. Install fabric with tension bars

- and bands at vertical edges and at top and bottom edges.
4. Install diagonal cross-bracing consisting of 3/8-inch-diameter adjustable-length truss rods on gates to ensure frame rigidity without sag or twist.
 5. Where barbed wire is indicated above gates, extend end members of gate frames 12 inches above top member and prepare to receive 3 strands of wire. Provide necessary clips for securing wire to extensions.
 4. Fabricate gates to receive hardware as detailed. Coordinate with submittals from hardware Contractor. Hot dip galvanized entire assembly after fabrication.
- B. Swing Gates: Comply with ASTM F 900.
1. Steel:
 - a. Up to 6 feet High and 8 feet Wide: Fabricate perimeter frames of minimum 1.660-inch OD Type I.
 - b. Over to 6 feet High and 8 Feet Wide: Fabricate perimeter frames of minimum 1.90-inch OD Type I.
 - c. Gate Hardware: Provide hardware and accessories for each gate, galvanized per ASTM A 153, and in accordance with the following:
 - 1) Hinges: Size and material to suit gate size, non-lift-off type, offset to permit 180-deg gate opening. Provide 1-1/2 pair of hinges for each leaf over 6-foot nominal height.
 - 2) Latch: Forked type or plunger-bar type to permit operation from either side of gate, with padlock eye as integral part of latch.
 - 3) Keeper: Provide keeper for vehicle gates, which automatically engages gate leaf and holds it in open position until manually released.
 - 4) Gate Stops: Provide gate stops for double gates, consisting of mushroom-type flush plate with anchors, set in concrete, and designed to engage center drop rod or plunger bar. Include locking device and padlock eyes as integral part of latch, permitting both gate leaves to be locked with single padlock.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Install fence in compliance with ASTM F 567. Do not begin installation and erection before final grading is completed, unless otherwise permitted.
- B. Excavation: Drill or hand-excavate (using post-hole digger) holes for posts to diameters and spacings indicated, in firm, undisturbed or compacted soil.
 1. If not indicated on drawings, excavate holes for each post to minimum diameter recommended by fence manufacturer, but not less than 4 times largest cross-section of post.
 2. Unless otherwise indicated, excavate hole depths approximately 3 inches lower than post bottom, with bottom of posts set not less than 36 inches below finish grade surface.
- C. Setting Posts: Center and align posts in holes 3 inches above bottom of excavation. Space maximum 10 feet o.c., unless otherwise indicated.
 1. Protect portion of posts above ground from concrete splatter. Place concrete around posts

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and vibrate or tamp for consolidation. Check each post for vertical and top alignment, and hold in position during placement and finishing operations.

- d. Unless otherwise indicated, extend concrete footings 2 inches above grade and trowel to a crown to shed water.
- D. Top Rails: Run rail continuously through line post caps, bending to radius for curved runs and at other posts terminating into rail end attached to posts or post caps fabricated to receive rail. Provide expansion couplings as recommended by fencing manufacturer.
- E. Brace Assemblies: Install braces so posts are plumb when diagonal rod is under proper tension.
- F. Bottom Tension Wire: Install tension wire within 6 inches of bottom of fabric before stretching fabric and tie to each post with not less than same gage and type of wire. Pull wire taut, without sags. Fasten fabric to tension wire with 11-gage hog rings of same material and finish as fabric wire, spaced maximum 24 inches o.c.
- G. Fabric: Leave approximately 2 inches between finish grade and bottom salvage unless otherwise indicated. Pull fabric taut and tie to posts, rails, and tension wires. Install fabric on security side of fence, and anchor to framework so that fabric remains in tension after pulling force is released.
- H. Tension or Stretcher Bars: Thread through or clamp to fabric 4 inches o.c., and secure to end, corner, pull, and gate posts with tension bands spaced not over 15 inches o.c.
- I. Tie Wires: Use U-shaped wire of proper length to secure fabric firmly to posts and rails with ends twisted at least 2 full turns. Bend ends of wire to minimize hazard to persons or clothing.
 1. Maximum Spacing: Tie fabric to line posts 12 inches o.c. and to rails and braces 24 inches o.c.
- J. Fasteners: Install nuts for tension bands and hardware bolts on side of fence opposite fabric side. Peen ends of bolts or score threads to prevent removal of nuts.
- K. Gates: Install gates plumb, level, and secure for full opening without interference. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation and lubricate where necessary.

END OF SECTION 323113



**SUMMARY OF COMPREHENSIVE ASBESTOS, LEAD, PCB,
MERCURY & FLUORESCENT LIGHT TUBE INSPECTION
FINDINGS**

Site Information:

Fremont ES – MOD Inspection
607 Texas Street, Bakersfield, CA 93307



Prepared for:

Mr. Robert Van Tassel, Supervisor – School Planning & Construction
Bakersfield City School District
1300 Baker Street, Bakersfield, CA 93305
(661) 631-5883

Prepared by:

Kristy Yowell, CAC 09-4500 / CDPH No. LRC-00004640
YES Environmental, Inc.
YES, Inc. Project Number 22YES-109
July 2023



Purpose of Inspection

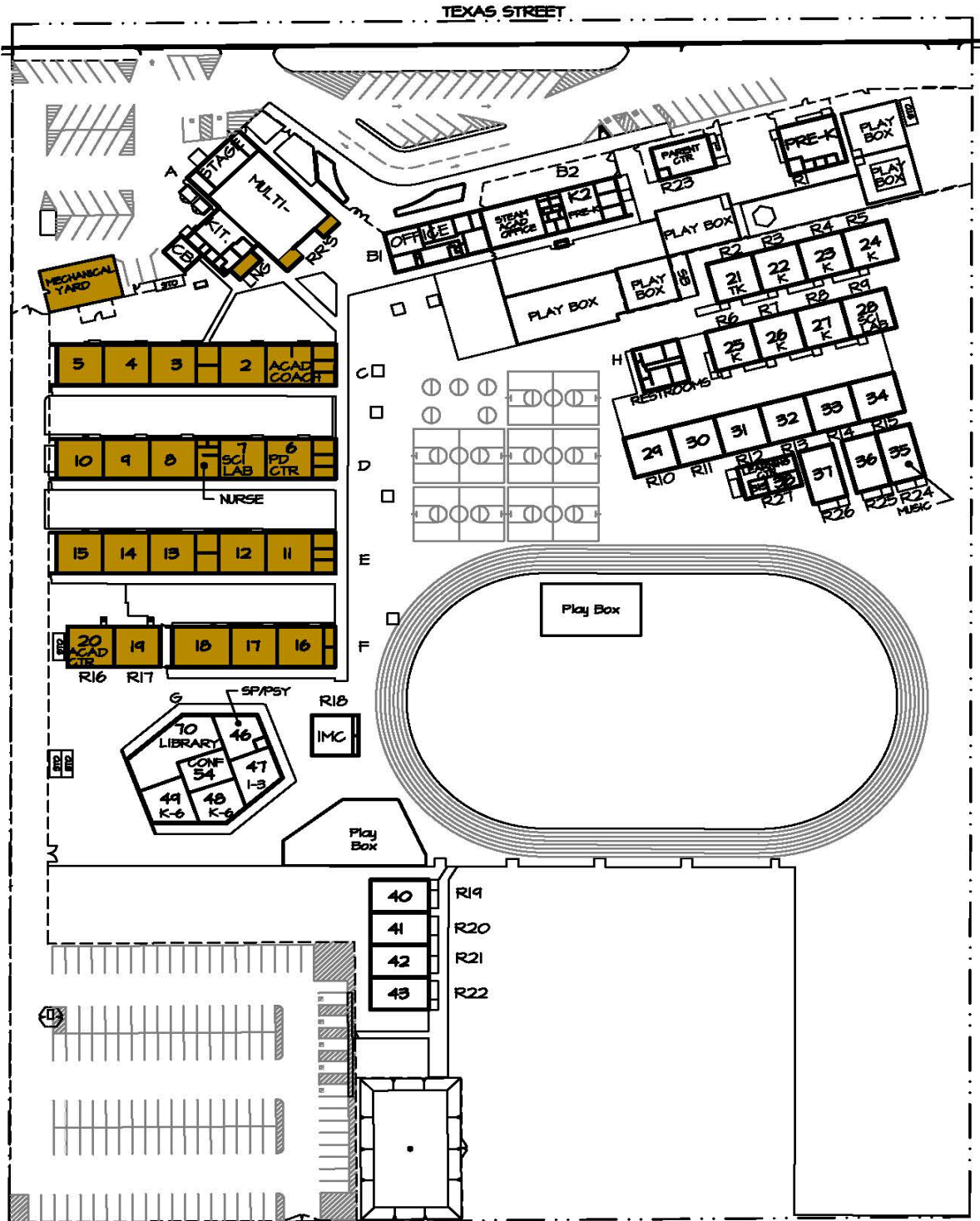
Bakersfield City School District (BCSD) contacted YES, Inc. to request an asbestos, lead, PCB, mercury and fluorescent light tube survey of the following buildings at Fremont Elementary School located at 607 Texas Street, Bakersfield, CA:

- Building C – Classrooms 1-5 including all hallways, connected offices, accessory rooms, and restrooms. Comprehensive inspection of all interiors and exteriors.
- Building D – Classrooms 6-10 including all hallways, connected offices, accessory rooms and restrooms. Comprehensive inspection of all interiors and exteriors.
- Building E – Classrooms 11-15 including all hallways, connected offices, accessory rooms, and restrooms. Comprehensive inspection of all interiors and exteriors.
- Building F – Classrooms 16-18 including all hallways, connected offices, accessory rooms, and restrooms. Comprehensive inspection of all interiors and exteriors.
- Building R16 & R17 – Classrooms 19-20. Comprehensive inspection of all interiors and exteriors.
- Building A – Staff Lounge and east side Staff Restrooms. Comprehensive inspection of all interiors and exteriors.
- The Chiller Yard was comprehensively inspected.
- The following buildings had limited interior and exterior inspections performed for fire alarm upgrade purposes. Per BCSD's scope the devices and conduits will likely be mounted on or penetrate upper interior walls, ceiling and attics. On the exterior the devices and conduits will likely be mounted or penetrate upper walls.
 - All rooms throughout Building A – Multi-Purpose Building
 - All rooms throughout Building B1 & B2
 - All rooms throughout Building G – Classrooms 46-49, 54 & 70
 - All rooms throughout relocatables R1-R15 & R18-R27

YES, Inc. performed the inspection over the course of several months, beginning in December 2022 and concluding in May 2023. The inspection was performed by Ms. Kristy Yowell who is a Cal/OSHA certified asbestos consultant and a CDPH certified lead inspector and risk assessor. Ms. Yowell was assisted by Mr. Allen Evans who is a Cal/OSHA certified Site Surveillance Technician and a CDPH certified lead sampling technician. A copy of their certifications is included in this report.



1201 24th Street, Suite B110-377, Bakersfield, CA 93301 / (661) 527-0820



FREMONT MAGNET ELEMENTARY SCHOOL
607 TEXAS ST.



SITE PLAN



Regulatory Review

The asbestos and lead surveys were performed in compliance with the following regulations:

- EPA NESHAP regulation 40 CFR Part 61 Subpart M
- EPA AHERA regulation 40 CFR Part 76
- Cal/OSHA lead in construction regulation Title 8 CCR 1532.1

The local enforcement office for the EPA NESHAP regulation, also known as San Joaquin Valley Air Pollution Control District (SJVAPCD), requires asbestos inspections of buildings and regulated structures to be performed prior to renovation or demolition activities, regardless of the age of the building or material(s) planned to be disturbed. This survey has met this requirement. Should the building owner opt to proceed with the removal or disturbance of the asbestos-containing materials discussed below (if any), notification to SJVAPCD and a 10-day waiting period may be required. Please contact YES, Inc. consulting firm prior to proceeding with work to determine the applicability of notification requirements.

EPA AHERA regulation determines the sampling protocol in K-12 public and non-profit private schools. The sampling protocols of this regulation were followed. AHERA also requires schools to add this inspection information to their existing Asbestos Management Plan. A copy of this report should be added to the main record in the District Office and a copy should be also retained on-site at the school. Since your District is a member of Self-Insured Schools of California (SISC), they should be notified of this inspection activity in order to update their copy of your school's asbestos management plan. Their office can be reached at (661) 636-4710.

Cal/OSHA requires an inspection of materials suspect to contain asbestos and lead prior to work commencing in order to protect workers who will be working directly with or around asbestos or lead-containing materials. Should the building owner proceed with any disturbance of the materials (in any amount), a copy of this report should be provided to all contractors involved. Note: there are other notifications that may be required in order to comply with this regulation. Please contact YES, Inc. consulting firm before proceeding with work to determine the applicability of such notifications. The lead portion of this survey is being performed in order for the contractor to comply with Title 8 CCR section 1532.1 in order to protect the workers performing disturbance of these materials.



Asbestos Inspection Protocol

Each building, as described above, was inspected and suspect materials were categorized into homogenous areas and sampled accordingly. Samples were collected by misting the material being sampled with water, then drilling, scraping, hammering or chiseling from the substrate. Whenever possible, samples were collected from areas previously damaged or deteriorating. Each sample was placed in its own plastic sample bag, sealed, and labeled with a unique identification number. Sampling tools were individually cleaned before and after each sample was collected to avoid sample cross contamination.

The samples collected were recorded on YES, Inc.'s chain-of-custody form which accompanied them to the laboratory for analysis. The samples were shipped via Federal Express to either EMSL Analytical, Inc. or LA Testing, Inc., who are both NVLAP, ELAP and AIHA accredited laboratory in California. The samples submitted to be analyzed for asbestos content were analyzed using polarized light microscopy (PLM) with dispersion staining.

The complete list of materials tested for asbestos content and their locations, please refer to the attached Inspection Report by Room.

NESHAP – San Joaquin Valley Air Pollution Control District Definitions

Category I non-friable asbestos-containing material (ACM) means asbestos-containing packings, gaskets, resilient floor covering, and asphalt roofing products containing more than 1 percent asbestos.

Category II non-friable ACM means any non-friable material, excluding Category I non-friable ACM, containing more than 1 percent asbestos.

Regulated asbestos-containing material (RACM) means (a) Friable asbestos material, (b) Category I nonfriable ACM that has become friable, (c) Category I nonfriable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading, or (d) Category II nonfriable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations regulated by this subpart.

Asbestos Conflicting Laboratory Results

The EPA has a specific protocol for sampling suspect asbestos building materials. Multiple samples are typically recommended (in some cases required) to increase the statistical reliability of the results and to minimize the potential for field or laboratory error. Sometimes, multiple samples representing a particular material will yield both positive and negative results. When this happens, the negative sample result(s) are superseded by the positive results. Once a single positive sample is identified, the material represented by the sampling is treated as an asbestos-containing material.

However, if additional sampling data, as-built plans, or other reliable data can adequately explain or confirm that area(s) which tested positive are different (not homogenous) from areas tested negative, this information can be used to more accurately quantify ACM and define the scope of an asbestos abatement job.



Lead Inspection Protocol

Paint Analysis by XRF Spectrum Analyzer

The painted and/or coated surfaces were tested for lead content in the field using a Viken Pb200 X-Ray fluorescence (XRF) spectrum analyzer. Materials tested in specific areas are representative of homogeneous materials located in other project areas. Verification of calibration of the XRF was performed prior to, during (if appropriate – required every four hours), and immediately following testing.

If a paint is not listed in the report or has not been bulk sampled to verify a negative result (0.00 mg/cm²), it must be presumed to contain lead, and handled as such until proven lead free.

None of the paints on this campus were bulk sampled and must be presumed to contain lead.

Types of Lead Materials			
Types	Definition	Lead Content Standard	
LBP	Lead-based paint, coating or material	By XRF:	1.0 mg/cm ² or greater
		By Paint Chip:	0.5 wt%; or 5,000 ppm
LCP	Lead-containing paint, coating or material	By XRF:	<1.0 mg/cm ²
		By Paint Chip:	<0.5 wt%; or 5,000 ppm
ND	No lead detected	By XRF:	Requires paint chip confirmation
		By Paint Chip:	<limit of detection

Summary of XRF Findings

Material Description	Locations See XRF table for specific testing information	Lead Type & Result
Interior ceramic wall & baseboard tile – various colors & sizes XRF Line #s: 129	Buildings C, D & E – Restrooms throughout	LBP ≥1.00 mg/cm ²
Exterior paint – light grey wood fascia XRF Line #: 10	Building A – Fascia near east Staff Restrooms	LBP ≥1.00 mg/cm ²
Exterior paint – white porcelain sink XRF Line #: 23	Building A – Staff Lounge	LBP ≥1.00 mg/cm ²
Exterior paint – grey metal vertical window mullion XRF Line #: 39	Buildings C, D & E	LBP ≥1.00 mg/cm ²
Exterior paint – grey wood walls XRF Line #s: 201-202	All exterior wood components on R2-R9 (Classrooms 21-28)	LBP ≥1.00 mg/cm ²
All other painted components on campus – interior and exterior	Throughout the buildings inspected	LCP 0.00-0.99 mg/cm ²

Additional Lead Information

Contractors, whose employees work at this site, are required to assess if their work will be subject to the requirements of the Cal/OSHA lead construction standard (CCR Title 8 § 1532.1). Cal/OSHA standards are designed to regulate and enforce on-the-job worker safety. Employers are required by law to ensure that employees are not exposed to airborne lead levels which exceed the permissible exposure limit (PEL). The standard requires worker exposure monitoring, medical surveillance, training, special work practices, etc.



Each contractor/employer who bids and/or performs work at the site will need to assess potential lead exposure to employees performing their particular scope of work. Contractors who perform work at this site may need to obtain additional data (beyond the data presented in this report) during their assessment and Cal/OSHA compliance planning. Individual contractors/subcontractors should be allowed access to the project to obtain any needed data (samples, consultation, etc.) to complete their employee exposure assessment.

Any work performed at the site where LBP or LCP is likely to be disturbed should be performed by a contractor trained and qualified to perform lead-related construction work. Any work that exceeds Cal/OSHA's permissible exposure limit or is performed to remediate a lead hazard must be conducted by CDPH certified personnel.

FLUORESCENT LIGHT TUBES / PCB BALLASTS / MERCURY THERMOSTATS

During the inspection YES, Inc. observed most every room has mercury vapor fluorescent light tubes, and ballasts that may contain polychlorinated biphenyls (PCBs).

No mercury-containing switches or thermostats were observed.

DISCLAIMERS

The nature of renovation/demolition is such that materials can be uncovered which previously were unknown to exist. Therefore, YES, Inc. cannot be responsible for "hidden materials", although reasonable efforts were made during the inspection to detect all suspect materials. If any materials other than those included in this report and/or its attachments are discovered during renovation/demolition, it must be assumed that the materials are asbestos and/or lead-containing, and the project should then be halted and re-evaluated. This inspection and testing performed by YES, Inc. reflect the environment and structure only at the time and location the investigation was undertaken.

This report has been prepared for the exclusive use of YES, Inc.'s client and is not intended for use by any other party. Any use of this report by a third party shall be at their own risk and shall constitute release and an agreement to defend and indemnify YES, Inc. from any and all liability in connection therewith.

This report does not assess or anticipate future events that may impact or damage asbestos, or lead materials. Future changes in the condition of ACM or LBP may require a new assessment by a certified asbestos consultant and certified lead inspector/risk assessor. This report is not a work plan or project specification.

FURTHER RECOMMENDATIONS

YES, Inc. recommends that the building owner disseminate this report to all prospective contractors bidding work at the subject site to assist them in identifying the materials tested for asbestos and/or lead-containing materials. Project design and oversight by a consultant is recommended to ensure the project is performed safely and legally during the removal and disturbance of asbestos or lead components or materials.



Thank you for using YES, Inc. for your consulting needs. We look forward to working together in the future.

Sincerely,

Kristy Yowell

Kristy Yowell, President,
CA Asbestos Consultant No. 09-4500 / CA Dept. of Public Health I/RA No. LRC-00004640

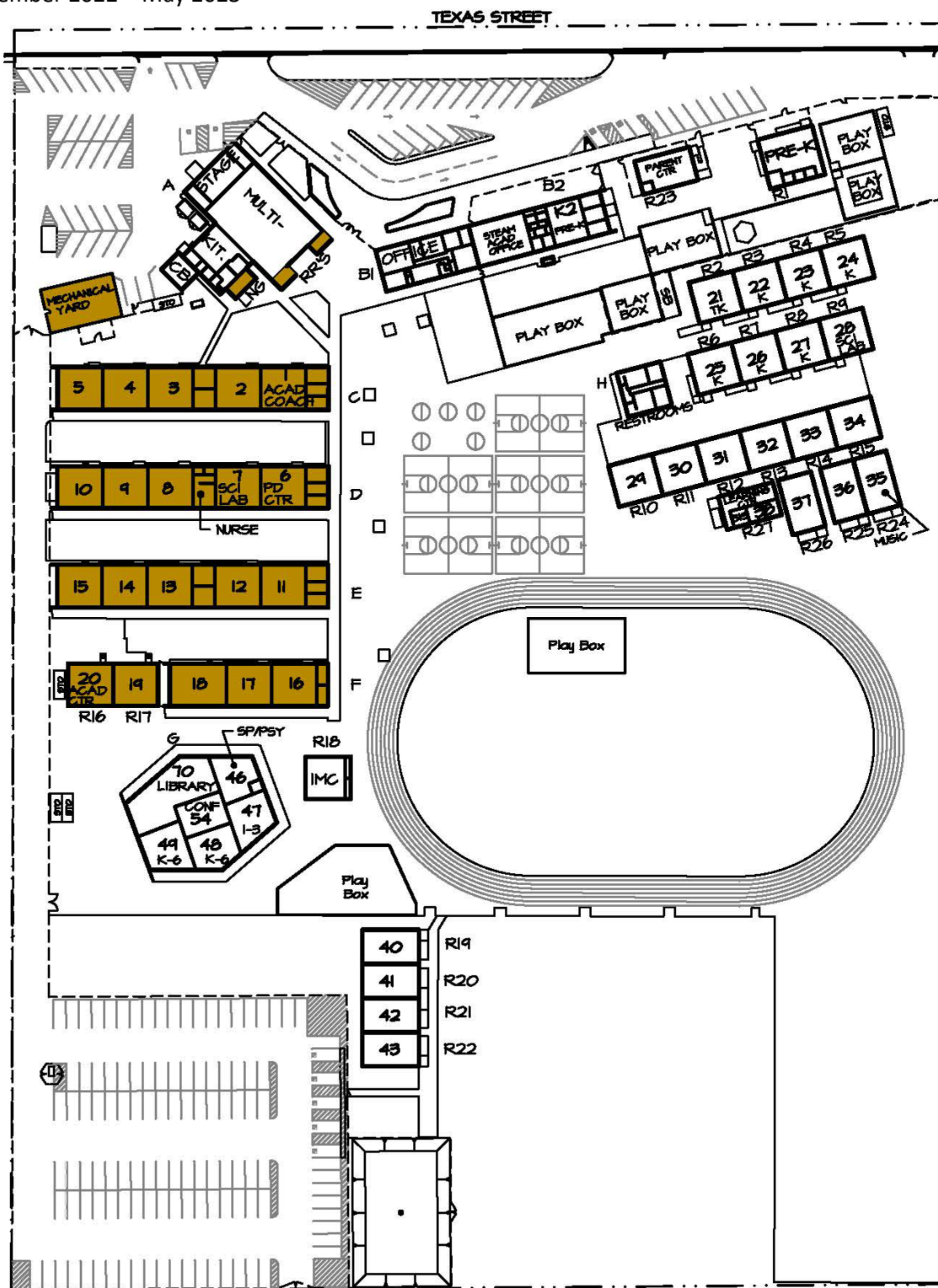
Attachments A – Asbestos Inspection Report by Room & Maps
B – Lead XRF Report, CDPH Form 8552 & Maps
C – Chain of Custodies & Laboratory Reports
D – YES, Inc. Certifications & Laboratory Accreditations



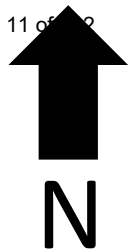
1201 24th Street, Suite B110-377, Bakersfield, CA 93301 / (661) 527-0820

Attachment A – Asbestos Inspection Report by Room & Maps

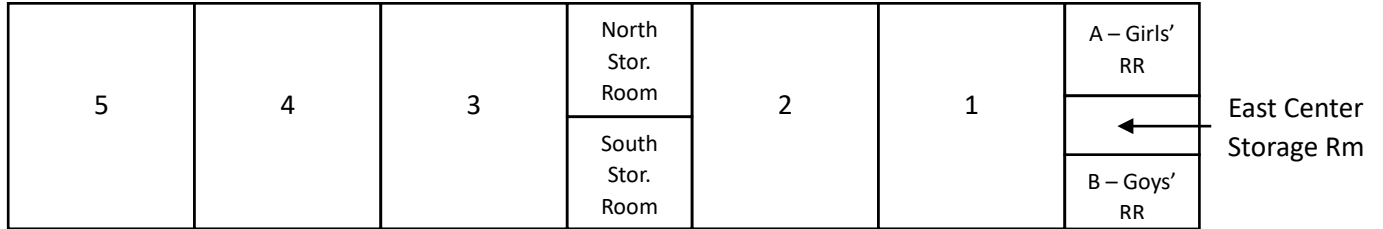
Bakersfield City School District
Fremont ES – 607 Texas Street, Bakersfield, CA 93307
YES, Inc. Project Number 22YES-109
December 2022 – May 2023



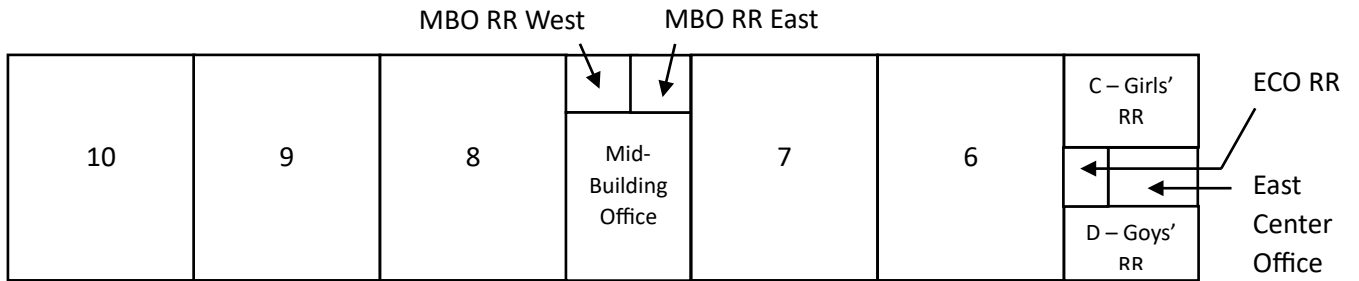
FREMONT MAGNET ELEMENTARY SCHOOL
607 TEXAS ST.



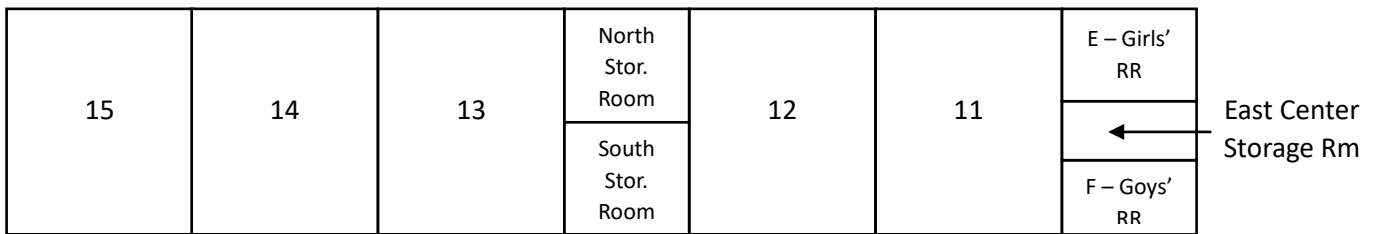
Building C



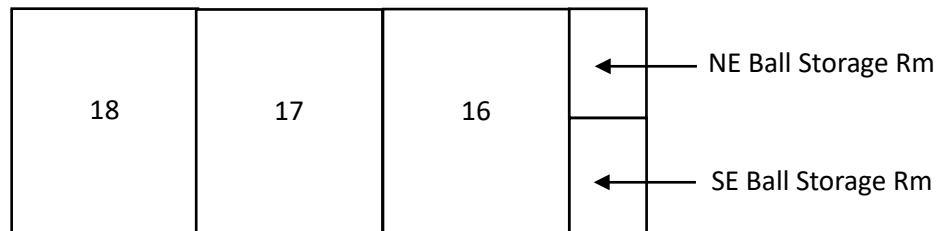
Building D



Building E



Building F





YES Environmental, Inc.

1201 24th Street, Suite B110-377, Bakersfield, CA 93301 / (661) 527-0820

Client: Bakersfield City School District

YES Project No.: 22YES-109

Site: Fremont ES

Date of Inspection: 12/13/2022

Inspection Report

Building: Building A - MPR Building	Room Name: Staff Lounge	Rm Ft²: 210
	Room Dimensions: L=21 W=10 H=10	

Component	HMR #	Sample #	Material Description	Substrate	Asbestos	
					Y/N	Friable Y/N
Floor	7		Carpet & glue - Off-white w/Black/Grey/Blue/Tan specks	ACM tile	N	N/A
Floor	17	17A	Concealed floor tile 7% CH & black mastic = ND - 9" tan	Concrete	Y	N
BB	8	08A	Baseboard & glue 4" lt brown		N	N/A
Wall	37	37B	Plaster - sanded finish		N	N/A
Ceiling	10	10B	Acoustic ceiling tile 12" random hole & brown glue	Drywall	N	N/A
Ceiling	11	11A	Unfinished drywall		N	N/A

Building: Building A - MPR Building	Room Name: SW Staff RR 2	Rm Ft²: 130
Exterior Restrooms - east side of building	Room Dimensions: L=13 W=10 H=8	

Component	HMR #	Sample #	Material Description	Substrate	Asbestos	
					Y/N	Friable Y/N
Floor	12		Ceramic floor tile brown grout (1" lt brown)		N	N/A
Walls	13	13A	Ceramic wall tile white grout (6" brown)	Plaster	N	N/A
Walls	14		Plaster - smooth		N	N/A
Ceiling	14		Plaster - smooth		N	N/A

RED=contains asbestos

BLACK=no asbestos detected or non-suspect



YES Environmental, Inc.

1201 24th Street, Suite B110-377, Bakersfield, CA 93301 / (661) 527-0820

Building:	Building A - MPR Building	Room Name:	NE Staff RR 1	Rm Ft²:	130
	Exterior restrooms - east side of building	Room Dimensions:	L=13 W=10 H=8		

Component	HMR #	Sample #	Material Description	Substrate	Asbestos	
					Y/N	Friable Y/N
Floor	12	12A	Ceramic floor tile brown grout (1" lt brown)		N	N/A
Walls	13	13A	Ceramic wall tile white grout (6" brown)	Plaster	N	N/A
Walls	14		Plaster - smooth		N	N/A
Ceiling	14		Plaster - smooth		N	N/A

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BLACK=no asbestos detected or non-suspect

Building: Building A - MPR Building	Room Name: Exterior
Roof Footprint: L=194 W=45	Building Footprint: L=186 W=30 H=12

Component	HMR #	Sample #	Material Description	Substrate	Asbestos Y/N	Friable Y/N
Ground	-		Concrete - bare & exposed		N/A	N/A
Walls	1	01A-B	Exterior stucco - painted & vapor barrier		N	N/A
Soffit	1		Exterior stucco - painted		N	N/A
Windows	2	2I	Exterior window putty - painted - 2% CH		Y	Y
Roof	38	38A	White coating on foam roofing on rolled composition roofing & felts		N	N/A
Roof	3	03I	White foam over shingles & felts - LIMITED TO THE AREAS ABOVE STAFF LOUNGE & RR		N	N/A
Roof	4	04E	Mastics - black/grey (foamed over) 8-10% CH		Y	N
	NOTE		On components such as, but not limited to, roof jacks, roof patches, pipes, HVAC platforms, etc.			

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YES Environmental, Inc.

1201 24th Street, Suite B110-377, Bakersfield, CA 93301 / (661) 527-0820

Client: Bakersfield City School District

YES Project No.: 22YES-109

Site: Fremont ES

Date of Inspection: 12/13/2022

Inspection Report

Building: Building B (Admin) **Room Name:** Representative of interiors throughout these rooms.

Component	HMR #	Sample #	Material Description	Substrate	Asbestos	
					Y/N	Friable Y/N
Walls	-		Plywood		N/A	N/A
Walls	-		Tackboard - appear to be attached w/screws		N/A	N/A
Ceiling	22		False ceiling panel - 2'x4' gouge pinhole	F/G batts	N	N/A
Ceiling	26		Fiberglass batts foil/paper jacketing	ACTs	N	N/A
Ceiling	10		Acoustic ceiling tile 12" random hole & brown glue	Drywall	N	N/A
Ceiling	11		Unfinished drywall	F/G batts	N	N/A
Ceiling	25		Fiberglass batts paper jacketing	Diagonal sheathing	N	N/A

Inspection limited to ceilings in this building for fire alarm work in accordance with BCSD plans.

RED=contains asbestos

BLACK=no asbestos detected or non-suspect

Building: Building A - MPR Building	Room Name: Exterior
Roof Footprint: L=194 W=45	Building Footprint: L=186 W=30 H=12

Component	HMR #	Sample #	Material Description	Substrate	Asbestos Y/N	Friable Y/N
Ground	-		Concrete - bare & exposed		N/A	N/A
Walls	1		Exterior stucco - painted & vapor barrier		N	N/A
Soffit	1		Exterior stucco - painted		N	N/A
Windows	2	21	Exterior window putty - painted - 2% CH		Y	Y
Roof	3		White foam over shingles & felts		N	N/A
Roof	4		Mastics - black/grey (foamed over) 8-10% CH		Y	N
	NOTE		On components such as, but not limited to, roof jacks, roof patches, pipes, HVAC platforms, etc.			

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YES Environmental, Inc.

1201 24th Street, Suite B110-377, Bakersfield, CA 93301 / (661) 527-0820

Client: Bakersfield City School District

YES Project No.: 22YES-109

Site: Fremont ES

Date of Inspection: 12/13/2022

Inspection Report

Building: Building C - CRs 1-5 east of CR 1	Room Name: A - Girl's Restroom	Rm Ft²: 195
Room Dimensions: L=15 W=13 H=+/- 12		

Component	HMR #	Sample #	Material Description	Substrate	Asbestos	
					Y/N	Friable Y/N
Floor	15		Ceramic floor tile brown grout (1"x2" browns)		N	N/A
Wall	16		Ceramic wall tile white grout (4"x6" cream w/gold specks)	Plaster	N	N/A
	NOTE		AFF 7'			
Wall	14		Plaster - smooth		N	N/A
Ceiling	14		Plaster - smooth		N	N/A

Building: Building C - CRs 1-5 east of CR 1	Room Name: East Center Storage Rm	Rm Ft²: 120
Room Dimensions: L=15 W=8 H=+/- 12		

Component	HMR #	Sample #	Material Description	Substrate	Asbestos	
					Y/N	Friable Y/N
Floor	-		Concrete - bare & exposed		N/A	N/A
BB	-		None		N/A	N/A
Walls	14	14A	Plaster - smooth		N	N/A
Ceiling	14		Plaster - smooth		N	N/A

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YES Environmental, Inc.

1201 24th Street, Suite B110-377, Bakersfield, CA 93301 / (661) 527-0820

Building:	Building C - CRs 1-5 east of CR 1	Room Name:	B - Boy's Restroom	Rm Ft²:	195
		Room Dimensions:	L=15 W=13 H=+/- 12		

Component	HMR #	Sample #	Material Description	Substrate	Asbestos	
					Y/N	Friable Y/N
Floor	15		Ceramic floor tile brown grout (1"x2" browns)		N	N/A
Wall	16		Ceramic wall tile white grout (4"x6" cream w/gold specks)	Plaster	N	N/A
	NOTE		AFF 7'			
Wall	14	14B	Plaster - smooth		N	N/A
Ceiling	14		Plaster - smooth		N	N/A

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1201 24th Street, Suite B110-377, Bakersfield, CA 93301 / (661) 527-0820

Building:	Building C - CRs 1-5	Room Name:	Classroom 1 - Academic Coach	Rm Ft²:	960
		Room Dimensions:	L=32 W=30 H=+/- 12		

Component	HMR #	Sample #	Material Description	Substrate	Asbestos	
					Y/N	Friable Y/N
Floor	18		Carpet squares & corner glue tabs - blue w/ multi colored pattern	Black mastic	N	N/A
	NOTE		Covers about 90% of floor			
Floor	20		Carpet & corner glue tabs - black with white specks	Black mastic	N	N/A
	NOTE		Covers about 10% of floor at entrances			
Floor	21		Black mastic	Concrete	N	N/A
	NOTE		Previously sampled in 2018 22YES-18 #s: 01A-04A			
BB	19	19A	Baseboard & glue 4" black		N	N/A
Walls	-		Plywood		N/A	N/A
Walls	-		Tackboard - appear to be attached w/screws		N/A	N/A
Sink	-		Porcelain		N/A	N/A
Ceiling	22		False ceiling panel - 2'x4' gouge pinhole	F/G batts	N	N/A
Ceiling	26		Fiberglass batts foil/paper jacketing	ACTs	N	N/A
Ceiling	10		Acoustic ceiling tile 12" random hole & brown glue	Drywall	N	N/A
Ceiling	11		Unfinished drywall	F/G batts	N	N/A
Ceiling	25		Fiberglass batts paper jacketing	Diagonal sheathing	N	N/A
Unit						
Ventilator	28		Fiberglass pipe insulation w/paper jacket		N	N/A

RED=contains asbestos

BLACK=no asbestos detected or non-suspect



YES Environmental, Inc.

1201 24th Street, Suite B110-377, Bakersfield, CA 93301 / (661) 527-0820

Building:	Building C - CRs 1-5	Room Name:	Classroom 2	Rm Ft²:	960
		Room Dimensions:	L=32 W=30 H=+/- 12		

Component	HMR #	Sample #	Material Description	Substrate	Asbestos	
					Y/N	Friable Y/N
Floor	18		Carpet squares & corner glue tabs - blue w/ multi colored pattern	Black mastic	N	N/A
	NOTE		Covers about 90% of floor			
Floor	20		Carpet & corner glue tabs - black with white specks	Black mastic	N	N/A
	NOTE		Covers about 10% of floor at entrances			
Floor	21		Black mastic	Concrete	N	N/A
	NOTE		Previously sampled in 2018 22YES-18 #s: 01A-04A			
BB	19		Baseboard & glue 4" black		N	N/A
Walls	-		Plywood		N/A	N/A
Walls	-		Tackboard - appear to be attached w/screws		N/A	N/A
Sink	-		Porcelain		N/A	N/A
Ceiling	22		False ceiling panel - 2'x4' gouge pinhole	F/G batts	N	N/A
Ceiling	26	26A	Fiberglass batts foil/paper jacketing	ACTs	N	N/A
Ceiling	10	10A	Acoustic ceiling tile 12" random hole & brown glue	Drywall	N	N/A
Ceiling	11	11B	Unfinished drywall	F/G batts	N	N/A
Ceiling	25	25A	Fiberglass batts paper jacketing	Diagonal sheathing	N	N/A
Unit						
Ventilator	28	28A	Fiberglass pipe insulation w/paper jacket		N	N/A

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YES Environmental, Inc.

1201 24th Street, Suite B110-377, Bakersfield, CA 93301 / (661) 527-0820

Building: Building C - CRs 1-5 Between Classroom 2 & 3	Room Name: South Stor. Rm	Rm Ft²: 210
	Room Dimensions: L=15 W=14 H=+/- 12	

Component	HMR #	Sample #	Material Description	Substrate	Asbestos	
					Y/N	Friable Y/N
Floor	-		Concrete - painted		N/A	N/A
BB	27		Baseboard & glue 4" grey		N	N/A
Walls	14		Plaster - smooth		N	N/A
Ceiling	14		Plaster - smooth		N	N/A
NOTE			ATTIC ACCESS			

Building: Building C - CRs 1-5 Between Classroom 2 & 3	Room Name: North Stor. Rm	Rm Ft²: 210
	Room Dimensions: L=15 W=14 H=+/- 12	

Component	HMR #	Sample #	Material Description	Substrate	Asbestos	
					Y/N	Friable Y/N
Floor	-		Concrete - painted		N/A	N/A
BB	27	27A	Baseboard & glue 4" grey		N	N/A
Walls	14		Plaster - smooth		N	N/A
Ceiling	14		Plaster - smooth		N	N/A

RED=contains asbestos

BLACK=no asbestos detected or non-suspect



YES Environmental, Inc.

1201 24th Street, Suite B110-377, Bakersfield, CA 93301 / (661) 527-0820

Building:	Building C - CRs 1-5	Room Name:	Classroom 3	Rm Ft²:	960
		Room Dimensions:	L=32 W=30 H=+/- 12		

Component	HMR #	Sample #	Material Description	Substrate	Asbestos	
					Y/N	Friable Y/N
Floor	18	18B	Carpet squares & corner glue tabs - blue w/ multi colored pattern	Black mastic	N	N/A
	NOTE		Covers about 90% of floor			
Floor	20		Carpet & corner glue tabs - black with white specks	Black mastic	N	N/A
	NOTE		Covers about 10% of floor at entrances			
Floor	21		Black mastic	Concrete	N	N/A
	NOTE		Previously sampled in 2018 22YES-18 #s: 01A-04A			
BB	19		Baseboard & glue 4" black		N	N/A
Walls	-		Plywood		N/A	N/A
Walls	-		Tackboard - appear to be attached w/screws		N/A	N/A
Sink	-		Porcelain		N/A	N/A
Ceiling	22	22B	False ceiling panel - 2'x4' gouge pinhole	F/G batts	N	N/A
Ceiling	26	26B	Fiberglass batts foil/paper jacketing	ACTs	N	N/A
Ceiling	10		Acoustic ceiling tile 12" random hole & brown glue	Drywall	N	N/A
Ceiling	11		Unfinished drywall	F/G batts	N	N/A
Ceiling	25		Fiberglass batts paper jacketing	Diagonal sheathing	N	N/A
Unit						
Ventilator	28		Fiberglass pipe insulation w/paper jacket		N	N/A

RED=contains asbestos

BLACK=no asbestos detected or non-suspect



YES Environmental, Inc.

1201 24th Street, Suite B110-377, Bakersfield, CA 93301 / (661) 527-0820

Building:	Building C - CRs 1-5	Room Name:	Classroom 4	Rm Ft²:	960
		Room Dimensions:	L=32 W=30 H=+/- 12		

Component	HMR #	Sample #	Material Description	Substrate	Asbestos	
					Y/N	Friable Y/N
Floor	18	18A	Carpet squares & corner glue tabs - blue w/ multi colored pattern	Black mastic	N	N/A
	NOTE		Covers about 90% of floor			
Floor	20		Carpet & corner glue tabs - black with white specks	Black mastic	N	N/A
	NOTE		Covers about 10% of floor at entrances			
Floor	21		Black mastic	Concrete	N	N/A
	NOTE		Previously sampled in 2018 22YES-18 #s: 01A-04A			
BB	19	19B	Baseboard & glue 4" black		N	N/A
Walls	-		Plywood		N/A	N/A
Walls	-		Tackboard - appear to be attached w/screws		N/A	N/A
Sink	-		Porcelain		N/A	N/A
Ceiling	22	22A	False ceiling panel - 2'x4' gouge pinhole	F/G batts	N	N/A
Ceiling	26		Fiberglass batts foil/paper jacketing	ACTs	N	N/A
Ceiling	10		Acoustic ceiling tile 12" random hole & brown glue	Drywall	N	N/A
Ceiling	11		Unfinished drywall	F/G batts	N	N/A
Ceiling	25		Fiberglass batts paper jacketing	Diagonal sheathing	N	N/A

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BLACK=no asbestos detected or non-suspect



YES Environmental, Inc.

1201 24th Street, Suite B110-377, Bakersfield, CA 93301 / (661) 527-0820

Building:	Building C - CRs 1-5	Room Name:	Classroom 5	Rm Ft²:	960
		Room Dimensions:	L=32 W=30 H=+/- 12		

Component	HMR #	Sample #	Material Description	Substrate	Asbestos	
					Y/N	Friable Y/N
Floor	18		Carpet squares & corner glue tabs - blue w/ multi colored pattern	Black mastic	N	N/A
	NOTE		Covers about 90% of floor			
Floor	20	20A	Carpet & corner glue tabs - black with white specks	Black mastic	N	N/A
	NOTE		Covers about 10% of floor at entrances			
Floor	21		Black mastic	Concrete	N	N/A
	NOTE		Previously sampled in 2018 22YES-18 #s: 01A-04A			
BB	19		Baseboard & glue 4" black		N	N/A
Walls	-		Plywood		N/A	N/A
Walls	-		Tackboard - appear to be attached w/screws		N/A	N/A
Sink	-		Porcelain		N/A	N/A
Ceiling	22		False ceiling panel - 2'x4' gouge pinhole	F/G batts	N	N/A
Ceiling	26		Fiberglass batts foil/paper jacketing	ACTs	N	N/A
Ceiling	10	10C	Acoustic ceiling tile 12" random hole & brown glue	Drywall	N	N/A
Ceiling	11	11C	Unfinished drywall	F/G batts	N	N/A
Ceiling	25		Fiberglass batts paper jacketing	Diagonal sheathing	N	N/A
Unit						
Ventilator	28	28B	Fiberglass pipe insulation w/paper jacket		N	N/A

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Building: Building C - CRs 1-5	Room Name: Exterior
Roof Footprint: L=194 W=45	Building Footprint: L=186 W=30 H=12

Component	HMR #	Sample #	Material Description	Substrate	Asbestos Y/N	Friable Y/N
Ground	-		Concrete - bare & exposed		N/A	N/A
Walls	1	01D	Exterior stucco - painted & vapor barrier		N	N/A
Soffit	1	01C	Exterior stucco - painted		N	N/A
Windows	2	02A-B	Exterior window putty - painted - 2% CH		Y	Y
Roof	3	03A-B	White foam over shingles & felts		N	N/A
Roof	4	04A	Mastics - black/grey (foamed over) 8-10% CH		Y	N
	NOTE		On componenets such as, but not limited to, roof jacks, roof patches, pipes, HVAC platforms, etc.			

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YES Environmental, Inc.

1201 24th Street, Suite B110-377, Bakersfield, CA 93301 / (661) 527-0820

Client: Bakersfield City School District

YES Project No.: 22YES-109

Site: Fremont ES

Date of Inspection: 12/13/2022

Inspection Report

Building:	Building D - CRs 6-10 east of CR 6	Room Name:	C - Girl's Restroom	Rm Ft²:	195
		Room Dimensions:	L=15 W=13 H=+/- 12		

Component	HMR #	Sample #	Material Description	Substrate	Asbestos	
					Y/N	Friable Y/N
Floor	29	29A	Ceramic floor tile brown grout (1" grey)		N	N/A
Wall	31	31A	Ceramic wall tile white grout (6" Blue)	Plaster	N	N/A
	NOTE		AFF 7'			
Wall	14		Plaster - smooth		N	N/A
Ceiling	14		Plaster - smooth		N	N/A

Building:	Building D - CRs 6-10 east of CR 1	Room Name:	East Center Office	Rm Ft²:	96
		Room Dimensions:	L=12 W=8 H=8		

Component	HMR #	Sample #	Material Description	Substrate	Asbestos	
					Y/N	Friable Y/N
Floor	18		Carpet squares & corner glue tabs - blue w/ multi colored pattern	Concrete	N	N/A
Floor	20		Carpet & corner glue tabs - black with white specks	Concrete	N	N/A
BB	19		Baseboard & glue 4" black		N	N/A
Walls	14		Plaster - smooth		N	N/A
Ceiling	14		Plaster - smooth		N	N/A

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YES Environmental, Inc.

1201 24th Street, Suite B110-377, Bakersfield, CA 93301 / (661) 527-0820

Building: Building D - CRs 6-10 east of CR 1	Room Name: East Center Office Restroom	Rm Ft²: 32
Room Dimensions: L=8 W=4 H=8		

Component	HMR #	Sample #	Material Description	Substrate	Asbestos	
					Y/N	Friable Y/N
Floor	15		Ceramic floor tile brown grout (1"x2" browns)		N	N/A
BB	16		Ceramic wall tile white grout (4"x6" cream w/gold specks)		N	N/A
Walls	14		Plaster - smooth		N	N/A
Ceiling	14		Plaster - smooth		N	N/A

Building: Building D - CRs 6-10 east of CR 1	Room Name: D - Boy's Restroom	Rm Ft²: 195
Room Dimensions: L=15 W=13 H=+/- 12		

Component	HMR #	Sample #	Material Description	Substrate	Asbestos	
					Y/N	Friable Y/N
Floor	29		Ceramic floor tile brown grout (1" grey)		N	N/A
Wall	30	30A	Ceramic wall tile white grout (6" Brown)	Plaster	N	N/A
	NOTE		AFF 7'			
Wall	14		Plaster - smooth		N	N/A
Ceiling	14		Plaster - smooth		N	N/A

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YES Environmental, Inc.

1201 24th Street, Suite B110-377, Bakersfield, CA 93301 / (661) 527-0820

Building:	Building D - CRs 6-10	Room Name:	Classroom 6	Rm Ft²:	960
		Room Dimensions:	L=32 W=30 H=+/- 12		

Component	HMR #	Sample #	Material Description	Substrate	Asbestos	
					Y/N	Friable Y/N
Floor	32	32A	Carpet squares & corner glue tabs - brown/green/yellow/orange s	Black mastic	N	N/A
	NOTE		Covers about 90% of floor			
Floor	20		Carpet & corner glue tabs - black with white specks	Black mastic	N	N/A
	NOTE		Covers about 10% of floor at entrances			
Floor	21		Black mastic	Concrete	N	N/A
	NOTE		Previously sampled in 2018 22YES-18 #s: 01A-04A			
BB	33	33A	Baseboard & glue 4" silver		N	N/A
Walls	-		Plywood		N/A	N/A
Walls	-		Tackboard - appear to be attached w/screws		N/A	N/A
Sink	-		Stainless steel sink - no coating		N/A	N/A
Ceiling	34	34A	False ceiling panel - 2'x4' gouge pinhole (look like 2'x2')	F/G batts	N	N/A
Ceiling	26	26C	Fiberglass batts foil/paper jacketing	ACTs	N	N/A
Ceiling	10		Acoustic ceiling tile 12" random hole & brown glue	Drywall	N	N/A
Ceiling	11	11D	Unfinished drywall	F/G batts	N	N/A
Ceiling	25	25B	Fiberglass batts paper jacketing	Diagonal sheathing	N	N/A
Unit						
Ventilator	28		Fiberglass pipe insulation w/paper jacket		N	N/A

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YES Environmental, Inc.

1201 24th Street, Suite B110-377, Bakersfield, CA 93301 / (661) 527-0820

Building:	Building D - CRs 6-10	Room Name:	Classroom 7	Rm Ft²:	960
		Room Dimensions:	L=32 W=30 H=+/- 12		

Component	HMR #	Sample #	Material Description	Substrate	Asbestos	
					Y/N	Friable Y/N
Floor	20		Carpet & corner glue tabs - black with white specks	Black mastic	N	N/A
	NOTE		Covers about 5% of floor at entrances			
Floor	18		Carpet squares & corner glue tabs - blue w/ multi colored pattern	Black mastic	N	N/A
	NOTE		Covers about 45% of room			
Floor	35	35A	Vinyl plank flooring & glue - blue/yellow/orange	Black mastic	N	N/A
	NOTE		Covers about 50% of room			
Floor	21		Black mastic	Concrete	N	N/A
	NOTE		Previously sampled in 2018 22YES-18 #s: 01A-04A			
BB	19		Baseboard & glue 4" black		N	N/A
Walls	-		Plywood		N/A	N/A
Walls	-		Tackboards appeared to be attached with screws		N/A	N/A
Sinks	-		Stainless steel sink - no coating		N/A	N/A
Ceiling	34		False ceiling panel - 2'x4' gouge pinhole (look like 2'x2')	F/G batts	N	N/A
	NOTE		Covers about 70% of room			
Ceiling	22		False ceiling panel - 2'x4' gouge pinhole	F/G batts	N	N/A
	NOTE		Covers about 30% of room			
Ceiling	10		Acoustic ceiling tile 12" random hole & brown glue	Drywall	N	N/A
Ceiling	11		Unfinished drywall	F/G batts	N	N/A
Ceiling	25		Fiberglass batts paper jacketing	Diagonal sheathing	N	N/A
Unit						
Ventilator	28		Fiberglass pipe insulation w/paper jacket		N	N/A

RED=contains asbestos

BLACK=no asbestos detected or non-suspect



YES Environmental, Inc.

1201 24th Street, Suite B110-377, Bakersfield, CA 93301 / (661) 527-0820

Building:	Building D - CRs 6-10	Room Name:	Mid-Bldg Office	Rm Ft²:	375
		Room Dimensions:	L=25 W=15 H=+/- 12		

Component	HMR #	Sample #	Material Description	Substrate	Asbestos	
					Y/N	Friable Y/N
Floor	18		Carpet squares & corner glue tabs - blue w/ multi colored pattern	Black mastic	N	N/A
	NOTE		Covers about 85% of floor			
Floor	36	36A	Sheet flooring & glue - cream mosaic	Black mastic	N	N/A
	NOTE		Covers about 15% of floor			
Floor	21		Black mastic	Concrete	N	N/A
	NOTE		Previously sampled in 2018 22YES-18 #s: 01A-04A			
BB	19		Baseboard & glue 4" black		N	N/A
Walls	37	37A	Plaster - sanded finish		N	N/A
Ceiling	10		Acoustic ceiling tile 12" random hole & brown glue	Drywall	N	N/A
Ceiling	11		Unfinished drywall	F/G batts	N	N/A
Ceiling	25		Fiberglass batts paper jacketing	Diagonal sheathing	N	N/A

Building:	Building D - CRs 6-10	Room Name:	Mid-Bldg Office RR West	Rm Ft²:	40
		Room Dimensions:	L=5 W=8 H=+/- 12		

Component	HMR #	Sample #	Material Description	Substrate	Asbestos	
					Y/N	Friable Y/N
Floor	15	15A	Ceramic floor tile brown grout (1"x2" browns)		N	N/A
BB	16	16A	Ceramic wall tile white grout (4"x6" cream w/gold specks)		N	N/A
Walls	14		Plaster - smooth		N	N/A
Ceiling	14		Plaster - smooth		N	N/A

RED=contains asbestos

BLACK=no asbestos detected or non-suspect



YES Environmental, Inc.

1201 24th Street, Suite B110-377, Bakersfield, CA 93301 / (661) 527-0820

Building:	Building D - CRs 6-10	Room Name:	Mid-Bldg Office RR East	Rm Ft²:	15
		Room Dimensions:	L=5 W=3 H=+/- 12		

Component	HMR #	Sample #	Material Description	Substrate	Asbestos	
					Y/N	Friable Y/N
Floor	36		Sheet flooring & glue - cream mosaic		N	N/A
BB - Coved	36		Sheet flooring & glue - cream mosaic		N	N/A
Walls	37		Plaster - sanded finish			
Walls	-		Plywood		N/A	N/A
	NOTE		West & south walls			
Ceiling	10		Acoustic ceiling tile 12" random hole & brown glue	Drywall	N	N/A
Ceiling	11		Unfinished drywall	F/G batts	N	N/A
Ceiling	25		Fiberglass batts paper jacketing	Diagonal sheathing	N	N/A

RED=contains asbestos

BLACK=no asbestos detected or non-suspect



YES Environmental, Inc.

1201 24th Street, Suite B110-377, Bakersfield, CA 93301 / (661) 527-0820

Building:	Building D - CRs 6-10	Room Name:	Classroom 8	Rm Ft²:	960
		Room Dimensions:	L=32 W=30 H=+/- 12		

Component	HMR #	Sample #	Material Description	Substrate	Asbestos	
					Y/N	Friable Y/N
Floor	18		Carpet squares & corner glue tabs - blue w/ multi colored pattern	Black mastic	N	N/A
	NOTE		Covers about 90% of floor			
Floor	20		Carpet & corner glue tabs - black with white specks	Black mastic	N	N/A
	NOTE		Covers about 10% of floor at entrances			
Floor	21		Black mastic	Concrete	N	N/A
	NOTE		Previously sampled in 2018 22YES-18 #s: 01A-04A			
BB	19	19C	Baseboard & glue 4" black		N	N/A
Walls	-		Plywood		N/A	N/A
Walls	-		Tackboard - appear to be attached w/screws		N/A	N/A
Sink	-		Porcelain		N/A	N/A
Ceiling	22	22C	False ceiling panel - 2'x4' gouge pinhole	F/G batts	N	N/A
Ceiling	26		Fiberglass batts foil/paper jacketing	ACTs	N	N/A
Ceiling	10		Acoustic ceiling tile 12" random hole & brown glue	Drywall	N	N/A
Ceiling	11		Unfinished drywall	F/G batts	N	N/A
Ceiling	25		Fiberglass batts paper jacketing	Diagonal sheathing	N	N/A
Unit						
Ventilator	28	28C	Fiberglass pipe insulation w/paper jacket		N	N/A

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BLACK=no asbestos detected or non-suspect



YES Environmental, Inc.

1201 24th Street, Suite B110-377, Bakersfield, CA 93301 / (661) 527-0820

Building:	Building D - CRs 6-10	Room Name:	Classroom 9	Rm Ft²:	960
		Room Dimensions:	L=32 W=30 H=+/- 12		

Component	HMR #	Sample #	Material Description	Substrate	Asbestos	
					Y/N	Friable Y/N
Floor	18	18C	Carpet squares & corner glue tabs - blue w/ multi colored pattern	Black mastic	N	N/A
	NOTE		Covers about 90% of floor			
Floor	20		Carpet & corner glue tabs - black with white specks	Black mastic	N	N/A
	NOTE		Covers about 10% of floor at entrances			
Floor	21		Black mastic	Concrete	N	N/A
	NOTE		Previously sampled in 2018 22YES-18 #s: 01A-04A			
BB	19		Baseboard & glue 4" black		N	N/A
Walls	-		Plywood		N/A	N/A
Walls	-		Tackboard - appear to be attached w/screws		N/A	N/A
Sink	-		Porcelain		N/A	N/A
Ceiling	22		False ceiling panel - 2'x4' gouge pinhole	F/G batts	N	N/A
Ceiling	26		Fiberglass batts foil/paper jacketing	ACTs	N	N/A
Ceiling	10	10D	Acoustic ceiling tile 12" random hole & brown glue	Drywall	N	N/A
Ceiling	11	11E	Unfinished drywall	F/G batts	N	N/A
Ceiling	25	25C	Fiberglass batts paper jacketing	Diagonal sheathing	N	N/A
Unit						
Ventilator	28		Fiberglass pipe insulation w/paper jacket		N	N/A

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YES Environmental, Inc.

1201 24th Street, Suite B110-377, Bakersfield, CA 93301 / (661) 527-0820

Building:	Building D - CRs 6-10	Room Name:	Classroom 10	Rm Ft²:	960
		Room Dimensions:	L=32 W=30 H=+/- 12		

Component	HMR #	Sample #	Material Description	Substrate	Asbestos	
					Y/N	Friable Y/N
Floor	18		Carpet squares & corner glue tabs - blue w/ multi colored pattern	Black mastic	N	N/A
	NOTE		Covers about 90% of floor			
Floor	20		Carpet & corner glue tabs - black with white specks	Black mastic	N	N/A
	NOTE		Covers about 10% of floor at entrances			
Floor	21		Black mastic	Concrete	N	N/A
	NOTE		Previously sampled in 2018 22YES-18 #s: 01A-04A			
BB	19		Baseboard & glue 4" black		N	N/A
Walls	-		Plywood		N/A	N/A
Walls	-		Tackboard - appear to be attached w/screws		N/A	N/A
Sink	-		Porcelain		N/A	N/A
Ceiling	22		False ceiling panel - 2'x4' gouge pinhole	F/G batts	N	N/A
Ceiling	26		Fiberglass batts foil/paper jacketing	ACTs	N	N/A
Ceiling	10		Acoustic ceiling tile 12" random hole & brown glue	Drywall	N	N/A
Ceiling	11		Unfinished drywall	F/G batts	N	N/A
Ceiling	25		Fiberglass batts paper jacketing	Diagonal sheathing	N	N/A
Unit						
Ventilator	28		Fiberglass pipe insulation w/paper jacket		N	N/A

RED=contains asbestos

BLACK=no asbestos detected or non-suspect

Building: Building D - CRs 6-10	Room Name: Exterior
Roof Footprint: L=194 W=45	Building Footprint: L=186 W=30 H=12

Component	HMR #	Sample #	Material Description	Substrate	Asbestos Y/N	Friable Y/N
Ground	-		Concrete - bare & exposed		N/A	N/A
Walls	1	01F & 01H	Exterior stucco - painted & vapor barrier		N	N/A
Soffit	1	01G	Exterior stucco - painted		N	N/A
Windows	2	02C-D	Exterior window putty - painted - 2% CH		Y	Y
Roof	3	03C-E	White foam over shingles & felts		N	N/A
Roof	4	04B	Mastics - black/grey (foamed over) 8-10% CH		Y	N
	NOTE		On components such as, but not limited to, roof jacks, roof patches, pipes, HVAC platforms, etc.			

RED=contains asbestos

BLACK=no asbestos detected or non-suspect



YES Environmental, Inc.

1201 24th Street, Suite B110-377, Bakersfield, CA 93301 / (661) 527-0820

Client: Bakersfield City School District

YES Project No.: 22YES-109

Site: Fremont ES

Date of Inspection: 12/13/2022

Inspection Report

Building: Building E - CRs 11-15 east of CR 11	Room Name: E - Girl's Restroom	Rm Ft²: 195
Room Dimensions: L=15 W=13 H=+/- 12		

Component	HMR #	Sample #	Material Description	Substrate	Asbestos	
					Y/N	Friable Y/N
Floor	29		Ceramic floor tile brown grout (1" grey)		N	N/A
Wall	31	31B	Ceramic wall tile white grout (6" Blue)	Plaster	N	N/A
	NOTE		AFF 7'			
Wall	14		Plaster - smooth		N	N/A
Ceiling	14		Plaster - smooth		N	N/A

Building: Building E - CRs 11-15 east of CR 11	Room Name: East Center Storage Rm	Rm Ft²: 120
Room Dimensions: L=15 W=8 H=8		

Component	HMR #	Sample #	Material Description	Substrate	Asbestos	
					Y/N	Friable Y/N
Floor	-		Concrete - bare & exposed	Concrete	N/A	N/A
BB			None		N/A	N/A
Walls	14	14B	Plaster - smooth		N	N/A
Ceiling	14		Plaster - smooth		N	N/A

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BLACK=no asbestos detected or non-suspect



YES Environmental, Inc.

1201 24th Street, Suite B110-377, Bakersfield, CA 93301 / (661) 527-0820

Building:	Building E - CRs 11-15 east of CR 11	Room Name:	F - Boy's Restroom	Rm Ft²:	195
		Room Dimensions:	L=15 W=13 H=+/- 12		

Component	HMR #	Sample #	Material Description	Substrate	Asbestos	
					Y/N	Friable Y/N
Floor	29	29B	Ceramic floor tile brown grout (1" grey)		N	N/A
Wall	30	30B	Ceramic wall tile white grout (6" Brown)	Plaster	N	N/A
	NOTE		AFF 7'			
Wall	14		Plaster - smooth		N	N/A
Ceiling	14		Plaster - smooth		N	N/A

RED=contains asbestos

BLACK=no asbestos detected or non-suspect



YES Environmental, Inc.

1201 24th Street, Suite B110-377, Bakersfield, CA 93301 / (661) 527-0820

Building:	Building E - CRs 11-15	Room Name:	Classroom 11	Rm Ft²:	960
		Room Dimensions:	L=32 W=30 H=+/- 12		

Component	HMR #	Sample #	Material Description	Substrate	Asbestos	
					Y/N	Friable Y/N
Floor	45	45A	Carpet & glue - black with white specks NOTE Covers about 10% of floor at entrances	Black mastic	N	N/A
Floor	44	44A	Carpet squares & glue - blue w/ multi colored pattern NOTE Covers about 90% of room	Black mastic	N	N/A
Floor	21		Black mastic NOTE Previously sampled in 2018 22YES-18 #s: 01A-04A	Concrete	N	N/A
BB	19	19D	Baseboard & glue 4" black		N	N/A
Walls	-		Plywood		N/A	N/A
Walls	-		Tackboard - appear to be attached w/screws		N/A	N/A
Sink	-		Porcelain		N/A	N/A
Ceiling	22		False ceiling panel - 2'x4' gouge pinhole	F/G batts	N	N/A
Ceiling	26		Fiberglass batts foil/paper jacketing	ACTs	N	N/A
Ceiling	10		Acoustic ceiling tile 12" random hole & brown glue	Drywall	N	N/A
Ceiling	11		Unfinished drywall	F/G batts	N	N/A
Ceiling	25		Fiberglass batts paper jacketing	Diagonal sheathing	N	N/A
Unit						
Ventilator	28	28D	Fiberglass pipe insulation w/paper jacket		N	N/A

RED=contains asbestos

BLACK=no asbestos detected or non-suspect



YES Environmental, Inc.

1201 24th Street, Suite B110-377, Bakersfield, CA 93301 / (661) 527-0820

Building:	Building E - CRs 11-15	Room Name:	Classroom 12	Rm Ft²:	960
		Room Dimensions:	L=32 W=30 H=+/- 12		

Component	HMR #	Sample #	Material Description	Substrate	Asbestos	
					Y/N	Friable Y/N
Floor	45		Carpet & glue - black with white specks	Black mastic	N	N/A
	NOTE		Covers about 10% of floor at entrances			
Floor	44		Carpet squares & glue - blue w/ multi colored pattern	Black mastic	N	N/A
	NOTE		Covers about 90% of room			
Floor	21		Black mastic	Concrete	N	N/A
	NOTE		Previously sampled in 2018 22YES-18 #s: 01A-04A			
BB	19		Baseboard & glue 4" black		N/A	N/A
Walls	-		Plywood		N/A	N/A
Walls	-		Tackboards appeared to be attached with screws		N/A	N/A
Sinks	-		Stainless steel sink - no coating		N/A	N/A
Ceiling	22	22D	False ceiling panel - 2'x4' gouge pinhole	F/G batts	N	N/A
Ceiling	26	26D	Fiberglass batts foil/paper jacketing		N	N/A
Ceiling	10	10F	Acoustic ceiling tile 12" random hole & brown glue	Drywall	N	N/A
Ceiling	11	11F	Unfinished drywall	F/G batts	N	N/A
Ceiling	25	25D	Fiberglass batts paper jacketing	Diagonal sheathing	N	N/A
Unit						
Ventilator	28		Fiberglass pipe insulation w/paper jacket		N	N/A

RED=contains asbestos

BLACK=no asbestos detected or non-suspect



YES Environmental, Inc.

1201 24th Street, Suite B110-377, Bakersfield, CA 93301 / (661) 527-0820

Building: Building E - CRs 11-15 Between 12 & 13	Room Name: South Storage Room	Rm Ft²: 225
Room Dimensions: L=15 W=15 H=+/- 12		

Component	HMR #	Sample #	Material Description	Substrate	Asbestos	
					Y/N	Friable Y/N
Floor	45		Carpet & glue - black with white specks	Black mastic	N	N/A
	NOTE		Covers about 10% of floor at entrances			
Floor	44		Carpet squares & glue - blue w/ multi colored pattern	Black mastic	N	N/A
	NOTE		Covers about 90% of room			
Floor	21		Black mastic	Concrete	N	N/A
	NOTE		Previously sampled in 2018 22YES-18 #s: 01A-04A			
BB	19		Baseboard & glue 4" black		N	N/A
Walls	14		Plaster - smooth		N	N/A
Ceiling	14		Plaster - smooth	F/G batts	N	N/A
Ceiling	25		Fiberglass batts paper jacketing	Diagonal sheathing	N	N/A
NOTE			ATTIC ACCESS			

RED=contains asbestos

BLACK=no asbestos detected or non-suspect



YES Environmental, Inc.

1201 24th Street, Suite B110-377, Bakersfield, CA 93301 / (661) 527-0820

Building: Building E - CRs 11-15 Between 12 & 13	Room Name: North Storage Room	Rm Ft²: 225
Room Dimensions: L=15 W=15 H=+/- 12		

Component	HMR #	Sample #	Material Description	Substrate	Asbestos	
					Y/N	Friable Y/N
Floor	45		Carpet & glue - black with white specks	Black mastic	N	N/A
	NOTE		Covers about 10% of floor at entrances			
Floor	44		Carpet squares & glue - blue w/ multi colored pattern	Black mastic	N	N/A
	NOTE		Covers about 90% of room			
Floor	21		Black mastic	Concrete	N	N/A
	NOTE		Previously sampled in 2018 22YES-18 #s: 01A-04A			
BB	19		Baseboard & glue 4" black		N	N/A
Walls	14		Plaster - smooth		N	N/A
Ceiling	14		Plaster - smooth	F/G batts	N	N/A
Ceiling	25		Fiberglass batts paper jacketing	Diagonal sheathing	N	N/A

RED=contains asbestos

BLACK=no asbestos detected or non-suspect



YES Environmental, Inc.

1201 24th Street, Suite B110-377, Bakersfield, CA 93301 / (661) 527-0820

Building:	Building E - CRs 11-15	Room Name:	Classroom 13	Rm Ft²:	960
		Room Dimensions:	L=32 W=30 H=+/- 12		

Component	HMR #	Sample #	Material Description	Substrate	Asbestos	
					Y/N	Friable Y/N
Floor	45	45B	Carpet & glue - black with white specks NOTE Covers about 10% of floor at entrances	Black mastic	N	N/A
Floor	44	44B	Carpet squares & glue - blue w/ multi colored pattern NOTE Covers about 90% of room	Black mastic	N	N/A
Floor	21		Black mastic NOTE Previously sampled in 2018 22YES-18 #s: 01A-04A	Concrete	N	N/A
BB	19	19E	Baseboard & glue 4" black		N	N/A
Walls	-		Plywood		N/A	N/A
Walls	-		Tackboards appeared to be attached with screws		N/A	N/A
Sinks	-		Stainless steel sink - no coating		N/A	N/A
Ceiling	22		False ceiling panel - 2'x4' gouge pinhole	F/G batts	N	N/A
Ceiling	26		Fiberglass batts foil/paper jacketing		N	N/A
Ceiling	10		Acoustic ceiling tile 12" random hole & brown glue	Drywall	N	N/A
Ceiling	11		Unfinished drywall	F/G batts	N	N/A
Ceiling	25		Fiberglass batts paper jacketing	Diagonal sheathing	N	N/A
Unit						
Ventilator	28		Fiberglass pipe insulation w/paper jacket		N	N/A

RED=contains asbestos

BLACK=no asbestos detected or non-suspect



YES Environmental, Inc.

1201 24th Street, Suite B110-377, Bakersfield, CA 93301 / (661) 527-0820

Building:	Building E - CRs 11-15	Room Name:	Classroom 14	Rm Ft²:	960
		Room Dimensions:	L=32 W=30 H=+/- 12		

Component	HMR #	Sample #	Material Description	Substrate	Asbestos	
					Y/N	Friable Y/N
Floor	45		Carpet & glue - black with white specks	Black mastic	N	N/A
	NOTE		Covers about 10% of floor at entrances			
Floor	44		Carpet squares & glue - blue w/ multi colored pattern	Black mastic	N	N/A
	NOTE		Covers about 90% of room			
Floor	21		Black mastic	Concrete	N	N/A
	NOTE		Previously sampled in 2018 22YES-18 #s: 01A-04A			
BB	19		Baseboard & glue 4" black		N	N/A
Walls	-		Plywood		N/A	N/A
Walls	-		Tackboards appeared to be attached with screws		N/A	N/A
Sinks	-		Stainless steel sink - no coating		N/A	N/A
Ceiling	22	22E	False ceiling panel - 2'x4' gouge pinhole	F/G batts	N	N/A
Ceiling	26	26E	Fiberglass batts foil/paper jacketing		N	N/A
Ceiling	10	10E	Acoustic ceiling tile 12" random hole & brown glue	Drywall	N	N/A
Ceiling	11	11G	Unfinished drywall	F/G batts	N	N/A
Ceiling	25	25E	Fiberglass batts paper jacketing	Diagonal sheathing	N	N/A
Unit						
Ventilator	28		Fiberglass pipe insulation w/paper jacket		N	N/A

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BLACK=no asbestos detected or non-suspect



YES Environmental, Inc.

1201 24th Street, Suite B110-377, Bakersfield, CA 93301 / (661) 527-0820

Building:	Building E - CRs 11-15	Room Name:	Classroom 15	Rm Ft²:	960
		Room Dimensions:	L=32 W=30 H=+/- 12		

Component	HMR #	Sample #	Material Description	Substrate	Asbestos	
					Y/N	Friable Y/N
Floor	45		Carpet & glue - black with white specks	Black mastic	N	N/A
	NOTE		Covers about 10% of floor at entrances			
Floor	44		Carpet squares & glue - blue w/ multi colored pattern	Black mastic	N	N/A
	NOTE		Covers about 90% of room			
Floor	21		Black mastic	Concrete	N	N/A
	NOTE		Previously sampled in 2018 22YES-18 #s: 01A-04A			
BB	19		Baseboard & glue 4" black		N	N/A
Walls	-		Plywood		N/A	N/A
Walls	-		Tackboards appeared to be attached with screws		N/A	N/A
Sinks	-		Stainless steel sink - no coating		N/A	N/A
Ceiling	22		False ceiling panel - 2'x4' gouge pinhole	F/G batts	N	N/A
Ceiling	26		Fiberglass batts foil/paper jacketing		N	N/A
Ceiling	10		Acoustic ceiling tile 12" random hole & brown glue	Drywall	N	N/A
Ceiling	11		Unfinished drywall	F/G batts	N	N/A
Ceiling	25		Fiberglass batts paper jacketing	Diagonal sheathing	N	N/A
Unit						
Ventilator	28	28E	Fiberglass pipe insulation w/paper jacket		N	N/A

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Building: Building E - CRs 11-15	Room Name: Exterior
Roof Footprint: L=194 W=45	Building Footprint: L=186 W=30 H=12

Component	HMR #	Sample #	Material Description	Substrate	Asbestos Y/N	Friable Y/N
Ground	-		Concrete - bare & exposed		N/A	N/A
Walls	1	01J-K	Exterior stucco - painted & vapor barrier		N	N/A
Soffit	1	01I	Exterior stucco - painted		N	N/A
Windows	2	02E-F	Exterior window putty - painted - 2% CH		Y	Y
Roof	3	03F	White foam over shingles & felts		N	N/A
Roof	4	04C	Mastics - black/grey (foamed over) 8-10% CH		Y	N
	NOTE		On components such as, but not limited to, roof jacks, roof patches, pipes, HVAC platforms, etc.			

RED=contains asbestos

BLACK=no asbestos detected or non-suspect



YES Environmental, Inc.

1201 24th Street, Suite B110-377, Bakersfield, CA 93301 / (661) 527-0820

Client: Bakersfield City School District

YES Project No.: 22YES-109

Site: Fremont ES

Date of Inspection: 12/13/2022

Inspection Report

Building: Building F - CRs 16-18 east of CR 16	Room Name: NE Ball Storage Rm	Rm Ft²: 90
	Room Dimensions: L=15 W=6 H=+/- 12	

Component	HMR #	Sample #	Material Description	Substrate	Asbestos	
					Y/N	Friable Y/N
Floor	-		Concrete - bare & exposed		N/A	N/A
BB	-		Wood	Plaster	N/A	N/A
Wall	14		Plaster - smooth		N	N/A
Ceiling	14		Plaster - smooth		N	N/A

Building: Building F - CRs 16-18 east of CR 16	Room Name: SE Ball Storage Rm	Rm Ft²: 90
	Room Dimensions: L=15 W=6 H=+/- 12	

Component	HMR #	Sample #	Material Description	Substrate	Asbestos	
					Y/N	Friable Y/N
Floor	-		Concrete - bare & exposed		N/A	N/A
BB	-		Wood	Plaster	N/A	N/A
Wall	14		Plaster - smooth		N	N/A
Ceiling	14		Plaster - smooth		N	N/A

RED=contains asbestos

BLACK=no asbestos detected or non-suspect



YES Environmental, Inc.

1201 24th Street, Suite B110-377, Bakersfield, CA 93301 / (661) 527-0820

Building:	Building F - CRs 16-18	Room Name:	Classroom 16	Rm Ft²:	960
		Room Dimensions:	L=32 W=30 H=+/- 12		

Component	HMR #	Sample #	Material Description	Substrate	Asbestos	
					Y/N	Friable Y/N
Floor	45	45C	Carpet & glue - black with white specks NOTE Covers about 10% of floor at entrances	Black mastic	N	N/A
Floor	44		Carpet squares & glue - blue w/ multi colored pattern NOTE Covers about 90% of room	Black mastic	N	N/A
Floor	21		Black mastic NOTE Previously sampled in 2018 22YES-18 #s: 01A-04A	Concrete	N	N/A
BB	19		Baseboard & glue 4" black		N	N/A
Walls	-		Plywood		N/A	N/A
Walls	-		Tackboard - appear to be attached w/screws		N/A	N/A
Sink	-		Porcelain		N/A	N/A
Ceiling	22		False ceiling panel - 2'x4' gouge pinhole	F/G batts	N	N/A
Ceiling	26		Fiberglass batts foil/paper jacketing	ACTs	N	N/A
Ceiling	10	10G	Acoustic ceiling tile 12" random hole & brown glue	Drywall	N	N/A
Ceiling	11	11H	Unfinished drywall	F/G batts	N	N/A
Ceiling	25	25F	Fiberglass batts paper jacketing	Diagonal sheathing	N	N/A
Unit						
Ventilator	28		Fiberglass pipe insulation w/paper jacket		N	N/A

RED=contains asbestos

BLACK=no asbestos detected or non-suspect



YES Environmental, Inc.

1201 24th Street, Suite B110-377, Bakersfield, CA 93301 / (661) 527-0820

Building:	Building F - CRs 16-18	Room Name:	Classroom 17	Rm Ft²:	960
		Room Dimensions:	L=32 W=30 H=+/- 12		

Component	HMR #	Sample #	Material Description	Substrate	Asbestos	
					Y/N	Friable Y/N
Floor	45		Carpet & glue - black with white specks	Black mastic	N	N/A
	NOTE		Covers about 10% of floor at entrances			
Floor	44	44C	Carpet squares & glue - blue w/ multi colored pattern	Black mastic	N	N/A
	NOTE		Covers about 90% of room			
Floor	21		Black mastic	Concrete	N	N/A
	NOTE		Previously sampled in 2018 22YES-18 #s: 01A-04A			
BB	19	19F	Baseboard & glue 4" black		N	N/A
Walls	-		Plywood		N/A	N/A
Walls	-		Tackboard - appear to be attached w/screws		N/A	N/A
Sink	-		Porcelain		N/A	N/A
Ceiling	22		False ceiling panel - 2'x4' gouge pinhole	F/G batts	N	N/A
Ceiling	26		Fiberglass batts foil/paper jacketing	ACTs	N	N/A
Ceiling	10		Acoustic ceiling tile 12" random hole & brown glue	Drywall	N	N/A
Ceiling	11		Unfinished drywall	F/G batts	N	N/A
Ceiling	25		Fiberglass batts paper jacketing	Diagonal sheathing	N	N/A
Unit						
Ventilator	28	28F	Fiberglass pipe insulation w/paper jacket		N	N/A

RED=contains asbestos

BLACK=no asbestos detected or non-suspect



YES Environmental, Inc.

1201 24th Street, Suite B110-377, Bakersfield, CA 93301 / (661) 527-0820

Building:	Building F - CRs 16-18	Room Name:	Classroom 18	Rm Ft²:	960
		Room Dimensions:	L=32 W=30 H=+/- 12		

Component	HMR #	Sample #	Material Description	Substrate	Asbestos	
					Y/N	Friable Y/N
Floor	45		Carpet & glue - black with white specks	Black mastic	N	N/A
	NOTE		Covers about 10% of floor at entrances			
Floor	44		Carpet squares & glue - blue w/ multi colored pattern	Black mastic	N	N/A
	NOTE		Covers about 90% of room			
Floor	21		Black mastic	Concrete	N	N/A
	NOTE		Previously sampled in 2018 22YES-18 #s: 01A-04A			
BB	19		Baseboard & glue 4" black		N	N/A
Walls	-		Plywood		N/A	N/A
Walls	-		Tackboard - appear to be attached w/screws		N/A	N/A
Sink	-		Porcelain		N/A	N/A
Ceiling	22	22F	False ceiling panel - 2'x4' gouge pinhole	F/G batts	N	N/A
Ceiling	26	26F	Fiberglass batts foil/paper jacketing	ACTs	N	N/A
Ceiling	10	10H	Acoustic ceiling tile 12" random hole & brown glue	Drywall	N	N/A
Ceiling	11	11I	Unfinished drywall	F/G batts	N	N/A
Ceiling	25	25G	Fiberglass batts paper jacketing	Diagonal sheathing	N	N/A
Unit						
Ventilator	28		Fiberglass pipe insulation w/paper jacket		N	N/A

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BLACK=no asbestos detected or non-suspect

Building: Building F - CRs 16-18	Room Name: Exterior
Roof Footprint: L=118 W=45	Building Footprint: L=110 W=30 H=12

Component	HMR #	Sample #	Material Description	Substrate	Asbestos Y/N	Friable Y/N
Ground	-		Concrete - bare & exposed		N/A	N/A
Walls	1	01M-N	Exterior stucco - painted & vapor barrier		N	N/A
Soffit	1	01L	Exterior stucco - painted		N	N/A
Windows	2	02G-H	Exterior window putty - painted - 2% CH		Y	Y
Roof	3	03G-H	White foam over shingles & felts		N	N/A
Roof	4	04D	Mastics - black/grey (foamed over) 8-10% CH		Y	N
	NOTE		On components such as, but not limited to, roof jacks, roof patches, pipes, HVAC platforms, etc.			

RED=contains asbestos

BLACK=no asbestos detected or non-suspect



YES Environmental, Inc.

1201 24th Street, Suite B110-377, Bakersfield, CA 93301 / (661) 527-0820

Client: Bakersfield City School District

YES Project No.: 22YES-109

Site: Fremont ES

Date of Inspection: 12/13/2022

Inspection Report

Building: Building G (46-54 & 70)

Room Name: Representative of interiors throughout these rooms.

Component	HMR #	Sample #	Material Description	Substrate	Asbestos	
					Y/N	Friable Y/N
Walls	59	59A	Unfinished drywall (no t&j)		N	N/A
	NOTE		Tackboards glued to drywall in all rooms is below ceiling. No glue above.			
Ceiling	60	60A	Lay-in panels 2'x4' XL Fissure PH		N	N/A
Ceiling	61	61A	Lay-in panels 2'x4' Gouge PH		N	N/A

RED=contains asbestos

BLACK=no asbestos detected or non-suspect



YES Environmental, Inc.

1201 24th Street, Suite B110-377, Bakersfield, CA 93301 / (661) 527-0820

Client: Bakersfield City School District

YES Project No.: 22YES-109

Site: Fremont ES

Date of Inspection: 12/13/2022

Inspection Report

Building: Portable Building R1 (Pre-K) **Room Name:** Representative of interiors throughout these rooms.

Component	HMR #	Sample #	Material Description	Substrate	Asbestos	
					Y/N	Friable Y/N
Walls	55	55A	Unfinished drywall with tackboard glue		N	N/A
Ceiling	56	56A	Lay-in panels 2'x4' Fissure PH		N	N/A

Inspection limited to ceilings in this building for fire alarm work in accordance with BCSD plans.

Building: Portable Building R1 (Pre-K) **Room Name:** Representative of exteriors throughout these rooms.

Component	HMR #	Sample #	Material Description	Substrate	Asbestos	
					Y/N	Friable Y/N
Walls	-		Wood		N/A	N/A

Exterior inspection was limited to the upper walls in accordance with BCSD plans for fire alarm system upgrade.

RED=contains asbestos

BLACK=no asbestos detected or non-suspect



YES Environmental, Inc.

1201 24th Street, Suite B110-377, Bakersfield, CA 93301 / (661) 527-0820

Client: Bakersfield City School District

YES Project No.: 22YES-109

Site: Fremont ES

Date of Inspection: 12/13/2022

Inspection Report

Building: Portable Buildings R2-R9 (CRs 21-28)	Room Name: Representative of interiors throughout these rooms.
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Component	HMR #	Sample #	Material Description	Substrate	Asbestos	
					Y/N	Friable Y/N
Walls	-		Wood		N/A	N/A
Ceiling	54	54A	Acoustic ceiling tile - 12" uniform holes		N	N/A

Inspection limited to ceilings in this building for fire alarm work in accordance with BCSD plans.

Building: Portable Buildings R2-R9 (CRs 21-28)	Room Name: Representative of exteriors throughout these rooms.
---	---

Component	HMR #	Sample #	Material Description	Substrate	Asbestos	
					Y/N	Friable Y/N
Walls	-		Wood		N/A	N/A

Exterior inspection was limited to the upper walls in accordance with BCSD plans for fire alarm system upgrade.

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BLACK=no asbestos detected or non-suspect



YES Environmental, Inc.

1201 24th Street, Suite B110-377, Bakersfield, CA 93301 / (661) 527-0820

Client: Bakersfield City School District

YES Project No.: 22YES-109

Site: Fremont ES

Date of Inspection: 12/13/2022

Inspection Report

Building: Portable Buildings R10-15 (CRs 29-34) **Room Name:** Representative of interiors throughout these rooms.

Component	HMR #	Sample #	Material Description	Substrate	Asbestos	
					Y/N	Friable Y/N
Walls	52	52A	Unfinished drywall with tackboard glue		N	N/A
Ceiling	53	53A	Lay-in panels 2'x4' Gouge PH		N	N/A

Inspection limited to ceilings in this building for fire alarm work in accordance with BCSD plans.

Building: Portable Buildings R10-15 (CRs 29-34) **Room Name:** Representative of exteriors throughout these rooms.

Component	HMR #	Sample #	Material Description	Substrate	Asbestos	
					Y/N	Friable Y/N
Walls	-		Wood		N/A	N/A

Exterior inspection was limited to the upper walls in accordance with BCSD plans for fire alarm system upgrade.

RED=contains asbestos

BLACK=no asbestos detected or non-suspect



YES Environmental, Inc.

1201 24th Street, Suite B110-377, Bakersfield, CA 93301 / (661) 527-0820

Client: Bakersfield City School District

YES Project No.: 22YES-109

Site: Fremont ES

Date of Inspection: 12/13/2022

Inspection Report

Building:	Building R16 & R17	Room Name:	Classroom 19	Rm Ft²:	1024
		Room Dimensions:	L=32 W=32 H=12		

Component	HMR #	Sample #	Material Description	Substrate	Asbestos	
					Y/N	Friable Y/N
Floor	45		Carpet & glue - black with white specks	Wood	N	N/A
	NOTE		Covers about 10% of floor at entrances			
Floor	44		Carpet squares & glue - blue w/ multi colored pattern	Wood	N	N/A
	NOTE		Covers about 90% of room			
NOTE			Floor substrate was drilled and no concealed flooring was found.			
BB	19		Baseboard & glue 4" black		N	N/A
Walls	-		Plywood		N/A	N/A
Walls	-		Tackboard - appear to be attached w/screws		N/A	N/A
Sink	-		Porcelain		N/A	N/A
Ceiling	46		Acoustic ceiling tile 12" random hole	Wood slat & F/G	N	N/A
Ceiling	47		Fiberglass insulation with black paper backing	Diagonal sheathing	N	N/A
Ceiling	25		Fiberglass batts paper jacketing	Diagonal sheathing	N	N/A
Unit						
Ventilator	28		Fiberglass pipe insulation w/paper jacket		N	N/A

RED=contains asbestos

BLACK=no asbestos detected or non-suspect



YES Environmental, Inc.

1201 24th Street, Suite B110-377, Bakersfield, CA 93301 / (661) 527-0820

Building:	Building R16 & R17	Room Name:	Classroom 20	Rm Ft²:	1024
		Room Dimensions:	L=32 W=32 H=12		

Component	HMR #	Sample #	Material Description	Substrate	Asbestos	
					Y/N	Friable Y/N
Floor	45		Carpet & glue - black with white specks	ACM mastic	N	N/A
	NOTE		2% CH Asbestos-containing mastic left from 2020 abatement.			
Floor	44		Carpet squares & glue - blue w/ multi colored pattern	ACM Mastic	N	N/A
	NOTE		2% CH Asbestos-containing mastic left from 2020 abatement.			
Floor	66		Black flooring mastic - 2% CH	Wood	Y	N
BB	19		Baseboard & glue 4" black		N	N/A
Walls	-		Plywood		N/A	N/A
Walls	-		Tackboard - appear to be attached w/screws		N/A	N/A
Sink	-		Porcelain		N/A	N/A
Ceiling	46	46A	Acoustic ceiling tile 12" random hole	Wood slat & F/G	N	N/A
Ceiling	47	47A	Fiberglass insulation with black paper backing	Diagonal sheathing	N	N/A
Unit						
Ventilator	28		Fiberglass pipe insulation w/paper jacket		N	N/A

RED=contains asbestos

BLACK=no asbestos detected or non-suspect

Building:	Portable Building R16 & 17 - CRs 19-20	Room Name:	Exterior
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Component	HMR #	Sample #	Material Description	Substrate	Asbestos	Friable
					Y/N	Y/N
Ground	-		Concrete - bare & exposed		N/A	N/A
Walls	5	05A-B	Exterior paints - lt grey/blue & dk grey		N	N/A
Eaves	5		Exterior paints - lt grey/blue & dk grey		N	N/A
Windows	6	06A-B	Exterior window putty - painted		N	N/A
Roof	23	23A-B	White coating on foam roofing on shingled roofing & felts		N	N/A
Roof	24	24A-B	Mastics - black/grey (foamed over) 10% CH		Y	N
	NOTE		On components such as, but not limited to, roof jacks, roof patches, pipes, HVAC platforms, etc.			

RED=contains asbestos

BLACK=no asbestos detected or non-suspect



YES Environmental, Inc.

1201 24th Street, Suite B110-377, Bakersfield, CA 93301 / (661) 527-0820

Client: Bakersfield City School District

YES Project No.: 22YES-109

Site: Fremont ES

Date of Inspection: 12/13/2022

Inspection Report

Building: Building R18 (IMC)

Room Name: Representative of interiors throughout these rooms.

Component	HMR #	Sample #	Material Description	Substrate	Asbestos	
					Y/N	Friable Y/N
Walls	62	62A	Drywall, tape, joint compound, orange-peel texture & paint		N	N/A
Ceiling	63	63A	Lay-in panels 2'x4' Fissure PH		N	N/A

Inspection limited to ceilings in this building for fire alarm work in accordance with BCSD plans.

RED=contains asbestos

BLACK=no asbestos detected or non-suspect



YES Environmental, Inc.

1201 24th Street, Suite B110-377, Bakersfield, CA 93301 / (661) 527-0820

Client: Bakersfield City School District

YES Project No.: 22YES-109

Site: Fremont ES

Date of Inspection: 12/13/2022

Inspection Report

Building: Portable Buildings R19-R22 (CRs 40-43) **Room Name:** Representative of interiors throughout these rooms.

Component	HMR #	Sample #	Material Description	Substrate	Asbestos	
					Y/N	Friable Y/N
Walls	64	64A	Unfinished drywall with tackboard glue		N	N/A
Ceiling	65	65A	Lay-in panels 2'x4' Fiberglass Orange-Peel Pattern		N	N/A

Inspection limited to ceilings in this building for fire alarm work in accordance with BCSD plans.

Building: Portable Buildings R19-R22 (CRs 40-43) **Room Name:** Representative of exteriors throughout these rooms.

Component	HMR #	Sample #	Material Description	Substrate	Asbestos	
					Y/N	Friable Y/N
Walls	-		Wood		N/A	N/A

Exterior inspection was limited to the upper walls in accordance with BCSD plans for fire alarm system upgrade.

RED=contains asbestos

BLACK=no asbestos detected or non-suspect



YES Environmental, Inc.

1201 24th Street, Suite B110-377, Bakersfield, CA 93301 / (661) 527-0820

Client: Bakersfield City School District

YES Project No.: 22YES-109

Site: Fremont ES

Date of Inspection: 12/13/2022

Inspection Report

Building: Portable Building R23 (parent center) **Room Name:** Representative of interiors throughout these rooms.

Component	HMR #	Sample #	Material Description	Substrate	Asbestos	
					Y/N	Friable Y/N
Walls	57	57A	Unfinished drywall with tackboard glue		N	N/A
Ceiling	58	58A	Lay-in panels 2'x4' Fissure PH		N	N/A

Inspection limited to ceilings in this building for fire alarm work in accordance with BCSD plans.

Building: Portable Building R23 (parent center) **Room Name:** Representative of exteriors throughout these rooms.

Component	HMR #	Sample #	Material Description	Substrate	Asbestos	
					Y/N	Friable Y/N
Walls	-		Wood		N/A	N/A

Exterior inspection was limited to the upper walls in accordance with BCSD plans for fire alarm system upgrade.

RED=contains asbestos

BLACK=no asbestos detected or non-suspect



YES Environmental, Inc.

1201 24th Street, Suite B110-377, Bakersfield, CA 93301 / (661) 527-0820

Client: Bakersfield City School District

YES Project No.: 22YES-109

Site: Fremont ES

Date of Inspection: 12/13/2022

Inspection Report

Building: Portable Buildings R24-R26 (CRs 35-37) **Room Name:** Representative of interiors throughout these rooms.

Component	HMR #	Sample #	Material Description	Substrate	Asbestos	
					Y/N	Friable Y/N
Walls	48	48A	Unfinished drywall with tackboard glue		No	N/A
Ceiling	49	49A	Lay-in panels 2'x4' Fissure PH		No	N/A

Inspection limited to ceilings in this building for fire alarm work in accordance with BCSD plans.

Building: Portable Buildings R24-R26 (CRs 35-37) **Room Name:** Representative of exteriors throughout these rooms.

Component	HMR #	Sample #	Material Description	Substrate	Asbestos	
					Y/N	Friable Y/N
Walls	-		Wood		N/A	N/A

Exterior inspection was limited to the upper walls in accordance with BCSD plans for fire alarm system upgrade.

RED=contains asbestos

BLACK=no asbestos detected or non-suspect



YES Environmental, Inc.

1201 24th Street, Suite B110-377, Bakersfield, CA 93301 / (661) 527-0820

Client: Bakersfield City School District

YES Project No.: 22YES-109

Site: Fremont ES

Date of Inspection: 12/13/2022

Inspection Report

Building: Portable Building R27 (CR 38)	Room Name: Representative of interiors throughout these rooms.
--	---

Component	HMR #	Sample #	Material Description	Substrate	Asbestos	
					Y/N	Friable Y/N
Walls	50	50A	Unfinished drywall with tackboard glue		N	N/A
Ceiling	51	51A	Lay-in panels 2'x4' Fissure PH		N	N/A

Inspection limited to ceilings in this building for fire alarm work in accordance with BCSD plans.

Building: Portable Building R27 (CR 38)	Room Name: Representative of exteriors throughout these rooms.
--	---

Component	HMR #	Sample #	Material Description	Substrate	Asbestos	
					Y/N	Friable Y/N
Walls	-		Wood		N/A	N/A

Exterior inspection was limited to the upper walls in accordance with BCSD plans for fire alarm system upgrade.

RED=contains asbestos

BLACK=no asbestos detected or non-suspect

Building: Chiller Yard**Room Name:** Chiller Yard

Component	HMR #	Sample #	Material Description	Substrate	Asbestos	Friable
					Y/N	Y/N
Ground	-		Concrete pads		N/A	N/A
Ground	-		Gravel		N/A	N/A
Walls	-		CMU		N/A	N/A
Pipes	39 NOTE	39A-B	Concealed chalkly pipe insulation - cream metal jacketed throughout		N	N/A
Pipes	40 NOTE	40A-B	Fiberglass pipe straight insulation - foil/paper jacketed metal jacketed throughout		N	N/A
Control						
Switch	41	41A	Black mastic		N	N/A
Pipes	42	42A	Exterior silver paint		N	N/A
Wood Walls	43	43A	Exterior white paint		N	N/A

RED=contains asbestos

BLACK=no asbestos detected or non-suspect



Attachment B – Lead XRF Inspection, CDPH 8552 & Maps



YES Environmental, Inc.

1201 24th Street, Suite B110-377, Bakersfield, CA 93301 / (661) 527-0820

CLIENT DEFINED SURVEY FOR LEAD BASED PAINT

Client: Bakersfield City School District

Site: Fremont ES

YES, Inc. Project Number:

NITON Serial #: 105041 Model #: XLp 300A

NO.	SAMPLE LOCATION	COMPONENT	SUBSTRATE	COLOR	CONDITION	XRF RESULT MG/CM ²	
BUILDING A - EXTERIOR							
1.	SOUTHEAST AT STAFF 1 RR	WALL	STUCCO	YELLOW	FAIR	0.04	LCP
2.	SOUTHEAST AT STAFF 1 RR	DOOR FRAME	WOOD	GREY	FAIR	0.60	LCP
3.	SOUTHWEST AT STAFF 2 RR	DOOR	WOOD	GREY	FAIR	0.00	LCP
4.	SOUTHWEST AT STAFF 2 RR	WINDOW INFILL	WOOD	LT GREY	FAIR	0.50	LCP
5.	SOUTHWEST AT LOUNGE – EAST WALL	DOOR TRIM	WOOD	GREY	FAIR	0.24	LCP
6.	SOUTHWEST AT LOUNGE – EAST WALL	DOOR	WOOD	GREY	FAIR	0.40	LCP
7.	SOUTHWEST AT LOUNGE – EAST WALL	WALL	STUCCO	CREAM	FAIR	0.10	LCP
8.	SOUTHWEST AT LOUNGE – EAST WALL	CABINET FRAME	WOOD	CREAM	FAIR	0.03	LCP
9.	SOUTHEAST AT LOUNGE	WINDOW TRIM	WOOD	GREY	FAIR	0.70	LCP
10.	SOUTHWEST AT STAFF 2 RR	INTERIOR FASCIA	WOOD	LT GREY	FAIR	1.60	LBP
11.	SOUTHWEST AT STAFF 2 RR	SOFFIT	WOOD	LT GREY	FAIR	0.40	LCP



YES Environmental, Inc.

1201 24th Street, Suite B110-377, Bakersfield, CA 93301 / (661) 527-0820

NO.	SAMPLE LOCATION	COMPONENT	SUBSTRATE	COLOR	CONDITION	XRF RESULT MG/CM ²	
BUILDING A – EXTERIOR CONTINUED							
12.	SOUTHWEST AT STAFF 2 RR	SOFFIT	STUCCO	LT GREY	FAIR	0.00	LCP
13.	SOUTHEAST AT STAFF LOUNGE	FASCIA	WOOD	GREY	FAIR	0.60	LCP
14.	SOUTHEAST AT STAFF LOUNGE	DRIP EDGE	METAL	GREY	FAIR	0.01	LCP
BUILDING A – INTERIOR							
15.	STAFF LOUNGE - SOUTHEAST	DOOR	WOOD	VARNISH	FAIR	0.00	LCP
16.	STAFF LOUNGE - SOUTHEAST	DOOR FRAME	WOOD	CREAM	POOR	0.00	LCP
17.	STAFF LOUNGE - SOUTHEAST	DOOR TRIM	WOOD	CREAM	POOR	0.04	LCP
18.	STAFF LOUNGE - SOUTHEAST	SCREEN DOOR	WOOD	VARNISH	POOR	0.00	LCP
19.	STAFF LOUNGE - SOUTHEAST	CABINET	WOOD	BLUE	FAIR	0.00	LCP
20.	STAFF LOUNGE - SOUTH, MIDDLE	VERTICAL COLUMN	WOOD	CREAM	FAIR	0.20	LCP
21.	STAFF LOUNGE - SOUTH, MIDDLE	WINDOW SILL	WOOD	CREAM	FAIR	0.10	LCP
22.	STAFF LOUNGE - SOUTH, WEST SIDE	WALL	PLASTER	CREAM	FAIR	0.03	LCP
23.	STAFF LOUNGE - WEST, SOUTH SIDE	SINK	PORCELAIN	WHITE	INTACT	9.20	LBP
24.	STAFF LOUNGE - CENTER	CEILING	12" ACT PRESSED BOARD	WHITE	FAIR	0.00	LCP



YES Environmental, Inc.

1201 24th Street, Suite B110-377, Bakersfield, CA 93301 / (661) 527-0820

NO.	SAMPLE LOCATION	COMPONENT	SUBSTRATE	COLOR	CONDITION	XRF RESULT MG/CM ²		
Date	12.14.22	Start Time	3:45 PM	Beginning Calibration	1.04 = 0.80	1.04 = 0.80	1.04 = 0.90	Lead-Containing Paint (LCP) or Lead-Based Paint (LBP)
Date	12.14.22	End Time	9:00 PM	Ending Calibration	1.04 = 0.90	1.04 = 1.00	1.04 = 0.90	
BUILDING A – INTERIOR CONTINUED								
25.	STAFF 1 RR - NORTH WALL	WALL	CERAMIC TILE	BLUE	INTACT	0.00	LCP	
26.	STAFF 1 RR - NORTH WALL	SINK	PORCELAIN	WHITE	INTACT	0.01	LCP	
27.	STAFF 1 RR - WEST SIDE, NORTH	DOOR FRAME	WOOD	GREY	FAIR	0.28	LCP	
28.	STAFF 1 RR - WEST SIDE, NORTH	DOOR	WOOD	GREY	FAIR	0.00	LCP	
29.	STAFF 1 RR - SOUTH AREA, MIDDLE	FLOOR	CERAMIC TILE	CREAM, BLUE FLAKE	INTACT	0.00	LCP	
30.	STAFF 1 RR - NORTH AREA, MIDDLE	CEILING	PLASTER	CREAM	INTACT	0.02	LCP	
31.	STAFF 2 RR - SOUTH AREA, EAST	WALL	CERAMIC TILE	TAN	INTACT	0.00	LCP	
32.	STAFF 2 RR - NORTH AREA, MIDDLE	SINK	PORCELAIN	WHITE	INTACT	0.00	LCP	
33.	STAFF 2 RR - EAST AREA, MIDDLE	FLOOR	CERAMIC TILE	BEIGE	INTACT	0.00	LCP	
34.	STAFF 2 RR - SOUTH AREA, EAST	CEILING	PLASTER	CREAM	INTACT	0.10	LCP	
BUILDING C – EXTERIOR								
35.	NORTH SIDE AT CR 1	DOOR FRAME	WOOD	GREY	FAIR	0.60	LCP	
36.	NORTH SIDE AT CR 1	DOOR	WOOD	GREY	FAIR	0.00	LCP	
37.	NORTH SIDE AT CR 3	HVAC LOUVERS	METAL	LT GREY	FAIR	0.00	LCP	



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NO.	SAMPLE LOCATION	COMPONENT	SUBSTRATE	COLOR	CONDITION	XRF RESULT MG/CM ²	
BUILDING C – EXTERIOR CONTINUED							
38.	NORTH SIDE AT CR 5	WINDOW FRAME	METAL	GREY	FAIR	0.30	LCP
39.	NORTH SIDE AT CR 5	VERTICAL MULLION	METAL	GREY	FAIR	2.80	LBP
40.	EAST SIDE, MIDDLE	WALL	STUCCO	YELLOW	FAIR	0.07	LCP
41.	EAST SIDE, MIDDLE	VENT FRAME	WOOD	GREY	INTACT	0.01	LCP
42.	SOUTH SIDE, EAST END	WALL	STUCCO	LT GREY	FAIR	0.04	LCP
43.	SOUTH SIDE, WEST END	CABINET DOOR	WOOD	LT GREY	POOR	0.14	LCP
44.	SOUTH SIDE, MIDDLE	FASCIA	WOOD	GREY	FAIR	0.28	LCP
45.	SOUTH SIDE, MIDDLE	DRIP EDGE	METAL	GREY	POOR	0.00	LCP
46.	SOUTH SIDE, MIDDLE	SOFFIT	STUCCO	LT GREY	FAIR	0.00	LCP
47.	SOUTH SIDE, MIDDLE	FASCIA NAILER	WOOD	LT GREY	FAIR	0.20	LCP
48.	WEST SIDE, MIDDLE	ROOF DECK	WOOD	LT GREY	FAIR	0.03	LCP
49.	WEST SIDE, MIDDLE	ROOF FRAMING	WOOD	LT GREY	FAIR	0.00	LCP
BUILDING C – INTERIOR							
50.	CR 1 - WEST SIDE, MIDDLE	CABINET FRAME	WOOD	BLUE	FAIR	0.18	LCP



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NO.	SAMPLE LOCATION	COMPONENT	SUBSTRATE	COLOR	CONDITION	XRF RESULT MG/CM ²	
BUILDING C – INTERIOR CONTINUED							
51.	CR 1 - NORTH SIDE, EAST END	DOOR FRAME	WOOD	GREY	FAIR	0.70	LCP
52.	CR 1 - NORTH SIDE, EAST END	DOOR	WOOD	GREY	FAIR	0.00	LCP
53.	CR 1 - NORTH SIDE, EAST END	WALL	WOOD	GOLD	INTACT	0.15	LCP
54.	CR 2 - WEST WALL, SOUTH END	WALL	WOOD	CREAM	FAIR	0.00	LCP
55.	CR 2 - NORTH, WEST END	SINK	PORCELAIN	WHITE	INTACT	0.00	LCP
56.	CR 2 - SOUTH, MIDDLE	WINDOW FRAME	METAL	CREAM	INTACT	0.09	LCP
57.	CR 2 - SOUTH, MIDDLE AT WINDOWS	VERTICAL COLUMN	METAL	CREAM	INTACT	0.30	LCP
58.	CR 2 - SOUTH, MIDDLE	WINDOW SILL	WOOD	CREAM	INTACT	0.29	LCP
59.	CR 2 - SOUTH, MIDDLE	VERTICAL WINDOW MULLION	METAL	CREAM	INTACT	0.27	LCP
60.	SOUTH STORAGE - WEST WALL, SOUTH SIDE	SINK	PORCELAIN	WHITE	INTACT	0.00	LCP
61.	SOUTH STORAGE - WEST WALL, MIDDLE	WALL RAIL	WOOD	CREAM	FAIR	0.03	LCP
62.	SOUTH STORAGE - NORTH WALL, MIDDLE	WALL	PLASTER	CREAM	FAIR	0.00	LCP
63.	SOUTH STORAGE - NORTH WALL, WEST	DOOR FRAME	WOOD	CREAM	FAIR	0.28	LCP



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NO.	SAMPLE LOCATION	COMPONENT	SUBSTRATE	COLOR	CONDITION	XRF RESULT MG/CM ²	
BUILDING C – INTERIOR CONTINUED							
64.	SOUTH STORAGE - NORTH WALL, WEST	DOOR TRIM	WOOD	CREAM	FAIR	0.16	LCP
65.	SOUTH STORAGE - NORTH WALL, WEST	DOOR	WOOD	VARNISH	FAIR	0.00	LCP
66.	SOUTH STORAGE - SOUTH WALL, WEST END	DOOR FRAME	WOOD	GREY	FAIR	0.30	LCP
67.	SOUTH STORAGE - SOUTH WALL, WEST END	DOOR TRIM	WOOD	GREY	FAIR	0.11	LCP
68.	SOUTH STORAGE - SOUTH WALL, WEST END	DOOR	WOOD	GREY	FAIR	0.00	LCP
69.	SOUTH STORAGE - SOUTH WALL, WEST END	WINDOW FRAME	METAL	CREAM	FAIR	0.08	LCP
70.	SOUTH STORAGE - SOUTH AREA	CEILING	PLASTER	CREAM	FAIR	0.13	LCP



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NO.	SAMPLE LOCATION	COMPONENT	SUBSTRATE	COLOR	CONDITION	XRF RESULT MG/CM ²	
BUILDING C – INTERIOR CONTINUED							
71.	CR 3 - WEST WALL, SOUTH AREA	WALL	WOOD	CREAM	FAIR	0.01	LCP
72.	CR 3 -NORTHEAST AREA	12" ACT. CEILING	PRESSED BOARD	WHITE	FAIR	0.00	LCP
73.	CR 3 - NORTHEAST AREA	CEILING REVEAL	METAL	CREAM	INTACT	0.00	LCP
74.	CR 3 - NORTHEAST AREA	T-BAR CEILING GRID	METAL	WHITE	INTACT	0.00	LCP
75.	CR 3 - NORTHEAST AREA	2'X4' LAY-IN CEILING PANELS	PRESSED BOARD	WHITE	INTACT	0.00	LCP
76.	CR 4 - WEST WALL, SOUTH	WALL	WOOD	CREAM	FAIR	0.00	LCP
77.	CR 4 - WEST AREA, MIDDLE	CABINET TRAY	WOOD	BLUE	FAIR	0.00	LCP
78.	CR 4 - WEST AREA, SOUTH	CABINET FRAME	WOOD	BLUE	FAIR	0.24	LCP
79.	CR 4 - NORTH WALL, WEST END	WINDOW SILL	WOOD	CREAM	FAIR	0.80	LCP
80.	CR 4 - NORTH WALL, MIDDLE	WINDOW FRAME	METAL	CREAM	FAIR	0.05	LCP
81.	CR 4 - NORTH WALL, MIDDLE	VERTICAL COLUMN	METAL	CREAM	FAIR	0.40	LCP
82.	CR 4 - NORTH WALL, MIDDLE	VERTICAL MULLION	METAL	CREAM	FAIR	0.30	LCP
83.	CR 4 - NORTH AREA, WEST SIDE	SINK	PORCELAIN	WHITE	INTACT	0.00	LCP
84.	CR 4 - EAST WALL, SOUTH END	WALL	WOOD	GOLD	FAIR	0.06	LCP



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NO.	SAMPLE LOCATION	COMPONENT	SUBSTRATE	COLOR	CONDITION	XRF RESULT MG/CM ²					
Date	12.15.22	Start Time	3:30 PM	Beginning Calibration	1.04 =	1.10	1.04 =	1.20	1.04 =	1.10	Lead-Containing Paint (LCP) or Lead-Based Paint (LBP)
Date	12.15.22	End Time	9:00 PM	Ending Calibration	1.04 =	1.00	1.04 =	1.10	1.04 =	1.20	
BUILDING C – INTERIOR CONTINUED											
85.	CR 5 - WEST WALL, NORTH AREA	WALL	WOOD	CREAM	FAIR	0.01	LCP				
86.	CR 5 - SOUTH WALL, WEST AREA	DOOR TRIM	WOOD	GREY	FAIR	0.40	LCP				
87.	CR 5 - SOUTH WALL, WEST AREA	DOOR FRAME	WOOD	GREY	FAIR	0.50	LCP				
88.	CR 5 - SOUTH WALL, WEST AREA	DOOR	WOOD	GREY	FAIR	0.00	LCP				
89.	CR 5 - SOUTH WALL, MIDDLE	WINDOW SILL	WOOD	CREAM	FAIR	0.23	LCP				
90.	CR 5 - SOUTH WALL, MIDDLE	WINDOW FRAME	METAL	CREAM	FAIR	0.40	LCP				
91.	CR 5 - SOUTH WALL, MIDDLE	VERTICAL MULLION	METAL	CREAM	FAIR	0.29	LCP				
92.	CR 5 - SOUTH WALL, MIDDLE	VERTICAL COLUMN	METAL	CREAM	FAIR	0.30	LCP				
93.	CR 5 - SOUTH AREA, MIDDLE	12" ACT. CEILING	PRESSED BOARD	WHITE	FAIR	0.00	LCP				
94.	CR 5 - SOUTH AREA, MIDDLE	CEILING REVEAL	METAL	WHITE	INTACT	0.00	LCP				
95.	CR 5 - SOUTH AREA, MIDDLE	T-BAR CEILING GRID	METAL	WHITE	INTACT	0.01	LCP				
96.	CR 5 - SOUTH AREA, MIDDLE	2'X4' LAY-IN CEILING PANELS	PRESSED BOARD	WHITE	INTACT	0.00	LCP				
BUILDING D - EXTERIOR											
97.	NORTH SIDE, MIDDLE	HVAC LOUVER	METAL	LT GREY	FAIR	0.00	LCP				



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BUILDING D – EXTERIOR CONTINUED							
98.	NORTH SIDE, WEST END	DRIP EDGE	METAL	GREY	FAIR	0.00	LCP
99.	NORTH SIDE, WEST END	FASCIA	WOOD	GREY	FAIR	0.30	LCP
100.	NORTH SIDE, WEST END	SOFFIT REVEAL	METAL	LT GREY	FAIR	0.30	LCP
101.	NORTH SIDE, WEST END	SOFFIT	STUCCO	LT GREY	FAIR	0.00	LCP
102.	EAST SIDE, SOUTH END	DOOR TRIM	WOOD	GREY	FAIR	0.00	LCP
103.	EAST SIDE, SOUTH END	DOOR FRAME	WOOD	GREY	FAIR	0.27	LCP
104.	EAST SIDE, SOUTH END	DOOR	WOOD	GREY	FAIR	0.00	LCP
105.	EAST SIDE, SOUTH END	WALL	STUCCO	YELLOW	FAIR	0.01	LCP
106.	SOUTH SIDE, EAST END	WALL	STUCCO	LT GREY	FAIR	0.04	LCP
107.	SOUTH SIDE, MIDDLE	CABINET FRAME	WOOD	LT GREY	FAIR	0.25	LCP
108.	SOUTH SIDE, MIDDLE	CABINET DOOR	WOOD	LT GREY	POOR	0.17	LCP
109.	SOUTH SIDE, MIDDLE	WINDOW SILL	WOOD	GREY	FAIR	0.50	LCP
110.	SOUTH SIDE, MIDDLE	WINDOW FRAME	METAL	GREY	FAIR	0.06	LCP
111.	SOUTH SIDE, MIDDLE	VERTICAL MULLION	METAL	GREY	FAIR	4.00	LBP



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BUILDING D – EXTERIOR CONTINUED							
112	SOUTH SIDE, WEST END	DOOR TRIM	WOOD	GREY	FAIR	0.40	LCP
113	SOUTH SIDE, WEST END	DOOR FRAME	WOOD	GREY	FAIR	0.50	LCP
114	SOUTH SIDE, WEST END	DOOR	WOOD	GREY	FAIR	0.26	LCP
115	SOUTH SIDE, WEST END	SOFFIT	STUCCO	LT GREY	FAIR	0.00	LCP
BUILDING D - INTERIOR							
116	BOYS RR - SOUTHEAST AREA	WALL	CERAMIC TILE	TAN	INTACT	0.00	LCP
117	BOYS RR - SOUTHEAST AREA	SINK	PORCELAIN	WHITE	INTACT	0.00	LCP
118	BOYS RR - SOUTH WALL, MIDDLE	WINDOW FRAME	METAL	CREAM	FAIR	0.11	LCP
119	BOYS RR - SOUTH WALL, MIDDLE	VERTICAL COLUMN	METAL	CREAM	FAIR	0.01	LCP
120	BOYS RR - EAST WALL, NORTH	DOOR	WOOD	GREY	FAIR	0.00	LCP
121	BOYS RR - CENTER	FLOOR	CERAMIC TILE	TAN	FAIR	0.00	LCP
122	STAFF RR - SOUTH WALL, MIDDLE	WALL	PLASTER	CREAM	FAIR	0.03	LCP
123	STAFF RR - WEST WALL	DOOR TRIM	WOOD	CREAM	FAIR	0.10	LCP
124	STAFF RR - WAITING, WEST WALL	DOOR FRAME	WOOD	CREAM	FAIR	0.60	LCP



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BUILDING D – INTERIOR CONTINUED							
125	STAFF RR WAITING - WEST WALL	DOOR	WOOD	VARNISH	FAIR	0.00	LCP
126	STAFF RR WAITING - NORTH, MIDDLE	ATTIC ACCESS TRIM	WOOD	CREAM	FAIR	0.50	LCP
127	STAFF RR WAITING - NORTH, MIDDLE	ATTIC ACCESS DOOR	WOOD	CREAM	FAIR	0.05	LCP
128	STAFF RR WAITING - NORTH, MIDDLE	12" ACT CEILING	PRESSED BOARD	CREAM	FAIR	0.00	LCP
129	STAFF RR - EAST WALL	WALL BASE	CERAMIC TILE	OATMEAL	FAIR	7.60	LBP
130	STAFF RR - WEST WALL, MIDDLE	WALL	PLASTER	CREAM	INTACT	0.15	LCP
131	STAFF RR - NORTH, MIDDLE	SINK	PORCELAIN	WHITE	INTACT	0.05	LCP
132	STAFF RR - CENTER	CEILING	PLASTER	CREAM	INTACT	0.03	LCP
133	STAFF RR - CENTER	FLOOR	CERAMIC TILE	BROWN/TAN	FAIR	0.00	LCP
134	GIRLS RR - SOUTH WALL, EAST END	WALL	CERAMIC TILE	BLUE	INTACT	0.00	LCP
135	GIRLS RR - WEST WALL, MIDDLE	WALL	PLASTER	CREAM	FAIR	0.00	LCP
136	GIRLS RR - NORTH WALL, MIDDLE	WINDOW FRAME	METAL	CREAM	FAIR	0.10	LCP
137	GIRLS RR - NORTH WALL, MIDDLE	VERTICAL COLUMN	METAL	CREAM	FAIR	0.11	LCP
138	GIRLS RR - EAST WALL, SOUTH	DOOR	WOOD	GREY	FAIR	0.00	LCP



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NO.	SAMPLE LOCATION	COMPONENT	SUBSTRATE	COLOR	CONDITION	XRF RESULT MG/CM ²	
BUILDING D – INTERIOR CONTINUED							
139	GIRLS RR - NORTH, MIDDLE	CEILING	PLASTER	CREAM	FAIR	0.09	LCP
140	GIRLS RR - NORTH, MIDDLE	FLOOR	CERAMIC TILE	CREAM/BLUE FLECKS	FAIR	0.00	LCP
141	CR 6 - WEST WALL	WALL	WOOD	GOLD	INTACT	0.01	LCP
142	CR 6 - NORTH, WEST AREA	CABINET	WOOD	VARNISH	INTACT	0.00	LCP
143	CR 6 - NORTH WALL, EAST AREA	DOOR TRIM	WOOD	CREAM	FAIR	0.40	LCP
144	CR 6 - NORTH WALL, EAST AREA	DOOR FRAME	WOOD	CREAM	FAIR	0.50	LCP
145	CR 6 - NORTH WALL, EAST AREA	DOOR	WOOD	GREY	FAIR	0.02	LCP
146	CR 6 - EAST WALL, NORTH AREA	WALL	WOOD	GREEN	INTACT	0.03	LCP
147	CR 6 - SOUTH WALL, EAST END	WALL	WOOD	CREAM	FAIR	0.00	LCP
148	CR 6 - SOUTH SIDE, MIDDLE	LAY-IN CEILING GRID	METAL	WHITE	INTACT	0.00	LCP
149	CR 6 - SOUTH SIDE, MIDDLE	2'X4' LAY-IN CEILING PANELS	PRESSED BOARD	WHITE	INTACT	0.00	LCP
150	CR 7 – WEST WALL CENTER	WALL	WOOD	CREAM	INTACT	0.02	LCP
151	CR 7 -WEST WALL, NORTH END	WALL TRIM	WOOD	CREAM	INTACT	0.0	LCP
152	CR7 - NORTH WALL, WEST END	WINDOW FRAME	METAL	CREAM	FAIR	0.22	LCP



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NO.	SAMPLE LOCATION	COMPONENT	SUBSTRATE	COLOR	CONDITION	XRF RESULT MG/CM ²	
BUILDING D – INTERIOR CONTINUED							
153	CR 7 - NORTH WALL, WEST END	VERTICAL MULLION	METAL	CREAM	FAIR	0.21	LCP
154	CR 7 - NORTH WALL, EAST END	WINDOW SILL	WOOD	CREAM	FAIR	0.50	LCP
155	CR 7 - NORTH WALL, EAST END	VERTICAL COLUMN	METAL	CREAM	FAIR	0.70	LCP
156	CR 7 - SOUTH WALL, EAST END	WALL	WOOD	GOLDENROD	FAIR	0.00	LCP
157	CR 7 - SOUTH WALL, WEST END	DOOR TRIM	WOOD	CREAM	FAIR	0.15	LCP
158	CR 7 - SOUTH WALL, WEST END	DOOR FRAME	WOOD	CREAM	FAIR	0.26	LCP
159	CR 7 - SOUTH WALL, WEST END	DOOR	WOOD	GREY	FAIR	0.01	LCP
160	CR 7 - SOUTH SIDE, MIDDLE	12" ACT CEILING TILE	PRESSED BOARD	WHITE	INTACT	0.00	LCP
161	CR 7 - SOUTH SIDE, MIDDLE	CEILING REVEAL	METAL	CREAM	INTACT	0.00	LCP
162	NURSE - WEST WALL, MIDDLE	WALL	PLASTER	CREAM	FAIR	0.01	LCP
163	NURSE - WEST WALL, NORTH END	MIRROR TRIP	WOOD	CREAM	INTACT	0.00	LCP
164	NURSE - NORTH WALL, MIDDLE	WINDOW FRAME	METAL	CREAM	FAIR	0.08	LCP
165	NURSE - SINK AREA, EAST WALL	WALL	WOOD	CREAM	FAIR	0.00	LCP
166	NURSE - SOUTH WALL, MIDDLE	DOOR TRIM	WOOD	GREY	FAIR	0.18	LCP



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BUILDING D – INTERIOR CONTINUED							
167	NURSE - SOUTH WALL, MIDDLE	DOOR FRAME	WOOD	GREY	FAIR	0.30	LCP
168	NURSE - SOUTH WALL, MIDDLE	DOOR	WOOD	GREY	FAIR	0.01	LCP
169	NURSE - SOUTH SIDE, WEST AREA	12" ACT CEILING	PRESSED BOARD	WHITE	FAIR	0.00	LCP
170	NURSE - STAFF RR 4, WEST, MIDDLE	WALL	WOOD	CREAM	FAIR	0.00	LCP
171	NURSE - STAFF RR 5, SOUTH, MIDDLE	WALL BASE	CERAMIC TILE	OATMEAL	FAIR	8.40	LBP
172	NURSE - STAFF RR 5, SOUTH, MIDDLE	FLOOR	CERAMIC TILE	BROWN/TAN	FAIR	0.00	LCP
173	CR 8 - WEST WALL, NORTH END	CABINET	WOOD	BLUE	FAIR	0.06	LCP
174	CR 8 - WEST WALL, MIDDLE	CABINET TRAY	WOOD	BLUE	FAIR	0.19	LCP
175	CR 8 - WEST WALL, NORTH END	WALL TRIM	WOOD	CREAM	FAIR	0.12	LCP
176	CR 8 - EAST WALL, MIDDLE, HIGH	WALL	WOOD	GOLD	INTACT	0.00	LCP
177	CR 8 - EAST WALL, MIDDLE	WALL TRIM	WOOD	GOLD	INTACT	0.40	LCP
178	CR 8 - EAST WALL, MIDDLE, LOW	WALL	WOOD	GOLD	INTACT	0.00	LCP
179	CR 8 - SOUTH WALL, EAST END	CABINET	WOOD	BLUE	FAIR	0.00	LCP
180	CR 8 - WEST AREA, MIDDLE	2'X4' CEILING TILE	PRESSED BOARD	WHITE	FAIR	0.00	LCP



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NO.	SAMPLE LOCATION	COMPONENT	SUBSTRATE	COLOR	CONDITION	XRF RESULT MG/CM ²	
BUILDING D – INTERIOR CONTINUED							
181	CR 8 - WEST AREA, MIDDLE	CEILING GRID	METAL	WHITE	FAIR	0.00	LCP
182	CR 9 - NORTH WALL, MIDDLE	WINDOW SILL	WOOD	CREAM	FAIR	0.30	LCP
183	CR 9 - NORTH WALL, MIDDLE	WINDOW FRAME	METAL	CREAM	FAIR	0.06	LCP
184	CR 9 - NORTH WALL, MIDDLE	VERTICAL MULLION	METAL	CREAM	FAIR	0.06	LCP
185	CR 9 - NORTH WALL, WEST END	VERTICAL COLUMN	METAL	CREAM	FAIR	0.13	LCP
186	CR 9 - NORTH WALL, WEST END	SINK	PORCELAIN	WHITE	INTACT	0.00	LCP
187	CR 9 - EAST WALL, SOUTH END, HIGH	WALL	WOOD	GOLDENROD	INTACT	0.01	LCP
188	CR 9 - EAST WALL, SOUTH END	WALL TRIM	WOOD	GOLDENROD	FAIR	0.12	LCP
189	CR 9 - EAST WALL, NORTH END, LOW	WALL	WOOD	GOLDENROD	INTACT	0.00	LCP
190	CR 10 - WEST WALL, SOUTH, HIGH	WALL	WOOD	CREAM	FAIR	0.01	LCP
191	CR 10 - WEST WALL, SOUTH END	WALL TRIM	WOOD	CREAM	FAIR	0.04	LCP
192	CR 10 - WEST WALL, SOUTH, LOW	WALL	WOOD	CREAM	FAIR	0.00	LCP
193	CR 10 - SOUTH SIDE, MIDDLE	12" ACT CEILING TILE	PRESSED BOARD	WHITE	FAIR	0.00	LCP
194	CR 10 - SOUTH SIDE, MIDDLE	CEILING REVEAL	METAL	CREAM	INTACT	0.00	LCP



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Date	12.15.22	Start Time	3:30 PM	Beginning Calibration	1.04 =	1.10	1.04 =	1.20	1.04 =	1.10	Lead-Containing Paint (LCP) or Lead-Based Paint (LBP)
Date	12.15.22	End Time	9:00 PM	Ending Calibration	1.04 =	1.00	1.04 =	1.10	1.04 =	1.20	
NO.	SAMPLE LOCATION			COMPONENT	SUBSTRATE	COLOR	CONDITION	XRF RESULT MG/CM ²			
BUILDING E - EXTERIOR											
195	NORTH SIDE, WEST END			HVAC LOUVER	METAL	LT GREY	FAIR	0.00		LCP	
196	NORTH SIDE, MIDDLE			DOOR TRIM	WOOD	GREY	FAIR	0.30		LCP	

Date	5.17.23	Start Time	7:00 PM	Beginning Calibration	1.04 =	1.07	1.04 =	1.01	1.04 =	1.01	Lead-Containing Paint (LCP) or Lead-Based Paint (LBP)
Date	5.17.23	End Time	8:00 PM	Ending Calibration	1.04 =	1.06	1.04 =	1.07	1.04 =	1.12	
NO.	SAMPLE LOCATION			COMPONENT	SUBSTRATE	COLOR	CONDITION	XRF RESULT MG/CM ²			
BUILDINGS R24-R26 (CRS 35-37) - EXTERIOR											
197	R25 (CR 36) – SOUTH			WALL	WOOD	GREY	INTACT	0.14		LCP	
BUILDING R27 (CR 38) – EXTERIOR											
198	WEST SIDE CENTER			WALL	WOOD	GREY	INTACT	0.14		LCP	
BUILDINGS R10-R15 (CRS 29-34) - EXTERIOR											
199	NORTH SIDE CENTER AT CR 30			WALL	WOOD	GREY	INTACT	0.03		LCP	



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NO.	SAMPLE LOCATION	COMPONENT	SUBSTRATE	COLOR	CONDITION	XRF RESULT MG/CM ²	
BUILDING H (RESTROOM BLDG) - EXTERIOR							
200	EAST SIDE CENTER	WALL	STUCCO	GREY	INTACT	0.01	LCP
BUILDINGS R2-R9 (CRS 21-28) - EXTERIOR							
201	CR 27 – SOUTH SIDE CENTER	WALL	WOOD	GREY	INTACT	1.26	LBP
202	CR 21 – NORTH SIDE CENTER	WALL	WOOD	GREY	INTACT	1.53	LBP
BUILDING R1 (PRE – K) - EXTERIOR							
203	WEST SIDE CENTER	WALL	WOOD	GREY	INTACT	0.07	LCP
BUILDING R23 (PARENT CENTER) - EXTERIOR							
204	SOUTH SIDE CENTER	WALL	WOOD	GREY	INTACT	0.12	LCP
BUILDING R18 (IMC) - EXTERIOR							
205	EAST SIDE CENTER	WALL	STUCCO	GREY	INTACT	0.16	LCP
BUILDING G (CRS 46-54 & 70) - EXTERIOR							
206	EAST SIDE CENTER	WALL	STUCCO	YELLOW	INTACT	0.02	LCP
BUILDINGS R19-22 (CRS 40-43) - EXTERIOR							
207	EAST SIDE CENTER AT CR 40	WALL	WOOD	GREY	INTACT	0.17	LCP

End of XRF report.

LEAD HAZARD EVALUATION REPORT

Section 1 – Date of Lead Hazard Evaluation 12/13/22, 12/14/22 & 12/15/22

Section 2 – Type of Lead Hazard Evaluation (Check one box only)

Lead Inspection Risk assessment Clearance Inspection Other (specify) _____

Section 3 – Structure Where Lead Hazard Evaluation Was Conducted

Address [number, street, apartment (if applicable)]		City	County	Zip Code
607 Texas Street		Bakersfield	Kern	93307
Construction date (year) of structure	Type of structure		Children living in structure?	
Unknown	<input type="checkbox"/> Multi-unit building <input checked="" type="checkbox"/> School or daycare <input type="checkbox"/> Single family dwelling <input type="checkbox"/> Other _____		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Don't Know	

Section 4 – Owner of Structure (if business/agency, list contact person)

Name		Telephone number		
Bakersfield City School District		(661) 631-5883		
Address [number, street, apartment (if applicable)]		City	State	Zip Code
1300 Baker Street		Bakersfield	CA	93305

Section 5 – Results of Lead Hazard Evaluation (check all that apply)

No lead-based paint detected Intact lead-based paint detected Deteriorated lead-based paint detected
 No lead hazards detected Lead-contaminated dust found Lead-contaminated soil found Other _____

Section 6 – Individual Conducting Lead Hazard Evaluation

Name		Telephone number		
Kristy Yowell		661-477-4662		
Address [number, street, apartment (if applicable)]		City	State	Zip Code
13708 Carpaccio Lane		Bakersfield	CA	93306
CDPH certification number	Signature		Date	
4640	<i>Kristy Yowell</i>		3.24.23	

Name and CDPH certification number of any other individuals conducting sampling or testing (if applicable)

n/a

Section 7 – Attachments

- A. A foundation diagram or sketch of the structure indicating the specific locations of each lead hazard or presence of lead-based paint;
- B. Each testing method, device, and sampling procedure used;
- C. All data collected, including quality control data, laboratory results, including laboratory name, address, and phone number.

First copy and attachments retained by inspector
Second copy and attachments retained by owner

Third copy only (no attachments) mailed or faxed to:
California Department of Public Health
Childhood Lead Poisoning Prevention Branch Reports
850 Marina Bay Parkway, Building P, Third Floor
Richmond, CA 94804-6403
Fax: (510) 620-5656

LEAD HAZARD EVALUATION REPORT

Section 1 – Date of Lead Hazard Evaluation 5-17-2023

Section 2 – Type of Lead Hazard Evaluation (Check one box only)

Lead Inspection Risk assessment Clearance Inspection Other (specify) _____

Section 3 – Structure Where Lead Hazard Evaluation Was Conducted

Address [number, street, apartment (if applicable)] 607 Texas Street		City Bakersfield	County Kern	Zip Code 93307
Construction date (year) of structure Unknown	Type of structure <input type="checkbox"/> Multi-unit building <input checked="" type="checkbox"/> School or daycare <input type="checkbox"/> Single family dwelling <input type="checkbox"/> Other _____		Children living in structure? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Don't Know	

Section 4 – Owner of Structure (if business/agency, list contact person)

Name Bakersfield City School District		Telephone number (661) 631-5883		
Address [number, street, apartment (if applicable)] 1300 Baker Street		City Bakersfield	State CA	Zip Code 93305

Section 5 – Results of Lead Hazard Evaluation (check all that apply)

No lead-based paint detected Intact lead-based paint detected Deteriorated lead-based paint detected
 No lead hazards detected Lead-contaminated dust found Lead-contaminated soil found Other _____

Section 6 – Individual Conducting Lead Hazard Evaluation

Name Allen Evans		Telephone number 559-359-6887		
Address [number, street, apartment (if applicable)] 33498 Road 220		City Woodlake	State CA	Zip Code 93286
CDPH certification number LRC 00010539	Signature <i>Allen Evans</i>		Date 6-17-2023	

Name and CDPH certification number of any other individuals conducting sampling or testing (if applicable)

n/a

Section 7 – Attachments

- A. A foundation diagram or sketch of the structure indicating the specific locations of each lead hazard or presence of lead-based paint;
- B. Each testing method, device, and sampling procedure used;
- C. All data collected, including quality control data, laboratory results, including laboratory name, address, and phone number.

First copy and attachments retained by inspector

Second copy and attachments retained by owner

Third copy only (no attachments) mailed or faxed to:

California Department of Public Health
 Childhood Lead Poisoning Prevention Branch Reports
 850 Marina Bay Parkway, Building P, Third Floor
 Richmond, CA 94804-6403
 Fax: (510) 620-5656

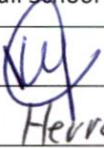



Attachment C – Chain of Custody & Laboratory Results




YES Environmental, Inc.

1201 24TH Street, Suite B110-377, Bakersfield, CA 93301 / (661) 527-0820

Contact Name & Phone Number	Kristy Yowell (661) 477-4662	Account #	YWEL75
Comments	Please e-mail results to: kristy@yowellenvironmental.com	TYPE OF ANALYSIS AND TURN AROUND TIME	
Collected By	Kristy Yowell	PLM with Dispersion Staining	
Date Samples Collected	12/13/2022	72 Hour	
Job # & Client	22YES-109 Bakersfield City School District	LAB	LA TESTING - Pasadena
Job Site Name & Description	Fremont ES – Full School Inspection		
Submitted By	Kristy Yowell 	Date	12/13/2022
Received By	James Herrera EFX 	Date	12-15-22 9:30 am

SAMPLE ID	1 ST LINE: MATERIAL DESCRIPTION – 2 ND LINE: SAMPLE LOCATION
22YES-109-01A	EXTERIOR STUCCO PAINTED & VAPOR BARRIER
	BLDG A – WEST WALL AT WEST STAFF RESTROOM
22YES-109-01B	EXTERIOR STUCCO PAINTED & VAPOR BARRIER
	BLDG A – WEST WALL CENTER OF STAFF LOUNGE
22YES-109-01C	EXTERIOR STUCCO
	BLDG C – EAST SOFFIT CENTER
22YES-109-01D	EXTERIOR STUCCO PAINTED & VAPOR BARRIER
	BLDG C – EAST END UPPER WALL
22YES-109-01E	EXTERIOR STUCCO PAINTED & VAPOR BARRIER
	BLDG C – SOUTH SIDE WEST END
22YES-109-01F	EXTERIOR STUCCO PAINTED & VAPOR BARRIER
	BLDG D – NORTH SIDE CENTER
22YES-109-01G	EXTERIOR STUCCO PAINTED B
	BLDG D – EAST SIDE SOUTH END UPPER WALL
22YES-109-01H	EXTERIOR STUCCO & VAPOR BARRIER
	BLDG D – EAST SIDE NORTH END UPPER WALL
22YES-109-01I	EXTERIOR STUCCO PAINTED
	BLDG E – EAST SIDE CENTER - UPPER SOFFIT
22YES-109-01J	EXTERIOR STUCCO PAINTED & VAPOR BARRIER
	BLDG E – EAST SIDE CENTER




Contact Name & Phone Number	Kristy Yowell (661) 477-4662	Account #	YWEL75
Comments	Please e-mail results to: kristy@yowellenvironmental.com	TYPE OF ANALYSIS AND TURN AROUND TIME	
Collected By	Kristy Yowell	PLM with Dispersion Staining	
Date Samples Collected	12/13/2022	72 Hour	
Job # & Client	22YES-109 Bakersfield City School District	LAB	LA TESTING - Pasadena
Job Site Name & Description	Fremont ES – Full School Inspection		
Submitted By	Kristy Yowell 	Date	12/13/2022
Received By		Date	

SAMPLE ID	1 st LINE: MATERIAL DESCRIPTION – 2 ND LINE: SAMPLE LOCATION
22YES-109-01K	EXTERIOR STUCCO PAINTED & VAPOR BARRIER
	BLDG E – EAST END
22YES-109-01L	EXTERIOR STUCCO PAINTED
	BLDG F - EAST SIDE CENTER SOFFIT
22YES-109-01M	EXTERIOR STUCCO PAINTED & VAPOR BARRIER
	BLDG F – WEST SIDE CENTER
22YES-109-01N	EXTERIOR STUCCO PAINTED & VAPOR BARRIER
	BLDG F – EAST SIDE SOUTH END
22YES-109-02A	EXTERIOR WINDOW PUTTY PAINTED
	BLDG C – NORTH SIDE WEST END
22YES-109-02B	EXTERIOR WINDOW PUTTY PAINTED
	BLDG C – SOUTH SIDE EAST END
22YES-109-02C	EXTERIOR WINDOW PUTTY PAINTED
	BLDG D – NORTH SIDE EAST END
22YES-109-02D	EXTERIOR WINDOW PUTTY PAINTED
	BLDG D – SOUTH SIDE WEST END
22YES-109-02E	EXTERIOR WINDOW PUTTY PAINTED
	BLDG E – SOUTH SIDE CENTER
22YES-109-02F	EXTERIOR WINDOW PUTTY PAINTED
	NORTH SIDE EAST END



YES Environmental, Inc.

1201 24TH Street, Suite B110-377, Bakersfield, CA 93301 / (661) 527-0820

Contact Name & Phone Number	Kristy Yowell (661) 477-4662	Account #	YWEL75
Comments	Please e-mail results to: kristy@yowellenvironmental.com	TYPE OF ANALYSIS AND TURN AROUND TIME	
Collected By	Kristy Yowell	PLM with Dispersion Staining	
Date Samples Collected	12/13/2022	72 Hour	
Job # & Client	22YES-109 Bakersfield City School District	LAB	LA TESTING - Pasadena
Job Site Name & Description	Fremont ES – Full School Inspection		
Submitted By	Kristy Yowell 	Date	12/13/2022
Received By		Date	

SAMPLE ID	1 st LINE: MATERIAL DESCRIPTION – 2 ND LINE: SAMPLE LOCATION
22YES-109-02G	EXTERIOR WINDOW PUTTY PAINTED
	BLDG F – NORTH SIDE WEST END
22YES-109-02H	EXTERIOR WINDOW PUTTY PAINTED
	BLDG F – SOUTH SIDE EAST END
22YES-109-02I	EXTERIOR WINDOW PUTTY PAINTED
	BLDG A – SE SIDE AT STAFF LOUNGE
22YES-109-03A	WHITE COATING ON FOAM ON SHINGLED ROOFING & FELTS
	BLDG C – WEST END SOUTH SIDE
22YES-109-03B	WHITE COATING ON FOAM ON SHINGLED ROOFING & FELTS
	BLDG C – EAST END SOUTH SIDE
22YES-109-03C	WHITE COATING ON FOAM ON SHINGLED ROOFING & FELTS
	BLDG D – WEST END SOUTH SIDE
22YES-109-03D	WHITE COATING ON FOAM ON SHINGLED ROOFING & FELTS
	BLDG D – EAST END SOUTH SIDE
22YES-109-03E	WHITE COATING ON FOAM ON SHINGLED ROOFING & FELTS
	BLDG D – EAST END NORTH SIDE
22YES-109-03F	WHITE COATING ON FOAM ON SHINGLED ROOFING & FELTS
	BLDG E – WEST END SOUTH SIDE
22YES-109-03G	WHITE COATING ON FOAM ON SHINGLED ROOFING & FELTS
	BLDG F – EAST END NORTH SIDE




YES Environmental, Inc.

222224857 #

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1201 24TH Street, Suite B110-377, Bakersfield, CA 93301 / (661) 527-0820

Contact Name & Phone Number	Kristy Yowell (661) 477-4662	Account #	YWEL75
Comments	Please e-mail results to: kristy@yowellenvironmental.com	TYPE OF ANALYSIS AND TURN AROUND TIME	
Collected By	Kristy Yowell	PLM with Dispersion Staining	
Date Samples Collected	12/13/2022	72 Hour	
Job # & Client	22YES-109 Bakersfield City School District	LAB	LA TESTING - Pasadena
Job Site Name & Description	Fremont ES – Full School Inspection		
Submitted By	Kristy Yowell 	Date	12/13/2022
Received By		Date	

SAMPLE ID	1 ST LINE: MATERIAL DESCRIPTION – 2 ND LINE: SAMPLE LOCATION
22YES-109-03H	WHITE COATING ON FOAM ON SHINGLED ROOFING & FELTS
	BLDG F – SOUTH SIDE CENTER
22YES-109-04A	MASTIC – BLACK/GREY UNDER FOAM ROOFING
	BLDG C – EAST END NORTH SIDE AT VENT
22YES-109-04B	MASTIC – BLACK/GREY UNDER FOAM ROOFING
	BLDG D – EAST END NORTH SIDE AT VENT PIPE
22YES-109-04C	MASTIC – BLACK/GREY UNDER FOAM ROOFING
	BLDG E – NORTH SIDE CENTER AT VENT PIPE
22YES-109-04D	MASTIC – BLACK/GREY UNDER FOAM ROOFING
	BLDG F – EAST END NORTH SIDE AT VENT PIPE
22YES-109-05A	EXTERIOR PAINT – LT GREY/BLUE & DK GREY
	BLDG R16 & 17 – CLASSROOM 19 – WALLS/HANDRAILS
22YES-109-05B	EXTERIOR PAINT – LT GREY/BLUE & DK GREY
	BLDG R16 & 17 – CLASSROOM 20 – WALL/DR FRAME
22YES-109-06A	EXTERIOR WINDOW PUTTY - PAINTED
	BLDG R16 & 17 – CR 19 – SOUTH SIDE EAST END
22YES-109-06B	EXTERIOR WINDOW PUTTY – PAINTED
	BLDG R16 & 17 – NORTH SIDE WEST END



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LA Testing Order: 322224857
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Customer ID: YWEL75

Customer PO:

Project ID:

Attention: Kristy Yowell
YES Environmental, Inc.
13708 Carpaccio Lane
Bakersfield, CA 93306

Phone: (661) 477-4662

Fax:

Received Date: 12/15/2022 9:30 AM

Analysis Date: 12/19/2022 - 12/20/2022

Collected Date: 12/13/2022

Project: 22YES-109 Bakersfield City School District / Fremont ES - Full School Inspection

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
22YES-109-01A-Texture Paint 322224857-0001	Bldg A - W wall at W staff restroom - Exterior Stucco Painted & Vapor Barrier	Yellow/Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-01A-Stucco 322224857-0001A	Bldg A - W wall at W staff restroom - Exterior Stucco Painted & Vapor Barrier	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-01A-Vapor Barrier 322224857-0001B	Bldg A - W wall at W staff restroom - Exterior Stucco Painted & Vapor Barrier	Brown/Black Fibrous Homogeneous	70% Cellulose	30% Non-fibrous (Other)	None Detected
22YES-109-01A-Composite 322224857-0001C	Bldg A - W wall at W staff restroom - Exterior Stucco Painted & Vapor Barrier	Gray/Yellow/Beige Fibrous Heterogeneous	30% Cellulose	70% Non-fibrous (Other)	None Detected
22YES-109-01B-Finish Coat 1 322224857-0002	Bldg A - W wall Center of Sstaff lounge - Exterior Stucco Painted & Vapor Barrier	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-01B-Finish Coat 2 322224857-0002A	Bldg A - W wall Center of Sstaff lounge - Exterior Stucco Painted & Vapor Barrier	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-01B-Base Coat 322224857-0002B	Bldg A - W wall Center of Sstaff lounge - Exterior Stucco Painted & Vapor Barrier	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-01B-Vapor Barrier 322224857-0002C	Bldg A - W wall Center of Sstaff lounge - Exterior Stucco Painted & Vapor Barrier	Brown/Black Fibrous Homogeneous	70% Cellulose	30% Non-fibrous (Other)	None Detected
22YES-109-01B-Composite 322224857-0002D	Bldg A - W wall Center of Sstaff lounge - Exterior Stucco Painted & Vapor Barrier	Gray/Black/Beige Fibrous Heterogeneous	45% Cellulose	55% Non-fibrous (Other)	None Detected
22YES-109-01C 322224857-0003	Bldg C - E soffit Center - Exterior Stucco				Not Submitted

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LA Testing Order: 322224857
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Customer ID: YWEL75

Customer PO:

Project ID:

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
22YES-109-01D-Finish Coat 322224857-0004	Bldg C - E end upper wall - Exterior Stucco Painted & Vapor Barrier	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-01D-Base Coat 322224857-0004A	Bldg C - E end upper wall - Exterior Stucco Painted & Vapor Barrier	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-01D-Vapor Barrier 322224857-0004B	Bldg C - E end upper wall - Exterior Stucco Painted & Vapor Barrier	Brown/Black Fibrous Homogeneous	70% Cellulose	30% Non-fibrous (Other)	None Detected
22YES-109-01D-Compo site 322224857-0004C	Bldg C - E end upper wall - Exterior Stucco Painted & Vapor Barrier	Gray/Black/Beige Non-Fibrous Heterogeneous	30% Cellulose	70% Non-fibrous (Other)	None Detected
22YES-109-01E-Texture Paint 322224857-0005	Bldg C - S side W end - Exterior Stucco Painted & Vapor Barrier	Gray/Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-01E-Finish Coat 322224857-0005A	Bldg C - S side W end - Exterior Stucco Painted & Vapor Barrier	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-01E-Base Coat 322224857-0005B	Bldg C - S side W end - Exterior Stucco Painted & Vapor Barrier	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-01E-Vapor Barrier 322224857-0005C	Bldg C - S side W end - Exterior Stucco Painted & Vapor Barrier	Brown/Black Fibrous Homogeneous	70% Cellulose	30% Non-fibrous (Other)	None Detected
22YES-109-01E-Compo site 322224857-0005D	Bldg C - S side W end - Exterior Stucco Painted & Vapor Barrier	Gray/Black/Beige Fibrous Heterogeneous	30% Cellulose	70% Non-fibrous (Other)	None Detected
22YES-109-01F-Finish Coat 322224857-0006	Bldg D - N Side Center - Exterior Stucco Painted & Vapor Barrier	White/Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-01F-Base Coat 322224857-0006A	Bldg D - N Side Center - Exterior Stucco Painted & Vapor Barrier	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-01F-Vapor Barrier 322224857-0006B	Bldg D - N Side Center - Exterior Stucco Painted & Vapor Barrier	Brown/Black Fibrous Homogeneous	70% Cellulose	30% Non-fibrous (Other)	None Detected
22YES-109-01F-Compo site 322224857-0006C	Bldg D - N Side Center - Exterior Stucco Painted & Vapor Barrier	Gray/Black/Beige Fibrous Heterogeneous	65% Cellulose	35% Non-fibrous (Other)	None Detected
22YES-109-01G-Finish Coat 322224857-0007	Bldg D - E side S end upper wall - Exterior Stucco Painted B	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

Initial report from: 12/20/2022 10:33:34



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LA Testing Order: 322224857
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Customer ID: YWEL75

Customer PO:

Project ID:

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
22YES-109-01G-Base Coat 322224857-0007A	Bldg D - E side S end upper wall - Exterior Stucco Painted B	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-01G-Compo site 322224857-0007B	Bldg D - E side S end upper wall - Exterior Stucco Painted B	Gray/White Non-Fibrous Heterogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-01H-Finish Coat 322224857-0008	Bldg D - E side N end upper wall - Exterior Stucco & Vapor Barrier	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-01H-Base Coat 322224857-0008A	Bldg D - E side N end upper wall - Exterior Stucco & Vapor Barrier	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-01H-Vapor Barrier 322224857-0008B	Bldg D - E side N end upper wall - Exterior Stucco & Vapor Barrier	Brown/Black Fibrous Homogeneous	70% Cellulose	30% Non-fibrous (Other)	None Detected
22YES-109-01H-Compo site 322224857-0008C	Bldg D - E side N end upper wall - Exterior Stucco & Vapor Barrier	Gray/Black/Beige Fibrous Heterogeneous	30% Cellulose	70% Non-fibrous (Other)	None Detected
22YES-109-01I-Finish Coat 322224857-0009	Bldg E - E side Center - upper soffit - Exterior Stucco Painted	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-01I-Base Coat 322224857-0009A	Bldg E - E side Center - upper soffit - Exterior Stucco Painted	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-01I-Compos ite 322224857-0009B	Bldg E - E side Center - upper soffit - Exterior Stucco Painted	Gray/White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-01J-Finish Coat 322224857-0010	Bldg E -E endBldg E - E side Center - Exterior Stucco Painted & Vapor Barrier	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-01J-Base Coat 322224857-0010A	Bldg E -E endBldg E - E side Center - Exterior Stucco Painted & Vapor Barrier	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-01J-Vapor Barrier 322224857-0010B	Bldg E -E endBldg E - E side Center - Exterior Stucco Painted & Vapor Barrier	Brown/Black Fibrous Homogeneous	70% Cellulose	30% Non-fibrous (Other)	None Detected
22YES-109-01J-Compo site 322224857-0010C	Bldg E -E endBldg E - E side Center - Exterior Stucco Painted & Vapor Barrier	Gray/White/Black Fibrous Homogeneous	30% Cellulose	70% Non-fibrous (Other)	None Detected

Initial report from: 12/20/2022 10:33:34



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520 Mission Street South Pasadena, CA 91030

Tel/Fax: (323) 254-9960 / (323) 254-9982

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LA Testing Order: 322224857
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Customer ID: YWEL75

Customer PO:

Project ID:

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
22YES-109-01K-Finish Coat 322224857-0011	Bldg E -E end - Exterior Stucco Painted & Vapor Barrier	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-01K-Base Coat 322224857-0011A	Bldg E -E end - Exterior Stucco Painted & Vapor Barrier	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-01K-Vapor Barrier 322224857-0011B	Bldg E -E end - Exterior Stucco Painted & Vapor Barrier	Brown/Black Fibrous Homogeneous	70% Cellulose	30% Non-fibrous (Other)	None Detected
22YES-109-01K-Compo site 322224857-0011C	Bldg E -E end - Exterior Stucco Painted & Vapor Barrier	Gray/Black/Beige Fibrous Heterogeneous	45% Cellulose	55% Non-fibrous (Other)	None Detected
22YES-109-01L-Finish Coat 322224857-0012	Bldg F - W side Center - Exterior Stucco Painted	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-01L-Base Coat 322224857-0012A	Bldg F - W side Center - Exterior Stucco Painted	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-01L-Compo site 322224857-0012B	Bldg F - W side Center - Exterior Stucco Painted	Gray/Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-01M-Finish Coat 322224857-0013	Bldg F - W side Center - Exterior Stucco Painted & Vapor Barrier	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-01M-Base Coat 322224857-0013A	Bldg F - W side Center - Exterior Stucco Painted & Vapor Barrier	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-01M-Vapor Barrier 322224857-0013B	Bldg F - W side Center - Exterior Stucco Painted & Vapor Barrier	Brown/Black Fibrous Homogeneous	70% Cellulose	30% Non-fibrous (Other)	None Detected
22YES-109-01M-Comp o site 322224857-0013C	Bldg F - W side Center - Exterior Stucco Painted & Vapor Barrier	Gray/Black/Beige Fibrous Heterogeneous	30% Cellulose	70% Non-fibrous (Other)	None Detected
22YES-109-01N-Finish Coat 322224857-0014	Bldg F - E side S end - Exterior Stucco Painted & Vapor Barrier	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-01N-Base Coat 322224857-0014A	Bldg F - E side S end - Exterior Stucco Painted & Vapor Barrier	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-01N-Vapor Barrier 322224857-0014B	Bldg F - E side S end - Exterior Stucco Painted & Vapor Barrier	Brown/Black Fibrous Homogeneous	70% Cellulose	30% Non-fibrous (Other)	None Detected

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Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
22YES-109-01N-Compo site 322224857-0014C	Bldg F - E side S end - Exterior Stucco Painted & Vapor Barrier	Gray/Black/Beige Fibrous Heterogeneous	45% Cellulose	55% Non-fibrous (Other)	None Detected
22YES-109-02A 322224857-0015	Bldg C - N side W end - Exterior Window Putty Painted	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-02B 322224857-0016	Bldg C - S side E end - Exterior Window Putty Painted	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	<1% Chrysotile
22YES-109-02C 322224857-0017	Bldg D - N side E end - Exterior Window Putty Painted	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	<% Chrysotile
22YES-109-02D 322224857-0018	Bldg D - S side W End - Exterior Window Putty Painted	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	<1% Chrysotile
22YES-109-02E 322224857-0019	Bldg E - S side Center - Exterior Window Putty Painted	Gray/Beige Non-Fibrous Homogeneous		98% Non-fibrous (Other)	2% Chrysotile
22YES-109-02F 322224857-0020	N side E end - Exterior Window Putty Painted	Gray/Beige Non-Fibrous Homogeneous		98% Non-fibrous (Other)	2% Chrysotile
22YES-109-02G 322224857-0021	Bldg F - N side W end - Exterior Window Putty Painted	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-02H 322224857-0022	Bldg F - S side E end - Exterior Window Putty Painted	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-02I 322224857-0023	Bldg A - SE side at staff lounge - Exterior Window Putty Painted	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-03A-Coating 322224857-0024	Bldg C - W end S side - White Coating on Foam on Shingled Roofing & Felts	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-03A-Foam 322224857-0024A	Bldg C - W end S side - White Coating on Foam on Shingled Roofing & Felts	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-03A-Shingles 322224857-0024B	Bldg C - W end S side - White Coating on Foam on Shingled Roofing & Felts	Various/Black Fibrous Heterogeneous	35% Cellulose	65% Non-fibrous (Other)	None Detected
22YES-109-03A-Felt 322224857-0024C	Bldg C - W end S side - White Coating on Foam on Shingled Roofing & Felts	Black Fibrous Homogeneous	60% Cellulose	40% Non-fibrous (Other)	None Detected
22YES-109-03A-Compo site 322224857-0024D	Bldg C - W end S side - White Coating on Foam on Shingled Roofing & Felts	Various/Black/Yellow Fibrous Heterogeneous	40% Cellulose	60% Non-fibrous (Other)	None Detected
22YES-109-03B-Coating 322224857-0025	Bldg C - E end S side - White Coating on Foam on Shingled roofing & Felts	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

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Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
22YES-109-03B-Foam 322224857-0025A	Bldg C - E end S side - White Coating on Foam on Shingled roofing & Felts	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-03B-Shingle s 322224857-0025B	Bldg C - E end S side - White Coating on Foam on Shingled roofing & Felts	Various/Black Fibrous Heterogeneous	30% Cellulose	70% Non-fibrous (Other)	None Detected
22YES-109-03B-Felt 322224857-0025C	Bldg C - E end S side - White Coating on Foam on Shingled roofing & Felts	Black Fibrous Homogeneous	60% Cellulose	40% Non-fibrous (Other)	None Detected
22YES-109-03B-Compo site 322224857-0025D	Bldg C - E end S side - White Coating on Foam on Shingled roofing & Felts	Various/Black/Yello w Fibrous Heterogeneous	30% Cellulose	70% Non-fibrous (Other)	None Detected
22YES-109-03C-Coatin g 322224857-0026	Bldg D - W end S side - White Coating on Foam on Shingled Roofing & Felt	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-03C-Foam 322224857-0026A	Bldg D - W end S side - White Coating on Foam on Shingled Roofing & Felt	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-03C-Shingl e 322224857-0026B	Bldg D - W end S side - White Coating on Foam on Shingled Roofing & Felt	Black/Green Fibrous Heterogeneous	10% Cellulose	90% Non-fibrous (Other)	None Detected
22YES-109-03C-Felt 322224857-0026C	Bldg D - W end S side - White Coating on Foam on Shingled Roofing & Felt	Black Fibrous Homogeneous	12% Cellulose	88% Non-fibrous (Other)	None Detected
22YES-109-03C-Compo site 322224857-0026D	Bldg D - W end S side - White Coating on Foam on Shingled Roofing & Felt	Black/Green Fibrous Heterogeneous	15% Cellulose	85% Non-fibrous (Other)	None Detected
22YES-109-03D-Coatin g 322224857-0027	Bldg D - E end S side - White Coatin g on Foam on Shingled Roofing & Felts	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-03D-Foam 322224857-0027A	Bldg D - E end S side - White Coatin g on Foam on Shingled Roofing & Felts	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-03D-Shingl es 322224857-0027B	Bldg D - E end S side - White Coatin g on Foam on Shingled Roofing & Felts	Various Fibrous Heterogeneous	30% Cellulose	70% Non-fibrous (Other)	None Detected
22YES-109-03D-Felt 322224857-0027C	Bldg D - E end S side - White Coatin g on Foam on Shingled Roofing & Felts	Black Fibrous Homogeneous	60% Cellulose	40% Non-fibrous (Other)	None Detected
22YES-109-03D-Compo site 322224857-0027D	Bldg D - E end S side - White Coatin g on Foam on Shingled Roofing & Felts	Various/Black/Yello w Fibrous Heterogeneous	30% Cellulose	70% Non-fibrous (Other)	None Detected

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Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
22YES-109-03E-Coating g 322224857-0028	Bldg D - E end N side - White Coating on Foam on Shingled Roofing & Felts	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-03E-Foam 322224857-0028A	Bldg D - E end N side - White Coating on Foam on Shingled Roofing & Felts	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-03E-Shingles 322224857-0028B	Bldg D - E end N side - White Coating on Foam on Shingled Roofing & Felts	Various/Black Fibrous Heterogeneous	30% Cellulose	70% Non-fibrous (Other)	None Detected
22YES-109-03E-Felt 322224857-0028C	Bldg D - E end N side - White Coating on Foam on Shingled Roofing & Felts	Black Fibrous Homogeneous	60% Cellulose	40% Non-fibrous (Other)	None Detected
22YES-109-03E-Composite 322224857-0028D	Bldg D - E end N side - White Coating on Foam on Shingled Roofing & Felts	Various/Black/Yellow Fibrous Heterogeneous	30% Cellulose	70% Non-fibrous (Other)	None Detected
22YES-109-03F-Coating g 322224857-0029	Bldg E - W end S side - White Coating on Foam on Shingled roofing & Felts	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-03F-Foam 322224857-0029A	Bldg E - W end S side - White Coating on Foam on Shingled roofing & Felts	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-03F-Shingle 1 322224857-0029B	Bldg E - W end S side - White Coating on Foam on Shingled roofing & Felts	Black/Green Fibrous Heterogeneous	10% Cellulose	90% Non-fibrous (Other)	None Detected
22YES-109-03F-Shingle 2 322224857-0029C	Bldg E - W end S side - White Coating on Foam on Shingled roofing & Felts	Gray/Black Fibrous Heterogeneous	10% Synthetic	90% Non-fibrous (Other)	None Detected
22YES-109-03F-Felt 1 322224857-0029D	Bldg E - W end S side - White Coating on Foam on Shingled roofing & Felts	Black Fibrous Homogeneous	12% Cellulose	88% Non-fibrous (Other)	None Detected
22YES-109-03F-Felt 2 322224857-0029E	Bldg E - W end S side - White Coating on Foam on Shingled roofing & Felts	Black Fibrous Homogeneous	10% Glass	90% Non-fibrous (Other)	None Detected
22YES-109-03F-Composite site 322224857-0029F	Bldg E - W end S side - White Coating on Foam on Shingled roofing & Felts	Black/Yellow/Green Fibrous Heterogeneous	15% Cellulose 8% Glass	77% Non-fibrous (Other)	None Detected
22YES-109-03G-Coating g 322224857-0030	Bldg F - E end n side - White Coating on Foam on Shingled Roofing & Felts	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-03G-Foam 322224857-0030A	Bldg F - E end n side - White Coating on Foam on Shingled Roofing & Felts	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

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Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
22YES-109-03G-Shingles 322224857-0030B	Bldg F - E end n side - White Coating on Foam on Shingled Roofing & Felts	Various/Black Fibrous Heterogeneous	30% Cellulose 10% Glass	60% Non-fibrous (Other)	None Detected
22YES-109-03G-Felt 322224857-0030C	Bldg F - E end n side - White Coating on Foam on Shingled Roofing & Felts	Black Fibrous Homogeneous	60% Cellulose	40% Non-fibrous (Other)	None Detected
22YES-109-03G-Compo site 322224857-0030D	Bldg F - E end n side - White Coating on Foam on Shingled Roofing & Felts	Various/Black/Yello w Fibrous Heterogeneous	30% Cellulose 2% Glass	68% Non-fibrous (Other)	None Detected
22YES-109-03H-Coatin g 322224857-0031	Bldg F - S side Center - White Coating on Foam on Shingled Roofing & Felts	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-03H-Foam 322224857-0031A	Bldg F - S side Center - White Coating on Foam on Shingled Roofing & Felts	Yellow Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-03H-Shingl e 1 322224857-0031B	Bldg F - S side Center - White Coating on Foam on Shingled Roofing & Felts	Black/Green Fibrous Heterogeneous	10% Cellulose	90% Non-fibrous (Other)	None Detected
22YES-109-03H-Shingl e 2 322224857-0031C	Bldg F - S side Center - White Coating on Foam on Shingled Roofing & Felts	Brown/Black Fibrous Heterogeneous	10% Glass	90% Non-fibrous (Other)	None Detected
22YES-109-03H-Felt 1 322224857-0031D	Bldg F - S side Center - White Coating on Foam on Shingled Roofing & Felts	Brown Fibrous Homogeneous	10% Cellulose	90% Non-fibrous (Other)	None Detected
22YES-109-03H-Felt 2 322224857-0031E	Bldg F - S side Center - White Coating on Foam on Shingled Roofing & Felts	Black Fibrous Homogeneous	10% Glass	90% Non-fibrous (Other)	None Detected
22YES-109-03H-Compo site 322224857-0031F	Bldg F - S side Center - White Coating on Foam on Shingled Roofing & Felts	Brown/Black/Yellow Fibrous Heterogeneous	15% Cellulose 10% Glass	75% Non-fibrous (Other)	None Detected
22YES-109-04A-Mastic 322224857-0032	Bldg C - E end N side at vent - Mastic - Black/Grey Under Foam Roofing	Black Non-Fibrous Homogeneous		92% Non-fibrous (Other)	8% Chrysotile
22YES-109-04A-Foam 322224857-0032A	Bldg C - E end N side at vent - Mastic - Black/Grey Under Foam Roofing	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-04A-Compo site 322224857-0032B	Bldg C - E end N side at vent - Mastic - Black/Grey Under Foam Roofing	Black/Yellow Non-Fibrous Homogeneous		94% Non-fibrous (Other)	6% Chrysotile
22YES-109-04B-Mastic 322224857-0033	Bldg D - E end N side at vent pipe - Mastic - Black/Grey Under Foam Roofing	Black Non-Fibrous Homogeneous		92% Non-fibrous (Other)	8% Chrysotile

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**Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E
Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy**

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
22YES-109-04B-Foam 322224857-0033A	Bldg D - E end N side at vent pipe - Mastic - Black/Grey Under Foam Roofing	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-04B-Compo site 322224857-0033B	Bldg D - E end N side at vent pipe - Mastic - Black/Grey Under Foam Roofing	Black/Yellow Non-Fibrous Heterogeneous		94% Non-fibrous (Other)	6% Chrysotile
22YES-109-04C-Mastic 322224857-0034	Bldg E - N side Center at vent pipe - Mastic - Black/Grey Under Foam Roofing	Black Non-Fibrous Homogeneous		90% Non-fibrous (Other)	10% Chrysotile
22YES-109-04C-Foam 322224857-0034A	Bldg E - N side Center at vent pipe - Mastic - Black/Grey Under Foam Roofing	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-04C-Compo site 322224857-0034B	Bldg E - N side Center at vent pipe - Mastic - Black/Grey Under Foam Roofing	Black/Yellow Non-Fibrous Homogeneous		92% Non-fibrous (Other)	8% Chrysotile
22YES-109-04D-Mastic 322224857-0035	Bldg F - E end n side at vent pipe - Mastic - Black/Grey Under Foam Roofing	Black Non-Fibrous Homogeneous		92% Non-fibrous (Other)	8% Chrysotile
22YES-109-04D-Foam 322224857-0035A	Bldg F - E end n side at vent pipe - Mastic - Black/Grey Under Foam Roofing	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-04D-Compo site 322224857-0035B	Bldg F - E end n side at vent pipe - Mastic - Black/Grey Under Foam Roofing	Black/Yellow Non-Fibrous Homogeneous		96% Non-fibrous (Other)	4% Chrysotile
22YES-109-05A 322224857-0036	Bldg R16 & 17 - Classroom 19 - Walls/Handrails - Exterior Paint - LT Grey/Blue & DK Grey	Gray/Blue Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-05B 322224857-0037	Bldg R16 & 17 - Classroom 20 - Wall/Dr Frame - Exterior Paint - LT Grey/Blue & DK Grey	Gray/Blue Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-06A 322224857-0038	Bldg R16 & 17 - CR 19 - S side East end - Exterior Window Putty - Painted	Green/Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-06B 322224857-0039	Bldg R16&17 - N side W end - Exterior Window Putty - Painted	Green/Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

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Analyst(s)

David Flores (44)

Rosa Mendoza (76)

Jerry Drapala Ph.D, Laboratory Manager
or Other Approved Signatory

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Samples analyzed by LA Testing South Pasadena, CA NVLAP Lab Code 200232-0, CA ELAP 2283

Initial report from: 12/20/2022 10:33:34



Contact Name & Phone Number	Kristy Yowell (661) 477-4662	Account #	YWEL75
Comments	Please e-mail results to: kristy@yowellenvironmental.com	TYPE OF ANALYSIS AND TURN AROUND TIME	
Collected By	Kristy Yowell	PLM with Dispersion Staining	
Date Samples Collected	12/14/2022	72 Hour	
Job # & Client	22YES-109 Bakersfield City School District	LAB	LA TESTING - Pasadena
Job Site Name & Description	Fremont ES – Full School Inspection		
Submitted By	Kristy Yowell <i>KY</i>	Date	12/14/2022
Received By	Makena Evertz (efy)	Date	12-16-22 9:40am

SAMPLE ID	1 ST LINE: MATERIAL DESCRIPTION – 2 ND LINE: SAMPLE LOCATION
22YES-109-03I	WHITE FOAM ROOFING OVER SHINGLED ROOFING & FELTS
	BLDG A – SW STAFF RR 2 – ROOF - CENTER
22YES-109-04E	MASTIC – BLACK/GREY UNDER FOAM ROOFING
	BLDG A – ROOF – SW STAFF RR 2 – WEST END ON VENT PIPE
22YES-109-08A	BASEBOARD & GLUE 4" LT BROWN
	BLDG A – LOUNGE – NE WALL – SW AREA
22YES-109-10A	ACOUSTIC CEILING TILE 12" RANDOM HOLE & BROWN GLUE
	BLDG C – CR 2 – EAST SIDE CENTER
22YES-109-10B	ACOUSTIC CEILING TILE 12" RANDOM HOLE & BROWN GLUE
	BLDG A – LOUNGE – NE AREA OF CEILING
22YES-109-10C	ACOUSTIC CEILING TILE 12" RANDOM HOLE & BROWN GLUE
	BLDG C – CR 5 - EAST SIDE SOUTH END OF CEILING
22YES-109-10D	ACOUSTIC CEILING TILE 12" RANDOM HOLE & BROWN GLUE
	BLDG D – CR 9 – WEST SIDE CENTER
22YES-109-11A	UNFINISHED DRYWALL
	BLDG A – STAFF LOUNGE – NORTH SIDE CENTER OF CEILING
22YES-109-11B	UNFINISHED DRYWALL
	BLDG C – CR 2 – EAST SIDE CENTER
22YES-109-11C	UNFINISHED DRYWALL
	BLDG C – CR 5 – EAST SIDE SOUTH END



Contact Name & Phone Number	Kristy Yowell (661) 477-4662	Account #	YWEL75
Comments	Please e-mail results to: kristy@yowellenvironmental.com	TYPE OF ANALYSIS AND TURN AROUND TIME	
Collected By	Kristy Yowell	PLM with Dispersion Staining	
Date Samples Collected	12/14/2022	72 Hour	
Job # & Client	22YES-109 Bakersfield City School District	LAB	LA TESTING - Pasadena
Job Site Name & Description	Fremont ES – Full School Inspection		
Submitted By	Kristy Yowell <i>(Signature)</i>	Date	12/14/2022
Received By	Makenna Fuenft <i>(Signature)</i>	Date	12-16-22 9:40am

SAMPLE ID	1 ST LINE: MATERIAL DESCRIPTION – 2 ND LINE: SAMPLE LOCATION
22YES-109-11D	UNFINISHED DRYWALL
	BLDG D – CR 6 – WEST SIDE CENTER
22YES-109-11E	UNFINISHED DRYWALL
	BLD1G D – CR 9 – WEST SIDE CENTER
22YES-109-12A	CERAMIC FLOOR TILE GROUT BROWN (1" LT BROWN)
	BLDG A – NE STAFF RR 1 – AT ENTRY
22YES-109-13A	CERAMIC WALL TILE GROUT WHITE (6" BROWN)
	BLDG A – SW STAFF 2 – WEST WALL NORTH END
22YES-109-14A	PLASTER – SMOOTH – PAINTED
	BLDG C – EAST CENTER STORAGE RM – SOUTH WALL CENTER
22YES-109-15A	CERAMIC FLOOR TILE GROUT BROWN (1X2" BROWNS)
	BLDG D – MID-BLDG OFFICE RR – AT ENTRY
22YES-109-16A	CERAMIC WALL TILE GROUT WHITE (4X6" CREAM W/GOLD SPECKS)
	BLDG D – MID BLDG OFFICE RR – NORTH SIDE CENTER
22YES-109-17A	CONCEALED TAN FLOOR TILE & BLACK MASTIC
	BLDG A – LOUNGE- SE AREA OF FLOOR
22YES-109-18A	CARPET SQUARES – BLUE W/MULTI COLORED PATTERN
	BLDG C – CR 4 – EAST SIDE SOUTH END
22YES-109-18B	CARPET SQUARES – BLUE W/MULTI COLORED PATTERN
	BLDG C – CR 3 – SE AREAB



YES Environmental, Inc.

1201 24TH Street, Suite B110-377, Bakersfield, CA 93301 / (661) 527-0820

Contact Name & Phone Number	Kristy Yowell (661) 477-4662	Account #	YWEL75
Comments	Please e-mail results to: kristy@yowellenvironmental.com	TYPE OF ANALYSIS AND TURN AROUND TIME	
Collected By	Kristy Yowell	PLM with Dispersion Staining	
Date Samples Collected	12/14/2022	72 Hour	
Job # & Client	22YES-109 Bakersfield City School District	LAB	LA TESTING - Pasadena
Job Site Name & Description	Fremont ES – Full School Inspection		
Submitted By	Kristy Yowell	Date	12/14/2022
Received By	Makenna Evertt (etx)	Date	12-16-22 9:40am

SAMPLE ID	1 ST LINE: MATERIAL DESCRIPTION – 2 ND LINE: SAMPLE LOCATION
22YES-109-18C	CARPET SQUARES – BLUE W/MULTI COLORED PATTERN
	BLDG D – CR 9 – SE AREA
22YES-109-19A	BASEBOARD & GLUE 4" BLACK
	BLDG C – CR 1 – NORTH SIDE AT DOOR
22YES-109-19B	BASEBOARD & GLUE 4" BLACK
	BLDG C – CR 4 – NORTH SIDE CENTER
22YES-109-19C	BASEBOARD & GLUE 4" BLACK
	BLDG D – CR 8 – EAST SIDE SOUTH END
22YES-109-20A	CARPET – BLACK W/WHITE SPECKS
	BLDG C – CR 5 – NORTH SIDE EAST SIDE
22YES-109-22A	FALSE CEILING PANEL 2'X4' GOUGE PINHOLE PATTERN
	BLDG C – CR 4 – EAST SIDE SOUTH END OF CEILING
22YES-109-22B	FALSE CEILING PANEL 2'X4' GOUGE PINHOLE PATTERN
	BLDG C – CR 3 – NORTH SIDE CENTER
22YES-109-22C	FALSE CEILING PANEL 2'X4' GOUGE PINHOLE PATTERN
	BLDG D – CR 8 – WEST SIDE AT DAMAGE
22YES-109-23A	WHITE FOAM ROOFING OVER SHINGLED ROOFING & FELTS
	R16/R17 – CR 19 – SOUTH SIDE CENTER OF ROOF
22YES-109-23B	WHITE FOAM ROOFING OVER SHINGLED ROOFING & FELTS
	R16/R17 – CR 20 – NORTH SIDE CENTER OF ROOF



Contact Name & Phone Number	Kristy Yowell (661) 477-4662	Account #	YWEL75
Comments	Please e-mail results to: kristy@yowellenvironmental.com	TYPE OF ANALYSIS AND TURN AROUND TIME	
Collected By	Kristy Yowell	PLM with Dispersion Staining	
Date Samples Collected	12/14/2022	72 Hour	
Job # & Client	22YES-109 Bakersfield City School District	LAB	LA TESTING - Pasadena
Job Site Name & Description	Fremont ES – Full School Inspection		
Submitted By	Kristy Yowell	Date	12/14/2022
Received By	Makenzie Eueritt (etx)	Date	12/16/22 9:40am

SAMPLE ID	1 ST LINE: MATERIAL DESCRIPTION – 2 ND LINE: SAMPLE LOCATION
22YES-109-24A	MASTIC – BLACK/GREY UNDER FOAM ROOFING
	R16/R17 – CR 19 – NW AREA SECTION ON VENT PIPE
22YES-109-24B	MASTIC – BLACK/GREY UNDER FOAM ROOFING
	R16/R17 – CR 20 – NW SECTION ON VENT PIPE2
22YES-109-25A	FIBERGLASS BATT INSULATION WITH PAPER BACKING
	BLDG C - CR 2 – EAST SIDE CENTER
22YES-109-25B	FIBERGLASS BATT INSULATION WITH PAPER BACKING
	BLDG D – CR 6 – WEST SIDE CENTER
22YES-109-25C	FIBERGLASS BATT INSULATION WITH PAPER BACKING
	BLDG D – CR 9 – WEST SIDE CENTER
22YES-109-26A	FIBERGLASS BATT INSULATION WITH FOIL/PAPER BACKING
	BLDG C – CR 2 – EAST SIDE CENTER
22YES-109-26B	FIBERGLASS BATT INSULATION WITH FOIL/PAPER BACKING
	BLDG C – CR 3 – NORTH SIDE CENTER
22YES-109-26C	FIBERGLASS BATT INSULATION WITH FOIL/PAPER BACKING
	BLDG D – CR 6 – WEST SIDE CENTER
22YES-109-27A	BASEBOARD & GLUE 4" GREY
	BLDG C – NORTH STORAGE RM – NORTH WALL CENTER
22YES-109-28A	FIBERGLASS PIPE STRAIGHT INSULATION PAPER JACKETED
	BLDG C – CR 2 – AT UNIT VENTILATOR



YES Environmental, Inc.

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Contact Name & Phone Number	Kristy Yowell (661) 477-4662	Account #	YWEL75
Comments	Please e-mail results to: kristy@yowellenvironmental.com	TYPE OF ANALYSIS AND TURN AROUND TIME	
Collected By	Kristy Yowell	PLM with Dispersion Staining	
Date Samples Collected	12/14/2022	72 Hour	
Job # & Client	22YES-109 Bakersfield City School District	LAB	LA TESTING - Pasadena
Job Site Name & Description	Fremont ES – Full School Inspection		
Submitted By	Kristy Yowell <i>(V)</i>	Date	12/14/2022
Received By	Makenna Euenth <i>(efx)</i>	Date	12-16-22 9:40am

SAMPLE ID	1 ST LINE: MATERIAL DESCRIPTION – 2 ND LINE: SAMPLE LOCATION
22YES-109-28B	FIBERGLASS PIPE STRAIGHT INSULATION PAPER JACKETED
	BLDG C – CR 5 – AT UNIT VENTILATOR
22YES-109-28C	FIBERGLASS PIPE STRAIGHT INSULATION PAPER JACKETED
	BLDG D – CR 8 – AT UNIT VENTILATOR
22YES-109-29A	CERAMIC FLOOR TILE GROUT BROWN (1" GREY)
	BLDG D – GIRLS RR – AT ENTRY
22YES-109-30A	CERAMIC WALL TILE GROUT WHITE (6" BROWN)
	BLDG D – BOYS RR – AT ENTRY
22YES-109-31A	CERAMIC WALL TILE GROUT WHITE (6" BLUE)
	BLDG D – GIRLS RR – AT ENTRY
22YES-109-32A	CARPET SQUARES – BROWN/YELLOW/ORANGE/GREEN STRIPED
	BLDG D – CR 6 – NW AREA
22YES-109-33A	BASEBOARD & GLUE 4" SILVER
	BLDG D – CR 6 – EAST SIDE CENTER3
22YES-109-34A	FALSE CEILING PANEL 2'X4' GOUGE PH (LOOKS LIKE 2'X2')
	BLDG D – CR 6 – WEST SIDE CENTER
22YES-109-35A	VINYL PLANK FLOORING & GLUE – BLUE/ORANGE/YELLOW
	BLDG D -CR 7 – NW AREA
22YES-109-36A	SHEET FLOORING & GLUE – CREAM MOSAIC
	BLDG D – MID BLDG OFFICE – AT SINK



YES Environmental, Inc.

#322224939

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Contact Name & Phone Number	Kristy Yowell (661) 477-4662	Account #	YWEL75
Comments	Please e-mail results to: kristy@yowellenvironmental.com	TYPE OF ANALYSIS AND TURN AROUND TIME	
Collected By	Kristy Yowell	PLM with Dispersion Staining	
Date Samples Collected	12/14/2022	72 Hour	
Job # & Client	22YES-109 Bakersfield City School District	LAB	LA TESTING - Pasadena
Job Site Name & Description	Fremont ES – Full School Inspection		
Submitted By	Kristy Yowell	Date	12/14/2022
Received By	Makenna Ewertt (etx)	Date	12-16-22 9:40am

SAMPLE ID	1 ST LINE: MATERIAL DESCRIPTION – 2 ND LINE: SAMPLE LOCATION
22YES-109-37A	PLASTER – SANDED – PAINTED
	BLDG D – MID BLDG OFFICE – AT SINK AT DAMAGE
22YES-109-38A	WHITE COATING ON FOAM ROOFING ON ROLLED COMPOSITION ROOFING & FELTS
	BLDG A – LOUNGE – NORTH SIDE EAST END OF ROOF
22YES-109-39A	CONCEALED CHALKY PIPE INSULATION – CREAM
	CHILLER YARD – NORTH SIDE EAST AREA AT HIGH PIPE
22YES-109-39B	CONCEALED CHALKY PIPE INSULATION – CREAM
	CHILLER YARD – SW AREA
22YES-109-40A	FIBERGLASS PIPE STRAIGHT INSULATION – PAPER/FOIL JACKETED
	CHILLER YARD – SW AREA
22YES-109-40B	FIBERGLASS PIPE STRAIGHT INSULATION – PAPER/FOIL JACKETED
	CHILLER YARD – SOUTH SIDE EAST END
22YES-109-41A	BLACK MASTIC
	CHILLER YARD – NORTH SIDE AT CONTROL SWITCH
22YES-109-42A	SILVER PAINT
	CHILLER YARD – ON PIPES
22YES-109-43A	WHITE PAINT
	CHILLER YARD – ON WOOD WALLS



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LA Testing Order: 322224939 Page 105 of 142

Customer ID: YWEL75

Customer PO:

Project ID:

Attention: Kristy Yowell
YES Environmental, Inc.
13708 Carpaccio Lane
Bakersfield, CA 93306

Phone: (661) 477-4662

Fax:

Received Date: 12/16/2022 9:40 AM

Analysis Date: 12/20/2022 - 12/21/2022

Collected Date:

Project: 22YES-109 Bakerfield City School District / Fremont ES - Full School Inspection

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
22YES-109-03I-Coating 322224939-0001	Bldg A - SW Staff RR 2 - Roof - Center - White Foam Roofing Over Shingled Roofing & Felt	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-03I-Foam 322224939-0001A	Bldg A - SW Staff RR 2 - Roof - Center - White Foam Roofing Over Shingled Roofing & Felt	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-03I-Shingle 1 322224939-0001B	Bldg A - SW Staff RR 2 - Roof - Center - White Foam Roofing Over Shingled Roofing & Felt	Various Fibrous Heterogeneous	10% Synthetic	90% Non-fibrous (Other)	None Detected
22YES-109-03I-Shingle 2 322224939-0001C	Bldg A - SW Staff RR 2 - Roof - Center - White Foam Roofing Over Shingled Roofing & Felt	Gray/Black/Green Fibrous Heterogeneous	10% Cellulose	90% Non-fibrous (Other)	None Detected
22YES-109-03I-Felt 1 322224939-0001D	Bldg A - SW Staff RR 2 - Roof - Center - White Foam Roofing Over Shingled Roofing & Felt	Brown/Black Fibrous Homogeneous	10% Cellulose	90% Non-fibrous (Other)	None Detected
22YES-109-03I-Felt 2 322224939-0001E	Bldg A - SW Staff RR 2 - Roof - Center - White Foam Roofing Over Shingled Roofing & Felt	Black Fibrous Homogeneous	10% Glass	90% Non-fibrous (Other)	None Detected
22YES-109-03I-Compos ite 322224939-0001F	Bldg A - SW Staff RR 2 - Roof - Center - White Foam Roofing Over Shingled Roofing & Felt	Various/Black/Gree n Fibrous Heterogeneous	8% Cellulose 10% Synthetic 8% Glass	74% Non-fibrous (Other)	None Detected
22YES-109-04E-Mastic 322224939-0002	Bldg a - Roof - Sw Staff RR 2 - West End On Vent - Mastic - Black/Grey Under Zfoam Roofing	Black Non-Fibrous Homogeneous		92% Non-fibrous (Other)	8% Chrysotile
22YES-109-04E-Foam 322224939-0002A	Bldg a - Roof - Sw Staff RR 2 - West End On Vent - Mastic - Black/Grey Under Zfoam Roofing	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-08A-Baseb oard 322224939-0003	Bldg A - Lounge - NE Wall - SW Area - Base Board & Glue 4" LT Brown	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

Initial report from: 12/21/2022 12:32:05



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LA Testing Order: 322224939 Page 106 of 142

Customer ID: YWEL75

Customer PO:

Project ID:

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
22YES-109-08A-Mastic 322224939-0003A	Bldg A - Lounge - NE Wall - SW Area - Base Board & Glue 4" LT Brown	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-10A-Ceiling Tile 322224939-0004	Bldg C - CR2 - East Side Center - Acoustic Ceiling Tile 12" Random Hole & Brown Glue	Brown/White Fibrous Homogeneous	98% Cellulose	2% Non-fibrous (Other)	None Detected
22YES-109-10A-Mastic 322224939-0004A	Bldg C - CR2 - East Side Center - Acoustic Ceiling Tile 12" Random Hole & Brown Glue	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-10A-Compo site 322224939-0004B	Bldg C - CR2 - East Side Center - Acoustic Ceiling Tile 12" Random Hole & Brown Glue	Brown/White Fibrous Heterogeneous	50% Cellulose	50% Non-fibrous (Other)	None Detected
22YES-109-10B-Ceiling Tile 322224939-0005	Bldg A - Lounge - Ne Area Of Ceiling - Acoustic Ceiling Tile 12" Random Hole & Brown Glue	Brown/White Fibrous Homogeneous	98% Cellulose	2% Non-fibrous (Other)	None Detected
22YES-109-10B-Mastic 322224939-0005A	Bldg A - Lounge - Ne Area Of Ceiling - Acoustic Ceiling Tile 12" Random Hole & Brown Glue	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-10B-Compo site 322224939-0005B	Bldg A - Lounge - Ne Area Of Ceiling - Acoustic Ceiling Tile 12" Random Hole & Brown Glue	Brown/White Fibrous Homogeneous	50% Cellulose	50% Non-fibrous (Other)	None Detected
22YES-109-10C-Ceiling Tile 322224939-0006	Bldg C - CR% - East Side South End OF Ceiling - Acoustic Ceiling Tile 12" Random Hole & Brown Glue	Brown/White Fibrous Heterogeneous	90% Cellulose	10% Non-fibrous (Other)	None Detected
22YES-109-10C-Mastic 322224939-0006A	Bldg C - CR% - East Side South End OF Ceiling - Acoustic Ceiling Tile 12" Random Hole & Brown Glue	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-10C-Compo site 322224939-0006B	Bldg C - CR% - East Side South End OF Ceiling - Acoustic Ceiling Tile 12" Random Hole & Brown Glue	Brown/White Fibrous Heterogeneous	85% Cellulose	15% Non-fibrous (Other)	None Detected
22YES-109-10D-Ceiling Tile 322224939-0007	Bldg D - CR 9 - West Side Center - Acoustic Ceiling Tile 12" Random Hole & Brown Glue	Brown/White Fibrous Homogeneous	98% Cellulose	2% Non-fibrous (Other)	None Detected

Initial report from: 12/21/2022 12:32:05



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LA Testing Order: 322224939 Page 107 of 142

Customer ID: YWEL75

Customer PO:

Project ID:

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
22YES-109-10D-Mastic 322224939-0007A	Bldg D - CR 9 - West Side Center - Acoustic Ceiling Tile 12" Random Hole & Brown Glue	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-10D-Compo site 322224939-0007B	Bldg D - CR 9 - West Side Center - Acoustic Ceiling Tile 12" Random Hole & Brown Glue	Brown/White Fibrous Heterogeneous	50% Cellulose	50% Non-fibrous (Other)	None Detected
22YES-109-11A-Drywall 322224939-0008	Bldg A - Staff Loung - North Side Center of Ceiling - Unfinished Drywall	Brown/White Fibrous Heterogeneous	20% Cellulose	80% Non-fibrous (Other)	None Detected
22YES-109-11A-Mastic 322224939-0008A	Bldg A - Staff Loung - North Side Center of Ceiling - Unfinished Drywall	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-11A-Compo site 322224939-0008B	Bldg A - Staff Loung - North Side Center of Ceiling - Unfinished Drywall	Brown/White Fibrous Heterogeneous	15% Cellulose	85% Non-fibrous (Other)	None Detected
22YES-109-11B 322224939-0009	Bldg C - CR2 - East Side Center - Unfinished Drywall	Brown/White Fibrous Heterogeneous	20% Cellulose	80% Non-fibrous (Other)	None Detected
22YES-109-11C 322224939-0010	Bldg C - CR5 - East Side South End - Unfinished Drywall	Brown/White Fibrous Heterogeneous	20% Cellulose	80% Non-fibrous (Other)	None Detected
22YES-109-11D 322224939-0011	Bldg D - CR6 - West Side Center - Unfinished Drywall	Brown/White Fibrous Heterogeneous	20% Cellulose	80% Non-fibrous (Other)	None Detected
22YES-109-11E 322224939-0012	Bldg D - CR(- West Side Center - Unfinished Drywall	Brown/White Fibrous Heterogeneous	20% Cellulose	80% Non-fibrous (Other)	None Detected
22YES-109-12A-Ceramic Tile 322224939-0013	Bldg A - NE Staff RR1 - At Entry - Ceramic Floor Tile Grout Brown (1"LT Brown)	White/Blue Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-12A-Grout 322224939-0013A	Bldg A - NE Staff RR1 - At Entry - Ceramic Floor Tile Grout Brown (1"LT Brown)	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-12A-Compo site 322224939-0013B	Bldg A - NE Staff RR1 - At Entry - Ceramic Floor Tile Grout Brown (1"LT Brown)	Gray/White/Blue Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-13A-Ceramic Tile 322224939-0014	Bldg A - SW Staff 2 - West Wall North Enhd - Ceramic Wall Tile Grout White (6"Brown)	Brown/White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-13A-Grout 322224939-0014A	Bldg A - SW Staff 2 - West Wall North Enhd - Ceramic Wall Tile Grout White (6"Brown)	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

Initial report from: 12/21/2022 12:32:05



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LA Testing Order: 322224939 Page 108 of 142

Customer ID: YWEL75

Customer PO:

Project ID:

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
22YES-109-13A-Compo site 322224939-0014B	Bldg A - SW Staff 2 - West Wall North Enh'd - Ceramic Wall Tile Grout White (6"Brown)	Brown/Gray/White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-14A-Finish Coat 322224939-0015	Bldg C - East Center Storage RM - South Wall Center - Plaster - Smooth - Painted	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-14A-Base Coat 322224939-0015A	Bldg C - East Center Storage RM - South Wall Center - Plaster - Smooth - Painted	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-14A-Compo site 322224939-0015B	Bldg C - East Center Storage RM - South Wall Center - Plaster - Smooth - Painted	Gray/White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-15A 322224939-0016	Bldg D - Mid-Bldg Office RR m- At Entry - Ceramic Floor Tile Grout Brown (1x2" Browns)	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-16A 322224939-0017	Bldg D - Mid Bldg Office RR - North Side Center - Ceramic Wall Tile Grout White (4x6" Cream w/Gold Specks)	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-17A-Floor Tile 322224939-0018	Bldg A - Lounge - SE Area of Floor - Concealed Tan Floor Tile & Black Mastic	Brown/Tan Non-Fibrous Homogeneous		93% Non-fibrous (Other)	7% Chrysotile
22YES-109-17A-Mastic 322224939-0018A	Bldg A - Lounge - SE Area of Floor - Concealed Tan Floor Tile & Black Mastic	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-18A-Carpet 322224939-0019	Bldg C - CR4 -East Side South End - Carpet Squares - Blue w/Multi Colored Pattern	Various Fibrous Homogeneous	98% Synthetic	2% Non-fibrous (Other)	None Detected
22YES-109-18A-Padding 322224939-0019A	Bldg C - CR4 -East Side South End - Carpet Squares - Blue w/Multi Colored Pattern	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-18A-Compo site 322224939-0019B	Bldg C - CR4 -East Side South End - Carpet Squares - Blue w/Multi Colored Pattern	Gray/Various Fibrous Homogeneous	50% Synthetic	50% Non-fibrous (Other)	None Detected
22YES-109-18B-Carpet 322224939-0020	Bldg C - CR3 - SE Area B - Carpet Squares - Blue w/Multi Colored Pattern	Various Fibrous Homogeneous	98% Synthetic	2% Non-fibrous (Other)	None Detected

Initial report from: 12/21/2022 12:32:05



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LA Testing Order: 322224939 Page 109 of 142

Customer ID: YWEL75

Customer PO:

Project ID:

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
22YES-109-18B-Padding 322224939-0020A	Bldg C - CR3 - SE Area B - Carpet Squares - Blue w/Multi Colored Pattern	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-18B-Compo site 322224939-0020B	Bldg C - CR3 - SE Area B - Carpet Squares - Blue w/Multi Colored Pattern	Gray/Variou s Fibrous Heterogeneous	50% Synthetic	50% Non-fibrous (Other)	None Detected
22YES-109-18C-Carpet 322224939-0021	Bldg D - Cr9 - SE Area - Carpet Squares - Blue w/Multi Colored Pattern	Gray/Blue/Beige Fibrous Heterogeneous	95% Synthetic	5% Non-fibrous (Other)	None Detected
22YES-109-18C-Paddin g 322224939-0021A	Bldg D - Cr9 - SE Area - Carpet Squares - Blue w/Multi Colored Pattern	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-18C-Compo site 322224939-0021B	Bldg D - Cr9 - SE Area - Carpet Squares - Blue w/Multi Colored Pattern	Gray/Blue/Beige Fibrous Heterogeneous	60% Synthetic	40% Non-fibrous (Other)	None Detected
22YES-109-19A-Baseb oard 322224939-0022	Bldg C - CR1- North Side at Door - Baseboard & Glue 4" Black	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-19A-Glue 322224939-0022A	Bldg C - CR1- North Side at Door - Baseboard & Glue 4" Black	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-19B-Baseb oard 322224939-0023	Bldg C - CR4 - North Side Center - Basedboard & Glue 4" Black	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-19B-Glue 322224939-0023A	Bldg C - CR4 - North Side Center - Basedboard & Glue 4" Black	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-19C-Baseb oard 322224939-0024	Bldg D - CR8 - East Side South End - Baseboard & Glue 4" Black	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-19C-Glue 322224939-0024A	Bldg D - CR8 - East Side South End - Baseboard & Glue 4" Black	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-20A-Carpet 322224939-0025	Bldg C - CR5 - North Side East Side - Carpet - Black w/White Specks	Gray/Black Fibrous Homogeneous	98% Synthetic	2% Non-fibrous (Other)	None Detected
22YES-109-20A-Paddin g 322224939-0025A	Bldg C - CR5 - North Side East Side - Carpet - Black w/White Specks	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

Initial report from: 12/21/2022 12:32:05



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Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
22YES-109-20A-Compo site 322224939-0025B	Bldg C - CR5 - North Side East Side - Carpet - Black w/White Specks	Gray/Black Fibrous Heterogeneous	50% Synthetic	50% Non-fibrous (Other)	None Detected
22YES-109-22A 322224939-0026	Bldg C - CR4 - East Side South End of Ceiling - False Ceiling Panel 2"x4" Gouge Pinhole Pattern	Gray/White Fibrous Homogeneous	45% Cellulose 20% Min. Wool	20% Perlite 15% Non-fibrous (Other)	None Detected
22YES-109-22B 322224939-0027	Bldg C - CR3 - North Side Center - False Ceiling Panel 2'x4' Gouge Pinhole Pattern	Gray/White Fibrous Homogeneous	45% Cellulose 20% Min. Wool	20% Perlite 15% Non-fibrous (Other)	None Detected
22YES-109-22C 322224939-0028	Bldg D - CR8 - West Side At Damge - False Ceiling Panel 2'x4' Gouge Pinhole Pattern	Gray/White/Beige Non-Fibrous Homogeneous	45% Cellulose 10% Min. Wool	25% Perlite 20% Non-fibrous (Other)	None Detected
22YES-109-23A-Shingle 1 322224939-0029	R16/R17 - CR19 - South Side Center of Roof - White Foam Roofing Over Shingled Roofing & Felts	Gray/Black Fibrous Heterogeneous	10% Cellulose	90% Non-fibrous (Other)	None Detected
22YES-109-23A-Shingle 2 322224939-0029A	R16/R17 - CR19 - South Side Center of Roof - White Foam Roofing Over Shingled Roofing & Felts	Gray/Black Fibrous Heterogeneous	10% Glass	90% Non-fibrous (Other)	None Detected
22YES-109-23A-Felt 322224939-0029B	R16/R17 - CR19 - South Side Center of Roof - White Foam Roofing Over Shingled Roofing & Felts	Black Fibrous Homogeneous	10% Glass	90% Non-fibrous (Other)	None Detected
22YES-109-23A-Foam 322224939-0029C	R16/R17 - CR19 - South Side Center of Roof - White Foam Roofing Over Shingled Roofing & Felts	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-23A-Compo site 322224939-0029D	R16/R17 - CR19 - South Side Center of Roof - White Foam Roofing Over Shingled Roofing & Felts	Black/Yellow/Green Fibrous Heterogeneous	8% Cellulose 8% Glass	84% Non-fibrous (Other)	None Detected
22YES-109-23B-Shingle 1 322224939-0030	R16/R17 - CR20 - North Side Center of Roof - White Foam Roofing Over Shingled Roofing & Felts	Gray/White/Black Fibrous Heterogeneous	10% Cellulose	90% Non-fibrous (Other)	None Detected

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Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
22YES-109-23B-Shingle 2 322224939-0030A	R16/R17 - CR20 - North Side Center of Roof - White Foam Roofing Over Shingled Roofing & Felts	White/Black/Green Fibrous Heterogeneous	10% Cellulose	90% Non-fibrous (Other)	None Detected
22YES-109-23B-Felt 322224939-0030B	R16/R17 - CR20 - North Side Center of Roof - White Foam Roofing Over Shingled Roofing & Felts	Black Non-Fibrous Homogeneous	20% Cellulose	80% Non-fibrous (Other)	None Detected
22YES-109-23B-Foam 322224939-0030C	R16/R17 - CR20 - North Side Center of Roof - White Foam Roofing Over Shingled Roofing & Felts	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-23B-Compo site 322224939-0030D	R16/R17 - CR20 - North Side Center of Roof - White Foam Roofing Over Shingled Roofing & Felts	Gray/Black/Yellow Fibrous Heterogeneous	10% Cellulose	90% Non-fibrous (Other)	None Detected
22YES-109-24A-Roofin g 322224939-0031	R16/R17 - Cr19 - NW Area Section On Vent Pipe - Mastic - Black/Grey Under Foam Roof	Gray/Black Non-Fibrous Homogeneous		90% Non-fibrous (Other)	10% Chrysotile
22YES-109-24A-Shingle 322224939-0031A	R16/R17 - Cr19 - NW Area Section On Vent Pipe - Mastic - Black/Grey Under Foam Roof	Gray/White/Black Fibrous Heterogeneous	12% Cellulose	88% Non-fibrous (Other)	None Detected
22YES-109-24A-Foam 322224939-0031B	R16/R17 - Cr19 - NW Area Section On Vent Pipe - Mastic - Black/Grey Under Foam Roof	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-24A-Compo site 322224939-0031C	R16/R17 - Cr19 - NW Area Section On Vent Pipe - Mastic - Black/Grey Under Foam Roof	Gray/Black/Yellow Fibrous Heterogeneous	8% Cellulose	88% Non-fibrous (Other)	4% Chrysotile
22YES-109-24B-Roofin g 322224939-0032	R16/R17 - CR20 - NW Section On Vent Pipe2 - Mastic - Black/Grey Under Foam Roofing	Gray/Black Non-Fibrous Homogeneous		90% Non-fibrous (Other)	10% Chrysotile
22YES-109-24B-Shingle 322224939-0032A	R16/R17 - CR20 - NW Section On Vent Pipe2 - Mastic - Black/Grey Under Foam Roofing	Gray/White/Black Fibrous Heterogeneous	10% Cellulose	90% Non-fibrous (Other)	None Detected
22YES-109-24B-Foam 322224939-0032B	R16/R17 - CR20 - NW Section On Vent Pipe2 - Mastic - Black/Grey Under Foam Roofing	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

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Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
22YES-109-24B-Compo site 322224939-0032C	R16/R17 - CR20 - NW Section On Vent Pipe2 - Mastic - Black/Grey Under Foam Roofing	White/Black/Yellow Fibrous Heterogeneous	10% Cellulose	84% Non-fibrous (Other)	6% Chrysotile
22YES-109-25A-Insulation 322224939-0033	Bldg C - CR2 - East Side Center - Fiberglass Batt Insulation With Paper Backing	Gray Fibrous Homogeneous	98% Glass	2% Non-fibrous (Other)	None Detected
22YES-109-25A-Backing Paper 322224939-0033A	Bldg C - CR2 - East Side Center - Fiberglass Batt Insulation With Paper Backing	Brown Fibrous Homogeneous	98% Cellulose	2% Non-fibrous (Other)	None Detected
22YES-109-25A-Compo site 322224939-0033B	Bldg C - CR2 - East Side Center - Fiberglass Batt Insulation With Paper Backing	Brown/Gray Fibrous Heterogeneous	45% Cellulose 45% Glass	10% Non-fibrous (Other)	None Detected
22YES-109-25B-Insulation 322224939-0034	Bldg - CR6 - West Side Center - Fiberglass Batt Insulation With Paper Backing	Gray Fibrous Homogeneous	98% Glass	2% Non-fibrous (Other)	None Detected
22YES-109-25B-Backing Paper 322224939-0034A	Bldg - CR6 - West Side Center - Fiberglass Batt Insulation With Paper Backing	Brown Fibrous Homogeneous	98% Cellulose	2% Non-fibrous (Other)	None Detected
22YES-109-25B-Compo site 322224939-0034B	Bldg - CR6 - West Side Center - Fiberglass Batt Insulation With Paper Backing	Brown/Gray Fibrous Heterogeneous	45% Cellulose 45% Glass	10% Non-fibrous (Other)	None Detected
22YES-109-25C-Insulation 322224939-0035	Bldg D - CR 9 - West Side Center - Fiberglass Batt Insulation With Paper Backing	Gray Fibrous Homogeneous	95% Glass	5% Non-fibrous (Other)	None Detected
22YES-109-25C-Backing Paper 322224939-0035A	Bldg D - CR 9 - West Side Center - Fiberglass Batt Insulation With Paper Backing	Brown/Black Fibrous Heterogeneous	75% Cellulose	25% Non-fibrous (Other)	None Detected
22YES-109-25C-Compo site 322224939-0035B	Bldg D - CR 9 - West Side Center - Fiberglass Batt Insulation With Paper Backing	Brown/Gray/Black Fibrous Heterogeneous	45% Cellulose 45% Glass	10% Non-fibrous (Other)	None Detected
22YES-109-26A-Insulation 322224939-0036	Bldg C - CR2 - East Side Center - Fiberglass mBatt Insulation With Foil/Paper Backing	Yellow Fibrous Homogeneous	98% Glass	2% Non-fibrous (Other)	None Detected
22YES-109-26A-Foil/Paper Backing 322224939-0036A	Bldg C - CR2 - East Side Center - Fiberglass mBatt Insulation With Foil/Paper Backing	Brown/Black/Silver Fibrous Heterogeneous	65% Cellulose 8% Glass	27% Non-fibrous (Other)	None Detected

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Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
22YES-109-26A-Compo site 322224939-0036B	Bldg C - CR2 - East Side Center - Fiberglass mBatt Insulation With Foil/Paper Backing	Black/Silver/Yellow Fibrous Heterogeneous	55% Cellulose 45% Glass		None Detected
22YES-109-26B-Insulation 322224939-0037	Bldg C - CR3 - North Side Center - Fiberglass Batt Insulation With Foil/Paper Backing	Yellow Fibrous Homogeneous	98% Glass	2% Non-fibrous (Other)	None Detected
22YES-109-26B-Foil/Paper Backing 322224939-0037A	Bldg C - CR3 - North Side Center - Fiberglass Batt Insulation With Foil/Paper Backing	Brown/Black/Silver Fibrous Heterogeneous	65% Cellulose 10% Glass	25% Non-fibrous (Other)	None Detected
22YES-109-26B-Compo site 322224939-0037B	Bldg C - CR3 - North Side Center - Fiberglass Batt Insulation With Foil/Paper Backing	Black/Silver/Yellow Fibrous Heterogeneous	55% Cellulose 45% Glass		None Detected
22YES-109-26C-Insulation 322224939-0038	Bldg D - CR6 - West Side Center - Fiberglass Batt Insulation With Foil/Paper Backing	Yellow Fibrous Homogeneous	95% Glass	5% Non-fibrous (Other)	None Detected
22YES-109-26C-Foil/Paper Backing 322224939-0038A	Bldg D - CR6 - West Side Center - Fiberglass Batt Insulation With Foil/Paper Backing	Brown/Black/Silver Fibrous Heterogeneous	75% Cellulose 10% Glass	15% Non-fibrous (Other)	None Detected
22YES-109-26C-Compo site 322224939-0038B	Bldg D - CR6 - West Side Center - Fiberglass Batt Insulation With Foil/Paper Backing	Brown/Silver/Yellow Fibrous Heterogeneous	45% Cellulose 45% Glass	10% Non-fibrous (Other)	None Detected
22YES-109-27A-Baseboard 322224939-0039	Bldg C - North Storage RM - North Wall Center - Baseboard & Glue 4" Grey	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-27A-Glue 322224939-0039A	Bldg C - North Storage RM - North Wall Center - Baseboard & Glue 4" Grey	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-28A-Insulation 322224939-0040	Bldg C - CR2 - At Unit Ventilator - Fiberglass Pipe Straight Insulation Paper Jacketed	Yellow Fibrous Homogeneous	98% Glass	2% Non-fibrous (Other)	None Detected
22YES-109-28A-Foil/Paper Backing 322224939-0040A	Bldg C - CR2 - At Unit Ventilator - Fiberglass Pipe Straight Insulation Paper Jacketed	Brown/Black/Silver Fibrous Heterogeneous	65% Cellulose 10% Glass	25% Non-fibrous (Other)	None Detected
22YES-109-28A-Compo site 322224939-0040B	Bldg C - CR2 - At Unit Ventilator - Fiberglass Pipe Straight Insulation Paper Jacketed	Black/Silver/Yellow Fibrous Heterogeneous	55% Cellulose 45% Glass		None Detected

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Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
22YES-109-28B-Insulation 322224939-0041	Bldg C - CR5 - At Unit Ventilator - Fiberglass Pipe Straight Insulation Paper Jacketed	Yellow Fibrous Homogeneous	98% Glass	2% Non-fibrous (Other)	None Detected
22YES-109-28B-Foil/Paper Backing 322224939-0041A	Bldg C - CR5 - At Unit Ventilator - Fiberglass Pipe Straight Insulation Paper Jacketed	Brown/Black/Silver Fibrous Heterogeneous	65% Cellulose 10% Glass	25% Non-fibrous (Other)	None Detected
22YES-109-28B-Composite 322224939-0041B	Bldg C - CR5 - At Unit Ventilator - Fiberglass Pipe Straight Insulation Paper Jacketed	Black/Silver/Yellow Fibrous Homogeneous	55% Cellulose 45% Glass		None Detected
22YES-109-28C-Insulation 322224939-0042	Bldg D - CR8 - At Unit Ventilator - Fiberglass Pipe Straight Insulation Paper Jacketed	Yellow Fibrous Homogeneous	95% Glass	5% Non-fibrous (Other)	None Detected
22YES-109-28C-Foil/Paper Backing 322224939-0042A	Bldg D - CR8 - At Unit Ventilator - Fiberglass Pipe Straight Insulation Paper Jacketed	Silver/Beige Fibrous Heterogeneous	75% Cellulose 10% Glass	15% Non-fibrous (Other)	None Detected
22YES-109-28C-Composite 322224939-0042B	Bldg D - CR8 - At Unit Ventilator - Fiberglass Pipe Straight Insulation Paper Jacketed	Brown/Black/Silver Fibrous Heterogeneous	45% Cellulose 45% Glass	10% Non-fibrous (Other)	None Detected
22YES-109-29A 322224939-0043	Bldg D - Girl RR - At Entry - Ceramic Floor Tile Grout Brown 91" Grey)	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-30A 322224939-0044	Bldg D - Boys RR - At Entry - Ceramic Wall Tile Grout White (^ Brown)	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-31A 322224939-0045	Bldg D - Girl RR - At Entry - Ceramic Wall Tile Grout White (6" Blue)	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-32A-Carpet 322224939-0046	Bldg D - CR 6 - NW Area - Carpet Squares - Brown/Yellow/Orange /Green Striped	Brown/Black Fibrous Homogeneous	98% Synthetic	2% Non-fibrous (Other)	None Detected
22YES-109-32A-Padding 322224939-0046A	Bldg D - CR 6 - NW Area - Carpet Squares - Brown/Yellow/Orange /Green Striped	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-32A-Mastic 322224939-0046B	Bldg D - CR 6 - NW Area - Carpet Squares - Brown/Yellow/Orange /Green Striped	Black/Green Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

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Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
22YES-109-32A-Compo site 322224939-0046C	Bldg D - CR 6 - NW Area - Carpet Squares - Brown/Yellow/Orange /Green Striped	Brown/Black/Green Fibrous Heterogeneous	45% Synthetic	55% Non-fibrous (Other)	None Detected
22YES-109-33A-Baseboard 322224939-0047	Bldg D - Cr6 - East Side Center 3 - Baseboard & Glue 4" Silver	Gray/Silver Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-33A-Glue 322224939-0047A	Bldg D - Cr6 - East Side Center 3 - Baseboard & Glue 4" Silver	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-34A 322224939-0048	Bldg D - CR 6 - West Side Center - False Ceiling Panel 2"x4" Gouge PH (Looks Like 2'x2')	Gray/White Fibrous Homogeneous	45% Cellulose 20% Min. Wool	20% Perlite 15% Non-fibrous (Other)	None Detected
22YES-109-35A-Floor Tile 322224939-0049	Bldg D - CR7 - NW Area - Vinyl Plank Flooring & Glue - Blue/Orange/Yellow	Gray/Blue Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-35A-Glue 322224939-0049A	Bldg D - CR7 - NW Area - Vinyl Plank Flooring & Glue - Blue/Orange/Yellow	Green Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-36A-Sheet Flooring 322224939-0050	Bldg D - Mid Bldg Office - At Sink - Sheet Flooring & Glue - Cream Mosaic	Tan/White Fibrous Heterogeneous	20% Glass	80% Non-fibrous (Other)	None Detected
22YES-109-36A-Glue/Leveling Compound 322224939-0050A Unable to separate	Bldg D - Mid Bldg Office - At Sink - Sheet Flooring & Glue - Cream Mosaic	Gray/Yellow Non-Fibrous Heterogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-37A 322224939-0051	Bldg D - Mid Bldg Office - At Sink - Damage - Plaster - Sanded - Painted	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-38A-Coating 322224939-0052	Bldg A - Lounge - North Side East End of Roof - White Coating opn Foam Roofing on Rolled Composition Roofing & Felts	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-38A-Foam 322224939-0052A	Bldg A - Lounge - North Side East End of Roof - White Coating opn Foam Roofing on Rolled Composition Roofing & Felts	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-38A-Shingle 1 322224939-0052B	Bldg A - Lounge - North Side East End of Roof - White Coating opn Foam Roofing on Rolled Composition Roofing & Felts	White/Black Fibrous Heterogeneous	10% Cellulose	90% Non-fibrous (Other)	None Detected

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Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
22YES-109-38A-Shingle 2 322224939-0052C	Bldg A - Lounge - North Side East End of Roof - White Coating opn Foam Roofing on Rolled Composition Roofing & Felts	Gray/Black Fibrous Heterogeneous	10% Synthetic	90% Non-fibrous (Other)	None Detected
22YES-109-38A-Felt 322224939-0052D	Bldg A - Lounge - North Side East End of Roof - White Coating opn Foam Roofing on Rolled Composition Roofing & Felts	Black Fibrous Homogeneous	8% Cellulose	92% Non-fibrous (Other)	None Detected
22YES-109-38A-Insulati on 322224939-0052E	Bldg A - Lounge - North Side East End of Roof - White Coating opn Foam Roofing on Rolled Composition Roofing & Felts	Brown Fibrous Homogeneous	98% Cellulose	2% Non-fibrous (Other)	None Detected
22YES-109-38A-Compo site 322224939-0052F	Bldg A - Lounge - North Side East End of Roof - White Coating opn Foam Roofing on Rolled Composition Roofing & Felts	White/Black/Yellow Fibrous Heterogeneous	55% Cellulose 20% Glass	25% Non-fibrous (Other)	None Detected
22YES-109-39A 322224939-0053	Chiller Yard - North Side East Area At High Pipe - Concealed Chalky Pipe Insulation - Cream	Silver/Beige Fibrous Heterogeneous	10% Cellulose 12% Glass	78% Non-fibrous (Other)	None Detected
22YES-109-39B 322224939-0054	Chiller Yard - Sw Area - Concealed Chalky Pipe Insulation - Cream	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-40A-Wrap 322224939-0055	Chiller Yard - SW Area - Fiberglass Pipe Staight Insulation - Paper/Foil Jacketed	Brown/Silver Fibrous Heterogeneous	10% Cellulose 8% Glass	82% Non-fibrous (Other)	None Detected
22YES-109-40A-Insulati on 322224939-0055A	Chiller Yard - SW Area - Fiberglass Pipe Staight Insulation - Paper/Foil Jacketed	Yellow Fibrous Homogeneous	98% Glass	2% Non-fibrous (Other)	None Detected
22YES-109-40A-Compo site 322224939-0055B	Chiller Yard - SW Area - Fiberglass Pipe Staight Insulation - Paper/Foil Jacketed	Brown/Silver/Yellow Fibrous Heterogeneous	10% Cellulose 45% Glass	45% Non-fibrous (Other)	None Detected
22YES-109-40B-Wrap 322224939-0056	Chiller Yard - South Side East End - Fiberglass Pipe Straight Insulation - Paper/Foil Jacketed	Brown/Silver Fibrous Heterogeneous	10% Cellulose 8% Glass	82% Non-fibrous (Other)	None Detected

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Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
22YES-109-40B-Insulation 322224939-0056A	Chiller Yard - South Side East End - Fiberglass Pipe Straight Insulation - Paper/Foil Jacketed	Yellow Fibrous Homogeneous	98% Glass	2% Non-fibrous (Other)	None Detected
22YES-109-40B-Compo site 322224939-0056B	Chiller Yard - South Side East End - Fiberglass Pipe Straight Insulation - Paper/Foil Jacketed	Brown/Silver/Yellow Fibrous Heterogeneous	10% Cellulose 45% Glass	45% Non-fibrous (Other)	None Detected
22YES-109-41A 322224939-0057	Chiller Yard - North Side at Control Switch - Black Mastic	Black/Silver Non-Fibrous Homogeneous	8% Cellulose	92% Non-fibrous (Other)	None Detected
22YES-109-42A 322224939-0058	Chiller Yard - On Pipes - Silver Paint	Black/Silver Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-43A 322224939-0059	Chiller Yard - On Wood Walls - White Paint	White/Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

Analyst(s)

David Flores (112)

Yisely Sanchez (32)

Jerry Drapala Ph.D, Laboratory Manager
or Other Approved Signatory

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Samples analyzed by LA Testing South Pasadena, CA NVLAP Lab Code 200232-0, CA ELAP 2283

Initial report from: 12/21/2022 12:32:05



YES Environmental, Inc.

1201 24TH Street, Suite B110-377, Bakersfield, CA 93301 / (661) 527-0820

Contact Name & Phone Number	Kristy Yowell (661) 477-4662	Account #	YWEL75
Comments	Please e-mail results to: kristy@yowellenvironmental.com	TYPE OF ANALYSIS AND TURN AROUND TIME	
Collected By	Kristy Yowell	PLM with Dispersion Staining	
Date Samples Collected	12/15/2022	72 Hour	
Job # & Client	22YES-109 Bakersfield City School District	LAB	LA TESTING - Pasadena
Job Site Name & Description	Fremont ES – Full School Inspection		
Submitted By	Kristy Yowell 	Date	12/20/2022
Received By	James Herrera (EPX) 	Date	12-21-22 14:45


SAMPLE ID	1 ST LINE: MATERIAL DESCRIPTION – 2 ND LINE: SAMPLE LOCATION
22YES-109-10E	ACOUSTIC CEILING TILE BROWN GLUE (NO CEILING TILE)
	BLDG E – CR 14 - CENTER
22YES-109-10F	ACOUSTIC CEILING TILE BROWN GLUE (NO CEILING TILE)
	BLDG E – CR 12 – EAST SIDE CENTER
22YES-109-10G	ACOUSTIC CEILING TILE 12" RANDOM HOLE & BROWN GLUE
	BLDG F – RM 16 – WEST SIDE CENTER
22YES-109-10H	ACOUSTIC CEILING TILE 12" RANDOM HOLE & BROWN GLUE
	BLDG F – RM 18 – CENTER OF CEILING
22YES-109-11F	UNFINISHED DRYWALL (NO T&J)
	BLDG E – RM 12 – EAST SIDE CENTER
22YES-109-11G	UNFINISHED DRYWALL (NO T&J)
	BLDG E – RM 14 – CENTER OF CEILING
22YES-109-11H	UNFINISHED DRYWALL (NO T&J)
	BLDG F – RM 16 – WEST SIDE CENTER
22YES-109-11I	UNFINISHED DRYWALL (NO T&J)
	BLDG F – RM 18 – CENTER OF CEILING
22YES-109-14B	PLASTER SMOOTH – PAINTED
	BLDG E – EAST STORAGE ROOM - NORTH WALL AT DAMAGE
22YES-109-19D	BASEBOARD & GLUE 4" BLACK
	BLDG E – RM 11 – NORTH WALL CENTER



Contact Name & Phone Number	Kristy Yowell (661) 477-4662	Account #	YWEL75
Comments	Please e-mail results to: kristy@yowellenvironmental.com	TYPE OF ANALYSIS AND TURN AROUND TIME	
Collected By	Kristy Yowell	PLM with Dispersion Staining	
Date Samples Collected	12/15/2022	72 Hour	
Job # & Client	22YES-109 Bakersfield City School District	LAB	LA TESTING - Pasadena
Job Site Name & Description	Fremont ES – Full School Inspection		
Submitted By	Kristy Yowell	Date	12/20/2022
Received By		Date	

SAMPLE ID	1 st LINE: MATERIAL DESCRIPTION – 2 ND LINE: SAMPLE LOCATION
22YES-109-19E	BASEBOARD & GLUE 4" BLACK
	BLDG E – RM 13 – EAST SIDE CENTER
22YES-109-19F	BASEBOARD & GLUE 4" BLACK BASEBOARD & GLUE 4" BLACK
	BLDG F – RM 17 – NORTH WALL EAST END
22YES-109-22D	FALSE CEILING PANEL 2'X4' GOUGE PINHOLE - PAINTED
	BLDG E – RM 12 – EAST SIDE CENTER
22YES-109-22E	FALSE CEILING PANEL 2'X4' GOUGE PINHOLE – PAINTED
	BLDG E – RM 14 – CENTER OF CEILING
22YES-109-22F	FALSE CEILING PANEL 2'X4' GOUGE PINHOLE - PAINTED
	BLDG F – RM 18 – CENTER OF CEILING
22YES-109-25D	FIBERGLASS BATT PAPER JACKETING
	BLDG E – RM 12 – EAST SIDE CENTER
22YES-109-25E	FIBERGLASS BATT PAPER JACKETING
	BLDG E – RM 14 – CENTER OF CEILING
22YES-109-25F	FIBERGLASS BATT PAPER JACKETING
	BLDG F – RM 16 – WESTS IDE CENTER
22YES-109-25G	FIBERGLASS BATT PAPER JACKETING
	BLDG F – RM 18 – CENTER OF CEILING
22YES-109-26D	FIBERGLASS BATTS FOIL/PAPER BACKING
	BLDG E – RM 12 – EAST SIDE CENTER



Contact Name & Phone Number	Kristy Yowell (661) 477-4662	Account #	YWEL75
Comments	Please e-mail results to: kristy@yowellenvironmental.com	TYPE OF ANALYSIS AND TURN AROUND TIME	
Collected By	Kristy Yowell	PLM with Dispersion Staining	
Date Samples Collected	12/15/2022	72 Hour	
Job # & Client	22YES-109 Bakersfield City School District	LAB	LA TESTING - Pasadena
Job Site Name & Description	Fremont ES – Full School Inspection		
Submitted By	Kristy Yowell 	Date	12/20/2022
Received By		Date	

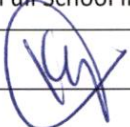
SAMPLE ID	1 ST LINE: MATERIAL DESCRIPTION – 2 ND LINE: SAMPLE LOCATION
22YES-109-26E	FIBERGLASS BATTS FOIL/PAPER BACKING
	BLDG E – RM 14 – CENTER OF CEILING
22YES-109-26F	FIBERGLASS BATTS FOIL/PAPER BACKING
	BLDG F – RM 18 – CENTER OF CEILING
22YES-109-28D	FIBERGLASS PIPE STRAIGHT INSULATION & PAPER JACKET
	BLDG E – RM 11 – AT UNIT VENTILATOR
22YES-109-28E	FIBERGLASS PIPE STRAIGHT INSULATION & PAPER JACKET
	BLDG E – RM 15 – AT UNIT VENTILATOR
22YES-109-28F	FIBERGLASS PIPE STRAIGHT INSULATION & PAPER JACKET
	BLDG F – RM 17 – AT UNIT VENTILATOR
22YES-109-29B	CERAMIC FLOOR TILE BROWN GROUT (1" GREY)
	BLDG E – BOYS' RR F – AT ENTRY DAMAGE
22YES-109-30B	CERAMIC WALL TILE GROUT WHITE (6" BROWN)
	BLDG E – BOYS' RR F – AT ENTRY DAMAGE
22YES-109-31B	CERAMIC WALL TILE GROUT WHITE (6" BLUE)
	BLDG E – GIRLS RR E – AT ENTRY
22YES-109-37B	PLASTER – SANDED – PAINTED
	BLDG A – STAFF LOUNGE – WEST WALL NORTH END
22YES-109-44A	CARPET SQUARES & GLUE – BLUE W/PATTERN
	BLDG E – RM 11 – NORTH WALL CENTER



YES Environmental, Inc.

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Contact Name & Phone Number	Kristy Yowell (661) 477-4662	Account #	YWEL75
Comments	Please e-mail results to: kristy@yowellenvironmental.com	TYPE OF ANALYSIS AND TURN AROUND TIME	
Collected By	Kristy Yowell	PLM with Dispersion Staining	
Date Samples Collected	12/15/2022	72 Hour	
Job # & Client	22YES-109 Bakersfield City School District	LAB	LA TESTING - Pasadena
Job Site Name & Description	Fremont ES – Full School Inspection		
Submitted By	Kristy Yowell 	Date	12/20/2022
Received By		Date	

SAMPLE ID	1 st LINE: MATERIAL DESCRIPTION – 2 ND LINE: SAMPLE LOCATION
22YES-109-44B	CARPET SQUARES & GLUE – BLUE W/PATTERN
	BLDG E – RM 13 – SE AREA
22YES-109-44C	CARPET SQUARES & GLUE – BLUE W/PATTERN
	BLDG F – RM 17 – SW AREA
22YES-109-45A	CARPET & GLUE – BLACK W/WHITE SPECKS
	BLDG E – RM 11 – NE AREA
22YES-109-45B	CARPET & GLUE – BLACK W/WHITE SPECKS
	BLDG E – RM 13 – NORTH ENTRY
22YES-109-45C	CARPET & GLUE – BLACK W/WHITE SPECKS
	BLDG F – RM 16 – AT NE AREA
22YES-109-46A	ACOUSTIC CEILING TILE 12" RANDOM HOLE (NAILED)
	BLDG R16 – RM 20 – NORTH SIDE CENTER
22YES-109-47A	FIBERGLASS BATT INSULATION WITH BLACK PAPER BACKING
	BLDG R16 – RM 20 – NORTH SIDE CENTER



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LA Testing Order: 322225286 Page 122 of 142

Customer ID: YWEL75

Customer PO:

Project ID:

Attention: Kristy Yowell
YES Environmental, Inc.
13708 Carpaccio Lane
Bakersfield, CA 93306

Phone: (661) 477-4662

Fax:

Received Date: 12/21/2022 2:45 PM

Analysis Date: 12/23/2022 - 12/24/2022

Collected Date: 12/22/2022

Project: 22YES-109 Bakerfield City School District - Fremont ES - Full School Inspection

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
22YES-109-10E-Glue 322225286-0001	Bldg E - CR 14 - Center - Fiberglass Batts Foil/Paper Backing	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-10E-Ceiling Tile 322225286-0001A	Bldg E - CR 14 - Center - Fiberglass Batts Foil/Paper Backing	Brown Fibrous Homogeneous	90% Cellulose	10% Non-fibrous (Other)	None Detected
22YES-109-10E-Compo site 322225286-0001B	Bldg E - CR 14 - Center - Fiberglass Batts Foil/Paper Backing	Brown Fibrous Heterogeneous	85% Cellulose	15% Non-fibrous (Other)	None Detected
22YES-109-10F-Glue 322225286-0002	Bldg E - CR 12 - East Side Center - Acoustic Ceiling Tile Brown Glue (No Ceiling Tile)	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-10F-Ceiling Tile 322225286-0002A	Bldg E - CR 12 - East Side Center - Acoustic Ceiling Tile Brown Glue (No Ceiling Tile)	Brown Fibrous Homogeneous	95% Cellulose	5% Non-fibrous (Other)	None Detected
22YES-109-10F-Compo site 322225286-0002B	Bldg E - CR 12 - East Side Center - Acoustic Ceiling Tile Brown Glue (No Ceiling Tile)	Brown Fibrous Heterogeneous	80% Cellulose	20% Non-fibrous (Other)	None Detected
22YES-109-10G-Ceiling Tile 322225286-0003	Bldg F - RM 16 - West Side Center - Acoustic Ceiling Tile 12" Random Hole & Brwon Glue	Brown/White Fibrous Heterogeneous	90% Cellulose	10% Non-fibrous (Other)	None Detected
22YES-109-10G-Glue 322225286-0003A	Bldg F - RM 16 - West Side Center - Acoustic Ceiling Tile 12" Random Hole & Brwon Glue	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-10G-Compo site 322225286-0003B	Bldg F - RM 16 - West Side Center - Acoustic Ceiling Tile 12" Random Hole & Brwon Glue	Brown/White Fibrous Heterogeneous	85% Cellulose	15% Non-fibrous (Other)	None Detected
22YES-109-10H-Ceiling Tile 322225286-0004	Bldg F - RM 18 - Center of Ceiling - Acoustic Tile 12" Random Hole & Brown Glue	Brown/White Fibrous Heterogeneous	95% Cellulose	5% Non-fibrous (Other)	None Detected

Initial report from: 12/24/2022 08:18:45



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LA Testing Order: 322225286 Page 123 of 142

Customer ID: YWEL75

Customer PO:

Project ID:

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
22YES-109-10H-Glue 322225286-0004A	Bldg F - RM 18 - Center of Ceiling - Acoustic Tile 12" Random Hole & Brown Glue	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-10H-Compo site 322225286-0004B	Bldg F - RM 18 - Center of Ceiling - Acoustic Tile 12" Random Hole & Brown Glue	Brown/White Fibrous Heterogeneous	80% Cellulose	20% Non-fibrous (Other)	None Detected
22YES-109-11F 322225286-0005	Bldg E - RM 12 - East Side Center - Unfinished Drywall (No T&J)	Brown/White Fibrous Heterogeneous	20% Cellulose	80% Non-fibrous (Other)	None Detected
22YES-109-11G 322225286-0006	Bldg E - RM 14 - Center of Ceiling - Unfinished Drywall (No T&J)	Brown/White Fibrous Heterogeneous	20% Cellulose	80% Non-fibrous (Other)	None Detected
22YES-109-11H 322225286-0007	Bldg F - RM 16 - West Side Center - Unfinished Drywall (No T&J)	Brown/White Fibrous Heterogeneous	20% Cellulose	80% Non-fibrous (Other)	None Detected
22YES-109-11I 322225286-0008	Bldg F - Rm 18 - Center Ceiling - Unfinished Drywall (No T&J)	Brown/White Fibrous Heterogeneous	20% Cellulose	80% Non-fibrous (Other)	None Detected
22YES-109-14B-Skim Coat 322225286-0009	Bldg E - East Storage Room - North Wall at Damage - Plaster Smooth - Painted	Gray/White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-14B-Finish Coat 322225286-0009A	Bldg E - East Storage Room - North Wall at Damage - Plaster Smooth - Painted	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-14B-Base Coat 322225286-0009B	Bldg E - East Storage Room - North Wall at Damage - Plaster Smooth - Painted	Gray/Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-14B-Compo site 322225286-0009C	Bldg E - East Storage Room - North Wall at Damage - Plaster Smooth - Painted	Gray/White/Beige Non-Fibrous Heterogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-19D-Baseb oard 322225286-0010	Bldg E - RM 11 - North Wall Center - Baseboard & Glue 4" Black	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-19D-Glue 322225286-0010A	Bldg E - RM 11 - North Wall Center - Baseboard & Glue 4" Black	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-19E-Baseb oard 322225286-0011	Bldg E - RM 13 - East Side Center - Baseboard & Glue 4" Black	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-19E-Glue 322225286-0011A	Bldg E - RM 13 - East Side Center - Baseboard & Glue 4" Black	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

Initial report from: 12/24/2022 08:18:45



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LA Testing Order: 322225286
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Customer ID: YWEL75

Customer PO:

Project ID:

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
22YES-109-19F-Baseboard ard 322225286-0012	Bldg F - RM 17 - North Wall East End - Baseboard & Glue 4" Black Baseboard & Glue 4" Black	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-19F-Glue 322225286-0012A	Bldg F - RM 17 - North Wall East End - Baseboard & Glue 4" Black Baseboard & Glue 4" Black	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-22D 322225286-0013	Bldg E - RM 12 - East Side Center - False Ceiling Panel 2'x4' Gouge Pinhole - Painted	Gray/White Fibrous Heterogeneous	40% Cellulose 20% Glass	20% Perlite 20% Non-fibrous (Other)	None Detected
22YES-109-22E 322225286-0014	Bldg E - Rm 14 - Center of Ceiling - False Ceiling Panel 2'x4' Gouge Pinhole - Painted	Gray/White Fibrous Heterogeneous	40% Cellulose 20% Glass	20% Perlite 20% Non-fibrous (Other)	None Detected
22YES-109-22F 322225286-0015	Bldg F - RM 18 - Center of Ceiling - False Ceiling Panel 2'x4' Gouge Pinhole - Painted	Gray/White/Beige Fibrous Heterogeneous	40% Cellulose 20% Min. Wool	25% Perlite 15% Non-fibrous (Other)	None Detected
22YES-109-25D-Insulati on 322225286-0016	Bldg E - RM 12 - East Side Center - Fiberglass Batt Paper Jacketing	Gray Fibrous Homogeneous	98% Glass	2% Non-fibrous (Other)	None Detected
22YES-109-25D-Paper Jacketing 322225286-0016A	Bldg E - RM 12 - East Side Center - Fiberglass Batt Paper Jacketing	Brown/Black Fibrous Homogeneous	90% Cellulose	10% Non-fibrous (Other)	None Detected
22YES-109-25D-Compo site 322225286-0016B	Bldg E - RM 12 - East Side Center - Fiberglass Batt Paper Jacketing	Brown/Gray/Black Fibrous Heterogeneous	48% Cellulose 50% Glass	2% Non-fibrous (Other)	None Detected
22YES-109-25E-Insulati on 322225286-0017	Bldg E - RM 14 - Center of Ceiling - Fiberglass Batt Paper Jacketing	Gray Fibrous Homogeneous	98% Glass	2% Non-fibrous (Other)	None Detected
22YES-109-25E-Paper Jacketing 322225286-0017A	Bldg E - RM 14 - Center of Ceiling - Fiberglass Batt Paper Jacketing	Brown/Black Fibrous Homogeneous	90% Cellulose	10% Non-fibrous (Other)	None Detected
22YES-109-25E-Compo site 322225286-0017B	Bldg E - RM 14 - Center of Ceiling - Fiberglass Batt Paper Jacketing	Brown/Gray/Black Fibrous Heterogeneous	48% Cellulose 50% Glass	2% Non-fibrous (Other)	None Detected
22YES-109-25F-Insulati on 322225286-0018	Bldg F - RM 16 - West IDE Center - Fiberglass Batt Paper Jacketing	Gray Fibrous Homogeneous	98% Glass	2% Non-fibrous (Other)	None Detected
22YES-109-25F-Paper Jacketing 322225286-0018A	Bldg F - RM 16 - West IDE Center - Fiberglass Batt Paper Jacketing	Brown/Black Fibrous Heterogeneous	90% Cellulose	10% Non-fibrous (Other)	None Detected

Initial report from: 12/24/2022 08:18:45



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LA Testing Order: 322225286 Page 125 of 142

Customer ID: YWEL75

Customer PO:

Project ID:

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
22YES-109-25F-Compo site 322225286-0018B	Bldg F - RM 16 - West IDE Center - Fiberglass Batt Paper Jacketing	Brown/Gray/Black Fibrous Heterogeneous	48% Cellulose 50% Glass	2% Non-fibrous (Other)	None Detected
22YES-109-25G-Insulation 322225286-0019	Bldg F - RM 18 - Center of Ceiling - Fiberglass Batt Paper Jacketing	Gray Fibrous Homogeneous	95% Glass	5% Non-fibrous (Other)	None Detected
22YES-109-25G-Paper Jacketing 322225286-0019A	Bldg F - RM 18 - Center of Ceiling - Fiberglass Batt Paper Jacketing	Brown/Black Fibrous Homogeneous	90% Cellulose	10% Non-fibrous (Other)	None Detected
22YES-109-25G-Compo site 322225286-0019B	Bldg F - RM 18 - Center of Ceiling - Fiberglass Batt Paper Jacketing	Brown/Gray/Black Fibrous Heterogeneous	48% Cellulose 50% Glass	2% Non-fibrous (Other)	None Detected
22YES-109-26D-Insulation 322225286-0020	Bldg E - RM 12 - East Side Center - Fiberglass Batts Foil/Paper Backing	Yellow Fibrous Homogeneous	98% Glass	2% Non-fibrous (Other)	None Detected
22YES-109-26D-Paper Backing 322225286-0020A	Bldg E - RM 12 - East Side Center - Fiberglass Batts Foil/Paper Backing	Brown/Silver Fibrous Heterogeneous	80% Cellulose	20% Non-fibrous (Other)	None Detected
22YES-109-26D-Compo site 322225286-0020B	Bldg E - RM 12 - East Side Center - Fiberglass Batts Foil/Paper Backing	Brown/Silver/Yellow Fibrous Heterogeneous	40% Cellulose 55% Glass	5% Non-fibrous (Other)	None Detected
22YES-109-26E-Insulation 322225286-0021	Bldg E - RM 14 - Center of Ceiling - Fiberglass Batts Foil/Paper Backing	Yellow Fibrous Homogeneous	98% Glass	2% Non-fibrous (Other)	None Detected
22YES-109-26E-Paper Backing 322225286-0021A	Bldg E - RM 14 - Center of Ceiling - Fiberglass Batts Foil/Paper Backing	Brown/Silver Fibrous Heterogeneous	80% Cellulose	20% Non-fibrous (Other)	None Detected
22YES-109-26E-Compo site 322225286-0021B	Bldg E - RM 14 - Center of Ceiling - Fiberglass Batts Foil/Paper Backing	Brown/Silver/Yellow Fibrous Heterogeneous	40% Cellulose 55% Glass	5% Non-fibrous (Other)	None Detected
22YES-109-26F-Insulation 322225286-0022	Bldg F - RM 18 - Center of Ceiling - Fiberglass Batts Foil/Paper Backing	Yellow Fibrous Homogeneous	95% Glass	5% Non-fibrous (Other)	None Detected
22YES-109-26F-Paper Backing 322225286-0022A	Bldg F - RM 18 - Center of Ceiling - Fiberglass Batts Foil/Paper Backing	Brown/Silver Fibrous Heterogeneous	65% Cellulose 10% Glass	25% Non-fibrous (Other)	None Detected
22YES-109-26F-Compo site 322225286-0022B	Bldg F - RM 18 - Center of Ceiling - Fiberglass Batts Foil/Paper Backing	Brown/Silver/Yellow Fibrous Heterogeneous	40% Cellulose 55% Glass	5% Non-fibrous (Other)	None Detected
22YES-109-28D-Insulation 322225286-0023	Bldg E - RM 11 - At Unit Ventilator - Fiberglass Pipe Straight Insulation & Paper Jacket	Yellow Fibrous Homogeneous	98% Glass	2% Non-fibrous (Other)	None Detected

Initial report from: 12/24/2022 08:18:45



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LA Testing Order: 322225286 Page 126 of 142

Customer ID: YWEL75

Customer PO:

Project ID:

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
22YES-109-28D-Paper Jacket 322225286-0023A	Bldg E - RM 11 - At Unit Ventilator - Fiberglass Pipe Straight Insulation & Paper Jacket	Silver/Beige Fibrous Heterogeneous	80% Cellulose	20% Non-fibrous (Other)	None Detected
22YES-109-28D-Compo site 322225286-0023B	Bldg E - RM 11 - At Unit Ventilator - Fiberglass Pipe Straight Insulation & Paper Jacket	Silver/Yellow/Beige Fibrous Heterogeneous	40% Cellulose 55% Glass	5% Non-fibrous (Other)	None Detected
22YES-109-28E-Insulation 322225286-0024	Bldg E - RM 15 - At Unit Ventilator - Fiberglass Pipe Straight Insulation & Paper Jacket	Yellow Fibrous Homogeneous	98% Glass	2% Non-fibrous (Other)	None Detected
22YES-109-28E-Paper Jacket 322225286-0024A	Bldg E - RM 15 - At Unit Ventilator - Fiberglass Pipe Straight Insulation & Paper Jacket	Brown Fibrous Homogeneous	80% Cellulose	20% Non-fibrous (Other)	None Detected
22YES-109-28E-Compo site 322225286-0024B	Bldg E - RM 15 - At Unit Ventilator - Fiberglass Pipe Straight Insulation & Paper Jacket	Brown/Yellow Fibrous Heterogeneous	40% Cellulose 55% Glass	5% Non-fibrous (Other)	None Detected
22YES-109-28F-Insulation 322225286-0025	Bldg F - RM 17 - At Unit Ventilator - Fiberglass Pipe Straight Insulation & Paper Jacket	Yellow Fibrous Homogeneous	95% Glass	5% Non-fibrous (Other)	None Detected
22YES-109-28F-Paper Jacket 322225286-0025A	Bldg F - RM 17 - At Unit Ventilator - Fiberglass Pipe Straight Insulation & Paper Jacket	Brown/Silver Fibrous Heterogeneous	65% Cellulose 10% Glass	25% Non-fibrous (Other)	None Detected
22YES-109-28F-Compo site 322225286-0025B	Bldg F - RM 17 - At Unit Ventilator - Fiberglass Pipe Straight Insulation & Paper Jacket	Brown/Silver/Yellow Fibrous Heterogeneous	40% Cellulose 55% Glass	5% Non-fibrous (Other)	None Detected
22YES-109-29B 322225286-0026	Bldg E - Boys RR F - At Entry Damgte - Ceramic Floor Tile Brown Grout (1" Grey)	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-30B 322225286-0027	Bldg E - Boys RR F - At Entry Damgte - Ceramic Wall Tile Grout White (6"Brown)	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-31B 322225286-0028	Bldg E - Girls RR E - At Entry - Ceramic Wall Tile Grout White (6" Blue)	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-37B 322225286-0029	Bldg A - Staff Lounge - West Wall North End - Plaster - Sanded - Painted	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

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LA Testing Order: 322225286 Page 127 of 142

Customer ID: YWEL75

Customer PO:

Project ID:

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
22YES-109-44A-Carpet 322225286-0030	Bldg E - RM 11 - North Wall Center - Carpet Squares & Glue - Blue w/Pattern	Black/Beige Fibrous Homogeneous	90% Synthetic	10% Non-fibrous (Other)	None Detected
22YES-109-44A-Paddin g 322225286-0030A	Bldg E - RM 11 - North Wall Center - Carpet Squares & Glue - Blue w/Pattern	Brown Non-Fibrous Homogeneous	10% Glass	90% Non-fibrous (Other)	None Detected
22YES-109-44A-Glue 322225286-0030B	Bldg E - RM 11 - North Wall Center - Carpet Squares & Glue - Blue w/Pattern	Clear Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-44A-Compo site 322225286-0030C	Bldg E - RM 11 - North Wall Center - Carpet Squares & Glue - Blue w/Pattern	Various Fibrous Heterogeneous	70% Synthetic 5% Glass	25% Non-fibrous (Other)	None Detected
22YES-109-44B-Carpet 322225286-0031	Bldg E - RM 13 - SE Area - Carpet Squares & Glue - Blue w/Pattern	Gray/Black Fibrous Heterogeneous	90% Synthetic	10% Non-fibrous (Other)	None Detected
22YES-109-44B-Paddin g 322225286-0031A	Bldg E - RM 13 - SE Area - Carpet Squares & Glue - Blue w/Pattern	Brown Non-Fibrous Homogeneous	10% Glass	90% Non-fibrous (Other)	None Detected
22YES-109-44B-Glue 322225286-0031B	Bldg E - RM 13 - SE Area - Carpet Squares & Glue - Blue w/Pattern	Clear Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-44B-Cemen titious Material 322225286-0031C	Bldg E - RM 13 - SE Area - Carpet Squares & Glue - Blue w/Pattern	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-44B-Compo site 322225286-0031D	Bldg E - RM 13 - SE Area - Carpet Squares & Glue - Blue w/Pattern	Various Fibrous Heterogeneous	70% Synthetic 5% Glass	25% Non-fibrous (Other)	None Detected
22YES-109-44C-Carpet 322225286-0032	Bldg F - RM 17 - SW Area - Carpet Squares & Glue - Blue w/Pattern	Gray/Black/Beige Fibrous Homogeneous	98% Synthetic	2% Non-fibrous (Other)	None Detected
22YES-109-44C-Paddin g 322225286-0032A	Bldg F - RM 17 - SW Area - Carpet Squares & Glue - Blue w/Pattern	Gray Non-Fibrous Homogeneous	8% Glass	92% Non-fibrous (Other)	None Detected
22YES-109-44C-Glue 322225286-0032B	Bldg F - RM 17 - SW Area - Carpet Squares & Glue - Blue w/Pattern	Yellow/Green Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-44C-Compo site 322225286-0032C	Bldg F - RM 17 - SW Area - Carpet Squares & Glue - Blue w/Pattern	Gray/Black/Yellow Fibrous Heterogeneous	65% Synthetic 5% Glass	30% Non-fibrous (Other)	None Detected
22YES-109-45A-Carpet 322225286-0033	Bldg E - RM 11 - NE Area - Carpet & Glue - Black w/White Specks	Gray/Black Fibrous Homogeneous	90% Synthetic	10% Non-fibrous (Other)	None Detected

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LA Testing Order: 322225286 Page 128 of 142

Customer ID: YWEL75

Customer PO:

Project ID:

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
22YES-109-45A-Padding g 322225286-0033A	Bldg E - RM 11 - NE Area - Carpet & Glue - Black w/White Specks	Gray Non-Fibrous Homogeneous	10% Glass	90% Non-fibrous (Other)	None Detected
22YES-109-45A-Glue 322225286-0033B	Bldg E - RM 11 - NE Area - Carpet & Glue - Black w/White Specks	Clear Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-45A-Compo site 322225286-0033C	Bldg E - RM 11 - NE Area - Carpet & Glue - Black w/White Specks	Gray/Black/Clear Fibrous Heterogeneous	70% Synthetic 5% Glass	25% Non-fibrous (Other)	None Detected
22YES-109-45B-Carpet 322225286-0034	Bldg E - Rm 13 - North Entry - Carpet & Glue - Black w/White Specks	Gray/Black Fibrous Homogeneous	90% Synthetic	10% Non-fibrous (Other)	None Detected
22YES-109-45B-Paddin g 322225286-0034A	Bldg E - Rm 13 - North Entry - Carpet & Glue - Black w/White Specks	Gray Non-Fibrous Homogeneous	10% Glass	90% Non-fibrous (Other)	None Detected
22YES-109-45B-Glue 322225286-0034B	Bldg E - Rm 13 - North Entry - Carpet & Glue - Black w/White Specks	Clear Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-45B-Cemen titious Material 322225286-0034C	Bldg E - Rm 13 - North Entry - Carpet & Glue - Black w/White Specks	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-45B-Compo site 322225286-0034D	Bldg E - Rm 13 - North Entry - Carpet & Glue - Black w/White Specks	Various Fibrous Heterogeneous	75% Synthetic 5% Glass	20% Non-fibrous (Other)	None Detected
22YES-109-45C-Carpet 322225286-0035	Bldg F - RM 16 - AT NE Area - Carpet & Glue - Black w/White Specks	Black Fibrous Homogeneous	98% Synthetic	2% Non-fibrous (Other)	None Detected
22YES-109-45C-Paddin g 322225286-0035A	Bldg F - RM 16 - AT NE Area - Carpet & Glue - Black w/White Specks	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES-109-45C-Compo site 322225286-0035B	Bldg F - RM 16 - AT NE Area - Carpet & Glue - Black w/White Specks	Gray/Black Fibrous Heterogeneous	65% Synthetic	35% Non-fibrous (Other)	None Detected
22YES-109-46A 322225286-0036	Bldg R16 - RM 20 - North Side Center - Acoustic Seiling Tile 12" Random Hole (Nailed)	Brown/White Fibrous Heterogeneous	80% Cellulose	20% Non-fibrous (Other)	None Detected
22YES-109-47A-Insulati on 322225286-0037	Bldg R16 - RM 20 - North Side Center - Fiberglass Batt Insulation With Balck Paper Backing	Yellow Fibrous Homogeneous	98% Glass	2% Non-fibrous (Other)	None Detected
22YES-109-47A-Paper Backing 322225286-0037A	Bldg R16 - RM 20 - North Side Center - Fiberglass Batt Insulation With Balck Paper Backing	Brown/Black Fibrous Homogeneous	90% Cellulose	10% Non-fibrous (Other)	None Detected

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LA Testing Order: 322225286 Page 129 of 142

Customer ID: YWEL75

Customer PO:

Project ID:

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
22YES-109-47A-Compo site 322225286-0037B	Bldg R16 - RM 20 -	Brown/Black/Yellow	40% Cellulose	5% Non-fibrous (Other)	None Detected
	North Side Center - Fiberglass Batt Insulation With Balck Paper Backing	Fibrous Heterogeneous	55% Glass		

Analyst(s)

John Talley (66)

Yisely Sanchez (26)

Jerry Drapala Ph.D, Laboratory Manager
or Other Approved Signatory

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Samples analyzed by LA Testing South Pasadena, CA NVLAP Lab Code 200232-0, CA ELAP 2283

Initial report from: 12/24/2022 08:18:45



Contact Name & Phone Number	Kristy Yowell (661) 477-4662	Account #	YWEL75
Comments	Please e-mail results to: kristy@yowellenvironmental.com	TYPE OF ANALYSIS AND TURN AROUND TIME	
Collected By	Kristy Yowell	PLM with Dispersion Staining	
Date Samples Collected	5/17/2023	72 Hour	
Job # & Client	22YES-109 – Bakersfield City School District	LAB	LA Testing
Job Site Name & Description	Fremont ES – Full School Inspection		
Submitted By	Kristy Yowell <i>KY</i>	Date	5/18/2023
Received By	Annette McKissack (mt) <i>AM</i>	Date	05/19/23 920

SAMPLE ID	1 ST LINE: MATERIAL DESCRIPTION – 2 ND LINE: SAMPLE LOCATION
22YES-109-48A	UNFINISHED DRYWALL WITH TACKBOARD GLUE
	R25 – CR 36 – EAST SIDE CENTER
22YES-109-49A	LAY-IN PANELS 2'X4' FISSURE PINHOLE
	R25 – CR 36 – EAST SIDE CENTER
22YES-109-50A	UNFINISHED DRYWALL WITH TACKBOARD GLUE
	R27 – CR 38 – WEST SIDE CENTER
22YES-109-51A	LAY-IN PANELS 2'X4' FISSURE PINHOLE
	R27 – CR 38 – WEST SIDE CENTER
22YES-109-52A	UNFINISHED DRYWALL WITH TACKBOARD GLUE
	R10 – CR 29 – NORTH SIDE CENTER
22YES-109-53A	LAY-IN PANELS 2'X4' GOUGE PINHOLE
	R10 – CR 29 – NORTH SIDE CENTER
22YES-109-54A	ACOUSTIC CEILING TILE - 12" UNIFORM HOLES (NAILED)
	R27 – CR 26 – SOUTHWEST CORNER
22YES-109-55A	UNFINISHED DRYWALL WITH TACKBOARD GLUE
	R1 – PRE-K – NORTH SIDE CENTER
22YES-109-56A	LAY-IN PANELS 2'X4' FISSURE PINHOLE
	R1 – PRE-K – NORTH SIDE CENTER
22YES-109-57A	UNFINISHED DRYWALL WITH TACKBOARD GLUE
	R23 – PARENT CENTER – NORTH SIDE CENTER



YES Environmental, Inc.

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1201 24th Street, Suite B110-377, Bakersfield, CA 93301 / (661) 527-0820

Contact Name & Phone Number	Kristy Yowell (661) 477-4662	Account #	YWEL75
Comments	Please e-mail results to: kristy@yowellenvironmental.com	TYPE OF ANALYSIS AND TURN AROUND TIME	
Collected By	Kristy Yowell	PLM with Dispersion Staining	
Date Samples Collected	5/17/2023	72 Hour	
Job # & Client	22YES-109 – Bakersfield City School District	LAB	LA Testing
Job Site Name & Description	Fremont ES – Full School Inspection		
Submitted By	Kristy Yowell <i>KY</i>	Date	5/18/2023
Received By	Annette McKissack (no) <i>AM</i>	Date	05/19/23 920

SAMPLE ID	1 st LINE: MATERIAL DESCRIPTION – 2 ND LINE: SAMPLE LOCATION
22YES-109-58A	LAY-IN PANELS 2'X4' FISSURE PINHOLE
	R23 – PARENT CENTER – NORTH SIDE CENTER
22YES-109-59A	UNFINISHED DRYWALL (NO T&J)
	BUILDING G – RM 54 – NORTH SIDE CENTER
22YES-109-60A	LAY-IN PANELS 2'X4' XL FISSURE PINHOLE
	BUILDING G – RM 47 – WEST SIDE CENTER
22YES-109-61A	LAY-IN PANELS 2'X4' GOUGE PINHOLE
	BUILDING G
22YES-109-62A	DRYWALL, TAPE, JOINT COMPOUND, ORANGE PEEL TEXTURE & PAINT
	R18 – IMC – WEST WALL NORTH END
22YES-109-63A	LAY-IN PANELS 2'X4' FISSURE PINHOLE
	R18 – IMC – NORTHWEST AREA
22YES-109-64A	UNFINISHED DRYWALL WITH TACKBOARD GLUE
	R21 – CR 42 – EAST SIDE CENTER
22YES-109-65A	LAY-IN PANELS 2'X4' FIBERGLASS ORANGE PEEL PATTERN
	R21 – CR 42 – EAST SIDE CENTER



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LA Testing Order: 322313127 Page 132 of 142

Customer ID: YWEL75

Customer PO: 22YES-109

Project ID:

Attention: Kristy Yowell
YES Environmental, Inc.
1201 24th Street, Suite B110-377
Bakersfield, CA 93301

Phone: (661) 477-4662

Fax:

Received Date: 05/19/2023 9:20 AM

Analysis Date: 05/23/2023

Collected Date: 05/17/2023

Project: 22YES-109 - Bakersfield City School District/ Fremont ES - Full School District

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos % Type
			% Fibrous	% Non-Fibrous	
22YES109-48A-Drywall 322313127-0001	R25 - CR 36 - East side center - Unfinish drywall with tackboard glue	Brown/White Fibrous Heterogeneous	20% Cellulose 2% Glass	78% Non-fibrous (Other)	None Detected
22YES109-48A-Glue 322313127-0001A	R25 - CR 36 - East side center - Unfinish drywall with tackboard glue	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES109-49A 322313127-0002	R25 - CR 36 - East side center - Lay-in panels 2'x4' fissure pinhole	Gray/White Fibrous Heterogeneous	40% Cellulose 20% Min. Wool	20% Perlite 20% Non-fibrous (Other)	None Detected
22YES109-50A-Drywall 322313127-0003	R27 - CR 38 - West side center - Unfinish drywall with tackboard glue	Brown/White Fibrous Heterogeneous	20% Cellulose	80% Non-fibrous (Other)	None Detected
22YES109-50A-Glue 322313127-0003A	R27 - CR 38 - West side center - Unfinish drywall with tackboard glue	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES109-51A 322313127-0004	R27 - CR 38 - West side center - Lay-in panels 2'x4' fissure pinhole	Gray/White Fibrous Heterogeneous	40% Cellulose 20% Min. Wool	20% Perlite 20% Non-fibrous (Other)	None Detected
22YES109-52A-Drywall 322313127-0005	R10 - CR 29 - North side center - Unfinish drywall with tackboard glue	Brown/Pink Fibrous Heterogeneous	20% Cellulose 2% Glass	78% Non-fibrous (Other)	None Detected
22YES109-52A-Glue 322313127-0005A	R10 - CR 29 - North side center - Unfinish drywall with tackboard glue	Green Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES109-53A 322313127-0006	R10 - CR 29 - North side center - Lay-in panels 2'x4' gouge pinhole	Gray/White Fibrous Heterogeneous	40% Cellulose 20% Min. Wool	20% Perlite 20% Non-fibrous (Other)	None Detected
22YES109-54A 322313127-0007	R27 - CR 26 - Southwest corner - Acoustic ceiling tile - 12" uniform holes (nailed)	Brown/White Fibrous Heterogeneous	90% Cellulose	10% Non-fibrous (Other)	None Detected
22YES109-55A-Drywall 322313127-0008	R1 - Pre-K - North side center - Unfinish drywall with tackboard glue	Brown/White Fibrous Heterogeneous	20% Cellulose 2% Glass	78% Non-fibrous (Other)	None Detected
22YES109-55A-Glue 322313127-0008A	R1 - Pre-K - North side center - Unfinish drywall with tackboard glue	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

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LA Testing Order: 322313127 Customer ID: YWEL75 Customer PO: 22YES-109 Project ID:

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Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
22YES109-56A 322313127-0009	R1 - Pre-K - North side center - Lay-in paneles 2'x4' fissure pinhole	Gray/White Fibrous Homogeneous	35% Cellulose 15% Min. Wool	10% Perlite 40% Non-fibrous (Other)	None Detected
22YES109-57A-Drywall 322313127-0010	R23 - Parent Center - North side Center - Unfinish drywall with tackboard glue	Brown/White Fibrous Heterogeneous	20% Cellulose	80% Non-fibrous (Other)	None Detected
22YES109-57A-Glue 322313127-0010A	R23 - Parent Center - North side Center - Unfinish drywall with tackboard glue	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES109-58A 322313127-0011	R23 - Parent Center - North side Center - Lay-in paneles 2'x4' fissure pinhole	Gray/White Fibrous Heterogeneous	40% Cellulose 20% Min. Wool	20% Perlite 20% Non-fibrous (Other)	None Detected
22YES109-59A 322313127-0012	Building G - Rm 54 - North side center - Unfinished drywall (no t&j)	Brown/White Fibrous Heterogeneous	20% Cellulose	80% Non-fibrous (Other)	None Detected
22YES109-60A 322313127-0013	Building G - Rm 47 - West side center - Lay-in panels 2'x4' fissure pinhole	Gray/White Fibrous Heterogeneous	40% Cellulose 20% Min. Wool	20% Perlite 20% Non-fibrous (Other)	None Detected
22YES109-61A 322313127-0014	Building G - Lay-in panels 2'x4' gouge pinhole	Gray/White Fibrous Homogeneous	40% Cellulose 15% Min. Wool	10% Perlite 35% Non-fibrous (Other)	None Detected
22YES109-62A-Drywall 322313127-0015	R18 - IMC - West wall north end - Drywall, tape, joint compound, orange peel texture & paint	White Non-Fibrous Homogeneous	3% Cellulose 2% Glass	95% Non-fibrous (Other)	None Detected
22YES109-62A-Tape 322313127-0015A	R18 - IMC - West wall north end - Drywall, tape, joint compound, orange peel texture & paint	Brown Fibrous Homogeneous	95% Cellulose	5% Non-fibrous (Other)	None Detected
22YES109-62A-Joint Compound 322313127-0015B	R18 - IMC - West wall north end - Drywall, tape, joint compound, orange peel texture & paint	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES109-62A-Texture 322313127-0015C	R18 - IMC - West wall north end - Drywall, tape, joint compound, orange peel texture & paint	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES109-62A-Paint 322313127-0015D	R18 - IMC - West wall north end - Drywall, tape, joint compound, orange peel texture & paint	Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES109-63A 322313127-0016	R18 - IMC - Northwest area - Lay-in paneles 2'x4' fissure pinhole	Gray/White Fibrous Homogeneous	35% Cellulose 15% Min. Wool	10% Perlite 40% Non-fibrous (Other)	None Detected

Initial report from: 05/23/2023 17:43:46



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LA Testing Order: 322313127 Customer ID: YWEL75 Customer PO: 22YES-109 Project ID:

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Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
22YES109-64A-Drywall 322313127-0017	R21 - CR 42 - East side center - Unfinish drywall with tackboard glue	Brown/White Fibrous Heterogeneous	20% Cellulose 2% Glass	78% Non-fibrous (Other)	None Detected
22YES109-64A-Glue 322313127-0017A	R21 - CR 42 - East side center - Unfinish drywall with tackboard glue	Yellow/Clear Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES109-64A-Foam 322313127-0017B	R21 - CR 42 - East side center - Unfinish drywall with tackboard glue	Yellow Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
22YES109-65A-Fiberglass 322313127-0018	R21 - CR 42 - East side center - Lay-in panels 2'x4' fiberglass orange peel pattern	Yellow Fibrous Homogeneous	98% Min. Wool	2% Non-fibrous (Other)	None Detected
22YES109-65A-Peel Pattern 322313127-0018A	R21 - CR 42 - East side center - Lay-in panels 2'x4' fiberglass orange peel pattern	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

Analyst(s)

James Siepler (22)

Tania Lopez (8)

Jerry Drapala Ph.D, Laboratory Manager
or Other Approved Signatory

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Samples analyzed by LA Testing South Pasadena, CA NVLAP Lab Code 200232-0, CA ELAP 2283

Initial report from: 05/23/2023 17:43:46



Attachment D – Consultant & Laboratory Certifications

DEPARTMENT OF INDUSTRIAL RELATIONS

Division of Occupational Safety and Health-Asbestos Certification

1750 Howe Avenue, Suite 460

Sacramento, CA 95825

(916) 574-2993 Office <http://www.dir.ca.gov/dosh/asbestos.html> actu@dir.ca.gov



903034500C

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December 07, 2022

Kristy L Yowell
13708 Carpaccio Lane
Bakersfield CA 93306

Dear Certified Asbestos Consultant or Technician:

Enclosed is your certification card. **To maintain your certification, you must abide by the rules printed on the back of the certification card.**

Your certification is valid for a period of one year. If you wish to renew your certification, you must apply for renewal at least 60 days before the expiration date shown on your card. [8 CCR 341.15(h)(1)].

Please hold and do not send copies of your required AHERA refresher renewal certificates to our office until you apply for renewal of your certification.

Certificates must be kept current if you are actively working as a CAC or CSST. The grace period is only for those who are not actively working as an asbestos consultant or site surveillance technician.

Please contact our office at the above address or email w any changes in your contact/ mailing information within 15 days of the change.

Sincerely,

Eric Berg

Eric Berg
Deputy Chief of Health

Attachment: Certification Card

cc: File

Renewal – Card Attached





STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC HEALTH



LEAD-RELATED CONSTRUCTION CERTIFICATE

INDIVIDUAL:	CERTIFICATE TYPE:	NUMBER:	EXPIRATION DATE:
 Kristy Yowell	Lead Inspector/Assessor	LRC-00004640	2/9/2024
	Lead Supervisor	LRC-00004639	2/9/2024

Disclaimer: This document alone should not be relied upon to confirm certification status. Compare the individual's photo and name to another valid form of government issued photo identification. Verify the individual's certification status by searching for Lead-Related Construction Professionals at www.cdph.ca.gov/programs/clppb or calling (800) 597-LEAD

DEPARTMENT OF INDUSTRIAL RELATIONS

Division of Occupational Safety and Health-Asbestos Certification

1750 Howe Avenue, Suite 460

Sacramento, CA 95825

(916) 574-2993 Office <http://www.dir.ca.gov/dosh/asbestos.html> actu@dir.ca.gov



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YES Environmental Inc.
Allen R. Evans
1201 24th Street, Suite B110-377
Bakersfield CA 93301

March 20, 2023

Dear Certified Asbestos Consultant or Technician:

Enclosed is your certification card. **To maintain your certification, you must abide by the rules printed on the back of the certification card.**

Your certification is valid for a period of one year. If you wish to renew your certification, you must apply for renewal at least 60 days before the expiration date shown on your card. [8 CCR 341.15(h)(1)].

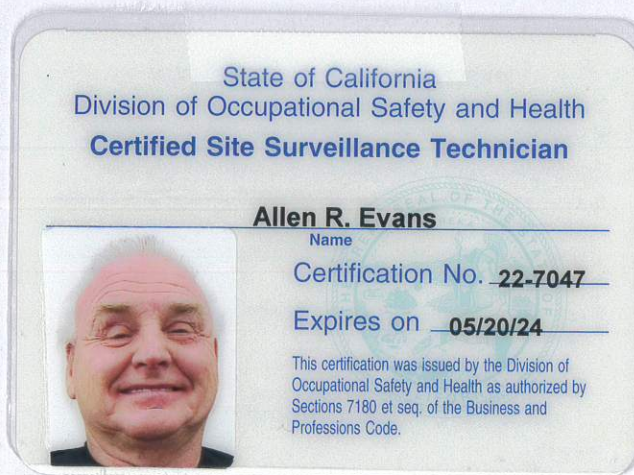
Please hold and do not send copies of your required AHERA refresher renewal certificates to our office until you apply for renewal of your certification.

Certificates must be kept current if you are actively working as a CAC or CSST. The grace period is only for those who are not actively working as an asbestos consultant or site surveillance technician.

Please contact our office at the above address or email w any changes in your contact/ mailing information within 15 days of the change.

Sincerely,

Kevin Graulich
Principal Safety Engineer



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cc: File

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STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC HEALTH



LEAD-RELATED CONSTRUCTION CERTIFICATE

INDIVIDUAL:



Allen Evans

CERTIFICATE TYPE:

Lead Sampling Technician

NUMBER:

LRC-00010539

EXPIRATION DATE:

10/21/2023

Disclaimer: This document alone should not be relied upon to confirm certification status. Compare the individual's photo and name to another valid form of government issued photo identification. Verify the individual's certification status by searching for Lead-Related Construction Professionals at www.cdph.ca.gov/programs/clppb or calling (800) 597-LEAD

United States Department of Commerce
National Institute of Standards and Technology



Certificate of Accreditation to ISO/IEC 17025:2017

NVLAP LAB CODE: 200232-0

LA Testing
South Pasadena, CA

*is accredited by the National Voluntary Laboratory Accreditation Program for specific services,
listed on the Scope of Accreditation, for:*

Asbestos Fiber Analysis

*This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017.
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality
management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).*

2022-07-01 through 2023-06-30

Effective Dates



A handwritten signature in black ink, appearing to read "Dana S. Haman".

For the National Voluntary Laboratory Accreditation Program

United States Department of Commerce
National Institute of Standards and Technology



Certificate of Accreditation to ISO/IEC 17025:2017

NVLAP LAB CODE: 101048-3

EMSL Analytical, Inc.
San Leandro, CA

*is accredited by the National Voluntary Laboratory Accreditation Program for specific services,
listed on the Scope of Accreditation, for:*

Asbestos Fiber Analysis

*This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017.
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality
management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).*

2022-07-01 through 2023-06-30

Effective Dates



A handwritten signature in black ink, appearing to read 'Dana S. Lamm', written over a horizontal line.

For the National Voluntary Laboratory Accreditation Program



AIHA Laboratory Accreditation Programs, LLC

acknowledges that

EMSL Analytical, Inc.

464 McCormick Street, San Leandro, CA 94577

Laboratory ID: LAP-101748

along with all premises from which key activities are performed, as listed above, has fulfilled the requirements of the AIHA Laboratory Accreditation Programs (AIHA LAP), LLC accreditation to the ISO/IEC 17025:2017 international standard, General Requirements for the Competence of Testing and Calibration Laboratories in the following:

LABORATORY ACCREDITATION PROGRAMS

- | | | |
|-------------------------------------|-----------------------------------|--------------------------------------|
| <input checked="" type="checkbox"/> | INDUSTRIAL HYGIENE | Accreditation Expires: June 01, 2024 |
| <input checked="" type="checkbox"/> | ENVIRONMENTAL LEAD | Accreditation Expires: June 01, 2024 |
| <input checked="" type="checkbox"/> | ENVIRONMENTAL MICROBIOLOGY | Accreditation Expires: June 01, 2024 |
| <input type="checkbox"/> | FOOD | Accreditation Expires: |
| <input type="checkbox"/> | UNIQUE SCOPES | Accreditation Expires: |

Specific Field(s) of Testing (FoT)/Method(s) within each Accreditation Program for which the above named laboratory maintains accreditation is outlined on the attached Scope of Accreditation. Continued accreditation is contingent upon successful on-going compliance with ISO/IEC 17025:2017 and AIHA LAP, LLC requirements. This certificate is not valid without the attached Scope of Accreditation. Please review the AIHA LAP, LLC website (www.aihaaccreditedlabs.org) for the most current Scope.

Cheryl O Morton
Managing Director, AIHA Laboratory Accreditation Programs, LLC