

PROJECT MANUAL

OAK KNOLL ELEMENTARY SCHOOL LIGHTING & CEILING UPGRADES AND ELC RESTROOM MODIFICATIONS

INFORMAL BID
#004-2019-02

MENLO PARK CITY SCHOOL DISTRICT



LIST OF DRAWINGS

DRAWINGS:

Architectural Drawings

Sheet: G-000, G-001, G-011, AD-101, A-101, A-102, A-501, A-571, A-572

Electrical Drawings

Sheet: E0.1, E0.2, E1.1, E2.1, E3.1, E3.2

Mechanical Drawings

Sheet: M-0.1, M-1.1

Plumbing Drawings

Sheet: P-0.1, P-1.1, P-2.1

TECHNICAL SPECIFICATIONS:

Project Manual dated April 2019 (247 pages, attached)

REFERENCE DOCUMENTS:

Asbestos and Lead Survey, dated May 3, 2007 (90 pages, attached)

INSTRUCTIONS TO

BIDDERS

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

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

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

Bid #004-2019-02:
Oak Knoll Elementary School
Lighting & Ceiling Upgrades
And ELC Restroom Modifications

2. **Sealed Bids.** District will receive sealed Bids from Bidders as indicated in the Notice to Bidders and each Bidder shall ensure that its Bid:
 - a. Is sealed and marked with name and address of the Bidder, the Project name and number, the bid number and bid package (if applicable), and the date for opening bids;
 - b. Contains all documents as required herein; and
 - c. Is submitted by date and time shown in the Notice to Bidders.
3. **Bid Opening.** Bids will be opened at or after the time indicated for receipt of bids.
4. **Bid Form.** Bidders must submit Bids on the Bid Form and all other required District forms. Bids not submitted on the District's required forms shall be deemed non-responsive and shall not be considered. Additional sheets required to fully respond to requested information are permissible. Bidders shall not modify the Bid Form or qualify their Bids. Bidders shall not submit scanned, re-typed, word-processed, or otherwise recreated versions of the Bid Form or other District-provided documents.
5. **Complete Bids.** Bidders must supply all information required by each Bid Document. Bids must be full and complete. District reserves the right in its sole discretion to reject any Bid as non-responsive as a result of any error or omission in the Bid. Bidders must complete and submit all of the following documents with the Bid Form:
 - Bid Bond or other security
 - Designated Subcontractors List
 - Site-Visit Certification, if a site visit was required
 - Noncollusion Declaration
 - a. **Bid Bond or Other Security.** Bidders must submit their Bid Form with cash, a cashier's check or a certified check payable to District, or a bid bond by an admitted surety insurer of not less than ten percent (10%) of their base Bid amount, including all additive alternates. Required form of corporate surety, Bid Bond, is provided by District and must be used and fully completed by Bidders choosing to provide a Bid Bond as security. The Surety on Bidders' Bid Bond must be an insurer admitted in the State of California and authorized to issue surety bonds in the State of California. Bids submitted without necessary bid security will be deemed non-responsive and will not be considered.

- b. **Designated Subcontractors List.** Bidders must submit with the Bid the Designated Subcontractors List for those subcontractors who will perform any portion of Work, including labor, rendering of service, or specially fabricating and installing a portion of the Work or improvement according to detailed drawings contained in the plans and specifications, in excess of one half of one percent (0.5%) of total Bid. Failure to submit this list when required by law shall result in Bid being deemed non-responsive and the Bid will not be considered.
 - c. **Site Visit Certification.** If a mandatory pre-bid conference and site visit ("Site Visit") is requested as referenced in the Notice to Bidders, then Bidders must submit the Site-Visit Certification with their Bid. District will transmit to all prospective Bidders of record such Addenda as District in its discretion considers necessary in response to questions presented at the Site Visit. Oral statements shall not be relied upon and will not be binding or legally effective. Addenda issued by the District as a result of the Site Visit, if any, shall constitute the sole and exclusive record and statement of the results of the Site Visit.
 - d. **Noncollusion Declaration.** Bidders shall submit the Noncollusion Declaration with their Bids. Bids submitted without the Noncollusion Declaration shall be deemed non-responsive and will not be considered.
- 6. **Erasures.** Bids shall be clearly written without erasure or deletions. District reserves the right to reject any Bid containing erasures or deletions.
 - 7. **Words / Numerals.** Discrepancies between written words and figures, or words and numerals, will be resolved in favor of written words.
 - 8. **Prevailing Wages.** Pursuant to sections 1770 et seq. of the California Labor Code, Bidder and all Subcontractors under the Bid shall pay all workers on all work performed pursuant to the Contract not less than the general prevailing rate of per diem wages and the general prevailing rate for holiday and overtime work as determined by the Director of the State of California Department of Industrial Relations (DIR) for the type of work performed and the locality in which the work is to be performed within the boundaries of the District. Copies of the general prevailing rates of per diem wages for each craft, classification, or type of worker needed to execute the Contract, as determined by the DIR are available from the District or on the internet (<http://www.dir.ca.gov>).
 - 9. **Contractor Registration.** Bidder shall ensure that it and its Subcontractors comply with the registration and compliance monitoring provisions of Labor Code section 1771.4, including furnishing its CPRs to the Labor Commissioner, and are registered pursuant to Labor Code section 1725.5. Bidder and its subcontractors shall comply with Labor Code section 1725.5 to 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 the Contract.
 - 10. **Bidder Diligence.** Submission of Bid signifies careful examination of the Contract Documents and a complete understanding of the nature, extent, and location of Work to be performed. Bidders must complete the tasks listed below as a condition to bidding, and submission of Bid shall constitute the Bidder's express representation to District that Bidder has fully completed the following:
 - a. Bidder has visited the Project Site, if required, and has examined thoroughly and understood the nature and extent of the Contract Documents, Work, Site, locality, actual conditions, as-built conditions, and local conditions and federal, state and local laws, and regulations that in any manner may affect cost, progress, performance, or furnishing of Work or that relate to any aspect of the means, methods, techniques, sequences, or procedures of construction to be employed by Bidder and safety precautions and programs incident thereto;

- b. Bidder has conducted or obtained and has understood all examinations, investigations, explorations, tests, reports, and studies that pertain to the subsurface conditions, as-built conditions, underground facilities, and all other physical conditions at or contiguous to the Site or otherwise that may affect the cost, progress, performance, or furnishing of Work, as Bidder considers necessary for the performance or furnishing of Work at the Contract Price, within the Contract Time, and in accordance with the other terms and conditions of Contract Documents, including specifically the provisions of the General Conditions; and no additional examinations, investigations, explorations, tests, reports, studies, or similar information or data are or will be required by Bidder for such purposes;
- c. Bidder has correlated its knowledge and the results of all such observations, examinations, investigations, explorations, tests, reports, and studies with the terms and conditions of the Contract Documents;
- d. Bidder has given the District prompt written notice of all conflicts, errors, ambiguities, or discrepancies that it has discovered in or among the Contract Documents and the actual conditions, and the written resolution thereof by the District is acceptable to Bidder;
- e. Bidder has made a complete disclosure in writing to the District of all facts bearing upon any possible interest, direct or indirect, that Bidder believes any representative of the District or other officer or employee of the District presently has or will have in this Contract or in the performance thereof or in any portion of the profits thereof;
- f. Bidder must, prior to bidding, perform the work, investigations, research, and analysis required by the Instructions to Bidders and that Bidder represented in its Bid Form and the Agreement that it performed prior to bidding. Bidder is charged with all information and knowledge that a reasonable bidder would ascertain from having performed this required work, investigation, research, and analysis. Bid prices must include entire cost of all work "incidental" to completion of the Work.
- g. **Conditions Shown on the Contract Documents:** Information as to underground conditions, as-built conditions, or other conditions or obstructions, indicated in the Contract Documents, e.g., on Drawings or in Specifications, has been obtained with reasonable care, and has been recorded in good faith. However, District only warrants, and Bidder may only rely, on the accuracy of limited types of information.
 - (1) As to above-ground conditions or as-built conditions shown or indicated in the Contract Documents, there is no warranty, express or implied, or any representation express or implied, that such information is correctly shown or indicated. This information is verifiable by independent investigation and Bidder is required to make such verification as a condition to bidding. In submitting its Bid, Bidder shall rely on the results of its own independent investigation. In submitting its Bid, Bidder shall not rely on District-supplied information regarding above-ground conditions or as-built conditions.
 - (2) As to any subsurface condition shown or indicated in the Contract Documents, Bidder may rely only upon the general accuracy of actual reported depths, actual reported character of materials, actual reported soil types, actual reported water conditions, or actual obstructions shown or indicated. District is not responsible for the completeness of such information for bidding or construction; nor is District responsible in any way for any conclusions or opinions of Bidder drawn from such information; nor is District responsible for subsurface conditions that are not specifically shown (for example, District is not responsible for soil conditions in areas contiguous to areas where a subsurface condition is shown).
- h. **Conditions Shown in Reports and Drawings Supplied for Informational Purposes:** Reference is made to the document entitled Geotechnical Data, and the document entitled Existing Conditions, for identification of:

- (1) Subsurface Conditions: Those reports of explorations and tests of subsurface conditions at or contiguous to the Project Site that have been utilized by Architect in preparing the Contract Documents; and Physical Conditions: Those drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Project Site that has been utilized by Architect in preparing the Contract Documents.
- (2) These reports and drawings are **not** Contract Documents and, except for any "technical" data regarding subsurface conditions specifically identified in Geotechnical Data and Existing Conditions, and underground facilities data, Bidder may not in any manner rely on the information in these reports and drawings. Subject to the foregoing, Bidder must make its own independent investigation of all conditions affecting the Work and must not rely on information provided by District.
11. **As-Builts.** Bidders may examine any available "as-built" drawings of previous work by giving District reasonable advance notice. District will not be responsible for accuracy of "as-built" drawings. The document entitled Existing Conditions applies to all supplied "as-built" drawings.
12. **Questions.** All questions about the meaning or intent of the Contract Documents are to be directed in writing to the District. Interpretations or clarifications considered necessary by the District in response to such questions will be issued in writing by Addenda faxed, mailed, or delivered to all parties recorded by the District as having received the Contract Documents. Questions received less than **SEVEN (7)** calendar days prior to the date for opening Bids may not be answered. Only questions answered by formal written Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.
13. **Addenda.** Addenda may also be issued to modify parts of the Contract Documents as deemed advisable by the District. Bidder must acknowledge each Addendum in its Bid Form by number or its Bid may be considered non-responsive. Each Addenda shall be part of the Contract Documents. A complete listing of Addenda may be obtained from the District.
14. **Substitution for Specified Items.** Bids shall be based on products and systems specified in Contract Documents or listed by name in Addenda. All requests must comply with the requirements specified in the Special Conditions, the Specifications and the following:
- a. **Request for Substitution Prior to Bid.**
- (1) District must receive any request for substitution a minimum of **SEVEN (7)** calendar days prior to the date of bid opening.
- (2) The District's denial of a substitution request prior to the date of bid opening shall be conclusive, requiring Bidders to list only approved items. The District is not responsible and/or liable in any way for a Bidder's damages and/or claims related, in any way, to that Bidder's basing its bid on any requested substitution that the District has not approved. Bidder's Bid shall be deemed non-responsive if it identifies a product or manufacturer of a non-approved substitution.
- (3) Approved substitutions shall be listed in Addenda.
- (4) District reserves the right not to act upon submittals of substitutions until after the date of bid opening.
- b. **Request for Substitution after Bid Award.** Substitutions may be requested after Contract has been awarded only if indicated in and in accordance with requirements specified in the Special Conditions.

15. **Information with Request.** Requests for substitutions shall contain sufficient information to assess acceptability of the product or system and impact to Project, including, without limitation, the requirements specified in the Special Conditions and the Specifications. Insufficient information shall be grounds for rejection of substitution.
16. **Alternates.** The Contract may include alternates. Alternates are defined as alternate products, materials, equipment, systems, methods, or major elements of the construction, that may, at the District's option and under terms established in the Contract and pursuant to section 20103.8 of the Public Contract Code, be selected for the Work. The District shall award the Contract, if it awards it at all, to the lowest responsive responsible bidder based on the criteria as indicated in the Notice to Bidders.
17. **Notice of Award.** The Bidder awarded the Contract shall execute and submit the following documents by 5:00 p.m. of the **SEVENTH (7th)** calendar day following the date of the Notice of Award. Failure to properly and timely submit these documents entitles District to, among other remedies, make a claim against Bidder's Bid Bond or deposit Bidder's cash, cashier's check, or certified check. The proceeds thereof may be retained by District as liquidated damages, in District's sole discretion.
 - a. Agreement: To be executed by successful Bidder. Submit four (4) copies, each bearing an original signature.
 - b. Performance Bond (100%): On the form provided in the Contract Documents and fully executed as indicated on the form.
 - c. Payment Bond (100%) (Contractor's Labor and Material Bond): On the form provided in the Contract Documents and fully executed as indicated on the form.
 - d. Insurance Certificates and Endorsements as required.
 - e. Workers' Compensation Certification.
 - f. Prevailing Wage and Related Labor Requirements Certification.
 - g. Hazardous Materials Certification.
 - h. Lead-Based Materials Certification.
 - i. Criminal Background Investigation/Fingerprinting Certification.
18. **Notice to Proceed.** District may issue a Notice to Proceed within **THREE (3)** months from the date of the Notice of Award. Upon receipt of the Notice to Proceed, Contractor shall complete the Work within the period of time indicated in the Contract Documents. It is further expressly understood by Contractor that Contractor shall not be entitled to any claim of additional compensation or additional time when the Notice to Proceed is issued within the 3-month period.
 - a. The District may postpone issuing the Notice to Proceed beyond the 3-month period, upon reasonable notice to Contractor.
 - b. It is further expressly understood by Contractor that Contractor shall not be entitled to any claim of additional compensation as a result of the postponement of the issuance of the Notice to Proceed beyond the 3-month period. If the Contractor believes that a postponement of issuance of the Notice to Proceed will cause a hardship to Contractor, the Contractor may terminate the Contract. Contractor's termination due to a postponement beyond the 3-month period shall be by written notice to District within **SEVEN (7)** calendar days after receipt by Contractor of District's notice of postponement.

- c. It is further understood by Contractor that in the event Contractor terminates the Contract as a result of postponement by the District, District shall only be obligated to pay Contractor for the Work that Contractor had performed at the time of notification of postponement and which the District had in writing authorized Contractor to perform prior to issuing a Notice to Proceed.
 - d. Should Contractor terminate the Contract as a result of a notice of postponement, District shall have the authority to award the Contract to the next lowest responsive responsible bidder.
19. **Bid Protests.** Any bid protest by any Bidder regarding any other bid on this Project must be submitted in writing to the District, before 5:00 p.m. of the **SECOND(2nd)** Business Day following the date of bid opening.
- a. The protest must contain a complete statement of any and all bases for the protest.
 - b. The protest must refer to the specific portions of all documents that form the bases for the protest.
 - c. The protest must include the name, address and telephone number of the person representing the protesting party.
 - d. The party filing the protest must concurrently transmit a copy of the protest and any attached documentation to all other parties with a direct financial interest that may be adversely affected by the outcome of the protest. Such parties shall include all other bidders or proposers who appear to have a reasonable prospect of receiving an award depending upon the outcome of the protest.
 - e. The procedure and time limits set forth in this paragraph are mandatory and are each bidder's sole and exclusive remedy in the event of bid protest. Failure to comply with these procedures shall constitute a waiver of any right to further pursue the bid protest, including filing a Government Code Claim or legal proceedings.
20. **Rejection of Bids.** District reserves the right to reject any or all bids, including without limitation the right to reject any or all nonconforming, non-responsive, unbalanced, or conditional bids, to re-bid, and to reject the bid of any bidder if District believes that it would not be in the best interest of the District to make an award to that bidder, whether because the bid is not responsive or the bidder is unqualified or of doubtful financial ability or fails to meet any other pertinent standard or criteria established by District. District also reserves the right to waive inconsequential deviations not involving price, time, or changes in the Work. For purposes of this paragraph, an "unbalanced bid" is one having nominal prices for work item(s) that represent substantive work and/or overly-enhanced prices for nominal work item(s).
21. **Bidder Responsibility.** Prior to the award of Contract, District reserves the right to consider the responsibility of the Bidder. District may conduct investigations as District deems necessary to assist in the evaluation of any bid and to establish the responsibility, including, without limitation, qualifications and financial ability of Bidders, proposed subcontractors, suppliers, and other persons and organizations to perform and furnish the Work in accordance with the Contract Documents to District's satisfaction within the prescribed time.

END OF OCUMENT

MENLO PARK CITY SCHOOL DISTRICT

BID FORM FOR

PROJECT: BID# 004-2019-02
OAK KNOLL ELEMENTARY SCHOOL
LIGHTING & CEILING UPGRADES
AND ELC RESTROOM MODIFICATIONS

Contractor will perform the Work defined in the Contract Documents and fully understands the scope of Work required in this bid and accepts in full payment for that Work the following total lump sum amount, all taxes included:

_____ dollars \$ _____
<i>TOTAL BASE BID</i>

ADDITIVE / DEDUCTIVE ALTERNATES:

NO ALTERNATES

1. Work. Contractor has reviewed the Work outlined in the Contract Documents and fully understands the scope of Work required in this bid, understands the construction and project management function(s) is described in the Contract Documents.
2. Schedule. Contractor agrees to commence work under this Contract on the date established in the Contract Documents and to complete all Work within the time specified in the Contract Documents.
3. Subcontractors. Contractor shall identify the **name, location** of the place of business, California Contractor State License Number, DIR Registration Number, and kind of work of each subcontractor that will perform work or labor or render service in or about the construction of the Work or improvement in an amount in excess of one-half of 1 percent (0.5%) of the Contractor's total bid. Use extra sheets/extra space as needed.

[Name]:	[Location]:	[CSLB Lic. #] and [DIR Reg. #]:	[Kind of Work]:
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

4. Bid Bond. Contractor shall provide with its bid a certified or cashier's check or bidder's bond for an amount not less than ten percent (10%) of the bid amount. The certified or cashier's check or bid bond shall be made payable to the order of the District. If a bid bond accompanies the bid/proposal, the bond shall be secured by an admitted surety company, licensed in the State of California, satisfactory to the District and in the form attached hereto. The certified or cashier's check or bond shall be given as a guarantee that Contractor will enter into the Contract if awarded the Work, and in the case of refusal or failure to enter into the Contract, the District shall have the right to award to another bidder. If Contractor fails or refuses to timely enter into the contract, the District reserves the right to declare the bid bond forfeited and to pursue all other remedies in law or equity relating to such breach including, but not limited to, seeking recovery of damages for breach of contract. Failure to provide bid security, or bid security in the proper amount, will result in rejection of the

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bid.

5. **Noncollusion Declaration.** Contractor shall provide with its bid the Noncollusion Declaration in the form attached hereto.
6. **License.** Contractor certifies that it is, at the time of bidding, and shall be throughout the period of the Contract, licensed by the State of California to do the type of Work required under the terms of the Contract Documents. Contractor further certifies that it is regularly engaged in the general class and type of work called for in the Contract Documents.
7. **Prevailing Wages.** Pursuant to sections 1770 et seq. of the California Labor Code, Contractor and all Subcontractors under the Contractor shall pay all workers on all work performed pursuant to the Contract not less than the general prevailing rate of per diem wages and the general prevailing rate for holiday and overtime work as determined by the Director of the State of California Department of Industrial Relations (DIR) for the type of work performed and the locality in which the work is to be performed within the boundaries of the District. Copies of the general prevailing rates of per diem wages for each craft, classification, or type of worker needed to execute the Contract, as determined by the DIR are available from the District or on the internet (<http://www.dir.ca.gov>). In addition, if awarded a contract, Contractor shall comply with Labor Code § 1777.5 pertaining to prevailing wage compensation to apprentices for preemployment activities.
8. **Contractor Registration.** Contractor shall ensure that it and its Subcontractors comply with the registration and compliance monitoring provisions of Labor Code section 1771.4, including furnishing its CPRs to the Labor Commissioner, and are registered pursuant to Labor Code section 1725.5. Contractor and its subcontractors shall comply with Labor Code section 1725.5 to be qualified to bid, be listed in a bid or proposal, subject to the requirements of Section 4104 of the Public Contract Code or engage in the performance of the Contract.
9. **Bid Protests.** Any bid protest by any Contractor regarding any other bid on this Project must be submitted in writing to the District to: **Ahmad Sheikholeslami** at the District office located at **181 Encinal Avenue, Atherton, CA 94027** before **5:00 p.m.** of the **SECOND (2ND)** business day following the date of bid opening, or the Contractor waives its right to protest. The protest must contain a complete statement of any and all bases for the protest and the Contractor must concurrently transmit a copy of the protest to all other bidders that appear to have a reasonable prospect of receiving an award depending upon the outcome of the protest.
10. **Addenda.** Receipt and acceptance of the following addenda is hereby acknowledged.

No.: _____	Date: _____
No.: _____	Date: _____

11. **CONTRACT FORM. DISTRICT'S CONTRACT FORM IS PART OF THE CONTRACT DOCUMENTS. THE SCOPE OF THE PROJECT IS AS DESCRIBED IN EXHIBIT A TO THE CONTRACT. THE SUCCESSFUL CONTRACTOR SHALL, WITHIN SEVEN (7) CALENDAR DAYS OF NOTICE THAT IT HAS BEEN AWARDED THE CONTRACT, BE REQUIRED TO PROVIDE TO THE DISTRICT ALL CERTIFICATIONS, BONDS, INSURANCE DOCUMENTS, CONSTRUCTION SCHEDULE, SUBCONTRACTOR LIST AND ALL OTHER REQUIRED DOCUMENTATION AS INDICATED IN THE CONTRACT.**

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

Dated this _____ day of _____ 20 _____

Name of Contractor _____

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Signed by _____

Title of Signer _____

Address of Contractor _____

Contractor's Taxpayer's Identification No. _____

Department of Industrial Relations (DIR) Registration No. of Contractor _____

Telephone Number _____

Fax Number _____

E-mail _____ Web page _____

Contractor's License No(s): No.: _____ Class: _____ Expiration Date: _____

 No.: _____ Class: _____ Expiration Date: _____

BID BOND (SECURITY)

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

KNOW ALL PERSONS BY THESE PRESENTS:

That the undersigned, as _____ as Principal ("Principal"),

and _____ as Surety ("Surety"),

a corporation organized and existing under and by virtue of the laws of the State of _____ and authorized to do business as a surety in the State of California, are held and firmly bound unto the **Menlo Park City School District** ("District"), State of California as Obligee, in the sum of

_____ (\$ _____)

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

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

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

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

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

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

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

Principal

By

Surety

By

Name of California Agent of Surety

Address of California Agent of Surety

Telephone Number of California Agent of Surety

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

END OF DOCUMENT

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Lighting & Ceiling Upgrades
And ELC Restroom Modifications

SITE-VISIT CERTIFICATION

PROJECT: **Bid #004-2019-02**
 Oak Knoll Elementary School
 Lighting & Ceiling Upgrades
 And ELC Restroom Modifications

Check whichever option applies:

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

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

Bidder fully relieves and releases the Menlo Park City School District, its Architect, its Engineer, its Construction Manager, and all of their respective officers, agents, employees, and consultants from any liability for any monetary or other damage(s), related to conditions that could have been identified during my visit and/or the Bidder's representative's visit to the Site.

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

Date: _____

Proper Name of Bidder: _____

Signature: _____

Print Name: _____

Title: _____

END OF DOCUMENT

NONCOLLUSION DECLARATION
Public Contract Code Section 7106

TO BE EXECUTED BY CONTRACTOR AND SUBMITTED WITH BID FORM

The undersigned declares:

I am the _____ **[PRINT YOUR TITLE]**

of _____ **[PRINT FIRM NAME]**,

the party making the foregoing Contract.

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 the following date:

Date: _____

Proper Name of Contractor: _____

Signature: _____

Print Name: _____

Title: _____

(ATTACH NOTARIAL ACKNOWLEDGMENT FOR THE ABOVE SIGNATURE)

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And ELC Restroom Modifications

CONTRACT FOR
BID #004-2019-02
OAK KNOLL ELEMENTARY SCHOOL
LIGHTING & CEILING UPGRADES
AND ELC RESTROOM MODIFICATIONS

THIS CONTRACT is made and entered into this _____ day of _____, 20____
("Contract"), by and between _____ ("Contractor") and
Menlo Park City School District ("District"). Contractor and District may be referred to herein individually as a "Party"
or collectively as the "Parties."

1. **Contract Price & Services.** After the District has issued a Notice to Proceed, the Contractor shall furnish to the District for a total price of _____ Dollars (\$_____) ("Contract Price"), the following repairs, maintenance or construction services ("Services" or "Work"):

**Lighting & Ceiling Upgrades and ELC Restroom Modifications at Oak Knoll Elementary School
per Bid #004-2019-02 Contract Documents**

2. **Payment.** Payment for the Work shall be made in accordance with the Terms and Conditions attached hereto.
3. **Site.** Contractor shall perform the Work at **Oak Knoll Elementary School** ("Premises" or "Site"). The Project is the scope of Work performed at the Site.
4. **Contract Time & Liquidated Damages.** Work shall be completed by **August 9, 2019**, fifty-two (**52**) consecutive calendar days from the date specified in the District's Notice to Proceed. ("Contract Time") Contractor agrees that if the Work is not completed within the Contract Time and/or pursuant to the completion schedule, construction schedule, or project milestones developed pursuant to provisions of the Contract, it is understood, acknowledged, and agreed that the District will suffer damage which is not capable of being calculated. Pursuant to Government Code section 53069.85, Contractor shall pay to the District, as fixed and liquidated damages for these incalculable damages, the sum of **One Thousand Dollars (\$1,000.00)** per day for each and every calendar day of delay beyond the Contract Time or beyond any completion schedule, construction schedule, or Project milestones established pursuant to the Contract.
5. **Bonds & Insurance.**
- a. **Payment Bond & Performance Bond:** Contractor shall not commence the Work until it has provided to the District, a Payment (Labor and Material) Bond and a Performance Bond, in the forms attached hereto, each in an amount equivalent to one hundred percent (100%) of the Contract Price issued by a surety admitted to issue bonds in the State of California and otherwise acceptable to the District.
- b. **Insurance:** Contractor shall have and maintain in force during the term of this Contract, with the minimum indicated limits, the following insurance:

Commercial General Liability , with Products and Completed Operations Coverage	\$1,000,000 per occurrence; \$2,000,000 aggregate
Automobile Liability, Any Auto , Combined Single Limit	\$1,000,000 per occurrence; \$2,000,000 aggregate
Workers Compensation	Statutory limits pursuant to State law

MENLO PARK CITY SCHOOL DISTRICT
Oak Knoll Elementary School
Lighting & Ceiling Upgrades
And ELC Restroom Modifications

Employers' Liability	\$1,000,000
Builder's Risk (Course of Construction)	Issued for the value and scope of work.

Contractor shall provide to the District certificate(s) of insurance and endorsements satisfactory to the District. The policy(ies) shall not be amended or modified and the coverage amounts shall not be reduced without thirty (30) days written notice to the District prior to cancellation. Except for worker's compensation insurance, the District, the Architect, and the Project Manager shall be named as an additional insured on all policies. Contractor's policy(ies) shall be primary; any insurance carried by the District shall only be secondary and supplemental. Contractor shall not allow any subcontractor, employee, or agent to commence Work on this Contract or any subcontract until the insurance required of Contractor, subcontractor, or agent has been obtained.

6. **Project Oversight.** Inspection and acceptance of the Work shall be performed by **Ahmad Sheikholeslami, Chief Business and Operations Officer** of the Menlo Park City School District. The architect for the Project is **HED** ("Architect").

7. **Terms & Conditions.** The Contractor agrees to comply with the Terms and Conditions.

8. **Contract Documents.** The Contract Documents include only the following documents, as indicated:

<input checked="" type="checkbox"/> Bid Form	<input checked="" type="checkbox"/> Drug-Free Workplace Certification
<input checked="" type="checkbox"/> Bid Bond	<input checked="" type="checkbox"/> Lead-Product(s) Certification
<input checked="" type="checkbox"/> Notice to Proceed	<input type="checkbox"/> Roofing Contract Financial Interest Certification
<input checked="" type="checkbox"/> Terms and Conditions to Contract	<input checked="" type="checkbox"/> Insurance Certificates and Endorsements
<input checked="" type="checkbox"/> Noncollusion Declaration	<input checked="" type="checkbox"/> Performance Bond
<input checked="" type="checkbox"/> Prevailing Wage Certification	<input checked="" type="checkbox"/> Payment Bond
<input checked="" type="checkbox"/> Workers' Compensation Certification	<input type="checkbox"/> Exhibit A ("Scope of Work")
<input checked="" type="checkbox"/> Criminal Background Investigation Certification	<input checked="" type="checkbox"/> Plans
<input checked="" type="checkbox"/> Asbestos & Other Hazardous Materials Certification	<input checked="" type="checkbox"/> Work Specifications
<input checked="" type="checkbox"/> Tobacco-Free Certification	<input type="checkbox"/> _____[Other]

9. **Notice.** Any notice required or permitted to be given under this Agreement shall be deemed to have been given, served, and received if given in writing and either personally delivered or sent by overnight delivery service addressed as follows:

Menlo Park City School District
Attn: Ahmad Sheikholeslami
Chief Business and Operations Officer
181 Encinal Avenue
Atherton, CA 94027

Contractor: _____

 Attn: _____

Any notice personally given shall be effective upon receipt. Any notice sent by overnight delivery service shall be effective the business day next following delivery thereof to the overnight delivery service.

ACCEPTED AND AGREED on the date indicated below. By signing this Contract, Contractor certifies, under penalty of perjury, that all the information provided in the Contract Documents is true, complete, and correct:

Dated: _____, 20____

Dated: _____, 20____

Menlo Park City School District

_____ Contractor

By: _____

By: _____

Print Name: _____

Print Name: _____

Print Title: _____

Print Title: _____

Information regarding Contractor:

Type of Business Entity:

- ____ Individual
- ____ Sole Proprietorship
- ____ Partnership
- ____ Limited Partnership
- ____ Corporation
- ____ Limited Liability Company
- ____ Other: _____

Employer Identification and/or Social Security Number

NOTE: United States Code, title 26, sections 6041 and 6109 require non-corporate recipients of \$600 or more to furnish their taxpayer identification number to the payer. The United States Code also provides that a penalty may be imposed for failure to furnish the taxpayer identification number. In order to comply with these rules, the District requires your federal tax identification number or Social Security number, whichever is applicable.

MENLO PARK CITY SCHOOL DISTRICT
Oak Knoll Elementary School
Lighting & Ceiling Upgrades
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TERMS AND CONDITIONS TO CONTRACT

1. NOTICE TO PROCEED: District shall provide a Notice to Proceed to Contractor pursuant to the Contract at which time Contractor shall proceed with the Work.

2. SITE EXAMINATION: Contractor has examined the Site and certifies that it accepts all measurements, specifications and conditions affecting the Work to be performed at the Site. By submitting its quote, Contractor warrants that it has made all Site examination(s) that it deems necessary as to the condition of the Site, its accessibility for materials, workers and utilities, and Contractor's ability to protect existing surface and subsurface improvements. No claim for allowance of time or money will be allowed as to any other undiscovered condition on the Site.

3. EQUIPMENT AND LABOR: The Contractor shall furnish all tools, equipment, apparatus, facilities, transportation, labor, and material necessary to furnish the Services, the Services to be performed at such times and places as directed by and subject to the approval of the authorized District representative indicated in the Work specifications attached hereto.

4. SUBCONTRACTORS: Contractor shall comply with the Subletting and Subcontracting Fair Practices Act (Public Contract Code, section 4100 et. seq.) Contractor shall identify by name and location of the place of business of each subcontractor who will perform work or labor or render service in or about the construction of the Project in an amount in excess of one-half of 1 percent of the Contractor's contract price or ten thousand dollars (\$10,000) whichever is greater. Subcontractors, if any, engaged by the Contractor for any Service or Work under this Contract shall be subject to the approval of the District. Contractor agrees to bind every subcontractor by the terms of the Contract as far as such terms are applicable to subcontractor's work, including, without limitation, all indemnification, insurance, bond, and warranty requirements. If Contractor subcontracts any part of this Contract, Contractor shall be fully responsible to the District for acts and omissions of its subcontractor and of persons either directly or indirectly employed by itself. Nothing contained in the Contract Documents shall create any contractual relations between any subcontractor and the District.

5. TERMINATION: If Contractor fails to perform the Services and Contractor's duties to the satisfaction of the District, or if Contractor fails to fulfill in a timely and professional manner Contractor's obligations under this Contract, or if Contractor violates any of the Terms or Provisions of this Contract, the District shall have the right to terminate this Contract effective immediately upon the District giving written notice thereof to the Contractor. District shall also have the right in its sole discretion to terminate the Contract for its own convenience. Termination shall have no effect upon any of the rights and obligations of the parties arising out of any transaction occurring prior to the effective date of termination. Upon termination, Contractor shall provide the District with all documents produced maintained or collected by Contractor pursuant to this Contract, whether or not such documents are final or draft documents.

6. SAFETY AND SECURITY: Contractor is responsible for maintaining safety in the performance of this Contract. Contractor shall be responsible for complying with the District's rules and regulations pertaining to safety, security, and driving on school grounds, particularly when children are present.

7. CHANGE IN SCOPE OF WORK: Any change in the scope of the Work, method of performance, nature of materials or price thereof, or any other matter materially affecting the performance or nature of the Work shall not be paid for or accepted by District unless such change, addition, or deletion is approved in advance and in writing by a valid change order executed by the District. Contractor specifically understands, acknowledges, and agrees that the District shall have the right to request any alterations, deviations, reductions, or additions to the Project or Work, and the cost thereof shall be added to or deducted from the amount of the Contract Price by fair and reasonable valuations. Contractor also agrees to provide the District with all information requested to substantiate the cost of any change order and to inform the District whether the Work will be done by the Contractor or a subcontractor. In addition to any other information requested, Contractor shall submit, prior to approval of any change order, its request for a time extension (if any), as well as all information necessary to substantiate Contractor's belief that such change will delay the completion of the Work. If Contractor fails to submit its request for a time extension or the necessary supporting information, it shall be deemed to have waived its right to request such extension.

8. TRENCH SHORING: If this Contract is in excess of \$25,000 and is for the excavation of any trench deeper than five (5) feet, Contractor must submit and obtain District's approval and acceptance, in advance of excavation, of 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 such trench or trenches. If the plan varies from the shoring system standards, the plan shall be prepared by a registered civil or structural engineer.

9. EXCAVATIONS OVER FOUR FEET: If this Contract includes excavations over four (4) feet, Contractor shall promptly, and before the following conditions are disturbed, notify the District, in writing, of any: (1) Material that the Contractor believes may be material that is hazardous waste, as defined in Section 25117 of the Health and Safety Code, that is required to be removed to a Class I, Class II, or Class III disposal site in accordance with provisions of existing law; (2) Subsurface or latent physical conditions at the Site differing from those indicated; or (3) Unknown physical conditions at the Site of any unusual nature, different materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract. The District shall promptly investigate the conditions, and if it finds that the conditions do materially so differ, or do involve hazardous waste, and cause a decrease or increase in the Contractor's cost of, or the time required for, performance of any part of the Work shall issue a

change order under the procedures described in the Contract. In the event that a dispute arises between the District and the Contractor regarding whether the conditions materially differ, or involve hazardous waste, or cause a decrease or increase in the Contractor's cost of, or time required for, performance of any part of the work, the Contractor shall not be excused from any scheduled completion date provided for by the Contract, but shall proceed with all Work. 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.

10. LEAD-BASED PAINT: Pursuant to the Lead-Safe Schools Protection Act (Education Code Section 32240 et seq.) and other applicable law, no lead-based paint, lead plumbing and solders, or other potential sources of lead contamination shall be utilized on this Project, and only trained and state-certified contractors, inspectors and workers shall undertake any action to abate existing risk factors for lead. Contractor must execute the Lead-Based Paint Certification, if applicable.

11. WORKERS: Contractor shall at all times enforce strict discipline and good order among its employees and the employees of its subcontractors and shall not employ or work any unfit person or anyone not skilled in work assigned to him or her. Any person in the employ of the Contractor or a subcontractor whom the District may deem incompetent or unfit shall be dismissed from the Site and shall not again be employed at the Site without written consent from the District.

12. DRUG-FREE / TOBACCO FREE / SMOKE FREE POLICY: No drugs, alcohol, tobacco, and/or smoking are allowed at any time in any buildings and/or grounds on District property. No students, staff, visitors, consultants or contractors are to use drugs on these sites.

13. FINGERPRINTING: Contractor shall comply at all times with the provisions of Education Code section 45125.2 regarding the submission of employee fingerprints to the California Department of Justice and the completion of criminal background investigations of its employees, its subcontractor(s), and its subcontractors' employees. Verification of compliance with this section shall be provided in writing to the District prior to each individual's commencement of employment or performing any portion of the Services and prior to permitting contact with any student.

14. CORRECTION OF ERRORS: Contractor shall perform, at its own cost and expense and without reimbursement from the District, any work necessary to correct errors or omissions which are caused by the Contractor's failure to comply with the standard of care required herein.

15. FAILURE TO PERFORM. If the District at any time believes that the Contractor is behind schedule, is failing to construct the Project pursuant to the Contract Documents or is otherwise failing to perform any provisions of this Contract, the District, after FORTY-EIGHT (48) hours written notice to the Contractor, may take any action necessary or beneficial to the District to complete the Project, takeover the Work of the Contract, terminate or suspend the Contract as indicated herein, or any combination or portion of those actions. The Contractor shall be liable to the District for any cost incurred by the District in those actions and the District has the

right to deduct the cost thereof from any payment then or thereafter due the Contractor.

16. SUBSTITUTIONS: No substitutions of material from those specified in the Work Specifications shall be made without the prior written approval of the District.

17. CONTRACTOR SUPERVISION: Contractor shall provide competent supervision of personnel employed on the job Site, use of equipment, and quality of workmanship.

18. CLEAN UP: Debris shall be removed from the Premises. The Site shall be in order at all times when work is not actually being performed and shall be maintained in a reasonably clean condition.

19. ACCESS TO WORK: District representatives shall at all times have access to the Work wherever it is in preparation or in progress. Contractor shall provide safe and proper facilities for such access.

20. PROTECTION OF WORK AND PROPERTY: Contractor shall erect and properly maintain at all times, as required by conditions and progress of the Work, all necessary safeguards, signs, barriers, lights, and security persons for protection of workers and the public and shall post danger signs warning against hazards created by the Work. In an emergency affecting life and safety of life or of Work or of adjoining property, Contractor, without special instruction or authorization from District, is permitted to act at his discretion to prevent such threatened loss or injury.

21. ASSIGNMENT OF CONTRACT: Contractor shall not assign or transfer in any way any or all of its rights, burdens, duties, or obligations under this Contract without the prior written consent of the District.

22. TIME IS OF THE ESSENCE: Time is of the essence in the performance of and compliance with each of the provisions and conditions of this Contract.

23. OCCUPANCY: District reserves the right to occupy buildings at any time before formal Contract completion and such occupancy shall not constitute final acceptance or approval of any part of the Work covered by this Contract, nor shall such occupancy extend the date specified for completion of the Work.

24. FORCE MAJEURE CLAUSE: Contractor shall be excused from performance hereunder during the time and to the extent that it is prevented from obtaining delivery, or performing by act of God, fire, strike, loss, or shortage of transportation facilities, lock-out, commandeering of materials, product, plant, or facilities by the government, when satisfactory evidence thereof is presented to the District, provided that it is satisfactorily established that the non-performance is not due to the fault or neglect of Contractor.

25. INDEMNIFICATION / HOLD HARMLESS CLAUSE: To the furthest extent permitted by California law, Contractor shall defend, indemnify, and hold free and harmless the District, its agents, representatives, officers, Contractors, employees, trustees, and volunteers ("the indemnified parties") from any and all claims, demands, causes of action, costs, expenses, liability, loss, damage or injury of any kind, in law or equity, including without limitation the payment of all consequential damages, arising out of, pertaining to or relating to, in whole or in part, the negligence, recklessness, errors or omissions, or willful misconduct of Contractor, its officials,

officers, employees, subcontractors, Contractors, or agents directly or indirectly arising out of, connected with, or resulting from the performance of the Services or from any activity, work, or thing done, permitted, or suffered by the Contractor in conjunction with this Contract, unless the claims are caused wholly by the sole negligence or willful misconduct of the indemnified parties. The District shall have the right to accept or reject any legal representation that Contractor proposes to defend the indemnified parties.

26. PAYMENT: On a monthly basis, Contractor shall submit an application for payment based upon the estimated value for materials delivered or Services performed under the Contract as of the date of submission ("Application for Payment"). Within thirty (30) days after District's approval of the Application for Payment, Contractor shall be paid a sum equal to ninety-five percent (95%) of the value of the Work performed (as verified by Architect and Inspector and certified by Contractor) up to the last day of the previous month, less the aggregate of previous payments and amount to be withheld. The District may deduct from any payment an amount necessary to protect the District from loss because of: (1) liquidated damages which have accrued as of the date of the application for payment; (2) any sums expended by the District in performing any of Contractor's obligations under the Contract which Contractor has failed to perform or has performed inadequately; (3) defective Work not remedied; (4) stop notices as allowed by state law; (5) reasonable doubt that the Work can be completed for the unpaid balance of the Total Contract price or by the scheduled completion date; (6) unsatisfactory prosecution of the Work by Contractor; (7) unauthorized deviations from the Contract; (8) failure of the Contractor to maintain or submit on a timely basis proper and sufficient documentation as required by the Contract or by District during the prosecution of the Work; (9) erroneous or false estimates by the Contractor of the value of the Work performed; (10) any sums representing expenses, losses, or damages, as determined by the District, incurred by the District for which Contractor is liable under the Contract; and (11) any other sums which the District is entitled to recover from Contractor under the terms of the Contract or pursuant to state law, including section 1727 of the California Labor Code. The failure by the District to deduct any of these sums from a progress payment shall not constitute a waiver of the District's right to such sums. The District shall retain five percent (5%) from all amounts owing as retention. Retention shall be paid pursuant to Public Contract Code sections 7107 and 7200.

27. PERMITS AND LICENSES: Contractor and all of its employees, agents, and subcontractors shall secure and maintain in force, at Contractor's sole cost and expense, all licenses and permits as are required by law, in connection with the furnishing of materials, supplies, or Services herein listed.

28. INDEPENDENT CONTRACTOR STATUS: While engaged in carrying out the Services of this Contract, the Contractor is an independent contractor, and not an officer, employee, agent, partner, or joint venture of the District. Contractor shall be solely responsible for its own Worker's Compensation insurance, taxes,

and other similar charges or obligations. Contractor shall be liable for its own actions, including its negligence or gross negligence, and shall be liable for the acts, omissions, or errors of its agents or employees.

29. ANTI-DISCRIMINATION: It is the policy of the District that in connection with all work performed under contracts there be no discrimination against any employee engaged in the work because of race, color, ancestry, national origin, or religious creed, and therefore the Contractor agrees to comply with applicable Federal and California laws including, but not limited to the California Fair Employment Practice Act beginning with Government Code Section 12900 and Labor Code Section 1735. In addition, the Contractor agrees to require like compliance by all its subcontractor(s).

30. DISABLED VETERAN BUSINESS ENTERPRISES: Section 17076.11 of the Education Code requires school districts using funds allocated pursuant to the State of California School Facility Program for the construction or modernization of a school building (SFP Funds) to have a participation of at least three percent (3%), per year, of the overall dollar amount expended each year by the school district, for disabled veteran business enterprises (DVBE). If this Contract uses School Facilities Program Funds, Contractor must submit, with its executed Contract, appropriate documentation to the District identifying the steps Contractor has taken to solicit DVBE participation in conjunction with this Contract.

31. WARRANTY/QUALITY: Unless a longer warranty is called for elsewhere in the Contract, Contractor, manufacturer, or their assigned agents shall guarantee the workmanship, product or Services performed against defective workmanship, defects or failures of materials for a minimum period of one (1) year from District's written approval of the Work. All workmanship and merchandise must be warranted to be in compliance with applicable California energy, conservation, environmental, and educational standards.

32. CONFIDENTIALITY: Contractor shall maintain the confidentiality of all information, documents, programs, procedures, and all other items that Contractor encounters while performing the Contractor's Services to the extent allowed by law. This requirement shall be ongoing and shall survive the expiration or termination of this Contract and specifically includes all student, parent, and disciplinary information.

33. COMPLIANCE WITH LAWS: Contractor shall give all notices and comply with all laws, ordinance, rules and regulations bearing on conduct of the Work as indicated or specified. If Contractor observes that any of the Work required by this Contract is at variance with any such laws, ordinance, rules or regulations, Contractor shall notify the District, in writing, and, at the sole option of the District, any necessary changes to the scope of the Work shall be made and this Contract shall be appropriately amended in writing, or this Contract shall be terminated effective upon Contractor's receipt of a written termination notice from the District. If Contractor performs any work that is in violation of any laws, ordinances, rules or regulations, without first notifying the District of the violation, Contractor shall bear all costs arising therefrom.

34. DISPUTES/CLAIMS: Public Contract Code § 9204. Claims between the District and the Contractor shall be resolved in accordance with the procedures established in Public Contract Code § 9204.

§ Claim. The term "Claim" means a written demand by the Contractor sent by registered mail or certified mail with return receipt requested for:

- (1) An extension of the Contract Time, including relief from damages or penalties assessed by the District for delay;
- (2) Payment of money or damages arising from work done by, or on behalf of, the Contractor pursuant to the Contract and payment that is not otherwise expressly provided for in the Contract Documents or to which the Contractor is not otherwise entitled; or
- (3) Payment of an amount that is disputed by the District.

§ Submission of Claim. A Claim arises upon the District's rejection of a request by the Contractor for a Change Order. The Contractor shall submit the Claim by registered mail or certified mail with return receipt requested to the District's Director of construction and Modernization, with a copy to the Project Manager/Construction Manager. The Contractor shall submit its Claim in writing, together with all Supporting Documentation no later than the earlier of either: (1) thirty (30) days after the date the Claim arises; or (2) sixty (60) days after the date of Completion. It is the intent of the District to evaluate and resolve Claims with the Contractor as close to the events giving rise to such Claims as possible and to avoid stale or late Claims, including late notice and documenting of Claims, and to timely mitigate the issue, event, condition, circumstance and/or cause of the Claim and any adverse impacts or damages related thereto.

§ Contents of Claim. A Claim must include all Supporting Documentation and a statement identifying it as a Claim signed by an authorized agent or officer of the Contractor under penalty of perjury and including the following language immediately above or before the Contractor's signature: "I declare under penalty of perjury under the laws of the State of California that the information provided and statements made in this Claim are true and correct, substantiated and of merit." The Contractor recognizes and acknowledges that this requirement is not a mere formality but is intended to ensure that the Contractor only submits Claims that it believes are true and correct, substantiated and have merit.

§ Subcontractor Claims. Pursuant to Public Contract Code § 9204(d)(5), a Subcontractor may request in writing, either on its own behalf or on behalf of a lower tier Subcontractor, that the Contractor submit to the District 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 submitted to the District shall furnish reasonable documentation to support the claim. Regardless of whether or not the Contractor decides to submit the Subcontractor's claim to the District, Contractor shall provide a copy of the Subcontractor's written request,

including all supporting documentation, to the Project Manager/Construction Manager within ten (10) days of Contractor's receipt of the request. In the event the Contractor agrees to submit a Subcontractor's claim to the District, the Contractor shall submit such claim as a request for a Change Order, unless such claim was previously submitted to the District as a request for a Change Order. Within forty-five (45) days of receipt of the Subcontractor's written request, the Contractor shall notify the Subcontractor in writing as to whether the Contractor submitted the claim to the District and, if the Contractor did not submit the claim, the Contractor shall provide the Subcontractor with a written statement of the reasons for not having done so and shall concurrently provide a copy of such written statement to the Project Manager/Construction Manager. In the event the Contractor includes supporting documentation with such written statement, the Contractor shall concurrently provide a copy of such supporting documentation to the Project Manager/Construction Manager. If the Contractor submits a Claim on behalf of a Subcontractor, the Claim shall include a statement in writing and signed by an authorized agent or officer of the Contractor under penalty of perjury that includes the following language immediately above or before the Contractor's signature: "I declare under penalty of perjury under the laws of the State of California that [insert name of Contractor] has thoroughly evaluated the claim of [insert name of Subcontractor] and determined that the information provided and statements made in the claim are true and correct, substantiated and of merit."

§ District Review of Claim. Upon receipt of a Claim, the District shall review the Claim and, within a period not to exceed forty-five (45) days, shall provide Contractor a written statement identifying what portion of the Claim is disputed and what portion is undisputed. Upon receipt of a Claim, the District and the Contractor may, by mutual written agreement, extend the forty-five (45) day time period. The District shall process and make payment of any undisputed portion of a Claim within sixty (60) days after the District issues its written statement. Failure by the District to provide a written statement in response to a Claim from the Contractor within the forty-five (45) day time period, or within an agreed upon extended time period, shall result in the Claim being deemed rejected in its entirety. A Claim that is rejected by reason of the District's failure to respond, or failure to timely respond, to the Claim shall not constitute an adverse finding regarding the merits of the Claim or the claimant's responsibility or qualifications.

§ Meet and Confer Meeting. If the Contractor disputes the District's written response, or if the District fails to respond within the time frame prescribed above, the Contractor, within fifteen (15) days of the District's written response or, if the District fails to respond, within fifteen (15) days after the District's response was due, may demand, in a writing sent to the District's Superintendent by registered mail or certified mail, return receipt requested, with a copy to the District's

Director of Construction and Modernization, and Project Manager/Construction Manager, an informal conference to meet and confer for settlement of the issues in dispute. The District shall schedule a meet and confer conference within thirty (30) days of its receipt of the Contractor's written demand.

§ Mediation. Within ten (10) business days following the conclusion of the meet and confer conference, if the Claim or any portion of the Claim remains in dispute, the District shall provide the 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 sixty (60) days after the District issues its written statement. Any disputed portion of the Claim, as identified by the Contractor in writing, shall be submitted to nonbinding mediation. The expenses and fees of the mediator and the administrative fees shall be divided among the parties equally. Each party shall pay its own legal fees, witness fees, and other expenses. The District and the Contractor shall mutually agree to a mediator within ten (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. The foregoing notwithstanding, pursuant to Public Contract Code § 9204(f), the parties may mutually agree in writing to waive mediation.

§ Pending resolution of the dispute, Contractor agrees it will neither rescind the Contract nor stop the progress of the Work but will allow determination by the court of the State of California, in the county in which the District's administration office is located, having competent jurisdiction of the dispute.

§ Nothing in this Article shall prevent the Parties from resolving any disputes or claims pursuant to Public Contract Code section 20104, et seq., if applicable.

§ Nothing in this Contract, waives, modifies or tolls the Contractor's obligation to present a timely claim under Government Code § 910, et seq. Therefore, in addition to complying with the contractual Claims procedures, the Contractor is required to present claims to the District pursuant to Government Code § 910, et seq.

35. LABOR CODE REQUIREMENTS: Provided that the Contract Price is more than \$1,000, and the Work is a "public works" under the Labor Code, the parties agree as follows:

§ The Work is subject to compliance monitoring and enforcement by the Department of Industrial Relations.

§ District hereby provides notice of the requirements described in Labor Code § 1771.1(a) that a contractor or subcontractor shall not be qualified to bid on, be listed in a bid or proposal, or engage in the performance of any contract for public work, unless currently registered and qualified to perform

public work pursuant to Labor Code § 1725.5.

§ Contractor acknowledges that all or a portion of the Services under this Contract are a public work, and that it and its subcontractors have complied with Labor Code § 1725.5, including, without limitation, the registration requirements thereof.

§ Contractor shall post all required job site notices and shall comply with all applicable requirements prescribed thereby, including but not limited to Labor Code § 1771.4.

§ Contractor shall comply with all applicable provisions of the Labor Code, Division 3, Part 7, Chapter 1, Articles 1-5, including, without limitation, the payment of the general prevailing per diem wage rates for public work projects of more than one thousand dollars (\$1,000).

§ Copies of the prevailing rate of per diem wages are on file with the District.

§ Contractor and each subcontractor shall comply with Chapter 1 of Division 2, Part 7 of the Labor Code, beginning with § 1720, and including §§ 1735, 1777.5 and 1777.6, forbidding discrimination, and §§ 1776, 1777.5 and 1777.6 concerning the employment of apprentices by Contractor or subcontractors. Willful failure to comply may result in penalties, including loss of the right to bid on or receive public works contracts. Contractor shall comply with Labor Code § 1777.5 pertaining to prevailing wage compensation to apprentices for preemployment activities.

36. PAYROLL RECORDS: Contractor and its subcontractor(s) shall keep accurate certified payroll records of employees and make them available to the District immediately upon request.

37. AUDIT: Contractor shall establish and maintain books, records, and systems of account, in accordance with generally accepted accounting principles, reflecting all business operations of Contractor transacted under this Contract. Contractor shall retain these books, records, and systems of account during the Term of this Contract. Contractor shall permit the District, its agent, other representatives, or an independent auditor to audit, examine, and make excerpts, copies, and transcripts from all books and records, and to make audit(s) of all billing statements, invoices, records, and other data related to the Services covered by this Contract. Audit(s) may be performed at any time, provided that the District shall give reasonable prior notice to Contractor and shall conduct audit(s) during Contractor's normal business hours, unless Contractor otherwise consents.

38. ANTI-TRUST CLAIM: Contractor and its subcontractor(s) agree to assign to the District all rights, title, and interest in and to all causes of action they may have under Section 4 of the Clayton Act (15 U.S.C. Sec. 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 Contract or a subcontract. This assignment shall be made and become effective at the time the District tenders final payment to the Contractor, without further acknowledgment by the Parties.

39. GOVERNING LAW: This Contract shall be governed by and

construed in accordance with the laws of the State of California with venue of any action in a in the county in which the District’s administration office is located.

40. PROVISIONS REQUIRED BY LAW DEEMED INSERTED: 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 this Contract shall be read and enforced as though it were included therein.

41. BINDING CONTRACT: This Contract shall be binding upon the Parties hereto and upon their successors and assigns, and shall inure to the benefit of the Parties and their successors and assigns.

42. DISTRICT WAIVER: District's waiver of any term, condition, covenant or waiver of a breach of any term, condition or covenant shall not constitute the waiver of any other term, condition or

covenant or the waiver of a breach of any other term, condition or covenant.

43. INVALID TERM: If any provision of this Contract is declared or determined by any court of competent jurisdiction to be illegal, invalid or unenforceable, the legality, validity or enforceability of the remaining parts, terms and provisions shall not be affected thereby, and said illegal, unenforceable or invalid part, term or provision will be deemed not to be a part of this Contract.

44. ENTIRE CONTRACT: This Contract sets forth the entire Contract between the Parties hereto and fully supersedes any and all prior agreements, understanding, written or oral, between the Parties hereto pertaining to the subject matter thereof. This Contract may be modified only by a writing evidencing the Parties’ mutual consent.

PREVAILING WAGE CERTIFICATION

I hereby certify that I will conform to the State of California Public Works Contract requirements regarding prevailing wages, benefits, on-site audits with 48-hours notice, payroll records, and apprentice and trainee employment requirements, for all Work on the above Project.

Date: _____

Proper Name of Contractor: _____

Signature: _____

Print Name: _____

Title: _____

WORKERS' COMPENSATION CERTIFICATION

Labor Code section 3700 in relevant part provides:

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

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

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

Date: _____

Proper Name of Contractor: _____

Signature: _____

Print Name: _____

Title: _____

(In accordance with Article 5 - commencing at section 1860, chapter 1, part 7, division 2 of the Labor Code, the above certificate must be signed and filed with the awarding body prior to performing any Work under this Contract.)

MENLO PARK CITY SCHOOL DISTRICT
Oak Knoll Elementary School
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And ELC Restroom Modifications

CRIMINAL BACKGROUND INVESTIGATION /FINGERPRINTING CERTIFICATION

The undersigned does hereby certify to the governing board of the District that (1) he/she is a representative of the Contractor, (2) he/she is familiar with the facts herein certified, (3) he/she is authorized and qualified to execute this certificate on behalf of Contractor; and (4) that the following is true and correct:

1. **Education Code.** Contractor has taken at least one of the following actions with respect to the Project (check all that apply):

_____ The Contractor has complied with the fingerprinting requirements of Education Code section 45125.1 with respect to all Contractor's employees and all of its subcontractors' employees who may have contact with District pupils in the course of providing services pursuant to the Contract, and the California Department of Justice has determined that none of those employees has been convicted of a felony, as that term is defined in Education Code section 45122.1. A complete and accurate list of Contractor's employees and of all of its subcontractors' employees who may come in contact with District pupils during the course and scope of the Contract is attached hereto; and/or

_____ Pursuant to Education Code section 45125.2, Contractor has installed or will install, prior to commencement of work, a physical barrier at the Project site, that will limit contact between Contractor's employees and District pupils at all times; and/or

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

Name: _____

Title: _____

_____ The Work on the Contract is at an unoccupied school site and no employee and/or subcontractor or supplier of any tier of Contract shall come in contact with the District pupils.

2. **Megan's Law (Sex Offenders).** I have verified and will continue to verify that the employees of Contractor that will be on the Project site and the employees of the Subcontractor(s) that will be on the Project site are **not** listed on California's "Megan's Law" Website (<http://www.meganslaw.ca.gov/>).

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

Date: _____

Proper Name of Contractor: _____

Signature: _____

Print Name: _____

Title: _____

ASBESTOS & OTHER HAZARDOUS MATERIALS CERTIFICATION

Contractor hereby certifies that no Asbestos, or Asbestos-Containing Materials, polychlorinated biphenyl (PCB), or any material listed by the federal or state Environmental Protection Agency or federal or state health agencies as a hazardous material, or any other material defined as being hazardous under federal or state laws, rules, or regulations "New Material Hazardous", shall be furnished, installed, or incorporated in any way into the Project or in any tools, devices, clothing, or equipment used to affect any portion of Contractor's work on the Project for District. Asbestos and/or asbestos-containing material shall be defined as all items containing but not limited to chrysotile, crocidolite, amosite, anthophyllite, tremolite, and actinolite. Any or all material containing greater than one-tenth of one percent (.1%) asbestos shall be defined as asbestos-containing material.

Contractor further certifies that it has instructed its employees with respect to the above-mentioned standards, hazards, risks, and liabilities.

Any disputes involving the question of whether or not material is New Hazardous Material shall be settled by electron microscopy or other appropriate and recognized testing procedure, at the District's determination. The costs of any such tests shall be paid by Contractor if the material is found to be New Hazardous Material.

All Work or materials found to be New Hazardous Material or Work or material installed with "New Hazardous Material" containing equipment will be immediately rejected and this Work will be removed at Contractor's expense at no additional cost to the District.

Contractor shall comply with all the provisions outlined herein.

Date: _____

Proper Name of Contractor: _____

Signature: _____

Print Name: _____

Title: _____

TOBACCO-FREE ENVIRONMENT CERTIFICATION

Pursuant to, without limitation, 20 U.S.C section 6083, Labor Code section 6400 et seq., Health & Safety Code section 104350 et seq. and District Board Policies, all District sites, including the Project site, are tobacco-free environments. Smoking and the use of tobacco products by all persons is prohibited on or in District property. District property includes school buildings, school grounds, school owned vehicles and vehicles owned by others while on District property.

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

Date: _____

Proper Name of Contractor: _____

Signature: _____

Print Name: _____

Title: _____

**MENLO PARK CITY SCHOOL DISTRICT
Oak Knoll Elementary School
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And ELC Restroom Modifications**

DRUG-FREE WORKPLACE CERTIFICATION

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

The District is not a "state agency" as defined in the applicable section(s) of the Government Code, but the District is a local agency and public school district under California law and requires all contractors on District projects to comply with the provisions and requirements of Government Code section 8350 et seq., the Drug-Free Workplace Act of 1990.

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

1. 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;
2. Establishing a drug-free awareness program to inform employees about all of the following:
 - a. The dangers of drug abuse in the workplace.
 - b. The person's or organization's policy of maintaining a drug-free workplace.
 - c. The availability of drug counseling, rehabilitation, and employee-assistance programs.
 - d. The penalties that may be imposed upon employees for drug abuse violations.
3. Requiring that each employee engaged in the performance of the contract or grant be given a copy of the statement required above, and that, as a condition of employment on the contract or grant, the employee agrees to abide by the terms of the statement.

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

I also understand that if the District determines that I have either (a) made a false certification herein, or (b) violated this certification by failing to carry out the requirements of section 8355, that the Contract awarded herein is subject to termination, suspension of payments, or both. I further understand that, should I violate the terms of the Drug-Free Workplace Act of 1990, I may be subject to debarment in accordance with the requirements of section 8350 et seq.

I acknowledge that I am aware of the provisions of Government Code section 8350 et seq. and hereby certify that I will adhere to the requirements of the Drug-Free Workplace Act of 1990.

Date: _____

Proper Name of Contractor: _____

Signature: _____

Print Name: _____

Title: _____

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LEAD-PRODUCT(S) CERTIFICATION

California Occupational Safety and Health Administration (CalOSHA), Environmental Protection Agency (EPA), California Department of Health Services (DHS), California Department of Education (CDE), and the Consumer Product Safety Commission (CPSC) regulate lead-containing paint and lead products. Because the Contractor and its employees will be providing services for the District, and because the Contractor's work may disturb lead-containing building materials, **CONTRACTOR IS HEREBY NOTIFIED** of the potential presence of lead-containing materials located within certain buildings utilized by the District. All school buildings built prior to 1993 are presumed to contain some lead-based paint until sampling proves otherwise.

The CDE mandates that school districts utilize DHS lead-certified personnel when a lead-based hazard is identified. Examples of lead-certified personnel include: project designers, inspectors, and abatement workers. Furthermore, since it is assumed by the district that all painted surfaces (interior as well as exterior) within the District contain some level of lead, it is imperative that the Contractor, its workers and subcontractors fully and adequately comply with all applicable laws, rules and regulations governing lead-based materials (**Including Title 8, California Code of Regulations, Section 1532.1**). Any and all Work which may result in the disturbance of lead-containing building materials must be coordinated through the District.

The California Education Code also prohibits the use or import of lead-containing paint, lead plumbing and solders, or other potential sources of lead contamination in the construction of any new school facility or in the modernization or renovation of any existing school facility. The Contractor shall provide the District with any sample results prior to beginning Work, during the Work, and after the completion of the Work. The District may request to examine, prior to the commencement of the Work, the lead training records of each employee of the Contractor.

If failure to comply with these laws, rules, and regulations results in a site or worker contamination, the Contractor will be held solely responsible for all costs involved in any required corrective actions, and shall defend, indemnify and hold harmless the District, pursuant to the indemnification provisions of the Contract, for all damages and other claims arising therefrom. If lead disturbance is anticipated in the Work, only persons with appropriate accreditation, registrations, licenses and training shall conduct this Work.

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

THE UNDERSIGNED HEREBY ACKNOWLEDGES, UNDER PENALTY OF PERJURY, THAT HE OR SHE HAS RECEIVED NOTIFICATION OF POTENTIAL LEAD-BASED MATERIALS ON THE OWNER'S PROPERTY, AS WELL AS THE EXISTENCE OF APPLICABLE LAWS, RULES AND REGULATIONS GOVERNING WORK WITH, AND DISPOSAL OF, SUCH MATERIALS WITH WHICH IT MUST COMPLY. THE UNDERSIGNED ALSO WARRANTS THAT HE OR SHE HAS THE AUTHORITY TO SIGN ON BEHALF OF AND BIND THE CONTRACTOR.

Date: _____

Proper Name of Contractor: _____

Signature: _____

Print Name: _____

Title: _____

MENLO PARK CITY SCHOOL DISTRICT
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ROOFING CONTRACT FINANCIAL INTEREST CERTIFICATION (Public Contract Code § 3006)

PROJECT/CONTRACT NO.: _____ between _____ **School District** (the "District" or the "Owner") and _____ (the "Contractor" or the "Bidder") (the "Contract" or the "Project").

I, _____ **[Your Name]**, _____ **[Firm Name]**
certify that I have not offered, given, or agreed to give, received, accepted, or agreed to accept, any gift, contribution, or any financial incentive whatsoever to or from any person in connection with a roof project contract or subcontract on the Project. As used in this certification, "person" means any natural person, business, partnership, corporation, union, committee, club, or other organization, entity, or group of individuals.

I, _____ **[Your Name]**, _____ **[Firm Name]**
certify that I do not have, and throughout the duration of the Contract, I will not have, any financial relationship in connection with the performance of the Contract with any architect, engineer, roofing consultant, materials manufacturer, distributor, or vendor that is not disclosed below.

I, _____ **[Your Name]**, _____ **[Firm Name]**
have the following financial relationships with an architect, engineer, roofing consultant, materials manufacturer, distributor, or vendor, or other person in connection with the following roof project contract:

Name of firm ("Firm"): _____

Mailing address: _____

Address of branch office used for this Project: _____

If subsidiary, name and address of parent company: _____

For Projects without substantive roofing components, check the following box and execute this certification:

☐

The Work on the Contract (1) does not include the replacement or repair of a roof or (2) is a repair of twenty five percent (25%) or less of the roof, (3) or is a repair project that has a total cost of twenty one thousand dollars (\$21,000) or less.

I certify that to the best of my knowledge, the contents of this disclosure are true, or are believed to be true.

Date: _____

Proper Name of Contractor: _____

Signature: _____

Print Name: _____

Title: _____

MENLO PARK CITY SCHOOL DISTRICT
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PERFORMANCE BOND

PERFORMANCE BOND (100% of Contract Price)

(Note: Contractors must use this form, NOT a surety company form.)

KNOW ALL PERSONS BY THESE PRESENTS:

WHEREAS, the governing board ("Board") of the **Menlo Park City School District** ("District") and _____
_____, ("Principal") have entered into a contract for the furnishing of all materials and labor, services and transportation,
necessary, convenient, and proper to perform the following project:

_____ (Project Name)
("Project" or "Contract")

which Contract dated _____, 20____, and all of the Contract Documents attached to or forming a part of the Contract,
are hereby referred to and made a part hereof, and

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

NOW, THEREFORE, the Principal and _____ ("Surety") are held and firmly bound
unto the Board of the District in the penal sum of:

_____ DOLLARS

(\$ _____), lawful money of the United States, for the payment of which sum well and truly to be made we bind
ourselves, our heirs, executors, administrators, successors, and assigns jointly and severally, firmly by these presents, to:

- Perform all the work required to complete the Project; and
- Pay to the District all damages the District incurs as a result of the Principal's failure to perform all the Work required to complete the Project.

The condition of the obligation is such that, if the above bounden Principal, his or its heirs, executors, administrators, successors, or assigns, shall in all things stand to and abide by, and well and truly keep and perform the covenants, conditions, and agreements in the Contract and any alteration thereof made as therein provided, on his or its part to be kept and performed at the time and in the intent and meaning, including all contractual guarantees and warranties of materials and workmanship, and shall indemnify and save harmless the District, its trustees, officers and agents, as therein stipulated, then this obligation shall become null and void, otherwise it shall be and remain in full force and virtue.

As a condition precedent to the satisfactory completion of the Contract, the above obligation shall hold good for a period equal to the warranty and/or guarantee period of the Contract, during which time Surety's obligation shall continue if Contractor shall fail to make full, complete, and satisfactory repair, replace, and totally protect the District from loss or damage resulting from or caused by defective materials or faulty workmanship. The obligations of Surety hereunder shall continue so long as any obligation of Contractor remains. Nothing herein shall limit the District's rights or the Contractor's or Surety's obligations under the Contract, law or equity, including, but not limited to, California Code of Civil Procedure section 337.15.

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 to the Work to be performed thereunder shall in any way affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alteration, or addition to the Contract Documents or to the Work.

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Any claims under this bond may be addressed to the Surety at the following address. This cannot be the Contractor's broker for this bond, but must be an employee of the Surety or the Surety's legal counsel:

Attention: _____

Telephone No.: (____) ____-_____

Fax No.: (____) ____-_____

E-mail Address: _____

IN WITNESS WHEREOF, two (2) identical counterparts of this instrument, each of which shall for all purposes be deemed an original thereof, have been duly executed by the Principal and Surety above named, on the ____ day of _____, 20____.

Principal

Surety

(Name of Principal)

(Name of Surety)

(Signature of Person with Authority)

(Signature of Person with Authority)

(Print Name)

(Print Name)

(Name of California Agent of Surety)

(Address of California Agent of Surety)

(Telephone Number of California Agent of Surety)

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

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PAYMENT BOND

PAYMENT BOND -- Contractor's Labor & Material Bond (100% of Contract Price)

(Note: Contractors must use this form, NOT a surety company form.)

KNOW ALL PERSONS BY THESE PRESENTS:

WHEREAS, the governing board ("Board") of the **Menlo Park City School District** ("District") and _____
_____, ("Principal") have entered into a contract for the furnishing of all materials and labor, services and transportation,
necessary, convenient, and proper to

_____ (Project Name)
("Project" or "Contract")

which Contract dated _____, 20____, and all of the Contract Documents attached to or forming a part of the Contract,
are hereby referred to and made a part hereof, and

WHEREAS, pursuant to law and the Contract, the Principal is required, before entering upon the performance of the work, to file a
good and sufficient bond with the body by which the Contract is awarded in an amount equal to 100 percent (100%) of the Contract
price, to secure the claims to which reference is made in sections 3179 through 3214 and 3247 through 3252 of the Civil Code of
California, and division 2, part 7, of the Labor Code of California.

NOW, THEREFORE, the Principal and _____ ("Surety") are held and firmly bound
unto the Board of the District in the penal sum of:

_____ DOLLARS

(\$ _____), lawful money of the United States, being a sum not less than the total amount payable by the terms of
Contract, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators,
successors, or assigns, jointly and severally, by these presents.

The condition of this obligation is that if the Principal or any of his or its subcontractors, of the heirs, executors, administrators,
successors, or assigns of any, all, or either of them shall fail to pay for any labor, materials, provisions, provender, 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 Act with respect to such work or labor, that the Surety will pay the same in an
amount not exceeding the amount herein above set forth, and also in case suit is brought upon this bond, will pay a reasonable
attorney's fee to be awarded and fixed by the Court, and to be taxed as costs and to be included in the judgment therein rendered.

It is hereby expressly stipulated and agreed that this bond shall inure to the benefit of any and all persons, companies, and
corporations entitled to file claims under sections 3179 through 3214 and 3247 through 3252 of the Civil Code, so as to give a right
of action to them or their assigns in any suit brought upon this bond.

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

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 to the Work to be performed thereunder shall in any way affect its obligation on this bond, and it does hereby waive
notice of any such change, extension of time, alteration, or addition to the Contract Documents or to the Work.

MENLO PARK CITY SCHOOL DISTRICT
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IN WITNESS WHEREOF, two (2) identical counterparts of this instrument, each of which shall for all purposes be deemed an original thereof, have been duly executed by the Principal and Surety above named, on the ____ day of _____, 20____.

Principal

Surety

(Name of Principal)

(Name of Surety)

(Signature of Person with Authority)

(Signature of Person with Authority)

(Print Name)

(Print Name)

(Name of California Agent of Surety)

(Address of California Agent of Surety)

(Telephone Number of California Agent of Surety)

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

MENLO PARK CITY SCHOOL DISTRICT
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PROJECT MANUAL

OAK KNOLL ELEMENTARY SCHOOL LIGHTING REPLACEMENT & EARLY LEARNING CENTER PROJECT NO. 2

1895 OAK KNOLL LANE, MENLO PARK, CA 94025

for

**MENLO PARK CITY SCHOOL DISTRICT
181 ENCINAL AVENUE, AHERTON, CA 94027**



**100% CONSTRUCTION DOCUMENTS
MPCSD #_____
HED PROJ. NO. 2018-04589-000**

APRIL 2019

HED

417 Montgomery Street, Suite 400

San Francisco

California 94104

(415) 981-2345

Fax (415) 981-234

CONSULTANTS PAGE

PROJECT

OAK KNOLL ELEMENTARY SCHOOL
LIGHTING REPLACEMENT AND EARLY LEARNING CENTER, PROJECT NO. 2
1895 Oak Knoll Lane
Menlo Park, California 94025

OWNER

MENLO PARK CITY SCHOOL DISTRICT
181 Encinal Avenue
Atherton, California 94027
(650) 321-7140 Fax: (650) 321-7184

ARCHITECT

HED
417 Montgomery Street, Suite 400
San Francisco, California 94104
(415) 981-2345 Fax: (415) 981-2343

MECHANICAL/PLUMBING

McCRACKEN WOODMAN
3470 Mount Diablo Boulevard, Suite A305
Lafayette, CA 94549
(925) 283-4891 Fax: (925) 283-4892

ELECTRICAL

ALLIANCE ENGINEERING CONSULTANTS, INC.
4701 Patrick Henry Drive, Building 10
Santa Clara, CA 95054
(408) 970-9888 Fax: (408) 970-9316

END OF DOCUMENT

04/19/19

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A-102 INTERIOR ELEVATIONS AND DETAILS

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ELECTRICAL (LIGHTING)

E0.1 GENERAL NOTES, LEGEND, ABBREVIATIONS AND DRAWING INDEX

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PLUMBING

P-0.1 PLUMBING LEGEND, NOTES AND SCHEDULE

P-1.1 PLUMBING FLOOR PLANS - ELC CLASSROOM

P-2.1 PLUMBING DETAILS

END OF DOCUMENT

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EXISTING HAZARDOUS MATERIAL INFORMATION

1.1 EXISTING HAZARDOUS MATERIAL INFORMATION

- A. This Document with its referenced attachments is part of the Procurement and Contracting Requirements for Project. They provide Owner's information for Bidders' convenience and are intended to supplement rather than serve in lieu of Bidders' own investigations. They are made available for Bidders' convenience and information, but are not a warranty of existing conditions. This Document and its attachments are not part of the Contract Documents.
- B. An Asbestos and Lead Survey Report, prepared by North Tower Environmental, dated May 31, 2007, is available for viewing at the office of the Construction Manager.
- C. Related Requirements:
 - 1. Document 00 21 13 "Instructions to Bidders" for the Bidder's responsibilities for examination of Project site and existing conditions.

END OF DOCUMENT

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SECTION 01 11 00
SUMMARY OF WORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Related Documents: The Conditions of the Contract and Division 1 apply to this section as fully as if repeated herein.

1.2 SUMMARY

- A. Section Includes:

1. Project information.
2. Work covered by Contract Documents.
3. Requirements of Regulatory Agencies.
4. Occupational Safety and Health Act requirements.
5. Coordination of physical space.
6. Coordination with structural requirements.
7. Work indicated as NIC.
8. Owner-Furnished, Owner-Installed products.
9. Access to site.
10. Coordination with occupants.
11. Work restrictions.
12. Specification and drawing conventions.

- B. Related Requirements:

1. Section 01 50 00 "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.

1.3 PROJECT INFORMATION

- A. Project Identification: Oak Knoll Elementary School – Lighting Replacement, Project No. 1.

1. Project Location: 1895 Oak Knoll Lane, Menlo Park, California 94025.

- B. Owner: Menlo Park City School District, 181 Encinal Avenue, Atherton, CA 94027.

1. Owner's Representative:

Ahmad Sheikholeslami
Director of Facilities and Operations
Menlo Park City School District
Office: 650-321-7140 ext 5614
Mobile: 650-303-6230

- C. Architect: HED; 417 Montgomery Street, Suite 400; San Francisco, California 94104.

- D. Architect's Consultants: The Architect has retained the following design professionals who have prepared designated portions of the Contract Documents: Refer to Document 00 01 05 - Consultants Page.

1.4 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Work of Project is defined by the Contract Documents. The work shall include but is not limited to:
1. Replacement of existing lighting and all related accessories with new pendant lighting system.
 2. Replacement of existing 12x12 inch adhesive-applied acoustical ceiling tile.
 3. New acoustical suspended ceiling system at Room K1.
 4. New toilets, casework, flooring, and walls at Room K5 for new Early Learning Center.
 5. Selective demolition, patch, repair, and refinish of areas affected by new work.
 6. Refer to Electrical Drawings for additional information.
- B. Type of Contract:
1. Project will be constructed under a single prime contract.

1.5 REQUIREMENTS OF REGULATORY AGENCIES

- A. Construction shall be in conformance with the California Code of Regulations (CCR), as follows:
1. 2016 California Administrative Code, Part 1, Title 24 C.C.R.
 2. 2016 California Building Code (CBC), Part 2, Title 24 C.C.R. (2015 International Building Code Volumes 1-2 and 2016 California Amendments).
 3. 2016 California Electrical Code (CEC), Part 3, Title 24 C.C.R. (2014 National Electrical Code and 2016 California Amendments).
 4. 2016 California Mechanical Code (CMC) Part 4, Title 24 C.C.R. (2015 IAPMO Uniform Mechanical Code and 2016 California Amendments).
 5. 2016 California Plumbing Code (CPC), Part 5, Title 24 C.C.R. (2015 IAPMO Uniform Plumbing Code and 2016 California Amendments).
 6. 2016 California Energy Code (CEC), Part 6, Title 24, C.C.R.
 7. 2016 California Fire Code (CFC), Part 9, Title 24 C.C.R. (2015 International Fire Code and 2016 California Amendments).
 8. 2016 California Existing Building Code (CEBC), Part 10, Title 24 C.C.R.
 9. 2016 California Green Building Standards Code (CALGreen), Part 11, Title 24 C.C.R.
 10. 2016 California Referenced Standards, Part 12, Title 24 C.C.R.
 11. Title 19 C.C.R., Public Safety, State Fire Marshal Regulations.
 12. NFPA 13, Standard for the Installation of Sprinkler Systems (CA Amended) (2016 Edition).
 13. NFPA 14, Standard for the Installation of Standpipe and Hose Systems (2013 Edition).
 14. NFPA 17, Standard for Dry Chemical Extinguishing Systems (2013 Edition).

15. NFPA 17A, Standard for Wet Chemical Extinguishing Systems (2013 Edition).
 16. NFPA 20, Standard for the Installation of Stationary Pumps for Fire Protection (2016 Edition).
 17. NFPA 22, Standard for Water Tanks for Private Fire Protection (2013 Edition).
 18. NFPA 24, Standard for the Installation of Private Fire Service Mains and Their Appurtenances (2016 Edition).
 19. NFPA 72-2013, National Fire Alarm and Signaling Code (CA Amended) (2016 Edition).
 20. NFPA 80, Standard for Fire Doors and Other Opening Protectives (2016 Edition).
 21. NFPA 92, Standard for Smoke Control Systems (2015 Edition).
 22. NFPA 253-2006, Standard Method of Test for Critical Radiant Flux of Floor Covering Systems.
 23. NFPA 2001-2012, Standard on Clean Agent Fire Extinguishing Systems Using a Radiant Heat Energy Source (2015 Edition).
 24. UL 300, Fire Testing of Fire Extinguishing Systems for Protection of Restaurant Cooking Equipment (2005 Edition; Rev. 2010).
 25. UL 464, Audible Signaling Devices for Fire Alarm and Signaling Systems, Including Accessories (2003 Edition).
 26. UL 521, Standard for Heat Detectors for Fire Protective Signaling Systems (1999 Edition; Rev. 2005).
 27. 2010 ADA Standards for Accessible Design (for information only).
- B. A copy of CCR Title 24 Parts 1 through 5 shall be kept at the Project site during construction.
 - C. Accessibility Requirements: Construction shall be in conformance with the 2010 ADA Standards for Accessible Design.

1.6 OCCUPATIONAL SAFETY AND HEALTH ACT REQUIREMENTS

- A. During the entire construction period, it shall be the responsibility of the Contractor to maintain conditions at the Project site so as to meet in all respects the requirements of the California Code of Regulations, Title 8, Industrial Relations, Chapter 4, Div. of Industrial Safety.
- B. Asbestos Free Materials: Materials containing asbestos shall not be used. Comply with requirements of the Environmental Protection Agency (EPA), 16 CFR 1305 dated 1978, and other governmental agencies having jurisdiction.

1.7 COORDINATION OF PHYSICAL SPACE

- A. Coordinate use of physical space and sequence of installation of mechanical work, specifically electrical work, and plumbing which is indicated diagrammatically on the Drawings. Follow routing indicated as closely as practicable, with due allowance for

available physical space; make runs parallel with lines of building. Coordinate work of the various trades to assure efficient and orderly utilization of space available.

- B. The Contractor's attention is directed to the need of special coordination and efficient use of the available physical space between the top of ceiling framing and bottom of the roof framing on all buildings.
- C. In finished areas, except as indicated otherwise, conceal pipes, ducts, and conduits in the construction. Coordinate location of fixtures and outlets with finish elements.

1.8 COORDINATION WITH STRUCTURAL REQUIREMENTS

- A. The placement of pipes, conduits, other materials, and the location, size and reinforcement of holes in the building structure shall conform to the Drawings and Specifications. When the requirements of the Plumbing, Electrical or other sections of the Specifications or Drawings are in conflict with the structural requirements, the structural requirements shall take precedence. Where the safety of the building structure is threatened, due to mechanical, electrical or other work or holes required for such work, modifications shall be made as directed by the Architect.
- B. It is the Contractor's responsibility to coordinate the Work so as to minimize conflicts and optimize efficiency.

1.9 WORK INDICATED AS NIC

- A. The term "NIC" shall be construed to mean that construction work not to be furnished, installed or performed by the Contractor. The term shall mean "Not in this Contract" or "Not a Part of the Work to be performed by the Contractor" except that coordination and installation of certain NIC items specified shall be the Contractor's responsibility.
- B. "NIC" work is indicated on the Drawings and specified herein as an aid to the Contractor in scheduling the amount of time and materials necessary for the completion of the Contract.

1.10 OWNER-FURNISHED, OWNER-INSTALLED PRODUCTS

- A. Owner will furnish and install products indicated.
- B. Owner-Furnished, Owner-Installed Products:
 - 1. Designated toilet paper dispensers.
 - 2. Designated paper towel dispensers.
 - 3. Designated soap dispensers.

1.11 ACCESS TO SITE

- A. General: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.
- B. Use of Site: Limit use of Project site to Work in areas within the Contract limits indicated. Do not disturb portions of the Project site beyond areas in which the Work is indicated.

1. Limits: Confine construction operations to Building B (Administration Building) and designated site areas adjacent to Building B as indicated on the drawings.
2. Driveways, Walkways and Entrances: Keep driveways, loading areas, and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
 - a. Schedule deliveries to minimize use of driveways and entrances by construction operations.
 - b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
- C. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weathertight condition throughout construction period. Repair damage caused by construction operations.
- D. Condition of Existing Grounds: Maintain portions of existing grounds, landscaping, and hardscaping affected by construction operations throughout construction period. Repair damage caused by construction operations.

1.12 COORDINATION WITH OCCUPANTS

- A. Full Owner Occupancy: Owner will occupy site and existing adjacent building(s) during entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's day-to-day operations. Maintain existing exits unless otherwise indicated.
 1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and approval of authorities having jurisdiction.
 2. Notify Owner not less than 72 hours in advance of activities that will affect Owner's operations.

1.13 WORK RESTRICTIONS

- A. Work Restrictions, General: Comply with restrictions on construction operations.
 1. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.
- B. On-Site Work Hours: Limit work in the existing building to normal business working hours of 8:00 a.m. to 5:00 p.m., Monday through Friday, unless otherwise indicated.
 1. Weekend Hours: Comply with restrictions on times permitted for weekend work per District and local ordinance.
 2. Early Morning Hours: Comply with District restrictions or references to regulations by authorities having jurisdiction for restrictions on noisy work.
 3. Hours for Utility Shutdowns: Comply with Owner's restrictions.
 4. Hours for Noisy Activities: Comply with Owner's restrictions.
- C. Nonsmoking Building: Smoking is not permitted within the buildings or within 25 feet of entrances, operable windows, or outdoor-air intakes.
- D. Controlled Substances: Use of tobacco products and other controlled substances on Project site is not permitted.

- E. Employee Identification: Provide identification tags for Contractor personnel working on Project site. Require personnel to use identification tags at all times.
- F. Employee Screening: Comply with Owner's requirements for drug and background screening of Contractor personnel working on Project site.
 - 1. Maintain list of approved screened personnel with Owner's representative.

1.14 SPECIFICATION AND DRAWING CONVENTIONS

- A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
 - 1. Imperative mood and streamlined language are generally used in the Specifications. 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.
 - 2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.
- B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.
- C. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:
 - 1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
 - 2. Abbreviations: Materials and products are identified by abbreviations published as part of the U.S. National CAD Standard and scheduled on Drawings.

END OF SECTION

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SECTION 01 25 00

SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for substitutions.
- B. Related Documents: The Conditions of the Contract and Division 1 apply to this section as fully as if repeated herein.
- C. Related Requirements:
 - 1. Section 01 60 00 "Materials and Equipment" for requirements for submitting comparable product submittals for products by listed manufacturers.

1.2 DEFINITIONS

- A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.
 - 1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
 - 2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.

1.3 ACTION SUBMITTALS

- A. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
 - 1. Substitution Request Form: Use facsimile of form provided in Project Manual, attached to this Section 01 25 00.
 - 2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 - a. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.
 - b. Coordination information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors, that will be necessary to accommodate proposed substitution.
 - c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
 - d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.

- e. Samples, where applicable or requested.
 - f. Certificates and qualification data, where applicable or requested.
 - g. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
 - h. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
 - i. Research reports evidencing compliance with building code in effect for Project, from ICC-ES, or applicable code organization.
 - j. Detailed comparison of Contractor's construction schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
 - k. Cost information, including a proposal of change, if any, in the Contract Sum.
 - l. Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.
 - m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.
- a. Forms of Acceptance: Change Order, Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.
 - b. Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.

1.4 QUALITY ASSURANCE

- A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

1.5 PROCEDURES

- A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

PART 2 - PRODUCTS

2.1 SUBSTITUTIONS

- A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than 15 days prior to time required for preparation and review of related submittals.
1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied,

Architect will return requests without action, except to record noncompliance with these requirements:

- a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - b. Requested substitution provides sustainable design characteristics that specified product provided.
 - c. Substitution request is fully documented and properly submitted.
 - d. Requested substitution will not adversely affect Contractor's construction schedule.
 - e. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - f. Requested substitution is compatible with other portions of the Work.
 - g. Requested substitution has been coordinated with other portions of the Work.
 - h. Requested substitution provides specified warranty.
 - i. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
- B. Substitutions for Convenience: Architect will consider requests for substitution if received within 30 days after the Notice to Proceed. Requests received after that time may be considered or rejected at discretion of Architect.
1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
 - a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
 - b. Requested substitution does not require extensive revisions to the Contract Documents.
 - c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - d. Requested substitution provides sustainable design characteristics that specified product provided.
 - e. Substitution request is fully documented and properly submitted.
 - f. Requested substitution will not adversely affect Contractor's construction schedule.
 - g. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - h. Requested substitution is compatible with other portions of the Work.
 - i. Requested substitution has been coordinated with other portions of the Work.
 - j. Requested substitution provides specified warranty.
 - k. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

PART 3 - EXECUTION (Not Used)

END OF SECTION

SUBSTITUTION REQUEST FORM

Note: Failure to complete this form with complete and accurate information in a timely manner will nullify any request for substitution.

TO: _____

PROJECT: _____

We hereby submit for your consideration the following product(s), material(s), and/or detail(s) instead of the specified item per the contract documents for the above indicated project and the following specified reference:

ITEM	DESCRIPTION	SPEC SECTION	SPEC PARA	DRAWINGS

Proposed Substitution: _____

- A. Attach complete technical data, including laboratory tests, if applicable.
- B. Include complete information on changes to Drawings and/or Specifications, which proposed substitution would require for its proper installation.
- C. Submit with this request all necessary samples and substantiating data to prove equal quality and performance to that which is specified. Clearly mark manufacturer's literature and test reports to indicated equality in performance.

Fill in blanks below:

- A. Does the proposed substitution affect dimensions indicated on Drawings?

Yes ___ No ___ Explanation: _____

- B. Will the undersigned pay for changes to the building design, including design, engineering and processing costs caused by the proposed substitution?

Yes ___ No ___ Explanation: _____

- B. Does the proposed substitution have an effect on other trades?

Yes ___ No ___ Explanation: _____

- C. Does the proposed substitution have an affect on applicable code requirements?

Yes ___ No ___ Explanation: _____

- D. Outline differences between proposed substitution and specified item:

E. Are the manufacturer's guarantees of the proposed substitution the same as the specified item?

Yes ____ No ____ Explanation: _____

Is the proposed substitution listed with and conform to the same requirements of the same testing agencies as the specified item, such as ICBO, ASTM, etc.?

Yes ____ No ____ Explanation: _____

.....

**CERTIFICATION OF EQUAL PERFORMANCE AND ASSUMPTION OF LIABILITY
FOR EQUAL PERFORMANCE BY CONTRACTOR**

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

Submitted By:

Signature _____ Title _____ Name (print) _____

Firm _____ Date _____

Address _____ Telephone _____

Remarks: _____

.....

For Use By Design Consultant

_____ Accepted _____ Accepted As Noted _____ Not Accepted

_____ Received Too Late _____ Approved as Alternate – See Bid Form

SECTION 01 31 13

COORDINATION AND PROJECT MEETINGS

PART 1 - GENERAL

1.1. SECTION INCLUDES

- A. Coordination Responsibilities of the Contractor.
- B. Preconstruction Conference.
- C. Progress Meetings.
- D. Pre-Installation Conferences.

1.2. COORDINATION RESPONSIBILITIES OF THE CONTRACTOR

- A. Coordinate scheduling, submittals, and Work of the Specifications to assure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
- B. Prior to commencement of a particular type or kind of work examine relevant information, contract documents, and subsequent data issued to the Project.
- C. Verify that utility requirement characteristics of operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- D. Closing up of holes, backfilling, and other covering up operations shall not proceed until all enclosed or covered work and inspections have been completed. Verify before proceeding.
- E. Coordinate space requirements and installation of mechanical and electrical work which are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit as closely as practicable; place runs parallel with line of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- F. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
- G. In locations where several elements of mechanical and electrical work must be sequenced and positioned with precision in order to fit into available space, prepare coordination drawings showing the actual conditions required for the installation. Prepare coordination drawings prior to purchasing, fabricating, or installing any of the elements required to be coordinated.
- H. Closing up of walls, partitions or furred spaces, backfilling, and other covering up operations shall not proceed until all enclosed or covered work and inspections have been completed. Verify before proceeding.
- I. Coordinate completion and clean up of Work of separate sections in preparation for completion and for portions of work designated for District's occupancy.
- J. After District occupancy of Project, coordinate access to Site for correction of defective Work and Work not in accordance with Contract Documents, to minimize

disruption of District's activities.

- K. Coordinate all utility company work in accordance with the Contract Documents.

1.3. PRECONSTRUCTION CONFERENCE

- A. Owner will schedule a conference immediately after receipt of fully executed Contract Documents prior to Project mobilization.
- B. Mandatory Attendance: Inspector of Record, Architect of Record, Contractor, Contractor's Project Manager, and Contractor's Job/Project Superintendent.
- C. Optional Attendance: Architect's consultants, subcontractors, and utility company representatives.
- D. Construction Manager shall preside at conference and shall prepare and record minutes and distribute copies.
- E. Agenda:
 - 1. Execution of District-Contractor Agreement.
 - 2. Issue Notice to Proceed.
 - 3. Submission of executed bonds and insurance certificates.
 - 4. Distribution of Contract Documents.
 - 5. Submission of list of Subcontractors, list of Products, Schedule of Values, and Progress Schedule.
 - 6. Designation of responsible personnel representing the parties.
 - 7. Procedures for processing Construction Directives and Change Orders.
 - 8. Procedures for Request for Information.
 - 9. Procedures for testing and inspecting.
 - 10. Procedures for processing applications for payment.
 - 11. Procedures for Project closeout.
 - 12. Use of Premises.
 - 13. Work restrictions.
 - 14. District's occupancy requirements or options.
 - 15. Responsibility for temporary facilities and controls.
 - 16. Construction waste management and recycling.
 - 17. Parking availability.
 - 18. Office, work and storage areas.
 - 19. Equipment deliveries and priority.
 - 20. Security.
 - 21. Progress cleaning.

1.4. PROGRESS MEETINGS

- A. General Contractor shall schedule and administer meetings throughout progress of the Work at a minimum of every week.
- B. General Contractor will make arrangements for meetings, prepare agenda, and preside at meetings. General Contractor shall record minutes (Field Reports), and distribute copies.
- C. Attendance Required: Project Manager, Job Superintendent, Project Inspector (Inspector of Record), Architect of Record, Subcontractors, and suppliers as appropriate to agenda topics for each meeting.
- D. Agenda:
 - 1. Review minutes of previous meetings. (Field Reports)
 - 2. Safety, and jobsite visits
 - 3. Review of Work progress.

4. Field observations, problems, and decisions.
5. Identification of problems which impede planned progress.
6. Review of submittals schedule and status of submittals.
7. Review of off-site fabrication and delivery schedules.
8. Maintenance of construction schedule.
9. Corrective measures to regain projected schedules.
10. Planned progress during succeeding work period.
11. Coordination of projected progress.
12. Maintenance of quality and work standards.
13. Effect of proposed changes on progress schedule and coordination.
14. Other business relating to Work.

E. District has authority to schedule meetings other than those listed, as necessary.

1.5. PRE-INSTALLATION CONFERENCES

When required in individual specification section, or requested by the District Contractor shall convene a pre-installation conference prior to commencing work of the section. Refer to individual specification section for timing requirements of conference.

- A. Contractor shall require his/her subcontractors and suppliers directly affecting, or affected by, work of the specific section to attend.
- B. Notify the Owner, Inspector of Record, and Architect of Record four (4) days in advance of meeting date.
- C. The pre-installation conference may coincide with a regularly scheduled progress meeting.
- D. Contractor shall prepare agenda, preside at conference, record minutes, and distribute copies within two (2) days after conference to participants.
- E. The purpose of the meeting will be to review Contract Documents, conditions of installation, preparation and installation procedures, and coordination with related work and manufacturer's recommendations.
- F. Pre-installation Schedule: As a minimum, Work being installed under the Contract Documents technical sections will require pre-installation conferences. Contractor shall review the technical specifications and add all additional requirements for pre-installation meetings contained in those sections.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION

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SECTION 01 32 16

CONSTRUCTION SCHEDULE - NETWORK ANALYSIS

PART 1 - GENERAL

1.1. REFERENCES

- A. Construction Planning and Scheduling Manual - A Manual for General Contractors and the Construction Industry, The Associated General Contractors of America (AGC).
- B. CSI - Construction Specifications Institute; MP-2-1 Master Format.
- C. U.S. National Weather Service - Local Climatological Data.

1.2. PERFORMANCE REQUIREMENTS

- A. All Contractor's schedules shall comply with the baseline and milestones as indicated in the draft "Program Schedule" furnished by District.
- B. Ensure adequate scheduling during construction activities so Work may be prosecuted in an orderly and expeditious manner within stipulated Contract Time.
- C. Ensure coordination of Contractor and subcontractors at all levels.
- D. Ensure coordination of submittals, fabrication, delivery, erection, installation, and testing of Products, materials and equipment.
- E. Ensure on-time delivery of District furnished Products, materials and equipment.
- F. Ensure coordination of jurisdictional reviews.
- G. Prepare applications for payment.
- H. Monitor progress of Work.
- I. Prepare proper requests for changes to Contract Time.
- J. Prepare proper requests for changes to Construction Schedule.
- K. Assist in detection of schedule delays and identification of corrective actions.

1.3. QUALITY ASSURANCE

- A. Perform scheduling work in accordance with Construction Planning and Scheduling Manual published by the AGC.
- B. Maintain one copy of Construction Planning and Scheduling Manual on Site.
- C. In the event of discrepancy between the AGC publication and the Contract Documents, provisions of the Contract Documents shall govern.

1.4. QUALIFICATIONS

- A. Scheduler:
 - 1. Contractor shall retain a construction scheduler to work in enough capacity to

perform all of the Contractor's requirements to prepare the Construction Schedule. The Scheduler shall plan, coordinate, execute, and monitor a cost/resource loaded critical path method (CPM) schedule as required for Project and have a minimum of five (5) years direct experience using CPM.

2. Scheduler will cooperate with District and shall be available on site for monitoring, maintaining and updating schedules in a timely manner.
3. District has the right to reject the Scheduler based upon a lack of experience as required by this Document or based on lack of performance and timeliness of schedule submittals/fragnets on past projects. Contractor shall within seven (7) calendar days of District's rejection, propose another scheduler who meets the experience requirements stated above.

- B. Administrative Personnel: Five (5) years minimum experience in using and monitoring schedules on comparable projects.

1.5. SUBMITTALS

- A. Adobe "PDF" files are not acceptable.
- B. Submit Short Interval Schedule at each Construction Progress Meeting.
- C. Submit Time Adjustment Schedule within five (5) days of commencement of a claimed delay.
- D. Submit Recovery Schedules as required for timely completion of Work or when demanded by the District.
- E. Submit job cost reports when demanded by the District.
- F. Submit one (1) reproducible and two (2) copies of each schedule and cost report.
- G. Submit large format plotted schedules monthly or at the request of the District.

1.6. REVIEW AND EVALUATION

- A. Contractor shall participate in review of Construction Schedule and Reports with District.
- B. Within seven (7) days of receipt of District comments provide satisfactory revision to Construction Schedule or adequate justification for activities in question.
- C. In the event that an activity or element of Work is not detected by District review, such omission or error shall be corrected by next scheduled update and shall not affect Contract Time.
- D. Acceptance by District of corrected Construction Schedule shall be a condition precedent to making any progress payments.
- E. Cost-loaded values of Construction Schedule shall be basis for determining progress payments.
- F. Review and acceptance by District of Preliminary Work Schedule or Construction Schedule does not constitute responsibility whatsoever for accuracy or feasibility of schedules nor does such acceptance expressly or impliedly warrant, acknowledge or admit reasonableness of activities, logic, duration, manpower, cost or equipment loading stated or implied on schedules.

1.7. FORMAT

- A. Prepare diagrams and supporting mathematical analyses using Precedence Diagramming Method, under concepts and methods outlined in AGC Construction Planning and Scheduling Manual.
- B. Listings: Reading from left to right, in ascending order for each activity.
- C. Diagram Size: 42 inches maximum height x width required.
- D. Scale and Spacing: To allow for legible notations and revisions.
- E. Illustrate order and interdependence of activities and sequence of Work.
- F. Illustrate complete sequence of construction by activity.
- G. Provide legend of symbols and abbreviations used.

1.8. COST AND SCHEDULE REPORTS

- A. Activity Analysis: Tabulate each activity of network diagram and identify for each activity:
 - 1. Description.
 - 2. Interface with outside contractors or agencies.
 - 3. Number.
 - 4. Preceding and following number.
 - 5. Duration.
 - 6. Earliest start date, earliest finish date.
 - 7. Actual start date, actual finish date.
 - 8. Latest start date, latest finish date.
 - 9. Total and free float.
 - 10. Identification of critical path activity.
 - 11. Monetary value keyed to Schedule of Values.
 - 12. Manpower requirements.
 - 13. Responsibility.
 - 14. Percentage complete.
 - 15. Variance positive or negative.
- B. Cost Report: Tabulate each activity of network diagram and identify for each activity:
 - 1. Description.
 - 2. Number.
 - 3. Total cost.
 - 4. Percentage complete.
 - 5. Value prior to current period.
 - 6. Value this period.
 - 7. Value to date.
- C. Required Sorts: List activities in sorts or groups:
 - 1. By activity number.
 - 2. By amount of float time in order of early start.
 - 3. By responsibility in order of earliest start date.
 - 4. In order of latest start dates.
 - 5. In order of latest finish dates.
 - 6. Application for payment sorted by Schedule of Values.
 - 7. Listing of activities on critical path.
- D. Listing of basic input data which generates schedule.

1.9. CONSTRUCTION SCHEDULE

- A. Contractor shall develop and submit a cost loaded preliminary schedule of construction (or Preliminary Construction Schedule) as required by this Document and the Contract Documents. It shall be submitted in computer generated network format and shall be organized by Activity Codes representing the Contractor's intended sequencing of the Work, and with time scaled network diagrams of activities. The Preliminary Construction Schedule shall include activities such as mobilization, preparation of submittals, specified review periods, procurement items, fabrication items, milestones, and all detailed construction activities.
- B. Upon District's acceptance of the Preliminary Construction Schedule, Contractor shall update the accepted Preliminary Construction Schedule until Contractor's Construction Schedule is fully developed and accepted. Once approved by District, this shall become the Construction Schedule. This schedule shall include and identify all tasks that are on the Project's critical path with a specific determination of the start and completion of each critical path task, all contract milestones and each milestone's completion date(s) as may be required by the District, and the date of Project Completion. Since updates to the Construction Schedule are the basis for payment to Contractor, submittal and acceptance of the Construction Schedule and updates shall be a condition precedent to making of monthly payments, as indicated in the General Construction Provisions.
- C. Failure to submit an adequate or accurate Preliminary Construction Schedule, Construction Schedule, updates thereto or failure to submit on established dates, will be considered a breach of Contract.
- D. Failure to include any activity shall not be an excuse for completing all Work by required Completion Date.
- E. Activities of long intervals shall be broken into increments no longer than fourteen (14) days or a value over \$20,000.00 unless approved by the District or it is non-construction activity for procurement and delivery.
- F. The Construction Schedule shall comply with the following and include the following:
 1. Provide a written narrative describing Contractor's approach to mobilization, procurement, and construction during the first thirty (30) calendar days including crew sizes, equipment and material delivery, Site access, submittals, and permits.
 2. Shall designate critical path or paths.
 3. Procurement activities to include mobilization, shop drawings and sample submittals.
 4. Identification of key and long-lead elements and realistic delivery dates.
 5. Construction activities in units of whole days limited to fourteen (14) days for each activity except non-construction, procurement and delivery.
 6. Approximate cost and duration of each activity.
 7. Shall contain seasonal weather considerations.
 8. Indicate a date for Project Completion that is no later than Completion Date subject to any time extensions processed as part of a Change Order.
 9. Conform to mandatory dates specified in the Contract Documents.
 10. Contractor shall allow for inclement weather in the Proposed Baseline Schedule by incorporating an activity titled "Rain Day Impact Allowance" as the last activity prior to the Completion Milestone. No other activities may be concurrent with it. The duration of the Rain Day Impact Allowance activity will be in accordance with the Contract Documents, including "Computation of Time / Adverse Weather" in Exhibit D, and will be calculated from the Notice to Proceed until the Completion.
 11. Level of detail shall correspond to complexity of work involved.
 12. Indicate procurement activities, delivery, and installation of District furnished

- material and equipment.
 - 13. Designate critical path or paths.
 - 14. Subcontractor work at all levels shall be included in schedule.
 - 15. As developed shall show sequence and interdependence of activities required for complete performance of Work.
 - 16. Shall be logical and show a coordinated plan of Work.
 - 17. Show order of activities and major points of interface, including specific dates of completion.
 - 18. Duration of activities shall be coordinated with subcontractors and suppliers and shall be best estimate of time required.
 - 19. Shall show description, duration and float for each activity.
- G. Activity. An activity shall meet the following criteria:
- 1. Any portion or element of Work or action that is precisely described, readily identifiable, and is a function of a logical sequential process.
 - 2. Descriptions shall be clear and concise. Beginning and end shall be readily verifiable. Starts and finishes shall be scheduled by logical restraints.
 - 3. Responsibility shall be identified with a single performing entity.
 - 4. Additional codes shall identify building, floor, and CSI classification.
 - 5. Assigned dollar value (cost-loading) of each activity shall cumulatively equal total contract amount. Mobilization, bond and insurance costs shall be separate. General requirement costs, overhead, profit, shall be prorated throughout all activities. Activity costs shall correlate with Schedule of Values.
 - 6. Major construction equipment shall be assigned to each activity.
 - 7. Activities labeled start, continue or completion are not allowed.
- H. Equipment and Materials. For major equipment and materials show a sequence of activities including:
- 1. Preparation of shop drawings and sample submissions.
 - 2. Review of shop drawings and samples.
 - 3. Finish and color selection.
 - 4. Fabrication and delivery.
 - 5. Erection or installation.
 - 6. Testing.
- I. Include a minimum of fifteen (15) days prior to Completion Date for punch lists and clean up. No other activities shall be scheduled during this period.

1.10. SHORT INTERVAL SCHEDULE

- A. The Four-Week Rolling Schedule shall be based on the most recent District Accepted Construction Schedule or Update. It shall include weekly updates to all construction, submittal, fabrication/procurement, and separate Work Contract activities. Contractor shall ensure that it accurately reflects the current progress of the Work.
- B. Shall be fully developed horizontal bar-chart-type schedule directly derived from Construction Schedule.
- C. Prepare schedule on sheet of sufficient width to clearly show data.
- D. Provide continuous heavy vertical line identifying first day of week.
- E. Provide continuous subordinate vertical line identifying each day of week.
- F. Identify activities by same activity number and description as Construction Schedule.
- G. Show each activity in proper sequence.

- H. Indicate graphically sequences necessary for related activities.
- I. Indicate activities completed or in progress for previous two (2) week period.
- J. Indicate activities scheduled for succeeding two (2) week period.
- K. Further detail may be added if necessary to monitor schedule.

1.11. REQUESTED TIME ADJUSTMENT SCHEDULE

- A. Updated Construction Schedule shall not show a Completion Date later than the Contract Time, subject to any time extensions processed as part of a Change Order.
- B. If an extension of time is requested, a separate schedule entitled "Requested Time Adjustment Schedule" shall be submitted to District and Architect.
- C. Indicate requested adjustments in Contract Time which are due to changes or delays in completion of Work.
- D. Extension request shall include forecast of Project Completion date and actual achievement of any dates listed in Contract Documents.
- E. To the extent that any requests are pending at time of any Construction Schedule update, Time Adjustment Schedule shall also be updated.
- F. Schedule shall be a time-scaled network analysis.
- G. Accompany schedule with formal written time extension request and detailed impact analysis justifying extension.
- H. Time impact analysis shall demonstrate time impact based upon date of delay, and status of construction at that time and event time computation of all affected activities. Event times shall be those as shown in latest Construction Schedule.
- I. Activity delays shall not automatically constitute an extension of Contract Time.
- J. Failure of subcontractors shall not be justification for an extension of time.
- K. Float is not for the exclusive use or benefit of any single party. Float time shall be apportioned according to needs of project, as determined by the District.
- L. Float suppression techniques such as preferential sequencing, special lead/lag logic restraints, extended activity durations, or imposed dates shall not be allowed without the prior written permission of the District.
- M. Extensions will be granted only to extent that time adjustments to activities exceed total positive float of the critical path and extends Completion date.
- N. District shall not have an obligation to consider any time extension request unless requirements of Contract Documents, and specifically, but not limited to these requirements are complied with.
- O. District shall not be responsible or liable for any construction acceleration due to failure of District to grant time extensions under Contract Documents should requested adjustments in Contract Time not substantially comply with submission and justification requirements of Contract for time extension requests.

- P. In the event a Requested Time Adjustment Schedule and Time Impact Analysis are not submitted within ten (10) days after commencement of a delay it is mutually agreed that delay does not require a Contract Time extension.

1.12. RECOVERY SCHEDULE

- A. When activities are behind Construction Schedule a supplementary Recovery Schedule shall be submitted.
- B. Contractor shall prepare and submit to the District a Recovery Schedule at any time requested by the District, at no cost to the District.
- C. Form and detail shall be sufficient to explain and display how activities will be rescheduled to regain compliance with Construction Schedule and to complete the Work by the Completion Date.
- D. Maximum duration shall be one (1) month and shall coincide with payment period.
- E. Ten (10) days prior to expiration of Recovery Schedule, Contractor shall have to show verification to determine if activities have regained compliance with Construction Schedule. Based upon this verification the following will occur:
1. Supplemental Recovery Schedule will be submitted to address subsequent payment period
 2. Construction Schedule will be resumed.

1.13. UPDATING SCHEDULES

- A. Review and update schedule at least ten (10) days prior to submitting an Application for Payment.
- B. Maintain schedule to record actual prosecution and progress.
- C. Identify approved Change Orders which affect schedule as separate new activities.
- D. No other revisions shall be made to schedule unless authorized by District.
- E. Written Narrative Report: Contractor shall include a written report to explain the Monthly Schedule Update. The narrative shall, at a minimum include the following headings with appropriate discussions of each topic:
1. Activities or portions of activities completed during previous reporting period.
 2. Actual start dates for activities currently in progress.
 3. Deviations from critical path in days ahead or behind.
 4. List of major construction equipment used and any equipment idle.
 5. Number of personnel by craft engaged on Work during reporting period.
 6. Progress analysis describing problem areas.
 7. Current and anticipated delay factors and their impact.
 8. Proposed corrective actions and logic revisions for Recovery Schedule.
 9. Proposed modifications, additions, deletions and changes in logic of Construction Schedule.
 10. In updating the Schedule, Contractor shall not modify Activity ID numbers, schedule calculation rules/criteria, or the Activity Coding Structure required.
- F. Schedule update will form basis upon which progress payments will be made.
- G. District will not be obligated to review or process Application for Payment until schedule and Progress Report have been submitted.

1.14. DISTRIBUTION

- A. Following joint review and acceptance of updated schedules distribute copies to District, Architect, and all other concerned parties.
- B. Instruct recipients to promptly report in writing any problem anticipated by projections shown in schedule.

PART 2 - PRODUCTS

2.1 SCHEDULING SOFTWARE

- A. Contractor shall utilize District approved software for scheduling software and shall employ the Critical Path Method (CPM) in the development and maintenance of the Construction Schedule. The scheduling software shall be capable of being resource loaded with manpower, costs and materials. It shall also be capable of generating time-scaled logic diagrams, resource histograms and profiles, bar charts, layouts and reports with any and/or all activity detail.

2.2 ELECTRONIC DATA

- A. Provide compact disk(s) that contain a back-up of the Proposed Baseline Schedule data on it. The electronic P6 files shall be saved in ".XER" type format.

PART 3 – EXECUTION (Not Used)

END OF SECTION

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SECTION 01 33 00

SUBMITTALS

PART 1 - GENERAL

1.1. SUBMITTAL PROCEDURES – USE OF MICROSOFT PROJECT

- A. Contractor shall utilize District-approved software for the submittal process.
- B. Contractor shall transmit each submittal in conformance with requirements of this Document. For each submittal, Contractor shall:
 - 1. Sequentially number the transmittal forms. Resubmitted submittals must have the original number with an alphabetic suffix;
 - 2. Identify Project and Architect's project number, Contractor, Subcontractor or supplier; pertinent Drawing sheet and detail number(s), and specification Section number, as appropriate;
 - 3. Apply Contractor's stamp, signed or initialed certifying that review, verification of Products required, field dimensions, adjacent construction work, and coordination of information is in accordance with the requirements of the Work and Contract Documents. Submittals without Contractor's stamp and signature will be returned without review.
- C. Coordinate preparation and processing of submittals with performance of Work. Transmit each submittal sufficiently in advance of performance of Work to avoid delay.
 - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 - 2. Coordinate transmittal of different types of submittals for related parts of Work so processing will not be delayed because of the need to review submittals concurrently for coordination.
 - 3. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- D. Comply with Contract Documents for list of submittals and time requirements for scheduled performance of Work.
- E. No extension of Contract Time will be authorized because of failure to transmit submittals to the Architect sufficiently in advance of the Work to permit processing.
- F. Identify variations from Contract Documents and Product or system limitations which may be detrimental to successful performance of the completed Work.
- G. Provide space for Contractor and Architect review stamps.
- H. Revise and resubmit submittals as required, identify all changes made since previous submittal.
- I. Distribute copies of reviewed submittals to concerned parties. Instruct parties to promptly report any inability to comply with provisions.
- J. Submittals not requested will not be recognized or processed. Submittals not requested will be returned without review.

1.2. SHOP DRAWINGS

- A. 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 a shop drawing.
- B. Do not use or allow others to use Shop Drawings which have been submitted and have been rejected.

1.3. ELECTRONIC SUBMITTAL PROCESS

- A. Submittal Procedure for Large Format shop drawings:
 - 1. Contractor shall provide six (6) paper copies and of the large format Shop Drawings directly to the District and the Construction Manager (CM) and Contractor will provide an electronic transmittal (with a detailed description of the submittal including the subject, specification number and number of drawings) using the District approved software/program.
 - 2. Contractor shall verify that the Submittal Schedule and all submittal log(s) are accurate and up to date.
 - 3. The District and Architect will review and markup each Submittal and provide changes to Contractor for Contractor's incorporation into the Submittal.
 - 4. This process will continue until the Contractor has provided a Submittal that is acceptable to the District and the Architect.
 - 5. Once a Submittal is accepted, the District will provide a final accepted Submittal to the Contractor and the Contractor will closeout that one Submittal.
 - 6. Contractor shall send one (1) copy of the completed record submittal of the large format documents to a vendor (Ford Graphics is suggested) and using the District approved software/program.
- B. Product Data, Calculations and Small Format Drawings:
 - 1. Contractor shall upload/post one (1) electronic copy (from manufacturer's website or pre-scanned) of the product literature, data, calculations, and/or small format shop drawings using the District approved software/program with a Transmittal (with a detailed description of the submittal) directly to the CM.
 - 2. The District and Architect will review and markup each Submittal and provide changes to Contractor for Contractor's incorporation into the Submittal.
 - 3. This process will continue until the Contractor has provided a Submittal that is acceptable to the District and the Architect.
 - 4. Once a Submittal is accepted, the District will provide a final accepted Submittal to the Contractor and the Contractor will closeout that one Submittal.
 - 5. Contractor shall send one (1) copy of the completed record submittal of the large format documents to a vendor for scanning and posting using the District approved software/program.
- C. Sample Submittal Procedure – (Product / Assembly Samples):
 - 1. Contractor shall provide four (4) physical samples directly to the District and the CM and Contractor will provide an electronic transmittal (with a detailed description of the submittal including the subject, specification number and number of drawings) using the District approved software/program.
 - 2. The District and Architect will review and markup each Submittal and provide changes to Contractor for Contractor's incorporation into the Submittal.
 - 3. This process will continue until the Contractor has provided a Submittal that is acceptable to the District and the Architect.
 - 4. Once a Submittal is accepted, the District will provide a final accepted Submittal to the Contractor and the Contractor will closeout that one

Submittal.

5. Contractor shall send one (1) copy of the completed record submittal of the large format documents to a vendor (Ford Graphics is suggested) for using the District approved software/program.

1.4 PRODUCT DATA

- A. In addition to the above requirements, mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information unique to this Project.

1.5 SAMPLES

- A. In addition to the above requirements, submit samples to illustrate functional and aesthetic characteristics of the Product in accordance with this Document, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
- B. Where specific colors or patterns are not indicated, provide materials and products specified in the full range of color, texture and pattern for selection by District. Range shall include standard stocked color/texture/pattern, standard color/texture/pattern not stocked, but available from manufacturer, and special color/ texture/pattern available from manufacturer as advertised in product data and brochures. Unless otherwise indicated in individual specification sections, District may select from any range at no additional cost to District.
- C. Include identification on each sample, with full Project information.
- D. Submit the number of samples that Contractor requires, plus one that will be retained by Architect and one by District.
- E. Reviewed samples which may be used in the Work are indicated in individual specification Sections.

1.6 MANUFACTURER'S INSTRUCTION

- A. When specified in individual specification Sections, submit manufacturers' printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, in quantities specified for Product Data.
- B. Identify conflicts between manufacturers' instructions and Contract Documents.

1.7 MANUFACTURER'S CERTIFICATES

- A. When specified in individual specification Sections, submit manufacturers' certificate to Architect for review, in quantities specified for Product Data.
- B. Indicate material or Product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
- C. Certificates may be recent or previous test results on material or Product, but must be acceptable to District.

1.8 MOCK-UP

- A. Where indicated, provide mock-ups as required. Mock-ups shall be prepared per the specifications and shall accurately and reasonably represent the quality of construction the Contractor will provide. If the mock-up or portions thereof do not adequately represent the quality of the work specified, the Contractor shall modify it

as needed.

- B. Once completed to the District's satisfaction, the mock-up shall serve as the standard of quality for the work.
- C. All mock-ups, at District's option, shall remain the property of the District. If not required by the District, Contractor shall remove and dispose of the mock-up.
- D. Where indicated, on-site mock-ups, if accepted, may be integrated into the Work.

1.9 DEFERRED APPROVAL REQUIREMENTS

- A. Installation of deferred approval items shall not be started until detailed plans, specifications, and engineering calculations have been accepted and signed by the Architect or Engineer in general responsible charge of design and signed by a California registered Architect or professional engineer who has been delegated responsibility covering the work shown on a particular plan or specification and approved by the Division of the State Architect (DSA). Deferred approval items for this Project are as indicated in the Contract Documents.
- B. Deferred approval drawings and specifications become part of the approved documents for the Project when they are submitted to and approved by DSA.
- C. Submit material using electronic submittal process as defined above.
- D. Identify and specify all supports, fasteners, spacing, penetrations, etc., for each of the deferred approval items, including calculations for each and all fasteners.
- E. Submit documents to Architect for review prior to requesting that the Architect forward it to the DSA.
- F. Documents shall bear the stamp and signature of the Structural, Mechanical, or Electrical Engineer licensed in California who is responsible for that work.
- G. Architect and its subconsultants will review the documents only for conformance with design concept. The Architect will then forward the Submittal to DSA for approval.
- H. Contractor shall respond to review comments made by DSA and revise and resubmit submittal to the Architect for re-submittal to DSA for final approval.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

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SECTION 01 40 00

QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
 - 1. Specific quality-assurance and quality-control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
 - 2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
 - 3. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner, Commissioning Authority, or authorities having jurisdiction are not limited by provisions of this Section.
 - 4. Specific test and inspection requirements are not specified in this Section.
- C. Related Requirements:
 - 1. Section 01 45 23 "Testing Laboratory Services" for testing laboratory services and inspections.

1.3 DEFINITIONS

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect.
- C. Mockups: Full-size physical assemblies that are constructed on-site. Mockups are constructed to verify selections made under Sample submittals; to demonstrate aesthetic effects and, where indicated, qualities of materials and execution; to review coordination, testing, or operation; to show interface between dissimilar materials; and to demonstrate compliance with specified installation tolerances. Mockups are not Samples. Unless otherwise indicated, approved mockups establish the standard by which the Work will be judged.

- D. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria.
- E. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.
- F. Source Quality-Control Testing: Tests and inspections that are performed at the source, e.g., plant, mill, factory, or shop.
- G. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- H. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.
- I. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
 - 1. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade(s).
- J. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.4 CONFLICTING REQUIREMENTS

- A. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Architect for a decision before proceeding.
- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.5 INFORMATIONAL SUBMITTALS

- A. Contractor's Quality-Control Plan: For quality-assurance and quality-control activities and responsibilities.
- B. Qualification Data: For Contractor's quality-control personnel.
- C. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.
- D. Schedule of Tests and Inspections: Prepare in tabular form and include the following:

1. Specification Section number and title.
2. Entity responsible for performing tests and inspections.
3. Description of test and inspection.
4. Identification of applicable standards.
5. Identification of test and inspection methods.
6. Number of tests and inspections required.
7. Time schedule or time span for tests and inspections.
8. Requirements for obtaining samples.
9. Unique characteristics of each quality-control service.

1.6 REPORTS AND DOCUMENTS

A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:

1. Date of issue.
2. Project title and number.
3. Name, address, and telephone number of testing agency.
4. Dates and locations of samples and tests or inspections.
5. Names of individuals making tests and inspections.
6. Description of the Work and test and inspection method.
7. Identification of product and Specification Section.
8. Complete test or inspection data.
9. Test and inspection results and an interpretation of test results.
10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
12. Name and signature of laboratory inspector.
13. Recommendations on retesting and reinspecting.

B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:

1. Name, address, and telephone number of technical representative making report.
2. Statement on condition of substrates and their acceptability for installation of product.
3. Statement that products at Project site comply with requirements.
4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
6. Statement whether conditions, products, and installation will affect warranty.
7. Other required items indicated in individual Specification Sections.

C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:

1. Name, address, and telephone number of factory-authorized service representative making report.
2. Statement that equipment complies with requirements.
3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
4. Statement whether conditions, products, and installation will affect warranty.
5. Other required items indicated in individual Specification Sections.

- D. Permits, Licenses, and Certificates: For 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.

1.7 QUALITY ASSURANCE

- A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar in material, design, and extent to those indicated for this Project.
- F. Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
 - 1. Requirements of authorities having jurisdiction shall supersede requirements for specialists.
- G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 329 and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.
 - 1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
 - 2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.
- H. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- I. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

- J. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:
1. Build mockups in location and of size indicated or, if not indicated, as directed by Architect.
 2. Notify Architect seven days in advance of dates and times when mockups will be constructed.
 3. Employ supervisory personnel who will oversee mockup construction. Employ workers that will be employed during the construction at Project.
 4. Demonstrate the proposed range of aesthetic effects and workmanship.
 5. Obtain Architect's and Owner's approval of mockups before starting work, fabrication, or construction.
 - a. Allow seven days for initial review and each re-review of each mockup.
 6. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
 7. Demolish and remove mockups when directed unless otherwise indicated.

1.8 QUALITY CONTROL

- A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
 2. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.
- B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.
1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
 2. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
 - a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
 3. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
 4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
 5. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
 6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- C. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Section 01 33 00 "Submittals."

- D. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.
- E. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- F. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
 - 1. Access to the Work.
 - 2. Incidental labor and facilities necessary to facilitate tests and inspections.
 - 3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
 - 4. Facilities for storage and field curing of test samples.
 - 5. Delivery of samples to testing agencies.
 - 6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
 - 7. Security and protection for samples and for testing and inspecting equipment at Project site.
- G. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
 - 1. Schedule times for tests, inspections, obtaining samples, and similar activities.

1.9 SPECIAL TESTS AND INSPECTIONS

- A. Special Tests and Inspections: Owner will engage a qualified testing agency to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner, as indicated in form *DSA-103 Statement of Structural Tests and Special Inspections*, and as specified in Section 01 45 23 "Testing Laboratory Services".

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

- A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:
 - 1. Date test or inspection was conducted.
 - 2. Description of the Work tested or inspected.
 - 3. Date test or inspection results were transmitted to Architect.
 - 4. Identification of testing agency or special inspector conducting test or inspection.

- B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Architect's, IOR's, and Commissioning Authority's reference during normal working hours.

3.2 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
 - 1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 01 73 29 "Cutting and Patching."
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION

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SECTION 01 41 00

REGULATORY REQUIREMENTS

PART 1 - GENERAL

1.1. DESCRIPTION

- A. This section covers the general requirements for regulatory requirements pertaining to the Work and is supplementary to all other regulatory requirements mentioned or referenced elsewhere in the Contract Documents.

1.2. REQUIREMENTS OF REGULATORY AGENCIES

- A. All statutes, ordinances, laws, rules, codes, regulations, standards, and the lawful orders of all public authorities having jurisdiction of the Work, are hereby incorporated into the Contract Documents as if repeated in full herein and are intended to be included in any reference to Code or Building Code, unless otherwise specified, including, without limitation, the references in the list below. Contractor shall make available at the Site copies of all the listed documents applicable to the Work as the District and/or Architect may request, including, without limitation, applicable portions of the California Code of Regulations (C.C.R.).
 - 1. 2016 California Administrative Code (CAC), Part 1, Title 24, CCR.
 - 2. 2016 California Building Code (CBC), Part 2, Title 24, CCR.
(2015 International Building Code volumes 1-2 and 2016 California Amendments).
 - 3. 2016 California Electrical Code (CEC), Part 3, Title 24, CCR.
(2014 National Electrical Code and 2016 California Amendments).
 - 4. 2016 California Mechanical Code (CMC), Part 4, Title 24, CCR.
(2015 IAPMO Uniform Mechanical Code and 2016 California Amendments).
 - 5. 2016 California Plumbing Code (CPC), Part 5, Title 24, CCR.
(2015 IAPMO Uniform Plumbing Code and 2016 California Amendments).
 - 6. California Energy Code (CEC), Part 6, Title 24, CCR.
 - 7. California Fire Code (CFC), Part 9, Title 24, CCR.
(2015 International Fire Plumbing Code and 2016 California Amendments).
 - 7. 2016 California Green Building Standards Code (CALGreen), Part 11, Title 24 C.C.R.
 - 8. 2016 California Referenced Standards Code, Part 12, Title 24, CCR.
 - 8. Title 29 CCR, Public Safety, State Fire Marshal Regulations.
- B. This Project shall be governed by applicable regulations, including, without limitation, the State of California's Administrative Regulations for the Division of the State Architect-Structural Safety (DSA/SS), Chapter 4, Part 1, Title 24, C.C.R., and the most current version on the date the Contract is executed and as it pertains to school construction including, without limitation:
 - 1. Test and testing laboratory pursuant to Section 4-335 (District shall pay for the testing laboratory).
 - 2. All special inspections pursuant to Section 4-333(d).
 - 3. Contractor shall submit verified reports pursuant to Section 4-336 & 4-343(c).
 - 4. Administration:
 - a. Duties of the Architect and Engineers shall be pursuant to Section and 4-341.
 - b. Duties of Contractor shall be pursuant Section 4-343.
 - c. Verified Reports shall be pursuant to Section 4-336.
 - 5. Contractor shall keep and make available a copy of Part 1 and 2 of the most current version of C.C.R., Title 24 at the Site during construction.

6. Contractor shall notify the Division of State Architect (DSA) upon the start of construction pursuant to Section 4-331.
 7. Addenda and Change Orders shall be pursuant to Section 4-338.
- C. Deferred Approval: None.
- D. Refer to Section 01 11 00 – Summary of Work, Article 1.6 Requirements of Regulatory Agencies.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

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SECTION 01 41 19

SITE STANDARDS

PART 1 - GENERAL

1.1. REQUIREMENTS OF THE DISTRICT

- A. Drug-Free Schools and Safety Requirements:
 - 1. No drugs, alcohol, smoking or the use of tobacco products are allowed at any time in any buildings, Contractor-owned vehicles or vehicles owned by others while on District property. No students, staff, visitors, or contractors are to use drugs on these sites.
 - 2. Contractor shall post: "Non-Smoking Area" in a highly visible location on Site. Contractor may designate a smoking area outside of District property within the public right-of-way, provided that this area remains quiet and unobtrusive to adjacent neighbors. This smoking area must be kept clean at all times.
 - 3. Contractor shall ensure that no alcohol, firearms, weapons, or controlled substances enter or are used at the Site. Contractor shall immediately remove from the Site and terminate the employment of any employee(s) found in violation of this provision.
- B. Language: Unacceptable and/or loud language will not be tolerated, "Cat calls" or other derogatory language toward students or public will not be allowed.
- C. Disturbing the Peace (Noise and Lighting):
 - 1. Contractor shall observe the noise ordinance of the Site at all times including, without limitation, all applicable local, city, and/or state laws, ordinances, and/or regulations regarding noise and allowable noise levels.
 - 2. District reserves the right to prohibit the use of radios at the Site, except for handheld communication radios.
 - 3. If portable lights are used after dark, the lights must be located so as not to direct light into neighboring properties.
- D. Traffic:
 - 1. Driving on the Premises shall be limited to periods when students and public are not present. If driving or deliveries must be made during the school hours, two (2) or more ground guides shall lead the vehicle across the area of travel. In no case shall driving take place across playgrounds or other pedestrian paths during recess, lunch, and/or class period changes. The speed limit on-the Premises shall be five (5) miles per hour (maximum) or less if conditions require. Contractor shall not have any deliveries to the Project during the hour before school begins at the Site and during the half hour after school ends at the Site without prior written permission from the Construction Manager or the District.
 - 2. All paths of travel for deliveries, including without limitation, material, equipment, and supply deliveries, shall be reviewed and approved by District in advance.
 - 3. District shall designate a construction entry to the Site. If Contractor requests, District determines it is required, and to the extent possible, District shall designate a staging area so as not to interfere with the normal functioning of school facilities. Location of gates and fencing shall be approved in advance with District and at Contractor's expense.
 - 4. Parking areas shall be reviewed and approved by District in advance. No parking is to occur under the drip line of trees or in areas that could otherwise be damaged.
 - 5. All of the above shall be observed and complied with by the Contractor and all workers on the Site. Failure to follow these directives could result in

individual(s) being suspended or removed from the work force at the discretion of the District. The same rules and regulations shall apply equally to delivery personnel, inspectors, consultants, and other visitors to the Site.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION

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SECTION 01 42 00

REFERENCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes: Applicability and availability of standards referenced or specified in these specifications.

1.3 DEFINITIONS

- A. General: Basic Contract definitions are included in the Conditions of the Contract.
- B. "Approved": When used to convey Architect's action on Contractor's submittals, applications, and requests, "approved" is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.
- C. "Directed": A command or instruction by Architect. Other terms including "requested," "authorized," "selected," "required," and "permitted" have the same meaning as "directed."
- D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."
- E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.
- F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
- G. "Install": Unload, temporarily store, unpack, assemble, erect, place, anchor, apply, work to dimension, finish, cure, protect, clean, and similar operations at Project site.
- H. "Provide": Furnish and install, complete and ready for the intended use.
- I. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

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 standards in effect as of date of the Contract Documents, unless otherwise indicated.
- C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.
 - 1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.

1.5 GOVERNMENTAL STANDARDS AND REFERENCES

- A. Abbreviations and Acronyms for Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations in the following list. Names, telephone numbers, and Web-site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

ADAAG	Americans With Disabilities Act (ADA)	(800) 872-2253
	2010 ADA Standards for Accessible Design	(202) 272-0080
	Available from Access Board www.access-board.gov	
CFR	Code of Federal Regulations	(888) 293-6498
	Available from Government Printing Office www.access.gpo.gov/nara/cfr	(202) 512-1530
FS	Federal Specification	(215) 697-6257
	Available from Department of Defense Single Stock Point www.dodssp.daps.mil	
	Available from General Services Administration www.fss.gsa.gov	(202) 501-1021
	Available from National Institute of Building Sciences www.nibs.org	(202) 289-7800

1.6 INDUSTRY ORGANIZATIONS

- A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web-site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

AA	Aluminum Association www.aluminum.org	(202) 862-5100
AAADM	American Association of Automatic Door Manufacturers www.aaadm.com	(216) 241-7333

AABC	Associated Air Balance Council www.aabchq.com	(202) 737-0202
AAMA	American Architectural Manufacturers Association www.aamanet.org	(847) 303-5664
AASHTO	American Association of State Highway and Transportation Officials www.transportation.org	(202) 624-5800
AATCC	American Association of Textile Chemists and Colorists www.aatcc.org	(919) 549-8141
ACI	ACI International (American Concrete Institute) www.aci-int.org	(248) 848-3700
ACPA	American Concrete Pipe Association www.concrete-pipe.org	(972) 506-7216
AF&PA	American Forest and Paper Association www.afandpa.org	(800) 878-8878
AGA	American Gas Association www.aga.com	(202) 824-7000
AGC	Associated General Contractors of America www.agc.org	(703) 548-3118
AHA	American Hardboard Association (Now part of CPA)	
AHAM	Association of Home Appliance Manufacturers www.aham.org	(202) 872-5955
AI	Asphalt Institute www.asphaltinstitute.org	(859) 288-4960
AIA	The American Institute of Architects www.aia.org	(800) 242-3837
AISC	American Institute of Steel Construction www.aisc.org	(800) 644-2400
AISI	American Iron and Steel Institute www.steel.org	(202) 452-7100
AITC	American Institute of Timber Construction www.aitc-glulam.org	(303) 792-9559
ALCA	Associated Landscape Contractors of America www.alca.org	(800) 395-2522
ALSC	American Lumber Standards Committee www.alsc.org	(301) 972-1700
AMCA	Air Movement and Control Association International, Inc. www.amca.org	(847) 394-0150

ANSI	American National Standards Institute www.ansi.org	(202) 293-8020
AOSA	Association of Official Seed Analysts www.aosaseed.com	(505) 522-1437
APA	APA-The Engineered Wood Association www.apawood.org	(253) 565-6600
APA	Architectural Precast Association www.archprecast.org	(239) 454-6989
ARI	Air Conditioning and Refrigeration Institute www.ari.org	(703) 524-8800
ARMA	Asphalt Roofing Manufacturers Association www.asphaltroofing.org	(202) 207-0917
ASCE	American Society of Civil Engineers www.asce.org	(800) 548-2723
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers www.ashrae.org	(800) 527-4723
ASLA	American Society of Landscape Architects www.asla.org	202/686-2752
ASME	ASME International (The American Society of Mechanical Engineers International) www.asme.org	(800) 843-2763
ASSE	American Society of Sanitary Engineering www.asse-plumbing.org	(440) 835-3040
ASTM	ASTM International (American Society for Testing and Materials International) www.astm.org	(610) 832-9585
AWCI	AWCI International (Association of the Wall and Ceiling Industries-International) www.awci.org	(703) 534-8300
AWCMA	American Window Covering Manufacturers Association (See WCSC)	
AWI	Architectural Woodwork Institute www.awinet.org	(800) 449-8811
AWPA	American Wood-Preservers' Association www.awpa.com	(334) 874-9800
AWS	American Welding Society www.aws.org	(800) 443-9353
AWWA	American Water Works Association www.awwa.org	(800) 926-7337

BHMA	Builders Hardware Manufacturers Association www.buildershardware.com	(212) 297-2122
BIA	Brick Industry Association www.bia.org	(703) 620-0010
CCC	Carpet Cushion Council www.carpetcushion.org	(203) 637-1312
CDA	Copper Development Association www.copper.org	(800) 232-3282
CGA	Compressed Gas Association www.cganet.com	(703) 788-2700
CGMI	Ceramic Glazed Masonry Institute www.cgmi.org	(330) 488-1211
CIMA	Cellulose Insulation Manufacturers Association www.cellulose.org	(888) 665-2472
CISCA	Ceilings & Interior Systems Construction Association www.cisca.org	(630) 584-1919
CISPI	Cast Iron Soil Pipe Institute www.cispi.org	(423) 892-0137
CLFMI	Chain Link Fence Manufacturers Institute www.chainlinkinfo.org	(301) 596-2583
CPPA	Corrugated Polyethylene Pipe Association www.cppa-info.org	(800) 510-2772
CRA	California Redwood Association www.calredwood.org	(415) 382-0662
CRI	Carpet and Rug Institute www.carpet-rug.com	(800) 882-8846
CRRC	Cool Roof Rating Council www.coolroofs.org	(866) 465-2523
CRSI	Concrete Reinforcing Steel Institute www.crsi.org	(847) 517-1200
CSI	Construction Specifications Institute www.csinet.org	(800) 689-2900
CSSB	Cedar Shake and Shingle Bureau www.cedarbureau.org	(604) 820-7700
CTIOA	Ceramic Tile Institute of America www.ctioa.org	(310) 574-7800
DHI	Door and Hardware Institute www.dhi.org	(703) 222-2010

EIMA	EIFS Industry Members Association www.eima.com	(800) 294-3462
EJMA	Expansion Joint Manufacturers Association www.ejma.org	(914) 332-0040
FCICA	Floor Covering Installation Contractors Association www.fcica.com	(248) 661-5015
FM	Factory Mutual (See FMG)	
FMG	FM Global www.fmglobal.com	(401) 275-3000
GA	Gypsum Association www.gypsum.org	(202) 289-5440
GANA	Glass Association of North America www.glasswebsite.com	(785) 271-0208
HMA	Hardwood Manufacturers Association www.hmamembers.org	(412) 829-0770
HMMA	Hollow Metal Manufacturers Association (See NAAMM)	
HPVA	Hardwood Plywood and Veneer Association www.hpva.org	(703) 435-2900
IEEE	Institute of Electrical and Electronic Engineers www.ieee.org	(212) 419-7900
IESNA	Illuminating Engineering Society of North America www.iesna.org	(212) 248-5000
IGCC	Insulating Glass Certification Council www.igcc.org	(315) 646-2234
IGMA	Insulating Glass Manufacturers Alliance www.igmaonline.org	(613) 233-1510
ILI	Indiana Limestone Institute of America www.iliai.com	(812) 275-4426
ISSFA	International Solid Surface Fabricators Association www.issfa.net	(702) 567-8150
KCMA	Kitchen Cabinet Manufacturers Association www.kema.org	(703) 264-1690
LMA	Laminating Materials Association www.lma.org	(201) 664-2700
MBMA	Metal Building Manufacturer's Association www.mbma.com	(216) 241-7333

MCAA	Mechanical Contractors Association of America www.mcaa.org	(301) 869-5800
MFMA	Maple Flooring Manufacturers Association www.maplefloor.com	(847) 480-9138
MFMA	Metal Framing Manufacturers Association www.metalframingmfg.org	(312) 644-6610
MIA	Marble Institute of America www.marble-institute.com	(440) 250-9222
MIA	Masonry Institute of America www.masonryinstitute.org	(213) 388-0427
NAAMM	National Association of Architectural Metal Manufacturers www.naamm.org	(312) 332-0405
NAIMA	North American Insulation Manufacturers Association www.naima.org	(703) 684-0084
NAPA	National Asphalt Pavement Association www.hotmix.org	(301) 731-4748
NBGQA	National Building Granite Quarries Association www.nbgqa.com	(800) 557-2848
NCMA	National Concrete Masonry Association www.ncma.org	(703) 713-1900
NCPI	National Clay Pipe Institute www.ncpi.org	(262) 248-9094
NCRPM	National Council on Radiation Protection and Measurements www.ncrp.com	(800) 229-2652 (301) 657-2652
NCSPA	National Corrugated Steel Pipe Association www.ncspa.org	(202) 452-1700
NEBB	National Environmental Balancing Bureau www.nebb.org	(301) 977-3698
NECA	National Electrical Contractors Association www.necanet.org	(301) 657-3110
NEI	National Elevator Industry www.nei.org	(518) 854-3100
NEMA	National Electrical Manufacturers Association www.nema.org	(703) 841-3200
NFPA	NFPA www.nfpa.org	(800) 344-3555
NHLA	National Hardwood Lumber Association www.natlhardwood.org	(800) 933-0318

NIA	National Insulation Association www.insulation.org	(703) 683-6422
NOFMA	National Oak Flooring Manufacturers Association www.nofma.org	(901) 526-5016
NPA	National Particleboard Association www.pbmdf.com	(301) 670-0604
NPCA	National Paint and Coatings Association www.paint.org	(202) 462-6272
NRCA	National Roofing Contractors Association www.nrca.net	(800) 323-9545
NRMCA	National Ready Mixed Concrete Association www.nrmca.org	(888) 846-7622
NSF	NSF International www.nsf.org	(800) 673-6275
NSSEA	National School Supply and Equipment Association www.nssea.org	(800) 395-5550
NTMA	National Terrazzo and Mosaic Association www.ntma.com	(800) 323-9736
NWWDA	National Wood Window and Door Association (See WDMA)	
PCA	Portland Cement Association www.portcement.org	(847) 966-6200
PCI	Precast/Prestressed Concrete Institute www.pci.org	(312) 786-0300
PDCA	Painting and Decorating Contractors of America www.pdca.com	(800) 332-7322
PDI	Plumbing and Drainage Institute www.pdionline.org	(800) 589-8956
PEI	Porcelain Enamel Institute www.porcelainenamel.com	(770) 281-8980
RFCI	Resilient Floor Covering Institute www.rfci.com	(301) 340-8580
RIS	Redwood Inspection Service www.calredwood.org	(888) 225-7339
RTI	Roof Tile Institute www.ntrma.org	(888) 225-7339
SDI	Steel Deck Institute www.sdi.org	(847) 462-1930

SDI	Steel Door Institute www.steeldoor.org	(440) 899-0010
SGCC	Safety Glazing Certification Council www.sgcc.org	(315) 646-2234
SIGMA	Sealed Insulating Glass Manufacturers Association (See IGMA)	
SJI	Steel Joist Institute www.steeljoist.org	(843) 626-1995
SMA	Stucco Manufacturers Association www.stuccomfgassoc.com	(949) 640-9902
SMACNA	Sheet Metal and Airconditioning Contractors www.smacna.org	(703) 803-2980
SPFA	Spray Polyurethane Foam Alliance www.sprayfoam.org	(800) 523-6154
SPI	Society of the Plastics Industry, Inc. Spray Polyurethane Division (See SPFA)	
SPIB	Southern Pine Inspection Bureau www.spib.org	(850) 434-2611
SPRI	SPRI (Single Ply Roofing Institute) www.spri.org	(781) 647-7026
SWI	Steel Window Institute www.steelwindows.com	(216) 241-7333
TCNA	Tile Council of North America www.tileusa.com	(864) 646-8453
TPI	Truss Plate Institute www.tpinst.org	(608) 833-5900
TPI	Turfgrass Producers International www.turfgrassod.org	(800) 405-8873
UL	Underwriters Laboratories, Inc. www.ul.com	(800) 285-4476
UNI	Uni-Bell PVC Pipe Association www.uni-bell.org	(972) 243-3902
WA	Wallcoverings Association www.wallcoverings.org	(312) 644-6610
WCLIB	West Coast Lumber Inspection Bureau www.wclib.org	(800) 283-1486

WCMA	Window Covering Manufacturers Association (See WCSC)	
WCSC	Window Covering Safety Council www.windowcoverings.org	(800) 506-4636
WI	Woodwork Institute www.wicnet.org	(916) 372-9943
WWCCA	Western Wall and Ceiling Contractors Association www.wwcca.org	(714) 221-5520
WMMPA	Wood Moulding & Millwork Producers Association www.wmmpa.com	(800) 550-7889
WWPA	Western Wood Products Association www.wwpa.org	(503) 224-3930

1.7 CODE AGENCIES

- A. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web-site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.
1. IAPMO - International Association of Plumbing and Mechanical Officials; www.iapmo.org.
 2. ICC - International Code Council; www.iccsafe.org.
 3. ICC-ES - ICC Evaluation Service, LLC; www.icc-es.org.

1.8 FEDERAL GOVERNMENT AGENCIES

- A. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web-site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

COE	Army Corps of Engineers www.usace.army.mil	
CPSC	Consumer Product Safety Commission www.cpse.gov	(800) 638-2772
DOC	Department of Commerce www.commerce.gov	(202) 482-2000
DOE	Department of Energy www.eren.doe.gov	(202) 586-9220
EPA	Environmental Protection Agency www.epa.gov	(202) 272-0167
FDA	Food and Drug Administration	(888) 463-6332

GSA	General Services Administration www.gsa.gov	(800) 488-3111
OSHA	Occupational Safety & Health Administration www.osha.gov	(800) 321-6742
USDA	Department of Agriculture www.usda.gov	(202) 720-2791
USPS	Postal Service www.usps.com	(202) 268-2000

1.9 STANDARDS AND REGULATIONS

A. Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.

1. CFR - Code of Federal Regulations; Available from Government Printing Office; www.gpo.gov/fdsys.
2. FED-STD - Federal Standard; (See FS).
3. FS - Federal Specification; Available from Department of Defense Single Stock Point; <http://dodssp.daps.dla.mil>.
 - a. Available from Defense Standardization Program; www.dsp.dla.mil.
 - b. Available from General Services Administration; www.gsa.gov.
 - c. Available from National Institute of Building Sciences/Whole Building Design Guide; www.wbdg.org/ccb.
4. MILSPEC - Military Specification and Standards; (See DOD).
5. USAB - United States Access Board; www.access-board.gov.
6. USATBCB - U.S. Architectural & Transportation Barriers Compliance Board; (See USAB).

1.10 STAGE GOVERNMENT AGENCIES

A. Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.

1. CBHF; State of California; Department of Consumer Affairs; Bureau of Electronic Appliance and Repair, Home Furnishings and Thermal Insulation; www.bearhfti.ca.gov.
2. CCR; California Code of Regulations; Office of Administrative Law; California Title 24 Energy Code; www.calregs.com.
3. CDHS; California Department of Health Services; (See CDPH).

4. CDPH; California Department of Public Health; Indoor Air Quality Program; www.cal-iaq.org.
5. CPUC; California Public Utilities Commission; www.cpuc.ca.gov.
6. SCAQMD; South Coast Air Quality Management District; www.aqmd.gov.
7. TFS; Texas Forest Service; Forest Resource Development and Sustainable Forestry; <http://txforests-service.tamu.edu>.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

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SECTION 01 45 23

TESTING LABORATORY SERVICES

PART 1 - GENERAL

1.1. REFERENCES

- A. ASTM D3740 - Practice for Evaluation of Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.
- B. ASTM E329 - Recommended Practice for Inspection and Testing Agencies for Concrete, Steel, and Bituminous Materials as Used in Construction.
- C. CBC - California Building Code.
- D. IBC - International Building Code.
- E. Title 24, Parts 1 and 2, of the California Code of Regulations. Contractor shall keep a copy of these available at the job Site for ready reference during construction
- F. DSA - Division of the State Architect, Structural Safety Section. DSA shall be notified at or before the start of construction.

1.2. OBSERVATION AND SUPERVISION

- A. The District and Construction Manager or their appointed representatives will review the Work and the Contractor shall provide facilities and access to the Work at all times as required to facilitate this review. Administration by the Architect and any consulting Structural Engineer will be in accordance with applicable regulations, including, without limitation, 24 C.C.R. §4-341.
- B. One or more Project Inspector(s) approved by DSA and employed by or in contract with the District ("Project Inspector"), will observe the Work in accordance with 24 C.C.R. §§4-333(b) and 4-342:
- C. Project Inspector shall have access to the Work wherever it is in preparation or progress for ascertaining that the Work is in accordance with the Contract Documents and all applicable code sections. Contractor shall provide facilities and access as required and shall provide assistance for sampling or measuring materials.
 - 1. Project Inspector will notify District and Architect and inform Contractor of any observed failure of Work or material to conform to Contract Documents.
 - 2. The Project Inspector shall observe and monitor all testing and inspection activities required.
- D. Contractor shall conform with all applicable laws as indicated in the Contract Documents, including, without limitation, to 24 C.C.R. §4-343. Contractor shall supervise and direct the Work and maintain a competent superintendent on the Project who is authorized to act in all matters pertaining to the Work. The Contractor shall inspect all materials, as they arrive, for compliance with the Contract Documents. Contractor shall reject defective Work or materials immediately upon delivery or failure of the Work or material to comply with the Contract Documents. The Contractor shall submit verified reports as indicated in the Contract Documents, including, without limitation, the Specifications and as required by 24 C.C.R. §4-336.

1.3. TESTS AND INSPECTIONS

- A. Contractor shall be responsible for notifying District and Project Inspector of all required tests and inspections. Contractor shall notify District and Project Inspector forty-eight (48) hours in advance of performing any Work requiring testing or inspection.
- B. Contractor shall provide access to Work to be tested and furnish incidental labor, equipment, and facilities to facilitate all inspections and tests.
- C. District will pay for first inspections and tests required by the Title 24 and other inspections or tests that District and/or Architect may direct to have made, including, but not limited to, the following principal items:
 - 1. Tests and observations for earthwork and pavings.
 - 2. Tests for concrete mix designs, including tests of trial batches.
 - 3. Tests and inspections for structural steel work.
 - 4. Field tests for framing lumber moisture content.
 - 5. Additional tests directed by District that establish that materials and installation comply with the Contract Documents.
 - 6. Test and observation of welding and expansion anchors.
 - 7. Factory observation of components and assembly of modular prefabrication structures and buildings.
- D. District may at its discretion, pay and then back charge Contractor for:
 - 1. Retests or reinspections, if required, and tests or inspection required due to Contractor error or lack of required identifications of material.
 - 2. Uncovering of work in accordance with Contract Documents.
 - 3. Testing done on weekends, holidays, and overtime will be chargeable to Contractor for the overtime portion.
 - 4. Testing done off site.
- E. Testing and inspection reports and certifications:
 - 1. If initially received by Contractor, Contractor shall provide to each of the following a copy of the agency or laboratory report of each test or inspection or certification: District; Construction Manager, if any; Architect; Consulting Engineer, if any; Other Engineers on the Project, as appropriate; and; Project Inspector.
 - 2. When the test or inspection is one required by the Title 24, a copy of the report shall also be provided to the DSA.

1.4. SELECTION AND PAYMENT

- A. District's hiring of Testing Laboratory shall in no way relieve Contractor of its obligation to perform work in accordance with requirements of Contract Documents.

1.5. CONTRACTOR RESPONSIBILITIES

- A. Submit proposed items for testing as required herein and/or as further required in the Contract Documents to Architect for review in accordance with applicable specifications.
- B. Cooperate with Laboratory personnel, and provide access to the Work and to manufacturer's facilities.
- C. Notify Architect, District, and Testing Laboratory 48 hours prior to expected time for operations requiring inspection and testing services.
- D. When tests or inspections cannot be performed after such notice, reimburse District for Laboratory personnel and travel expenses incurred due to the Contractor's negligence.

- E. Contractor shall notify District a sufficient time in advance of the manufacture of material to be supplied by Contractor pursuant to the Contract Documents, which must by terms of the Contract be tested, in order that the District may arrange for the testing of same at the source of supply.
 - 1. Any material shipped by the Contractor from the source of supply prior to having satisfactorily passed such testing and inspection or prior to the receipt of notice that such testing and inspection will not be required shall not be incorporated in the Work.
- F. Contract and pay for services of District's Testing Laboratory to perform additional inspections, sampling and testing required when initial tests indicate Contractor's work and/or materials does not comply with Contract Documents.

1.6. PROJECT INSPECTOR'S ACCESS TO SITE

- A. A Project Inspector employed by the District in accordance with the requirement of State of California Code of Regulations, Title 24, Part 1 will be assigned to the Work. Project Inspector's duties are specifically defined in 24. C.C.R. §4-342, and as indicated in the General Construction Provisions.
- B. District shall at all times have access for the purpose of inspection to all parts of the Work and to the shops wherein the Work is in preparation, and Contractor shall at all times maintain proper facilities and provide safe access for such inspection.
- C. The Work in all stages of progress shall be subject to the personal continuous observation of the Inspector. Inspector shall have free access to any or all parts of the Work at any time. Contractor shall furnish the Inspector reasonable facilities for obtaining such information as may be necessary to keep Inspector 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 set forth in the Contract Documents.
- D. The Inspector is not authorized to change, revoke, alter, enlarge or decrease in any way any requirement of the Contract Documents, drawings, specifications or subsequent change orders.
- E. Whenever there is insufficient evidence of compliance with any of the provisions of Title 24 or evidence that any material or construction does not conform to the requirements of Title 24, the Division of the State Architect may require tests as proof of compliance. Test methods shall be as specified herein or by other recognized and accepted test methods determined by the Division of the State Architect. All tests shall be performed by a testing laboratory accepted by the Division of the State Architect.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION

04/19/19

SECTION 01 50 00

TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1. LOGISTICS PLAN

- A. Contractor shall provide to the District for prior approval the Contractor's mobilization and logistics plan for the Site which shall include, at a minimum, the provisions herein.

1.2. TEMPORARY UTILITIES

- A. Temporary Electric Power and Lighting:
 - 1. Power is available from Owner's existing power system for single-phase temporary lighting and power. The Owner will pay the costs of power used. Contractor will furnish and pay for power during the course of the work to the extent power is not in the building(s) or on the Site. Contractor shall be responsible for providing temporary facilities required on the Site to point of intended use.
 - 2. Contractor shall be responsible for maintaining existing lighting levels in the Project vicinity should temporary outages or service interruptions occur.
 - 3. If power greater than that available at nearby convenience outlets is required, make arrangements for such service and pay all costs of wiring and current.
- B. Temporary Heating and Ventilating:
 - 1. Heating and Ventilating is available from Owner's existing HVAC system in the building. The Owner will pay the costs of HVAC power used.
 - 2. If adequate forced ventilation greater than that available from existing HVAC system is required, provide and pay for costs of adequate forced ventilation of enclosed areas for curing of installed materials, to disperse humidity, and to prevent hazardous accumulations of dust, fumes, vapors or gases.
 - 3. Contractor shall pay the costs of installation, maintenance, operation, and removal of temporary heat and ventilation, including costs for fuel consumed, required for the performance of the Work.
- C. Temporary Water:
 - 1. Available from existing building. The Contractor shall be responsible for undue wasting of water used on the Work. Furnish hoses and temporary piping placed where water connections are available.
 - 2. Contractor shall make potable water available for human consumption.
- D. Temporary Sanitary Facilities:
 - 1. Contractor shall provide sanitary temporary facilities in no fewer numbers than required by law and such additional facilities as may be directed by the Inspector for the use of all workers. The facilities shall be maintained in a sanitary condition at all times and shall be left at the Site until removal is directed by the Project Inspector or Contractor completes all Work.
 - 2. Use of permanent toilet facilities on the school campus shall not be permitted except by consent of the Project Inspector and District.
- E. Temporary Telephone and Internet Service: Not required.
- F. Fire Protection:
 - 1. Contractor shall provide and maintain fire extinguishers and other equipment for fire protection. Such equipment shall be designated for use for fire protection only and shall comply with all requirements of the California Fire,

- State Fire Marshall and/or its designee.
2. Where on-site welding and burning of steel is unavoidable, Contractor shall provide protection for adjacent surfaces.

G. Trash Removal:

1. Contractor shall provide trash removal on a timely basis, not less than weekly from all Site Offices and the Site.

H. Temporary Job Office Facilities: Not required.

1.3. CONSTRUCTION AIDS

A. Plant and Equipment:

1. Contractor shall furnish, operate, and maintain a complete plant for fabricating, handling, conveying, installing, and erecting materials and equipment. Include equipment, tools, and appliances necessary for performance of the Work.
2. Contractor shall maintain plant and equipment in safe and efficient operating condition. Damages due to defective plant and equipment, and uses made thereof, shall be repaired by Contractor at no expense to the District.

B. No District tools or equipment shall be used by Contractor for the performance of the Work.

1.4. BARRIERS AND ENCLOSURES

A. Contractor shall obtain District's written permission for locations and types of temporary barriers and enclosures, including fire-rated materials proposed for use, prior to their installation.

B. Contractor shall provide a six (6) foot high, chain link perimeter fence with post driven into the ground and fabric screen as a temporary barrier around construction area. Contractor shall provide and maintain temporary enclosures to prevent public entry and to protect persons using other buildings and portions of the Site and/or Premises. Contractor shall remove temporary fence, barriers and enclosure upon Completion of the Work.

C. Contractor shall provide site access to existing facilities for persons using other buildings and portions of the Site, the public, and for deliveries and other services and activities.

1.5. SECURITY

A. Contractor shall secure all construction equipment, machinery and vehicles, park and store only within fenced area, and render inoperable during non-work hours. Contractor is responsible for ensuring that no construction materials, tools, equipment, machinery or vehicles can be used for unauthorized entry or other damage or interference to activities and security of existing facilities adjacent to and in the vicinity of the Project Site.

1.6. TEMPORARY CONTROLS

A. Noise Control:

1. Contractor acknowledges that adjacent facilities may remain in operation during all or a portion of the Work, and it shall take all reasonable precautions to minimize noise as required by applicable laws and the Contract Documents.
2. Notice of proposed noisy operations, including without limitation, operation of

pneumatic demolition tools, concrete saws, and other equipment, shall be submitted to District a minimum of forty-eight (48) hours in advance of their performance.

- B. Noise and Vibration:
 - 1. Equipment and impact tools shall have intake and exhaust mufflers.
 - 2. Contractor shall cooperate with District to minimize and/or cease the use of noisy and vibratory equipment if that equipment becomes objectionable by its longevity.
- C. Dust and Dirt:
 - 1. Contractor shall conduct demolition and construction operations to minimize the generation of dust and dirt, and prevent dust and dirt from interfering with the progress of the Work and from accumulating in the Work and adjacent areas including, without limitation, occupied facilities.
 - 2. Contractor shall periodically water exterior demolition and construction areas to minimize the generation of dust and dirt.
 - 3. Contractor shall ensure that all hauling equipment and trucks carrying loads of soil and debris shall have their loads sprayed with water or covered with tarpaulins, and as otherwise required by local and state ordinance.
 - 4. Contractor shall prevent dust and dirt from accumulating on walks, roadways, parking areas, and planting, and from washing into sewer and storm drain lines.
- D. Water: Contractor shall not permit surface and subsurface water, and other liquids, to accumulate in or about the vicinity of the Premises. Should accumulation develop, Contractor shall control the water or other liquid, and suitably dispose of it by means of temporary pumps, piping, drainage lines, troughs, ditches, dams, or other methods.
- E. Pollution:
 - 1. No burning of refuse, debris, or other materials shall be permitted on or in the vicinity of the Premises.
 - 2. Contractor shall comply with applicable regulatory requirements and anti-pollution ordinances during the conduct of the Work including, without limitation, demolition, construction, and disposal operations.
- F. Lighting: If portable lights are used after dark, all light must be located so as not to direct light into neighboring property.

1.7. PUBLICITY RELEASES

- A. Contractor shall not release any information, story, photograph, plan, or drawing relating information about the Project to anyone, including press and other public communications medium, including, without limitation, on website(s). Contractor shall not bring anyone onto the project site during or after construction for the purpose of publicity or marketing without prior written permission of the District.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION

04/19/19

SECTION 01 60 00

MATERIALS AND EQUIPMENT

PART 1 - GENERAL

1.1. MATERIAL AND EQUIPMENT

- A. Only items approved by the District and/or Architect shall be used.
- B. Contractor shall submit lists of Products and other Product information in accordance with the Contract Documents, including, without limitation, the provisions regarding the submittals.

1.2. MATERIAL AND EQUIPMENT COLORS

- A. The Contractor shall comply with all schedule(s) of colors provided by the District and/or Architect.
- B. No individual color selections will be made until after approval of all pertinent materials and equipment and after receipt of appropriate samples in accordance with the Contract Documents, including, without limitation, the provisions regarding the submittals.
- C. Contractor shall request priority in writing for any item requiring advance ordering to maintain the approved Construction Schedule.

1.3. DELIVERY, STORAGE, AND HANDLING

- A. Contractor shall deliver manufactured materials in original packages, containers, or bundles (with seals unbroken), bearing name or identification mark of manufacturer.
- B. Contractor shall deliver fabrications in as large assemblies as practicable; where specified as shop-primed or shop-finished, package or crate as required to preserve such priming or finish intact and free from abrasion.
- C. Contractor shall store materials in such a manner as necessary to properly protect them from damage. Materials or equipment damaged by handling, weather, dirt, or from any other cause will not be accepted.
- D. Except for items that the District has approved, in writing, for Contractor to store off-site, all materials are not be acceptable that have been warehoused for long periods of time, stored or transported in improper environment, improperly packaged, inadequately labeled, poorly protected, excessively shipped, deviated from normal distribution pattern, or reassembled.
- E. Contractor shall store material so as to cause no obstructions of sidewalks, roadways, and underground services. Contractor shall protect material and equipment furnished pursuant to the Contract Documents.
- F. Contractor may store materials on Site with prior written approval by the District, all material shall remain under Contractor's control and Contractor shall remain liable for any damage to the materials. Should the Project Site not have storage area available, the Contractor shall provide for off-site storage at no cost to District.
- G. When any room in Project is used as a shop or storeroom, the Contractor shall be responsible for any repairs, patching, or cleaning necessary due to that use. Location of storage space shall be subject to prior written approval by District.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers listed in various sections of Contract Documents are names of those manufacturers that are believed to be capable of supplying one or more of items specified therein.
- B. The listing of a manufacturer does not imply that every product of that manufacturer is acceptable as meeting the requirements of the Contract Documents.

2.2 FACILITIES AND EQUIPMENT

- A. Contractor shall provide, install, maintain, and operate a complete and adequate facility for handling, the execution, disposal, and distribution of material and equipment as required for proper and timely performance of Work.

2.3 MATERIAL REFERENCE STANDARDS

- A. Where material is specified solely by reference to "standard specifications" and if requested by District, Contractor shall submit for review data on actual material proposed to be incorporated into Work, listing name and address of vendor, manufacturer, or producer, and trade or brand names of those materials, and data substantiating compliance with standard specifications.

PART 3 - EXECUTION

3.1 WORKMANSHIP

- A. Where not more specifically described in any other Contract Documents, workmanship shall conform to methods and operations of best standards and accepted practices of trade or trades involved and shall include items of fabrication, construction, or installation regularly furnished or required for completion (including finish and for successful operation, as intended).
- B. Work shall be executed by tradespersons skilled in their respective field of work. When completed, parts shall have been durably and substantially built and present a neat appearance.

3.2 COORDINATION

- A. Contractor shall coordinate installation of materials and equipment so as to not interfere with installation of other work. Adjustment or rework because of Contractor's failure to coordinate will be at no additional cost to District.
- B. Contractor shall examine in-place materials and equipment for readiness, completeness, fitness to be concealed or to receive Work, and compliance with Contract Documents. Concealing or covering work constitutes acceptance of additional cost which will result should in-place materials and equipment be found unsuitable for receiving other work or otherwise deviating from the requirements of the Contract Documents.

3.3 COMPLETENESS

- A. Contractor shall provide all portions of the Work, unless clearly stated otherwise, installed complete and operational with all elements, accessories, anchorages, utility connections, etc., in manner to assure well-balanced performance, in accordance with manufacturer's recommendations and in accordance with Contract Documents.

For example, electric water coolers require water, electricity, and drain services; roof drains require drain system; sinks fit within countertop, etc. Terms such as “installed complete,” “operable condition,” “for use intended,” “connected to all utilities,” “terminate with proper cap,” “adequately anchored,” “patch and refinish,” “to match similar,” should be assumed to apply in all cases, except where completeness of functional or operable condition is specifically stated as not required.

3.4 APPROVED INSTALLER OR APPLICATOR

- A. Contractor shall ensure that all installations are only performed by a manufacturer’s approved installer or applicator.

3.5 MANUFACTURER'S RECOMMENDATIONS

- A. All installations shall be in accordance with manufacturer’s published recommendations and specific written directions of manufacturer's representative. Should Contract Documents differ from recommendations of manufacturer or directions of manufacturer’s representative, Contractor shall analyze differences, make recommendations to the District and the Architect in writing, and shall not proceed until interpretation or clarification has been issued by the District and/or the Architect.

END OF SECTION

04/19/19

SECTION 01 66 00

DELIVERY, STORAGE AND HANDLING

PART 1 - GENERAL

1.1. PRODUCTS

- A. Products are as defined in the General Construction Provisions.
- B. Contractor shall not use and/or reuse materials and/or equipment removed from existing Premises, except as specifically permitted by the Contract Documents.
- C. Contractor shall provide interchangeable components of the same manufacturer, for similar components.

1.2. TRANSPORTATION AND HANDLING

- A. Contractor shall transport and handle Products in accordance with manufacturer's instructions.
- B. Contractor shall promptly inspect shipments to confirm that Products comply with Contract requirements, are of correct quantity, and are undamaged.
- C. Contractor shall provide equipment and personnel to properly handle Products to prevent soiling, disfigurement, or damage.

1.3. STORAGE AND PROTECTION

- A. Contractor shall store and protect Products in accordance with manufacturer's instructions, with seals and labels intact and legible. Contractor shall store sensitive Products in weather-tight, climate controlled enclosures.
- B. Contractor shall place fabricated Products that are stored outside, on above-ground sloped supports.
- C. Contractor shall provide off-site storage and protection for Products when Site does not permit on-site storage or protection.
- D. Contractor shall cover Products subject to deterioration with impervious sheet covering and provide ventilation to avoid condensation.
- E. Contractor shall store loose granular materials on solid flat surfaces in a well-drained area and prevent mixing with foreign matter.
- F. Contractor shall provide equipment and personnel to store Products by methods to prevent soiling, disfigurement, or damage.
- G. Contractor shall arrange storage of Products to permit access for inspection and periodically inspect to assure Products are undamaged and are maintained under specified conditions.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01 73 29

CUTTING AND PATCHING

PART 1 - GENERAL

1.1. CUTTING AND PATCHING

- A. Contractor shall be responsible for all cutting, fitting, and patching, including associated excavation and backfill, required to complete the Work or to:
 - 1. Make several parts fit together properly.
 - 2. Uncover portions of Work to provide for installation of ill-timed Work.
 - 3. Remove and replace defective Work.
 - 4. Remove and replace Work not conforming to requirements of Contract Documents.
 - 5. Remove Samples of installed Work as specified for testing.
 - 6. Provide routine penetrations of non-structural surfaces for installation of piping and electrical conduit.
 - 7. Attaching new materials to existing remodeling areas – including painting (or other finishes) to match existing conditions.
- B. In addition to Contract requirements, upon written instructions from District, Contractor shall uncover Work to provide for observations of covered Work in accordance with the Contract Documents; remove samples of installed materials for testing as directed by District; and remove Work to provide for alteration of existing Work.
- C. Contractor shall not cut or alter Work, or any part of it, in such a way that endangers or compromises the integrity of the Work, the Project, or work of others.
- D. Contractor shall not cut and patch operating elements and safety related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety. Operating elements include the following:
 - 1. Primary operational systems and equipment.
 - 2. Air or smoke barriers.
 - 3. Fire-suppression systems.
 - 4. Mechanical systems piping and ducts.
 - 5. Control systems.
 - 6. Communication systems.
 - 7. Conveying systems.
 - 8. Electrical wiring systems.
- E. Contractor shall not cut and patch miscellaneous elements or related components in a manner that could change their load-carrying capacity, that results in reducing capacity to perform as intended, or that results in increased maintenance or decreased operational life of safety. Miscellaneous elements include the following:
 - 1. Water, moisture or vapor barriers.
 - 2. Membranes and flashings.
 - 3. Exterior curtain-wall construction.
 - 4. Equipment supports.
 - 5. Piping, ductwork, vessels and equipment.
 - 6. Noise and vibration control elements and systems.
 - 7. Shoring, bracing and sheeting.

1.2 SUBMITTALS

- A. Contractor shall submit written notice to District pursuant to the applicable notice provisions of the Contract Documents, requesting consent to proceed with the cutting or alteration (Request) at least ten (10) days prior to any cutting or alterations that may affect the structural safety of Project, or work of others, including the following:
 - 1. The work of the District or other trades.
 - 2. Structural value or integrity of any element of Project.
 - 3. Integrity or effectiveness of weather-exposed or weather-resistant elements or systems.
 - 4. Efficiency, operational life, maintenance or safety of operational elements.
 - 5. Visual qualities of sight-exposed elements.
- B. Contractor's Request shall also include:
 - 1. Identification of Project.
 - 2. Description of affected Work.
 - 3. Necessity for cutting, alteration, or excavations.
 - 4. Effects of Work on District, other trades, or structural or weatherproof integrity of Project.
 - 5. Description of proposed Work:
 - a. Scope of cutting, patching, alteration, or excavation.
 - b. Trades that will execute Work.
 - c. Products proposed to be used.
 - d. Extent of refinishing to be done.
 - 6. Alternates to cutting and patching.
 - 7. Cost proposal, when applicable.
 - 8. The scheduled date the Contractor intends to perform the Work and the duration of time to complete the Work.
 - 9. Written permission of other trades whose Work will be affected.

1.3 QUALITY ASSURANCE

- A. Contractor shall ensure that cutting, fitting, and patching shall achieve security, strength, weather protection, appearance for aesthetic match, efficiency, operational life, maintenance, safety of operational elements, and the continuity of existing fire ratings.
- B. Contractor shall ensure that cutting, fitting, and patching shall successfully duplicate undisturbed adjacent profiles, materials, textures, finishes, colors, and that materials shall match existing construction. Where there is dispute as to whether duplication is successful or has been achieved to a reasonable degree, the District's decision shall be final.

1.4 PAYMENT FOR COSTS

- A. Cost caused by ill-timed or defective Work or Work not conforming to Contract Documents, including costs for additional services of the District, its consultants, including but not limited to the Architect, the Project Inspector(s), Engineers, and Agents, will be paid by Contractor and/or deducted from the Contract by the District.
- B. District shall only pay for cost of Work if it is part of the original Contract Price or if a change has been made to the contract in compliance with the provisions of the General Construction Provisions. Cost of Work performed upon instructions from the District, other than defective or nonconforming Work, will be paid by District on approval of written Change Order. Contractor shall provide written cost proposals prior to proceeding with cutting and patching.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Contractor shall provide for replacement and restoration of Work removed. Contractor shall comply with the Contract Documents and with the Industry Standard(s), for the type of Work, and the Specification requirements for each specific product involved. If not specified, Contractor shall first recommend a product of a manufacturer or appropriate trade association for approval by the District.
- B. Materials to be cut and patched include those damaged by the performance of the Work.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Contractor shall inspect existing conditions of the Site and the Work, including elements subject to movement or damage during cutting and patching, excavating and backfilling. After uncovering Work, Contractor shall inspect conditions affecting installation of new products.
- B. Contractor shall report unsatisfactory or questionable conditions in writing to District as indicated in the General Construction Provisions and shall proceed with Work as indicated in the General Construction Provisions by District.

3.2 PREPARATION

- A. Contractor shall provide shoring, bracing and supports as required to maintain structural integrity for all portions of the Project, including all requirements of the Project.
- B. Contractor shall provide devices and methods to protect other portions of Project from damage.
- C. Contractor shall, provide all necessary protection from weather and extremes of temperature and humidity for the Project, including without limitation, any work that may be exposed by cutting and patching Work. Contractor shall keep excavations free from water.

3.3 ERECTION, INSTALLATION AND APPLICATION

- A. With respect to performance, Contractor shall:
 - 1. Execute fitting and adjustment of products to provide finished installation to comply with and match specified tolerances and finishes.
 - 2. Execute cutting and demolition by methods that will prevent damage to other Work, and provide proper surfaces to receive installation of repairs and new Work.
 - 3. Execute cutting, demolition excavating, and backfilling by methods that will prevent damage to other Work and damage from settlement.
 - 4. Contractor shall employ original installer or fabricator to perform cutting and patching for:
 - 5. Weather-exposed surfaces and moisture-resistant elements such as roofing, sheet metal, sealants, waterproofing, and other trades.
 - 6. Sight-exposed finished surfaces.
- B. Contractor shall execute fitting and adjustment of products to provide a finished installation to comply with specified products, functions, tolerances, and finishes as shown or specified in the Contract Documents including, without limitation, the Drawings and Specifications.
- C. Contractor shall fit Work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces. Contractor shall conform to all Code requirements for

penetrations or the Drawings and Specifications, whichever calls for a higher quality or more thorough requirement. Contractor shall maintain integrity of both rated and non-rated fire walls, ceilings, floors, etc.

- D. Contractor shall restore Work which has been cut or removed. Contractor shall install new products to provide completed Work in accordance with requirements of the Contract Documents and as required to match surrounding areas and surfaces.
- E. Contractor shall refinish all continuous surfaces to nearest intersection as necessary to match the existing finish to any new finish.

END OF SECTION

04/19/19

SECTION 01 77 00

CONTRACT CLOSEOUT AND FINAL CLEANING

PART 1 - GENERAL

1.1. CLOSEOUT PROCEDURES

- A. Contractor shall comply with all closeout provisions as indicated in the General Construction Provisions.

1.2. FINAL CLEANING

- A. Contractor shall execute final cleaning prior to final inspection.
- B. Contractor shall clean interior and exterior glass and surfaces exposed to view; remove temporary labels, tape, stains, and foreign substances, polish transparent and glossy surfaces, wax and polish new vinyl floor surfaces, vacuum carpeted and soft surfaces.
- C. Contractor shall clean equipment and fixtures to a sanitary condition.
- D. Contractor shall replace filters of operating equipment.
- E. Contractor shall clean debris from roofs, gutters, down spouts, and drainage systems.
- F. Contractor shall clean Site, sweep paved areas, and rake clean landscaped surfaces.
- G. Contractor shall remove waste and surplus materials, rubbish, and construction facilities from the Site.

1.3. ADJUSTING

- A. Contractor shall adjust operating products and equipment to ensure smooth and unhindered operation.

1.4. RECORD DOCUMENTS AND SHOP DRAWINGS

- A. Contractor shall legibly mark each item to record actual construction, including:
 - 1. Measured depths of foundation in relation to finish floor datum.
 - 2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permit surface improvements.
 - 3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
 - 4. Field changes of dimension and detail.
 - 5. Details not on original Contract Drawings
 - 6. Changes made by modification(s).
 - 7. References to related Shop Drawings and modifications.

8. Contractor will provide one set of Record Drawings to District in an electronic format and one set on paper.
9. Contractor shall submit all required documents to District and/or Architect prior to or with its final Application for Payment.

1.5. INSTRUCTION OF DISTRICT PERSONNEL

- A. Before final inspection, at agreed upon times, Contractor shall instruct District's designated personnel in operation, adjustment, and maintenance of products, equipment, and systems.
- B. For equipment requiring seasonal operation, Contractor shall perform instructions for other seasons within six (6) months.
- C. Contractor shall use operation and maintenance manuals as basis for instruction. Contractor shall review contents of manual with personnel in detail to explain all aspects of operation and maintenance.
- D. Contractor shall prepare and insert additional data in Operation and Maintenance Manual when need for such data becomes apparent during instruction.
- E. Contractor shall use operation and maintenance manuals as basis for instruction. Contractor shall review contents of manual with personnel in detail to explain all aspects of operation and maintenance.
- F. Contractor shall be available for up to two (2) four-hour sessions of additional training of District personnel at any time within the first year of operation of the Site.

1.6. SPARE PARTS AND MAINTENANCE MATERIALS

- A. Contractor shall provide products, spare parts, maintenance, and extra materials in quantities specified in the Specifications and in Manufacturer's recommendations.
- B. Contractor shall provide District all required Operation and Maintenance Data.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

04/19/19

SECTION 01 78 23

OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1. QUALITY ASSURANCE

- A. Contractor shall prepare instructions and data by personnel experienced in maintenance and operation of described products.

1.2. FORMAT

- A. Contractor shall prepare data in the form of an instructional manual entitled "OPERATIONS AND MAINTENANCE MANUAL & INSTRUCTIONS" ("Manual").
- B. Binders: Contractor shall use commercial quality, 8-1/2 by 11 inch, three-side rings, with durable plastic covers; two inch maximum ring size. When multiple binders are used, Contractor shall correlate data into related consistent groupings.
- C. Cover: Contractor shall identify each binder with typed or printed title "OPERATION AND MAINTENANCE MANUAL & INSTRUCTIONS"; and shall list title of Project and identify subject matter of contents.
- D. Contractor shall arrange content by systems process flow under section numbers and sequence of Table of Contents of the Contract Documents.
- E. Contractor shall provide tabbed fly leaf for each separate Product and system, with typed description of Product and major component parts of equipment.
- F. Text: The content shall include Manufacturer's printed data, or typewritten data on 24 pound paper.
- G. Drawings: Contractor shall provide with reinforced punched binder tab and shall bind in with text; folding larger drawings to size of text pages.

1.3. CONTENTS, EACH VOLUME

- A. Table of Contents: Contractor shall provide title of Project; names, addresses, and telephone numbers of the Architect, any engineers, subconsultants, Subcontractor(s), and Contractor with name of responsible parties; and schedule of Products and systems, indexed to content of the volume.
- B. For Each Product or System: Contractor shall list names, addresses, and telephone numbers of Subcontractor(s) and suppliers, including local source of supplies and replacement parts.
- C. Product Data: Contractor shall mark each sheet to clearly identify specific Products and component parts, and data applicable to installation. Delete inapplicable information.
- D. Drawings: Contractor shall supplement Product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Contractor shall not use Project Record Documents as maintenance drawings.
- E. Text: The Contractor shall include any and all information as required to supplement Product data. Contractor shall provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

1.4. MANUAL FOR MATERIALS AND FINISHES

- A. Building Products, Applied Materials, and Finishes: Contractor shall include Product data, with catalog number, size, composition, and color and texture designations. Contractor shall provide information for re-ordering custom manufactured Products.
- B. Instructions for Care and Maintenance: Contractor shall include Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- C. Moisture Protection and Weather Exposed Products: Contractor shall include Product data listing applicable reference standards, chemical composition, and details of installation. Contractor shall provide recommendations for inspections, maintenance, and repair.
- D. Additional Requirements: Contractor shall include all additional requirements as specified in the Specifications.
- E. Contractor shall provide a listing in Table of Contents for design data, with tabbed fly sheet and space for insertion of data.

1.5. MANUAL FOR EQUIPMENT AND SYSTEMS

- A. Each Item of Equipment and Each System: Contractor shall include description of unit or system, and component parts and identify function, normal operating characteristics, and limiting conditions. Contractor shall include performance curves, with engineering data and tests, and complete nomenclature, and commercial number of replaceable parts.
- B. Panelboard Circuit Directories: Contractor shall provide electrical service characteristics, controls, and communications.
- C. Contractor shall include color coded wiring diagrams as installed.
- D. Operating Procedures: Contractor shall include start-up, break-in, and routine normal operating instructions and sequences. Contractor shall include regulation, control, stopping, shut-down, and emergency instructions. Contractor shall include summer, winter, and any special operating instructions.
- E. Maintenance Requirements: Contractor shall include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- F. Contractor shall provide servicing and lubrication schedule, and list of lubricants required.
- G. Contractor shall include manufacturer's printed operation and maintenance instructions.
- H. Contractor shall include sequence of operation by controls manufacturer.
- I. Contractor shall provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- J. Contractor shall provide control diagrams by controls manufacturer as installed.
- K. Contractor shall provide Contractor's coordination drawings, with color coded piping diagrams as installed.

- L. Contractor shall provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- M. Contractor shall provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- N. Additional Requirements: Contractor shall include all additional requirements as specified in Specification(s).
- O. Contractor shall provide a listing in Table of Contents for design data, with tabbed fly sheet and space for insertion of data.

1.6. SUBMITTAL

- A. Concurrent with the Submittal Schedule as indicated in the General Construction Provisions (Exhibit D to the Facilities Lease), Contractor shall submit to the District for review two (2) copies of a preliminary draft of proposed formats and outlines of the contents of the Manual.
- B. For equipment, or component parts of equipment put into service during construction and to be operated by District, Contractor shall submit draft content for that portion of the Manual within ten (10) days after acceptance of that equipment or component.
- C. On or before the Contractor submits its final application for payment, Contractor shall submit two (2) copies of a complete Manual in final form. The District will provide comments to Contractor and Contractor must revise the content of the Manual as required by District prior to District's approval of Contractor's final Application for Payment.
- D. Contractor must submit two (2) copies of revised Manual in final form within ten (10) days after receiving District's comments. Failure to do so will be a basis for the District withholding funds sufficient to protect itself for Contractor's failure to provide a final Manual to the District. All final documents to be concurrently provided to the District in an electronic format.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION

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SECTION 01 78 36

WARRANTIES

PART 1 - GENERAL

1.1. FORMAT

- A. Binders: Contractor shall use commercial quality, 8-1/2 by 11 inch, three-side rings, with durable plastic covers; two inch maximum ring size.
- B. Cover: Contractor shall identify each binder with typed or printed title "WARRANTIES" and shall list title of Project.
- C. Table of Contents: Contractor shall provide title of Project; name, address, and telephone number of Contractor and equipment supplier, and name of responsible principal. Contractor shall identify each item with the number and title of the specific Specification, document, provision, or section in which the name of the Product or work item is specified.
- D. Contractor shall separate each warranty with index tab sheets keyed to the Table of Contents listing, providing full information and using separate typed sheets as necessary. Contractor shall list each applicable and/or responsible Subcontractor(s), supplier(s), and/or manufacturer(s), with name, address, and telephone number of each responsible principal(s).

1.2. PREPARATION

- A. Contractor shall obtain warranties, executed in duplicate by each applicable and/or responsible subcontractor(s), supplier(s), and manufacturer(s), within ten (10) days after completion of the applicable item or work. Except for items put into use with District's permission, Contractor shall leave date of beginning of time of warranty until the date of completion is determined.
- B. Contractor shall verify that warranties are in proper form, contain full information, and are notarized, when required.
- C. Contractor shall co-execute submittals when required.
- D. Contractor shall retain warranties until time specified for submittal.

1.3. TIME OF SUBMITTALS

- A. For equipment or component parts of equipment put into service during construction with District's permission, Contractor shall submit a draft warranty for that equipment or component within ten (10) days after acceptance of that equipment or component.
- B. On or before the Contractor submits its final application for payment, Contractor shall submit all warranties and related documents in final form. The District will provide comments to Contractor and Contractor must revise the content of the warranties as required by District prior to District's approval of Contractor's final Application for Payment.
- C. For items of Work that are not completed until after the date of Completion, Contractor shall provide an updated warranty for those item(s) of Work within ten (10) days after acceptance, listing the date of acceptance as start of warranty period.

PART 2 – PRODUCTS (Not Used)

SECTION 01 78 39

RECORD DOCUMENTS

PART 1 – GENERAL (Not Used)

PART 2 – PRODUCTS

2.1 RECORD DRAWINGS - GENERAL

- A. "Record Drawings" may also be referred to in the Contract as "As-Built Drawings."
- B. As indicated in the Contract Documents, District will provide Contractor with one set of reproducible plans of the original Contract Drawings.
- C. Contractor shall maintain at each Project Site one (1) set of marked-up plans and shall transfer all changes and information to those marked-up plans, as often as required in the Contract Documents, but in no case less than once each month. Contractor shall submit to the Project Inspector one set of the Project Record Drawings ("As-Built") showing all changes incorporated into the Work since the preceding monthly submittal. The As-Built shall be available at the Project Site. The Contractor shall submit reproducible documents at the conclusion of the Project following review of the red-lined prints.
- D. Label and date each Record Drawing "RECORD DOCUMENT" in legibly printed letters.
- E. All deviations in construction, including but not limited to pipe and conduit locations and deviations caused by without limitation Change Orders, Construction Directives, RFI's, and Addenda, shall be accurately and legibly recorded by Contractor
- F. Locations and changes shall be done by Contractor in a neat and legible manner and, where applicable, indicated by drawing a "cloud" around the changed or additional information.

2.2 RECORD DRAWING INFORMATION

- A. Contractor shall record the following information:
 - 1. Locations of Work buried under or outside each building, including, without limitation, all utilities, plumbing and electrical lines, and conduits.
 - 2. Actual numbering of each electrical circuit.
 - 3. Locations of significant Work concealed inside each building whose general locations are changed from those shown on the Contract Drawings.
 - 4. Locations of all items, not necessarily concealed, which vary from the Contract Documents.
 - 5. Installed location of all cathodic protection anodes.
 - 6. Deviations from the sizes, locations, and other features of installations shown in the Contract Documents.
 - 7. Locations of underground work, points of connection with existing utilities, changes in direction, valves, manholes, catch basins, capped stubouts, invert elevations, etc.
 - 8. Sufficient information to locate Work concealed in each building with reasonable ease and accuracy.
- B. In some instances, this information may be recorded by dimension. In other instances, it may be recorded in relation to the spaces in the building near which it was installed.

- C. Contractor shall provide additional drawings as necessary for clarification.
- D. Contractor shall provide reproducible record drawings, made from final Shop Drawings marked "No Exceptions Taken" or "Approved as Noted."

2.3 RECORD SPECIFICATIONS

- A. Contractor shall mark each section legibly to record manufacturer, trade name, catalog number, and supplier of each Product and item of equipment actually installed.

PART 3 – EXECUTION

3.1 MAINTENANCE OF RECORD DOCUMENTS

- A. Contractor shall store Record Documents apart from documents used for construction as follows:
 - 1. Provide files and racks for storage of Record Documents.
 - 2. Maintain Record Documents in a clean, dry, legible condition and in good order.
- 3. Contractor shall not use Record Documents for construction purposes.

END OF SECTION

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SECTION 02 41 19

SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Demolition and removal of selected portions of building or structure.
2. Salvage of existing items to be reused or reinstalled.

B. Related Documents: The Conditions of the Contract and Division 1 apply to this section as fully as if repeated herein.

C. Related Requirements:

1. Section 01 11 00 "Summary of Work" for restrictions on the use of the premises, and Owner-occupancy requirements.
2. Section 01 73 29 "Cutting and Patching" for cutting and patching procedures.
3. Section 01 35 16 "Alteration Project Procedures" for general protection and work procedures for alteration projects.

1.2 DEFINITIONS

A. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged or removed and reinstalled.

B. Remove and Salvage: Carefully detach from existing construction, in a manner to prevent damage, and deliver to Owner.

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.

E. Dismantle: To remove by disassembling or detaching an item from a surface, using gentle methods and equipment to prevent damage to the item and surfaces; disposing of items unless indicated to be salvaged or reinstalled.

1.3 MATERIALS OWNERSHIP

A. Unless otherwise indicated, demolition waste becomes property of Contractor.

1.4 PREINSTALLATION MEETINGS

A. Predemolition Conference: Conduct conference at Project site.

1. Inspect and discuss condition of construction to be selectively demolished.

2. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
3. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
4. Review areas where existing construction is to remain and requires protection.
5. Review areas where existing construction is to be removed, salvaged, and reinstalled in the project.
6. Review areas where existing construction is to be removed and salvaged to the Owner.

1.5 INFORMATIONAL SUBMITTALS

- A. 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.
- B. Schedule of Selective Demolition Activities: Indicate the following:
 1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's on-site operations are uninterrupted.
 2. Interruption of utility services. Indicate how long utility services will be interrupted.
 3. Coordination for shutoff, capping, and continuation of utility services.
 4. Coordination of Owner's continuing occupancy of portions of existing buildings and existing adjacent buildings.
- C. Inventory: Submit a list of items to be removed and salvaged and deliver to Owner prior to start of demolition.
- D. Predemolition Photographs or Video: Show existing conditions of adjoining construction, including finish surfaces, that might be misconstrued as damage caused by demolition operations. Submit before Work begins.
- E. Warranties: Documentation indicating that existing warranties are still in effect after completion of selective demolition.

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 FIELD CONDITIONS

- A. Owner will occupy campus buildings immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.
- B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.

- D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
 - 1. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.
- E. Storage or sale of removed items or materials on-site is not permitted.
- F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
 - 1. Maintain fire-protection facilities in service during selective demolition operations.

1.8 COORDINATION

- A. Arrange selective demolition schedule so as not to interfere with Owner's operations.

PART 2 - PRODUCTS

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

- A. Verify that utilities have been disconnected and capped before starting selective demolition operations.
- B. Review Project Record Documents of existing construction or other existing condition and hazardous material information provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in Project Record Documents.
- C. Verify that hazardous materials have been remediated before proceeding with building demolition operations.
- D. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs or preconstruction videotapes.
 - 1. Inventory and record the condition of items to be removed and salvaged. Provide photographs or video of conditions that might be misconstrued as damage caused by salvage operations.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.
 - 1. Comply with requirements for existing services/systems interruptions specified in Section 01 11 00 "Summary of Work."
- B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.
 - 1. Owner will arrange to shut off indicated services/systems when requested by Contractor.
 - 2. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
 - 3. Disconnect, demolish, and remove plumbing, HVAC systems, electrical systems, equipment, and components indicated to be removed.
 - a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
 - b. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material and leave in place.
 - c. Equipment to Be Removed: Disconnect and cap services and remove equipment.
 - d. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
 - e. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.

3.3 PROTECTION

- A. Temporary Protection: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
 - 1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
 - 2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
 - 3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
 - 4. Cover and protect furniture, furnishings, and equipment that have not been removed.
 - 5. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Section 01 50 00 "Temporary Facilities and Controls."
- B. Remove temporary barricades and protections where hazards no longer exist.

3.4 SELECTIVE DEMOLITION, GENERAL

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:

1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
 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. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.
 5. Maintain adequate ventilation when using cutting torches.
 6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
 7. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
 8. Dispose of demolished items and materials promptly.
- B. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
1. Comply with requirements for access and protection specified in Section 01 50 00 "Temporary Facilities and Controls."
- C. Removed and Salvaged Items:
1. Clean salvaged items.
 2. Pack or crate items after cleaning. Identify contents of containers.
 3. Store items in a secure area until delivery to Owner.
 4. Transport items to Owner's storage area designated by Owner.
 5. Protect items from damage during transport and storage.
- D. Removed and Reinstalled Items:
1. Clean and repair items to functional condition adequate for intended reuse.
 2. Pack or crate items after cleaning and repairing. Identify contents of containers.
 3. Protect items from damage during transport and storage.
 4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.
- E. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

3.5 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

- A. Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals using power-driven saw, and then remove concrete between saw cuts.

- B. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, and then break up and remove.
- C. Resilient Floor Coverings: Remove floor coverings and adhesive according to recommendations in RFCI's "Recommended Work Practices for the Removal of Resilient Floor Coverings." Do not use methods requiring solvent-based adhesive strippers.

3.6 DISPOSAL OF DEMOLISHED MATERIALS

- A. General: Remove demolished materials from Project site and recycle or dispose of them in an EPA-approved construction and demolition waste landfill acceptable to authorities having jurisdiction.
 - 1. Do not allow demolished materials to accumulate on-site.
 - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
 - 3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
- B. Burning: Do not burn demolished materials.

3.7 CLEANING

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

3.8 SELECTIVE DEMOLITION SCHEDULE

- A. Existing Items to Be Removed:
 - 1. Designated (e) glued-on ceiling tile and all related accessories.
 - 2. Designated (e) surface-mounted lighting fixtures and all related accessories.
 - 3. Designated (e) wall tile.
 - 4. Designated (e) ceiling surface-mounted conduits.
 - 5. Designated (e) insulation and all related accessories.
 - 6. Designated portion of (e) carpeting.
 - 7. Designated (e) VCT flooring.
 - 8. Designated (e) casework, sink, and all related accessories.
 - 9. Designated (e) shelving.
 - 10. Designated (e) soap dispensers.
 - 11. Designated (e) power packs, occupancy sensors, and switches.
- B. Existing Items to Be Removed and Salvaged to Owner:
 - 1. Owner shall have option to remove and salvage items prior to turning site over to contractor.
- C. Existing Items to Be Removed and Reinstalled:
 - 1. Designated (e) ceiling fans.
 - 2. Designated (e) ceiling-mounted projector and mounting bracket.
 - 3. Designated (e) roller window shades.
 - 4. Designated (e) bookshelves.
 - 5. Designated (e) wall-mounted fire extinguishers; into new FEC.

6. Designated (e) cubby storage.
7. Designated (e) lighting controls.
8. Designated (e) clocks and speakers.

D. Existing Items to Remain:

1. Designated (e) wood furring.
2. Designated (e) mechanical ducts.
3. Designated (e) roof joist framing.
4. Designated (e) mechanical closets.
5. Designated (e) windows.
6. Designated (e) CMU walls.
7. Designated (e) carpeting.
8. Designated (e) wall-mounted clocks.
9. Designated (e) wall-mounted speakers.
10. Designated (e) ceiling fans.
11. Designated (e) ceiling-mounted projectors.
12. Designated (e) roller window shades.
13. Designated (e) 2x wall infill.
14. Designated (e) door and transom window.
15. Designated (e) 3/4" conduits from existing junction boxes to existing switches.
16. Designated (e) fan control switches.
17. Designated (e) speakers.

END OF SECTION

04/19/19

SECTION 03 30 53

MISCELLANEOUS CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes miscellaneous cast-in-place concrete for patching of concrete slab-on-grade construction, including reinforcement, concrete materials, mixture design, placement procedures, and finishes.
- B. Related Documents: The Conditions of the Contract and Division 1 apply to this section as fully as if repeated herein.

1.2 REFERENCES

- A. The editions of the specifications and standards referenced herein, published by the following organizations, apply to the work only to the extent specified by the reference. Refer to Section 01 42 00 for information concerning availability and use of references.

American Concrete Institute (ACI)
American Society for Testing and Materials (ASTM)

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Design Mixtures: For each concrete mixture.
- C. Mill Affidavits: Submit mill affidavits stating the grades and physical and chemical properties of the reinforcing steel, and conformance with ASTM specifications.

1.4 QUALITY ASSURANCE

- A. Ready-Mix-Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C94/C94M requirements for production facilities and equipment.

PART 2 - PRODUCTS

2.1 CONCRETE, GENERAL

- A. Comply with the following sections of ACI 301 unless modified by requirements in the Contract Documents:
 - 1. "General Requirements."
 - 2. "Formwork and Formwork Accessories."
 - 3. "Reinforcement and Reinforcement Supports."
 - 4. "Concrete Mixtures."

5. "Handling, Placing, and Constructing."

B. Comply with ACI 117.

2.2 STEEL REINFORCEMENT

A. Reinforcing Bars: ASTM A615/A615M, Grade 60, deformed.

B. Plain-Steel Tie Wire: ASTM A1064/A1064M, as drawn.

C. Accessories: Provide reinforcement accessories consisting of spacers, chairs, ties, and similar items as required for spacing, assembling, and supporting reinforcement in place.

2.3 CONCRETE MATERIALS

A. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from single source, and obtain admixtures from single source from single manufacturer.

B. Cementitious Materials:

1. Portland Cement: ASTM C150/C150M, Type II.
2. Fly Ash: ASTM C618, Class F. Limit use of pozzolan to not more than 15 percent of cement content by weight.

C. Normal-Weight Aggregate: ASTM C33/C33M, 1-inch nominal maximum aggregate size.

1. Fine Aggregate: Washed clean, uniformly screen graded, and contain not more than 2 percent by weight of deleterious materials such as shale, schist, alkali, clay lumps, earth, loam, mica or similar materials. Uniformly grade fine aggregate from fine to coarse.
2. Coarse Aggregate: Clean, hard, crushed rock or washed gravel, free from organic materials or soft or friable materials, contain not more than 2 percent by weight of shale or cherty material and not more than 15 percent by weight of elongated fragments. Maximum size aggregate shall be 1 inch.

D. Air-Entraining Admixture: ASTM C260/C260M.

E. Chemical Admixtures: Certified by manufacturer to be compatible with other admixtures and that do not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.

1. Water-Reducing Admixture: ASTM C494/C494M, Type A.
2. Retarding Admixture: ASTM C494/C494M, Type B.
3. Water-Reducing and Retarding Admixture: ASTM C494/C494M, Type D.
4. High-Range, Water-Reducing Admixture: ASTM C494/C494M, Type F.
5. High-Range, Water-Reducing and Retarding Admixture: ASTM C494/C494M, Type G.
6. Plasticizing and Retarding Admixture: ASTM C1017/C1017M, Type II.

F. Water: ASTM C94/C94M.

2.4 RELATED MATERIALS

- A. Joint-Filler Strips: ASTM D1751, asphalt-saturated cellulosic fiber, or ASTM D1752, cork or self-expanding cork.

2.5 CURING MATERIALS

- A. Evaporation Retarder: Waterborne, monomolecular film forming; manufactured for application to fresh concrete.
- B. Absorptive Cover: AASHTO M 182, Class 3, burlap cloth or cotton mats.
- C. Moisture-Retaining Cover: ASTM C171, polyethylene film or white burlap-polyethylene sheet.
- D. Water: Potable.
- E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C309, Type 1, Class B.

2.6 CONCRETE MIXTURES

- A. Comply with ACI 301.
- B. Normal-Weight Concrete:
 - 1. Minimum Compressive Strength: 3000 psi at 28 days.
 - 2. Maximum W/C Ratio: 0.45.
 - 3. Cementitious Materials: Use fly ash, pozzolan, as needed to reduce the total amount of portland cement, which would otherwise be used, by not less than 15 percent.
 - 4. Slump Limit: 4 inches plus or minus 1 inch.
 - 5. Air Content: Maintain within range permitted by ACI 301. Do not allow air content of trowel-finished floor slabs to exceed 3 percent.

2.7 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C94/C94M, and furnish batch ticket information.
 - 1. When air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.
- B. Project-Site Mixing Option: Measure, batch, and mix concrete materials and concrete according to ASTM C94/C94M. Mix concrete materials in appropriate drum-type batch machine mixer.
 - 1. For mixer capacity of 1 cu. yd. or smaller, continue mixing at least 1-1/2 minutes, but not more than 5 minutes after ingredients are in mixer, before any part of batch is released.
 - 2. For mixer capacity larger than 1 cu. yd., increase mixing time by 15 seconds for each additional 1 cu. yd.
 - 3. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mix type, mix time, quantity, and amount of water added. Record approximate location of final deposit in structure.

2.8 ADHESIVE ANCHORING SYSTEM FOR STEEL DOWELS IN CONCRETE

- A. Basis-of-Design Product: Hilti HIT-HY 100 Adhesive Anchoring System; ICC ESR-3574.
- B. System Components:
 - 1. Hilti HIT-HY 100 adhesive packaged in foil packs.
 - 2. Adhesive mixing and dispensing equipment.
 - 3. Hole cleaning equipment.
 - 4. A steel anchoring element.
- C. Hilti HIT-HY 100 Adhesive: An injectable hybrid adhesive combining urethane methacrylate resin, hardener, cement and water. The resin and cement are kept separate from the hardener and water by means of a dual-cylinder foil pack attached to a manifold. The two components combine and react when dispensed through a static mixing nozzle attached to the manifold.

PART 3 - EXECUTION

3.1 EMBEDDED ITEM INSTALLATION

- A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

3.2 STEEL REINFORCEMENT INSTALLATION

- A. Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.
- B. Bend and cut bars accurately. Bend bars cold; heating of bars not permitted. Do not bend or straighten bars in a manner that will injure the material.
- C. Placing: Place reinforcing steel in accordance with applicable requirements of references specified. Install reinforcement accurately and secure against movement.
 - 1. Reinforcing Supports: Support reinforcing bars above earth by concrete blocks or other approved non-corrodible supports. Space chairs and accessories to conform to CRSI's "Recommended Practice for Placing Bar Supports".
 - 2. Placing and Tying: Set reinforcing in place, space, and rigidly and securely tie or wire with 16 gage steel tie wire in the position directed.

3.3 JOINTS

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.
- C. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness, as follows:

1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch. Repeat grooving of contraction joints after applying surface finishes. Eliminate groover marks on concrete surfaces.
2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch-wide joints into concrete when cutting action does not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.

3.4 CONCRETE PLACEMENT

- A. Comply with ACI 301 for placing concrete.
- B. Do not add water to concrete during delivery, at Project site, or during placement.
- C. Consolidate concrete with mechanical vibrating equipment according to ACI 301.

3.5 FINISHING UNFORMED SURFACES

- A. General: Comply with ACI 302.1R for screeding, restraighening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Screed surfaces with a straightedge and strike off. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane before excess moisture or bleedwater appears on surface.
 1. Do not further disturb surfaces before starting finishing operations.
- C. Trowel and Fine-Broom Finish: Apply a partial trowel finish, stopping after second troweling, to surfaces indicated and to surfaces where ceramic tile is to be installed by either thickset or thinset methods. Immediately after second troweling, and when concrete is still plastic, slightly scarify surface with a fine broom.

3.6 CONCRETE PROTECTING AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and with ACI 305.1 for hot-weather protection during curing.
- B. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- C. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.
- D. Curing Methods: Cure formed and unformed concrete for at least seven days by one or a combination of the following methods:
 1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
 - a. Water.
 - b. Continuous water-fog spray.

- c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.
- 2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period, using cover material and waterproof tape.
- 3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.
- 4. Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.

3.7 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
- B. Tests: Perform according to ACI 301.
 - 1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture exceeding 5 cu. yd., but less than 25 cu. yd., plus one set for each additional 50 cu. yd. or fraction thereof.
 - 2. Testing Frequency: Obtain at least one composite sample for each 100 cu. yd. or fraction thereof of each concrete mixture placed each day.

END OF SECTION

04/19/19

SECTION 06 10 53

MISCELLANEOUS ROUGH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Wood blocking and nailers.

B. Related Documents: The Conditions of the Contract and Division 1 apply to this section as fully as if repeated herein.

1.2 DEFINITIONS

A. Boards or Strips: Lumber of less than 2 inches nominal size in least dimension.

B. Dimension Lumber: Lumber of 2 inches nominal or greater size but less than 5 inches nominal size in least dimension.

C. Lumber grading agencies, and the abbreviations used to reference them, include the following:

1. RIS: Redwood Inspection Service.
2. WCLIB: West Coast Lumber Inspection Bureau.
3. WWPA: Western Wood Products Association.

1.3 REFERENCES

A. The editions of the specifications and standards referenced herein, published by the following organizations, apply to the stone facing only to the extent specified by the reference. Refer to Section 01 42 00 for information concerning availability and use of references.

APA-The Engineered Wood Association (APA)
American Society for Testing and Materials (ASTM International)
American Wood-Preservers' Association (AWPA)
Redwood Inspection Service (RIS)
U.S. Department of Commerce Product Standard (PS)
West Coast Lumber Inspection Bureau (WCLIB)
Western Wood Products Association (WWPA)
Redwood Inspection Service (RIS)

1.4 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.
2. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.

B. Submittal procedures and quantities are specified in Section 01 33 00.

1.5 INFORMATIONAL SUBMITTALS

A. Evaluation Reports: For the following, from ICC-ES:

1. Preservative-treated wood.

B. Submittal procedures and quantities are specified in Section 01 33 00.

1.6 QUALITY ASSURANCE

A. Requirements of Regulatory Agencies:

1. Rough carpentry shall conform to the 2016 California Building Code (CBC) Title 24 Part 2, Chapter 23 - Wood.

B. Grade Marks:

1. Identify each piece of structural lumber, by the official grade mark of WCLIB, or WWPA. Provide qualified lumber grader at the site to stamp members that are not mill stamped.
2. Identify pressure preservative treated lumber with the official grade mark of an independent Testing Agency operating under the overview of the ALSC. Grade stamp shall state retention; statements on grade stamp such as "or to refusal" are not permitted.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to the site in an undamaged condition.

B. Store lumber at the site under cover or otherwise protected against exposure to weather, raised above the ground and out of contact with other damp or wet surfaces.

C. Stack lumber and provide for air circulation within and around the stacks and under temporary coverings.

D. For pressure treated lumber, provide spacers between courses to permit air circulation.

1.8 PROJECT CONDITIONS

A. Cooperate with other trades in coordinating their work with the work of this section. Provide blocking and nailers where indicated or as required for integration of work of other trades into the structure.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

- A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.
 - 1. Factory mark each piece of lumber with grade stamp of grading agency.
 - 2. Dress lumber, S4S, unless otherwise indicated.
- B. Maximum Moisture Content of Lumber:
 - 1. Untreated Lumber: Maximum 19 percent except 25 percent for timbers 5" by 5" in size or larger.
 - 2. Treated Lumber: Maximum 19 percent, except 23 percent for timbers 5" by 5" in size or larger, after pressure treatment.

2.2 WOOD-PRESERVATIVE-TREATED MATERIALS

- A. Preservative Treatment by Pressure Process: AWWA U1; Use Category UC2 for interior construction not in contact with ground.
 - 1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium. Do not use inorganic boron (SBX) for sill plates.
- B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or does not comply with requirements for untreated material.
- C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.
- D. Application: Treat all miscellaneous carpentry unless otherwise indicated.

2.3 MISCELLANEOUS LUMBER

- A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:
 - 1. Blocking.
 - 2. Nailers.
- B. Dimension Lumber Items: Construction or No. 2 grade lumber of any of the following species:
 - 1. Hem-fir (north); NLGA.
 - 2. Mixed southern pine or southern pine; SPIB.
 - 3. Spruce-pine-fir; NLGA.
 - 4. Hem-fir; WCLIB or WWPA.
 - 5. Spruce-pine-fir (south); WCLIB, or WWPA.
 - 6. Western woods; WCLIB or WWPA.

- C. Concealed Boards: 19 percent maximum moisture content of any of the following species and grades:
 - 1. Western woods, Construction or No. 2 Common grade; WCLIB or WWPA.
- D. For blocking not used for attachment of other construction, Utility, Stud, or No. 3 grade lumber of any species may be used provided that it is cut and selected to eliminate defects that will interfere with its attachment and purpose.
- E. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.

2.4 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.
 - 1. Where carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M, or of Type 304 stainless steel.
- B. Nails, Brads, and Staples: ASTM F 1667.
- C. Screws for Fastening to Metal Framing: ASTM C 1002 or ASTM C 954, length as recommended by screw manufacturer for material being fastened.
- D. Power-Driven Fasteners: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.
- B. Set carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit carpentry accurately to other construction. Locate furring, nailers, blocking, and similar supports to comply with requirements for attaching other construction.
- C. Do not splice structural members between supports unless otherwise indicated.
- D. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.
 - 1. Provide metal clips for fastening gypsum board at corners and intersections where framing or blocking does not provide a surface for fastening edges of panels. Space clips not more than 16 inches on center.
- E. Provide fire blocking in furred spaces, stud spaces, and other concealed cavities as indicated and as follows:

1. Fire block furred spaces of walls, at ceiling, and at not more than 96 inches on center with solid wood blocking or noncombustible materials accurately fitted to close furred spaces.
 - F. Sort and select lumber so that natural characteristics do not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.
 - G. Comply with AWP A M4 for applying field treatment to cut surfaces of preservative-treated lumber.
 1. Use inorganic boron for items that are continuously protected from liquid water.
 2. Use copper naphthenate for items not continuously protected from liquid water.
 - H. Securely attach carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
 1. Table 2304.10.1, "Fastening Schedule," in 2016 California Building Code.
 2. ICC-ES evaluation report for fastener.
 - I. Use steel common nails unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood. Drive nails snug but do not countersink nail heads unless otherwise indicated.
- 3.2 INSTALLATION OF WOOD BLOCKING AND NAILERS
- A. Install where indicated and where required for attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.
 - B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces unless otherwise indicated.

END OF SECTION

04/19/19

SECTION 06 41 16

PLASTIC-LAMINATE-FACED ARCHITECTURAL CABINETS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Plastic laminate-faced architectural cabinets.
2. Wood furring, blocking, shims, and hanging strips for installing plastic-laminate-faced architectural cabinets that are not concealed within other construction before cabinet installation.

B. Related Documents: The Conditions of the Contract and Division 1 apply to this section as fully as if repeated herein.

C. Related Sections:

1. Section 06 10 00 "Rough Carpentry" for wood furring, blocking, shims, and hanging strips required for installing cabinets and concealed within other construction before cabinet installation.
2. Section 09 22 16 "Non-Structural Metal Framing."

1.2 REFERENCES

A. The editions of the specifications and standards referenced herein, published by the following organizations, apply to the work only to the extent specified by the reference. Refer to Section 01 42 00 for information concerning availability and use of references.

American Iron and Steel Institute (AISI)

American Society for Testing and Materials (ASTM International)

National Electrical Manufacturers' Association (NEMA)

U.S. Department of Commerce (DOC)

Woodwork Institute:

1. *WI – North American Architectural Woodwork Standards (NAAWS), Current Edition.*

1.3 COORDINATION

A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that cabinets can be supported and installed as indicated.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

B. Before framing is completed, hold a meeting of the contractor, the casework manufacturer, casework installer and the framing contractor.

1. Review the locations of backing required for casework installation as shown on the casework shop drawings.
2. Review the method of attachment of the backing to the wall system as shown on the architectural drawings.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product, including panel products, high-pressure decorative laminate, adhesive for bonding plastic laminate, and cabinet hardware and accessories.
- B. Shop Drawings:
 1. Submit Shop Drawings showing list of materials and hardware, sizes, sections, elevations and details of construction and assembly as required by Woodwork Institute *North American Architectural Woodwork Standards 3.1*, Section 1 – Submittals.
 2. Indicate grounds, backing, blocking, sleepers and other items required for the installation of cabinet work which are to be furnished and installed as part of the structure.
- C. Samples for Initial Selection:
 1. Plastic Laminate: Submit samples of each type of plastic laminate, including complete color and pattern range and surface finish.
- D. Samples for Verification:
 1. Plastic laminates, 8 by 10 inches, for each type, color, pattern, and surface finish, with one sample applied to core material, and specified edge material applied to one edge.
 2. Exposed Cabinet Hardware: Submit one unit of each type and finish. Approved samples may be used in the work.
- E. Submittal procedures and quantities are specified in Section 01 33 00.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer and fabricator.
- B. Product Certificates: For the following:
 1. Composite wood and agrifiber products.
 2. Thermoset decorative panels.
 3. High-pressure decorative laminate.
 4. Adhesives.

1.7 QUALITY ASSURANCE

- A. Fabricator Qualifications: Shop that employs skilled workers who custom fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.

- B. Installer Qualifications: Fabricator of products.
- C. Regulatory Requirements: Wall hung cabinets and floor supported cabinets over 5 feet high shall be braced and anchored in accordance with the 2016 California Building Code (CBC) Title 24 Part 2.
- D. Manufacturing Standards:
 - 1. Cabinets: Manufacture plastic laminate clad cabinet work in accordance with Woodwork Institute *North American Architectural Woodwork Standards 3.1*, latest edition, Section 10, Casework - Laminated Plastic, Custom Grade, except as modified herein.
 - 2. Plastic Laminate Countertops: Manufacture plastic laminate countertops in accordance with Woodwork Institute *North American Architectural Woodwork Standards 3.1*, latest edition, Section 11, Countertops - Laminated Plastic, Custom Grade.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Do not deliver cabinets until painting and similar finish operations that might damage architectural cabinets have been completed in installation areas. Store cabinets in installation areas or in areas where environmental conditions comply with requirements specified in "Field Conditions" Article.
- B. Do not deliver materials until project construction is ready for installation. Provide a clean storage area as required by Woodwork Institute *North American Architectural Woodwork Standards 3.1*, Section 2 – Care and Storage.

1.9 FIELD CONDITIONS

- A. Environmental Limitations: Do not deliver or install cabinets until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.
- B. Field Measurements: Where cabinets are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
 - 1. Locate concealed framing, blocking, and reinforcements that support cabinets by field measurements before being enclosed, and indicate measurements on Shop Drawings.

PART 2 - PRODUCTS

2.1 PLASTIC-LAMINATE-FACED ARCHITECTURAL CABINETS

- A. Quality Standard: Unless otherwise indicated, comply with the WI "NAAWS" for grades of architectural plastic-laminate cabinets indicated for construction, finishes, installation, and other requirements.
- B. Grade: NAAWS Custom Grade.

- C. Type of Construction: *NAAWS* Construction Type A - Frameless.
- D. Cabinet, Door, and Drawer Front Interface Style: Flush overlay.

2.2 MATERIALS

- A. Plastic Laminate: Meet the requirements of NEMA LD3.
 - 1. Horizontal Surfaces: NEMA GP 50 high pressure plastic laminate, nominal 0.050-inch thick, except where postforming type is required provide NEMA PF-42, nominal 0.042-inch thick, conforming to Woodwork Institute *NAAWS*, Section 4, Article 4.4.7, and Section 10, Article 10.4.5.
 - 2. Vertical Surfaces: NEMA GP-28, nominal 0.028-inch thick.
 - 3. Cabinet Liners: Comply with Woodwork Institute *NAAWS*, Section 10 for Grade specified.
 - 4. Backing Sheets: Comply with Woodwork Institute *NAAWS*, Section 10 for Grade specified.
 - 5. Surface Finish: Satin finish.
 - 6. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:
 - a. As selected by Architect from laminate manufacturer's full range in the following categories:
 - 1) Solid colors: Satin or matte finish.
 - 2) Wood grains: Satin or matte finish.
 - 3) Patterns: Satin or matte finish.
 - 7. Pattern Direction: Vertically for drawer fronts, doors, and fixed panels.
 - 8. Acceptable manufacturers or equal:

Formica Corporation
Micarta Div.
Nevamar Corporation
Wilsonart International, Inc.
- B. Core: Combination Core Plywood.
 - 1. Basis of Design Product: Raw, 2 Step ArmorCore® "Blank" panels by States Industries LLC; www.StatesInd.com; or ClassicCore® by Columbia Forest Products.
 - a. Description: ArmorCore panels combine the low weight and high strength advantages of veneer cored panels with the superior flatness and higher density of Medium Density Fiberboard. ArmorCore panels are stiffer, lighter, and stronger than composition panels of equivalent thickness, yet the MDF crossbands match the best composition surface characteristics.
 - b. Performance Specifications:
 - 1) MOE: 630,200 lb/in²
 - 2) MOR: 4,922 lb/in²
 - 3) Screw holding, face: 324 lbf.
 - 4) Screw holding, edge: 271 lbf.
 - 5) Weight: 2,656 lbs per MSF of 3/4"
 - 6) Thickness tolerance: +0; -3/64"
 - c. Panel thickness: As shown on drawings.
- C. Lumber: In accordance with the North American Architectural Woodwork Standards Grade specified for the product being fabricated. Moisture Content: 6% to 12% for boards up to 2-inch nominal thickness, and shall not exceed 19% for thicker pieces.

- D. Hardboard: Meet or exceed Commercial Standard CS-251 and Fed. Spec. LLL-B-00810, tempered, 1/4-inch thick, smooth both sides. Pre-finish exposed surfaces in color to match cabinet interior, pre-finish opposite surface with neutral color balance coating.
- E. Visible Edges, Exposed and Semi-Exposed: 3mm purified PVC edge bands of size to suit material thickness. Color(s) as selected by Architect from manufacturer's full range. Hot melt apply to edges of cabinet ends, shelves, doors, and drawer fronts.
- F. Stainless Steel: AISI 18 8, Type 302 or 304 with a No. 4 satin finish.

2.3 CABINET HARDWARE AND ACCESSORIES

- A. Hinges: Woodwork Institute Grade 1 as approved for schools and hospitals. Acceptable products or equal:

Rockford Process Control; No. 376 or No. 456

- B. Wire Pulls: Back-mounted, "U" shaped stainless steel, nominal 4" long, 5/16 inch in diameter, US 32D finish. Acceptable products or equal:

Trimco; 562 Series
Doug Mocket & Company; No. DP57B

- C. Catches:

- 1. Doors Without Locks: Magnetic type with aluminum case. Acceptable products or equal:

Amerock; #9765
Epco; No. EP591

- 2. Inactive Leaf of Pairs of Doors With Locks: Elbow catch. Acceptable products or equal:

Amerock; No. B238-14A
Ives 2A-92

- D. Drawer Slides: Full extension type with no deflection, with rolling balls, steel rollers and self-lubricating bearings. For drawers 18-inches wide and less, provide slides with 100-pound capacity. For drawers over 18-inches in width provide slides with 150-pound capacity. Provide drawer slides that have mechanical stops designed to prevent accidental removal of the drawer. Acceptable manufacturers or equal:

Accuride
Grant Hardware Company
Knape & Vogt

- E. Shelf Rests for Bored Hole Shelf Support System: BHMA A156.9, B04013; plastic locking shelf support, 1/4" pin length. Acceptable product or equal:

K&V 339 Series for 3/4" shelves; 340 Series for 1" shelves.

- F. Screws: Straight shank double thread particleboard screws.

2.4 MISCELLANEOUS MATERIALS

- A. Furring, Blocking, Shims, and Hanging Strips: Softwood or hardwood lumber, kiln dried to less than 15 percent moisture content.
- B. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide metal expansion sleeves or expansion bolts for post-installed anchors. Use nonferrous-metal or hot-dip galvanized anchors and inserts at inside face of exterior walls and at floors.
- C. Adhesives: Use adhesives that meet the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.5 FABRICATION

- A. Fabricate cabinets to dimensions, profiles, and details indicated.
- B. Complete fabrication, including assembly and hardware application, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.
- C. Shop-cut openings to maximum extent possible to receive hardware, appliances, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.
- D. Cabinets: Fabricate cabinets to meet Woodwork Institute *North American Architectural Woodwork Standards 3.1*, Construction Type A - Frameless, Style 1 - Flush overlay. Close gaps at walls with filler panels not to exceed 3-inches wide.
 - 1. Semi-Exposed Surfaces: Finish semi-exposed surfaces of open cabinets to match exposed surfaces.
 - 2. Cabinet interiors (other than semi-exposed surfaces) including faces of shelving therein, and interior door faces: Finish with cabinet liner as specified herein, color as selected by the Architect.
- E. Drawer Boxes: Provide with subfronts and applied finish fronts securely fastened, with square corners, edges finished with plastic laminate or 3mm purified PVC. Provide drawers with metal slides as specified.
- F. Doors: Flush overlay type, hinged to swing flat against the face of adjoining cabinet or the side of cabinet, with square corners, and edges finished with plastic laminate or 3mm purified PVC. Notch door or cabinet ends, or divisions to receive hinge.
- G. Door and Drawer Fronts: Vertical grade plastic laminate covered. Core material shall be as specified in paragraph 2.2.B. Finish exposed edges with plastic laminate or 3mm purified PVC, color as selected by the Architect, hot-melt applied.
- H. Shelves: Comply with Woodwork Institute *North American Architectural Woodwork Standards 3.1* and Technical Bulletin 435 for 50 pound per square foot load test.
- I. Toe Kick Base:
 - 1. Toe Kick at Sink Cabinets: Fabricate of 16-gage stainless steel with No. 4 finish, profile to match profile of adjacent base cabinets.

2. Typical Cabinets: Furnished and installed under Section 09 65 00.
- J. Countertops and Splashes:
1. Plastic Laminate Countertops: Custom Grade in accordance with Woodwork Institute *North American Architectural Woodwork Standards 3.1*, Section 11, plastic laminate covered, including square butt top, exposed edges and ends self-edged. Core material: As specified in paragraph 2.2.B.
 2. Front edges: Self Edgeband with Narrow Build Up.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verification of conditions: Verify that mechanical, electrical, plumbing, and other building components affecting work in this section are in place and ready.

3.2 PREPARATION

- A. Before installation, condition cabinets to average prevailing humidity conditions in installation areas.
- B. Before installing cabinets, examine shop-fabricated work for completion and complete work as required.

3.3 INSTALLATION

- A. General: Install work as specified in Woodwork Institute *North American Architectural Woodwork Standards*.
- B. Grade: Install cabinets to comply with same grade as item to be installed.
- C. Assemble cabinets and complete fabrication at Project site to the extent that it was not completed in the shop.
- D. Install cabinets plumb, level, true and straight with no distortions. Shim as required using concealed shims. Install level and plumb to a tolerance of 1/8 inch in 96 inches.
- E. Scribe and cut cabinets to fit adjoining work, refinish cut surfaces, and repair damaged at finished cuts.
- F. Secure to ground, stripping, blocking with countersunk, concealed fasteners. Install without distortion so that doors and drawers fit openings and are accurately aligned.
- G. Base Cabinets: Set cabinets straight, plumb, and level. Adjust sub-tops within 1/16-inch of a single plane. Fasten each individual cabinet to floor at toe space, with fasteners spaced 24-inches on center. Bolt continuous cabinets together. Secure individual cabinets with not less than 2 fasteners into floor, where they do not adjoin other cabinets.
1. Where required, assemble units into one integral unit with joints flush, tight, and uniform. Align similar adjoining doors and drawers to a tolerance of 1/16-inch.

- H. Wall Cabinets: Securely fasten to solid supporting material, not plaster, lath, or gypsum board. Anchor, adjust, and align wall cabinets as specified for base cabinets.
 - 1. Reinforcement of stud walls to support wall-mounted cabinets specified in appropriate section, but responsibility for accurate location and sizing of reinforcement shall be coordinated with applicable trade.
- I. Adjust casework and hardware so that doors and drawers operate smoothly without warp or bind. Lubricate operating hardware as recommended by manufacturer.
- J. Install finish hardware after all finish work has been completed. Inspect drilling operations for surface splinters or delaminations. Pieces bearing such imperfections will be rejected.

3.4 INSTALLATION OF TOPS

- A. Field Jointing: Where practicable, make in same manner as factory jointing using doweled, splines, adhesives, and fasteners recommended by manufacturer. Locate field joints as shown on accepted shop drawings; factory prepared so there is no project site processing of top and edge surfaces.
- B. Fastening: Use concealed clamping devices for field joints located within 6-inches of front, at back edges and at intervals not exceeding 24-inches. Tighten in accordance with manufacturer's instructions to exert a constant, heavy clamping pressure at joints. Secure tops to cabinets with "Z" type fasteners or equal, using 2 or more fasteners at each front, end, and back.
- C. Workmanship: Abut tops and edge surfaces in one true plane, with internal supports placed to prevent any deflection. Provide flush hairline joints in top units using clamping devices. At joints in epoxy tops, use manufacturer's recommended adhesives and holding devices to provide joint widths not more than 1/16-inch wide at any location, completely filled and flush with abutting edges.
 - 1. After installation, carefully dress joints smooth, remove surface scratches, clean and polish entire surface.
 - 2. Provide holes and cutouts as required for mechanical and electrical work.
 - 3. Provide scribe moldings for closures at junctures of top, curb and splash with walls as recommended by manufacturer for materials involved. Use chemical resistant, permanently elastic sealing compound where recommended by manufacturer.
- D. Plastic Laminate Countertops:
 - 1. Where no splash occurs, scribe the back edge of the counter top to the wall.
 - 2. Secure joints in the counter tops with draw bolts, sized and spaced as recommended by Woodwork Institute for Custom Grade counter tops.
 - 3. Apply adhesive using cold-press method and a pressure of not less than 30 psi.
- E. Coordinate work with Divisions 22 and 26 for Plumbing and Electrical work to be integrated into casework.

3.5 ADJUSTING AND CLEANING

- A. Repair damaged and defective cabinets, where possible, to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.

- B. Clean, lubricate, and adjust hardware.
- C. Clean cabinets on exposed and semiexposed surfaces.

END OF SECTION

04/19/19

SECTION 06 64 00

FRP PANELING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Fiberglass Reinforced Plastic (FRP) panels for adhesive mounting.
2. Moldings, adhesive, and joint sealants.

B. Related Documents: The Conditions of the Contract and Division 1 apply to this section as fully as if repeated herein.

C. Related Requirements:

1. Section 09 29 00 "Gypsum Board" for gypsum board finish levels behind paneling.

1.2 REFERENCES

A. ASTM International:

1. ASTM D2583 - Standard Test Method for Indentation Hardness of Rigid Plastics by Means of a Barcol Impressor.
2. ASTM D5319 - Standard Specification for Glass-Fiber Reinforced Plastic Wall and Ceiling Panels.
3. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Product Data: Manufacturer's data sheets on each product to be used, including:

1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.
3. Installation methods.
4. Material Safety Data Sheets (MSDS) for each type of adhesive and sealant recommended for installation.

C. Selection Samples:

1. For each finish specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.
2. Two complete sets of standard trim shapes.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance Instructions: For FRP paneling, to include in maintenance manuals.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who has completed installation of fiberglass reinforced panels similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
- B. Manufacturer Qualifications: A firm experienced in manufacturing fiberglass reinforced panels similar to those required for this Project and with a record of successful in-service performance.
- C. Source Limitations: Obtain each color, grade, finish, and type of fiberglass reinforced panels from a single source with resources to provide components of consistent quality in appearance and physical properties.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact. Package sheets on skids or pallets for shipment to project site.
- B. Store wall surface-protection materials in original undamaged packages and containers inside a well-ventilated area protected from weather, moisture, soiling, extreme temperatures, and humidity.
 - 1. Store products indoors and protect from moisture, construction traffic and damage.
 - 2. Store panels flat on clean, dry surface. Do not stand on edge or stack on fresh concrete or other surfaces that emit moisture.
 - 3. Store panels at least 24 hours with temperature and humidity conditions approximating the average environment of the finished room.
- C. Handling: Remove foreign matter from face of panel by use of a soft bristle brush, avoiding abrasive action.

1.7 PROJECT CONDITIONS

- A. Environmental Requirements:
 - 1. Installation shall not begin until building is enclosed and residual moisture from plaster, concrete or terrazzo work has dissipated.
 - 2. During installation and for not less than 48 hours before, maintain an ambient temperature and relative humidity within limits required by type of adhesive used and recommendation of adhesive manufacturer.
 - 3. Provide ventilation to disperse fumes during application of adhesive as recommended by adhesive manufacturer.
- B. Field Measurements: Verify actual measurements and openings by field measurements before fabrication. Coordinate field measurements and fabrication schedule with construction progress to avoid construction delays.

1.8 WARRANTY

- A. Furnish one year guarantee against defects in material and workmanship.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain plastic paneling and trim accessories from single manufacturer.
- B. Available Manufacturers: Subject to compliance with requirements, provide the following:
 - 1. Crane Composites Inc.; www.cranecomposites.com; Sequentia® StructoGlas FRP panels or comparable products from one of the following manufacturers:
 - a. Marlite; www.marlite.com
 - b. Nudo Products; www.nudo.com

2.2 PLASTIC SHEET PANELING

- A. Glass-Fiber-Reinforced Plastic Paneling: Gelcoat-finished, glass-fiber-reinforced plastic panels complying with ASTM D 5319.
- B. Panel Size:
 - 1. Wall Panel Width: 48 inches to conform to wainscot height indicated.
 - 2. Wall Panel Length: 96 inches, 108 inches, 120 inches or 144 inches, as required to conform to wall width indicated on the drawings. Provide full-length panels from corner to corner unless substrate dimensions exceed available fabricated size.
- C. Nominal Thickness: Standard Panels: 3/32 inch.
- D. Dimensional Tolerances:
 - 1. Width and Length: 1/8 inch.
 - 2. Thickness: +/- 10%.
 - 3. Squareness: Not more than 1/8 inch out of square.
- E. Panel Finish:
 - 1. Exposed Surface: Pebble-like embossed finish.
 - 2. Back Surface: Smooth. Imperfections that do not affect functional properties are not cause for rejection.
 - 3. Color: Uniform throughout. As selected by the Architect from manufacturer's standard range of colors.
- F. Panel Physical Properties: Provide products with the following properties:
- G. Surface Burning Classification: Class A.
 - 1. Flame Spread Index (ASTM E84): 25 or less;
 - 2. Smoke-Developed Index (ASTM E84): 450 or less.

2.3 ACCESSORIES

- A. Trim Accessories: Provide panel manufacturer's standard vinyl moldings to meet project conditions. Provide division bar, inside corner, outside corner and end cap.
 - 1. 0.09 inch Contractor Trim: Match panel color.
- B. Adhesives as recommended by fiberglass reinforced panels manufacturer:

1. Porous Surfaces: A high-quality, low-odor, non-flammable latex-based fiberglass reinforced panels adhesive for application over approved porous surfaces such as drywall or plywood. The adhesive shall meet low V.O.C requirements. Provide Marlite Brand C- 551 Fiberglass Reinforced Panel Adhesive (Latex based) adhesive, Henry's or approved alternate adhesives.
 2. Non-Porous Surfaces: A strong, flexible, moisture-resistant, all-purpose adhesive formulated for fast, easy application over many non-porous surfaces. Synthetic rubber base remains pliable to compensate for movement of structural surfaces up to 1/8". The adhesive shall meet low V.O.C requirements. Provide adhesive recommended by manufacturer.
- C. Sealant as recommended by fiberglass reinforced panel manufacturer:
1. Clear or White as selected by Architect. Waterproof sealants for interior or exterior use. The sealant shall meet low V.O.C requirements.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean substrates of substances that could impair adhesive bond, including oil, grease, dirt, and dust.
- B. Condition panels by unpacking and placing in installation space before installation according to manufacturer's written recommendations.
- C. Lay out paneling before installing. Locate panel joints to provide equal panels at ends of walls not less than half the width of full panels.
 1. Mark plumb lines on substrate at trim accessory and panel joint locations for accurate installation.
 2. Locate trim accessories to allow clearance at panel edges according to manufacturer's written instructions.

3.3 INSTALLATION

- A. Fiberglass Reinforced Plastic Panel Installation:
 1. Cut panels with carbide tipped saw blades, or cut with snips.
 2. Install panels with manufacturer's recommended gap for panel field and corner joints.
 3. For trowel type and application of adhesive, follow adhesive manufacturer's recommendations.
 4. Using products acceptable to panel manufacturer, install fiberglass reinforced panels in accordance with panel manufacturer's printed instructions. Comply with panel manufacturer's Installation Guide.

- B. Use adhesives recommended by the panel manufacturer unless prohibited by local regulations; obtain manufacturer's approval of alternative adhesives.
- C. Install continuous bead of silicone sealant in each joint and trim groove and between trim and adjacent construction, maintaining 1/8 inch expansion space.
- D. Avoid contamination of panel faces with adhesives, solvents, or cleaners; clean as necessary and replace if not possible to repair to original condition.
- E. Protect installed products until completion of project.
- F. Touch-up, repair or replace damaged products after Substantial Completion.

END OF SECTION

04/19/19

SECTION 07 92 00

JOINT SEALANTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Sealant work, except as otherwise specified, required to weatherproof the buildings, and including interior sealant work. This section contains requirements pertaining to all weather and interior sealant work throughout the project and becomes a part of each and every section calling for sealant and caulking, unless otherwise specified, as though written in full in each section.
- B. Related Documents: The Conditions of the Contract and Division 1 apply to this section as fully as if repeated herein.
- C. Related Sections:
 - 1. Section 09 29 00 "Gypsum Board" for sealing perimeter systems.

1.2 REFERENCES

- A. The editions of American Society for Testing and Materials (ASTM International) Standards referenced herein apply to the work only to the extent specified by the reference thereto. Refer to Section 01 42 00 for information concerning availability and use of references.

1.3 ACTION SUBMITTALS

- A. Product Data: For each joint sealant product. Submit copies of manufacturer's specifications, recommendations and installation instructions for each type of sealant and related material required.
- B. Samples: Submit samples indicating the color range available for each sealant material intended for installation in locations exposed to view. Materials installed before approval of color will be subject to removal and replacement with approved material.
- C. Joint-Sealant Schedule: Include the following information:
 - 1. Joint-sealant application, joint location, and designation.
 - 2. Joint-sealant manufacturer and product name.
 - 3. Joint-sealant formulation.
 - 4. Joint-sealant color.
- D. Submittal procedures and quantities are specified in Section 01 33 00.

1.4 INFORMATIONAL SUBMITTALS

- A. Product Test Reports: For each kind of joint sealant, for tests performed by a qualified testing agency.

1. Include manufacturer's letter of certification, or certified test reports indicating that each material complies with the requirements specified herein and is suitable for the applications indicated.
2. Include manufacturer's letter of certification indicating that sealants, primers and cleaners comply with regulations controlling use of volatile organic compounds.

1.5 QUALITY ASSURANCE

- A. **Manufacturer's Qualifications:** Obtain joint sealants from a single manufacturer for each different product required. Obtain elastomeric sealants only from manufacturers who will, if required by the Architect, send a qualified technical representative to the Project site to advise the installer of proper procedures and precautions for the use of these materials.
- B. **Installer's Qualifications:** Employ a firm having a minimum of 5 years successful experience in the application of the types of materials required.
- C. **Regulatory Requirements.** The quantity of volatile organic compounds (VOC) used in sealants, primers and cleaners shall not exceed the limits permitted under the current regulations for architectural coatings of the Bay Area Air Quality Management District.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver sealants to the Project site in unopened containers, labeled with the manufacturer's name, brand designation, color, expiration period for use, pot life, curing time, and mixing instructions for multi component materials.
- B. Store sealants in an area where they will not be subject to temperatures above 100 degrees F or below 40 degrees F. Do not store materials that have exceeded the manufacturer's recommended shelf life.

1.7 FIELD CONDITIONS

- A. 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.
 2. When joint substrates are wet.
 3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
 4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.8 WARRANTY

- A. Provide an extended warranty under the provisions of Section 01 78 36.
- B. **Special Installer's Warranty:** Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
 1. **Warranty Period:** Five years from date of Substantial Completion.

- C. Special Manufacturer's Warranty: Manufacturer agrees to furnish joint sealants to repair or replace those joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
 - 1. Warranty Period: Five years from date of Substantial Completion.
- D. Special warranties specified in this article exclude deterioration or failure of joint sealants from the following:
 - 1. Movement of the structure caused by stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression.
 - 2. Disintegration of joint substrates from 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 JOINT SEALANTS, 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 joint-sealant manufacturer, based on testing and field experience.
- B. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

2.2 SEALANT MATERIALS

- A. Type A Sealant: Multiple component, self-leveling polyurethane based sealant meeting the requirements of ASTM C920, Type M, Grade P, Class 25. Acceptable products or equal:
 - Pecora Corp.; Urexpam NR-200
 - Sika Corp.; Sikaflex-2c-SL
 - Sonneborn Building Products; Sonolastic SL 2
 - Tremco, Inc.; Vulkem 445 SSL
- B. Type B Sealant: Single or multiple component, nonsag polyurethane based sealant meeting the requirements of ASTM C920, Type S or M, Grade NS, Class 25. Do not use single component sealants when excessive movement is expected within the curing time of the sealant. Acceptable products or equal:
 - BASF MasterSeal NP 1 or NP 2
 - Pecora Corp.; Dynatrol I or II
 - Sika Corp.; Sikaflex 1a or 2c-NS Ez-Mix
 - Tremco; Dymonic FC or Dymetric 240 FC
- C. Type C Sealant: Butyl rubber based sealant meeting the requirements of ASTM C920, Type S, Grade NS, Class 7.5. Acceptable products or equal:
 - Adco Seal; No. B-100
 - Pecora Corp.; BC-158
 - PTI Sealants; PTI 757
 - Tremco; Butyl Sealant

- D. Type D Sealant: Latex acrylic based sealant meeting the requirements of ASTM C834. Acceptable products or equal:
- Pecora Corp.; AC-20
Sonneborn Building Products; Sonolac
Tremco; Acrylic Latex 834
- E. Type E Sealant: Medium modulus silicone sealant meeting the requirements of ASTM C920, Type S, Grade NS, Class 50. Acceptable products or equal:
- Dow Corning Corp.; No. 795
Momentive; Silpruf SCS 2000
Sika Corp; SikaSil 295
Tremco, Inc.; Spectrem 2
- F. Type F Sealant: Narrow joint seam sealant meeting the requirements of AAMA 803.3-1976 and formulated for sealing joints 3/16-inch or smaller in width. Acceptable product or equal:
- PTI Sealants; PTI 200
- G. Type G Sealant: Multiple component, nonsag polysulfide or polyurethane based sealant meeting the requirements of ASTM C920, Type M, Grade NS, Class 25, Use I, recommended by the manufacturer for continuously submerged joints. Acceptable products or equal:
- L.M. Scofield Co.; Lithoseal Watercalk-3G
Sika Corp.; Sikaflex 2c NS Ez-Mix
Tremco, Inc. Dymeric 240 FC
- H. Acoustical Sealant: Sealant shall be one of the following types at the Contractor's option:
1. Polyvinyl chloride foam tape with pressure sensitive tape on one side 3/4-inch wide by the thickness required to accommodate unevenness of substrates and completely fill openings between partition framing and building floors and concrete or masonry wall. Acceptable products or equal:
- Norton Co.; Norseal V730 Series
Arlon; Series 6A
2. Permanently resilient compound manufactured specifically for acoustical applications. Acceptable products or equal:
- Ohio Sealants; Sound Calk (solvent type)
Pecora Corp.; BA-98
Tremco; Acoustical Sealant
- I. Colors: Custom colors as selected by the Architect.

2.3 JOINT-SEALANT BACKING

- A. Sealant Backing Material, General: Nonstaining; compatible with joint substrates, sealants, primers, and other joint fillers; and approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
- B. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin) or Type B (bicellular material with a surface skin) of size and density as recommended

by manufacturer to control sealant depth and otherwise contribute to producing optimum sealant performance.

1. Profile: Round in shape, with diameter never less than 30 percent greater than width of joint.
- C. 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. Provide self-adhesive tape where applicable.

2.4 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 to joint substrates.
- C. Masking Tape: Non-staining, non-absorbent type compatible with silicone sealant and adjacent surfaces.

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 performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected. Start of sealant work constitutes acceptance of conditions.

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, 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 after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates 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 joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:
 - a. Metal.
 - b. Glass.
 - c. Porcelain enamel.
 - d. Glazed surfaces of ceramic tile.

- B. Joint Priming: Prime joint substrates where indicated or where recommended by joint sealant manufacturer. Apply primer to comply with joint sealant manufacturer's recommendations. 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 or primer 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 JOINT DIMENSIONS

- A. Butyl Base Type Sealant: Minimum joint width of 1/4-inch, and the depth of 3 times the width of the joint, with the maximum depth 3/4-inch.
- B. Silicone Rubber Sealant: Minimum joint width of 1/4-inch, and depth of approximately one-half the width, but in no case less than 1/4-inch. Other width-to-depth ratios as follows:

JOINT WIDTH:	JOINT DEPTH:	
<u>For Nonporous Surfaces:</u>	<u>Minimum</u>	<u>Maximum</u>
1/4" (minimum)	1/4"	1/4"
1/4" to 1/2"	1/2 of width	Equal to width
Over 1/2"	Not Permitted	
<u>For Porous Surfaces</u>		
1/4" (minimum)	1/4"	1/4"
1/4" to 1/2"	1/4"	Equal to width
1/2" to 1"	1/2"	Equal to width
Over 1"	Not Permitted	

- C. Acrylic and Polyurethane: Minimum joint width of 1/4-inch, and depth equal to width, but in no case deeper than 1/2-inch. Other width-to-depth ratios as follows:

JOINT WIDTH:	JOINT DEPTH:	
<u>For Nonporous Surfaces:</u>	<u>Minimum</u>	<u>Maximum</u>
1/4" (minimum)	1/4"	1/4"
1/4" to 1/2"	Equal to width	Equal to width
Over 1/2" to 1" maximum	1/2"	1/2"
<u>For Porous Surfaces</u>		
1/4" (minimum)	1/4"	1/4"
1/4" to 1/2"	1/4"	Equal to width
1/2" to 1"	1/2"	1/2"

3.4 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 in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. Install sealant backings of kind 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.
- D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.
- E. Install sealants using proven techniques that 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 in each joint configuration.
 - 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs 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 sealant from surfaces adjacent to joints.
 - 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 profile per Figure 8A in ASTM C 1193, unless otherwise indicated.
 - 4. Provide flush joint profile where indicated per Figure 8B in ASTM C 1193.
 - 5. Provide recessed joint configuration of recess depth and at locations indicated per Figure 8C in ASTM C 1193.
 - a. Use masking tape to protect surfaces adjacent to recessed tooled joints.
- G. Acoustical Sealant Installation: At sound-rated assemblies and elsewhere as indicated, seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM C 919 and with manufacturer's written recommendations.
- H. Seal around all openings in exterior walls, and other locations indicated or required for waterproofing the buildings. Seal all other joints as herein specified, indicated, and required to properly complete the buildings.

- I. Apply sealants using specified materials and proper tools. Prepare surfaces (cleaning, etc.) and apply sealant as specified herein and in accordance with the manufacturer's printed instruction and recommendations.
- J. Do not use sealants when they become too jelled to be discharged in a continuous flow from the gun. Modification of sealants by addition of liquids, solvents, or powders will not be permitted.
- K. Apply sealants with guns having proper size nozzles. Use sufficient pressure to fill all voids and joints solid. In sealing around openings, include entire perimeter of each opening, unless indicated or specified otherwise. Where the use of the gun is impracticable, use suitable hand tools.
- L. Neatly point sealed joints on flush surfaces with beading tool, and internal corners with eaving tool. Remove excess material. Sealant, where exposed, shall be free of wrinkles and uniformly smooth. Complete sealing before final coats of paint are applied.

3.5 MISCELLANEOUS JOINT SEALING WORK

- A. The entire extent of sealing work is not necessarily fully or individually described herein. Provide sealing wherever required to prevent light leakage as well as moisture leakage. Refer to drawings for conditions and related parts of the work.

3.6 CLEANING

- A. Clean off excess sealant 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.

3.7 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 Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out, remove, and repair damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

3.8 JOINT-SEALANT APPLICATION SCHEDULE

- A. Type A Sealant: Use for all joints in exterior and interior concrete and ceramic and quarry tile floors and paved surfaces subject to foot traffic.
- B. Type B Sealant: Use for all vertical joints in masonry, plaster, and concrete, exposed on the exterior of the building and for sealing around metal door, window and louver frames penetrating these surfaces.
- C. Type C Sealant: Use for interior wall penetrations for pipe or conduit that will be concealed by escutcheons or other trim or plates and for lap joints in sheet metal work.
- D. Type D Sealant: Use for joints, voids, and penetrations in interior surfaces exposed to view and requiring painting.

- E. Type E Sealant: Use for all joints in contact with organically coated aluminum and for joints between precast and tilt-up concrete panels.
- F. Type F Sealant: Use for all narrow joints in aluminum storefront and curtain wall framing where joints are mechanically restricted from movement.
- G. Type G Sealant: Use for joints between window frames and other materials, and at other exterior joints for which no other sealant is indicated.
- H. Acoustical Sealant: Use to seal all perimeter joints around sound retardant partitions and around electrical boxes and other penetrations in these partitions.

END OF SECTION

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SECTION 09 22 16

NON-STRUCTURAL METAL FRAMING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Non-load-bearing steel framing systems for interior partitions.

B. Related Documents: The Conditions of the Contract and Division 1 apply to this section as fully as if repeated herein.

1.2 REFERENCES

A. The editions of the specifications and standards referenced herein, published by the following organizations, apply to the work only to the extent specified by the reference. Refer to Section 01 42 00 for information concerning availability and use of references.

American Society for Testing and Materials (ASTM International)
American Iron and Steel Institute (AISI)
ASCE 7-05, Section 13.5.6
CBC Section 2506.2.1 – Other Materials.
Steel Stud Manufacturers Association (SSMA)
Steel Framing Industry Association (SFIA)
Technical Services Information Bureau (TSIB)

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Submit framing manufacturer's literature, showing tabulation of structural properties, load capacities, dimensions, metal gages and type of coating for all framing and furring members.

B. Submittal procedures and quantities are specified in Section 01 33 00.

1.4 INFORMATIONAL SUBMITTALS

A. Evaluation Reports: For non-structural metal framing and powder driven fasteners, from ICC-ES or other qualified testing agency acceptable to authorities having jurisdiction.

1.5 REGULATORY REQUIREMENTS

A. Support framing for walls and ceilings shall conform to the 2016 California Building Code (CBC) Title 24 Part 2, Chapter 25 - Gypsum Board and Plaster. Support framing for fire resistive walls, partitions and ceilings shall also conform to CBC Title 24 Part 2 Chapter 7 - Fire-Resistance-Rated Construction, and which are listed in the current UL "Fire Resistance Directory".

- B. Furnish and install wall framing and powder driven fasteners in accordance with the framing and fastener manufacturer's current ICC Evaluation Reports.

1.6 QUALITY ASSURANCE

- A. Code-Compliance Certification of Studs and Tracks: Provide documentation that framing members are certified according to the product-certification program of the Certified Steel Stud Association, the Steel Framing Industry Association, or the Steel Stud Manufacturers Association.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to the project site and store them in adequately ventilated dry locations. If it is necessary to store materials outside, stack them off the ground on a platform and fully protect them from the weather.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable manufacturers or equal:
 - Angeles Metal Systems
 - Allied American Studco, Inc.
 - CEMCO; California Expanded Metal Products Co.
 - ClarkDietrich Building Systems
 - Scafco Steel Stud Company
 - Steel Network, Inc. (The)
 - Unimast, Inc.
 - Western Metal Lath Co.
- B. Acceptable Products: Products shall be fabricated in accordance with the SFIA (ICC-ES ESR 2457), SSMA (ICC ER-3064P).

2.2 FRAMING SYSTEMS

- A. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.
- B. Framing Members, General: Comply with ASTM C 754 for conditions indicated.
 - 1. Steel Sheet Components: Comply with ASTM C 645 requirements for metal unless otherwise indicated.
 - 2. Protective Coating: ASTM A 653/A 653M, G60 hot-dip galvanized unless otherwise indicated.
- C. Carbon Steel: ASTM A568. Provide framing components with electro-galvanized finish, conforming to ASTM A633, Type RS or shop-applied red-oxide, zinc chromate or other similar primer.
- D. Powder Driven Fasteners: Types and sizes indicated on the structural drawings. Acceptable manufacturers or equal:

- E. Screws: No. 8 by 3/8 inch cadmium or zinc coated TEKS screws with pan heads.
- F. Concrete inserts, expansion anchors, powder driven fasteners, flange clips, and bolts for attachment of hanger wires to overhead construction shall have a rated capacity equal to that of the hanger wire.
- G. Wire for Hangers and Ties: ASTM A641, Class 1 zinc coating, soft temper.

2.3 WALL FRAMING AND FURRING MEMBERS

- A. Studs and Tracks for Non-Load Bearing Interior Partitions: Fabricate framing members in accordance with ASTM C645 from hot dip zinc coated steel, of thickness required to meet the specified design criteria. Studs shall not be rolled from re-rolled steel.
- B. Slip-Type Head Joints: Where indicated, provide one of the following:
 - 1. Deflection Track: Steel sheet top runner manufactured to prevent cracking of finishes applied to interior partition framing resulting from deflection of structure above; in thickness not less than indicated for studs and in width to accommodate depth of studs.
 - a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1) CEMCO; California Expanded Metal Products Co.; SLP-TRK Slotted Deflection Track.
 - 2) ClarkDietrich Building Systems; SLP-TRK Slotted Deflection Track.
 - 3) SCAFCO Steel Stud Company; Slotted Track SLT.
 - 4) Sliptrack Systems, SLP-TRK®
 - 5) Steel Network, Inc. (The); VertiTrack VTD.
- C. Flat Strap and Backing Plates: Galvanized steel, not lighter than 0.0635-inch (16-gage), of proper size to accommodate fastenings.

2.4 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that comply with referenced installation standards.
 - 1. Fasteners for Steel Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.
- B. Isolation Strip at Exterior Walls: Provide one of the following:
 - 1. Asphalt-Saturated Organic Felt: ASTM D226, Type I (No. 15 asphalt felt), nonperforated.
 - 2. Foam Gasket: Adhesive-backed, closed-cell vinyl foam strips that allow fastener penetration without foam displacement, 1/8 inch thick, in width to suit steel stud size.

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 INSTALLATION, GENERAL

- A. Installation Standard: ASTM C754, except comply with framing sizes and spacing indicated.
 - 1. Gypsum Board Assemblies: Also comply with requirements in ASTM C840 that apply to framing installation.
- B. Install framing and accessories plumb, square, and true to line, with connections securely fastened.
- C. Install supplementary framing, and blocking to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction.
- D. Install bracing at terminations in assemblies.
- E. Do not bridge building control and expansion joints with non-load-bearing steel framing members. Frame both sides of joints independently.

3.3 INSTALLING FRAMED ASSEMBLIES

- A. Install framing system components according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.
- B. Where studs are installed directly against exterior masonry walls or dissimilar metals at exterior walls, install isolation strip between studs and exterior wall.
- C. Install studs so flanges within framing system point in same direction.
- D. Install tracks at floors and overhead supports. Extend framing full height to structural supports or substrates above suspended ceilings, except where partitions are indicated to terminate at suspended ceilings. Continue framing around ducts penetrating partitions above ceiling.
 - 1. Slip-Type Head Joints: Where framing extends to overhead structural supports, install to produce joints at tops of framing systems that prevent axial loading of finished assemblies.
 - 2. Door Openings: Screw vertical studs at jambs to jamb anchor clips on door frames; install runner track section (for cripple studs) at head and secure to jamb studs.
 - a. Install two studs at each jamb unless otherwise indicated.
 - b. Install cripple studs at head adjacent to each jamb stud, with a minimum 1/2-inch clearance from jamb stud to allow for installation of control joint in finished assembly.
 - c. Extend jamb studs through suspended ceilings and attach to underside of overhead structure.

3. Other Framed Openings: Frame openings other than door openings the same as required for door openings unless otherwise indicated. Install framing below sills of openings to match framing required above door heads.
 4. Sound-Rated Partitions: Install framing to comply with sound-rated assembly indicated. Set runners in two beads of acoustical sealant or two strips of acoustical tape as specified in Section 07 92 00.
 5. Reinforce and stiffen partitions with 3/4-inch (or larger as necessary) steel channels placed horizontally not more than 4'-6" apart. Wire-tie or bolt stiffeners to inside surfaces of studs.
- E. Installation Tolerance: Install each framing member so fastening surfaces vary not more than 1/8 inch from the plane formed by faces of adjacent framing.

3.4 CLEAN-UP AND PROTECTION

- A. Perform clean-up of the premises as specified in Section 01 77 00.

END OF SECTION

04/19/19

SECTION 09 29 00

GYPSUM BOARD

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Interior gypsum board construction and accessories.
- B. Related Documents: The Conditions of the Contract and Division 1 apply to this section as fully as if repeated herein.

1.2 REFERENCES

- A. The editions of the specifications and standards referenced herein, published by the following organizations, apply to the work only to the extent specified by the reference: Refer to Section 01 42 00 for information concerning availability and use of references.

American Society of Testing and Materials (ASTM International)
Gypsum Association (GA)
Technical Services Information Bureau (TSIB); formerly Western Lath/Plaster/Drywall
Industries Association (WLPDIA)
Western Wall and Ceiling Contractors Association (WWCCA)

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Certificates: Submit manufacturer's certification that products meet or exceed requirements of the referenced specifications.
- C. Submittal procedures and quantities are specified in Section 01 33 00.

1.4 QUALITY ASSURANCE

- A. Gypsum Board Construction: Meet the requirements of the 2016 California Building Code (CBC) Title 24 Part 2, Chapter 25 - Gypsum Board and Plaster.
- B. Fire Resistive Gypsum Board: Bear the Underwriter's Laboratories Inc. (UL) label or label of another organization acceptable to the State Fire Marshal.
- C. Field Samples: On actual gypsum board surfaces, prepare field samples of at least 50 square feet in surface area for the applications listed below. Simulate finished lighting conditions for review of in-place unit of work.
 - 1. Wall surfaces indicated or specified for non-textured finish.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver gypsum board and accessories in the manufacturer's original unopened containers, bundles or rolls bearing the manufacturer's name and brand designation.
- B. Store materials inside the building or in other dry weather tight enclosure. Stack gypsum board flat and off the floor. Do not stack long lengths over shorter lengths.
- C. Store flammable adhesives away from fire, sparks and smoking areas.
- D. Handle gypsum board to prevent damage to edges, ends, and surfaces.

1.6 FIELD CONDITIONS

- A. Environmental Limitations: Comply with ASTM C840 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent.
- B. Do not install gypsum board until insulation, pipes, conduits, ducts, vents, supports and other items that will be concealed by the gypsum board have been inspected, tested and approved by the governing authorities and unsatisfactory conditions have been corrected.
- C. Do not install interior gypsum panels until installation areas are enclosed and conditioned.
- D. Do not install panels that are wet, moisture damaged, or mold damaged.
 - 1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, and irregular shape.
 - 2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.1 GYPSUM BOARD, GENERAL

- A. Size: Provide maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

2.2 MANUFACTURERS

- A. Acceptable manufacturers or equal:

CertainTeed Corp; www.certainteed.com
 Georgia-Pacific Gypsum LLC; www.gp.com
 National Gypsum Co.; Gold Bond Building Products Division;
www.nationalgypsum.com
 USG Corporation; www.usg.com
 PABCO Gypsum; www.pabco gypsum.com

2.3 INTERIOR GYPSUM BOARD

- A. Moisture- and Mold-Resistant Gypsum Board: ASTM C1396, 5/8 in. thick "Type X" unless otherwise shown or specified, with tapered edges and either rounded or beveled returns for prefilling. Where fire resistive ratings are shown use thickness required to comply with assembly fire testing of gypsum board partitions for fire rating required.

1. Acceptable products:
 - a. United States Gypsum Co.; Sheetrock Brand EcoSmart Mold Tough Firecode X Panels, or equal.
 - 1) Wallboard uses a manufacturing process with a net use of fresh water value less than or equal to 1.35 m³/1000 ft² for wallboard manufactured west of the Mississippi River as listed per Product Category Rules for North American Gypsum Boards.
 - 2) Wallboard uses a manufacturing process with a global warming potential value of less than or equal to 268 kg CO₂-eq./1000 ft² for wallboard manufactured west of the Mississippi River as listed per Product Category Rules for North American Gypsum Boards.
 - b. CertainTeed Gypsum; M2Tech® gypsum board, or equal.
 - c. G-P Gypsum Corp.; Mold-Guard Gypsum Board, or equal.
 - d. National Gypsum Company; Gold Bond Brand XP Fire-Shield Gypsum Board, or equal.

2.4 TRIM ACCESSORIES

- A. Interior Trim: ASTM C1047.
 1. Material: Paper-faced galvanized steel sheet.
 2. Shapes:
 - a. Cornerbead.
 - b. LC-Bead: J-shaped; exposed long flange receives joint compound.
 - c. L-Bead: L-shaped; exposed long flange receives joint compound.
 - d. U-Bead: J-shaped; exposed short flange does not receive joint compound.
 - e. Expansion (control) joint.

2.5 JOINT TREATMENT MATERIALS

- A. General: Comply with ASTM C475.
- B. Joint Tape:
 1. Interior Gypsum Board: Paper.
- C. Joint Compound for Interior Gypsum Board: 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 setting-type taping or drying-type, all-purpose compound.
 - a. Use setting-type compound for installing paper-faced metal trim accessories.
 3. Fill Coat: For second coat, use setting-type, sandable topping or drying-type, all-purpose compound.
 4. Finish Coat: For third coat, use setting-type, sandable topping or drying-type, all-purpose compound.
 5. Skim Coat: For final coat of Level 5 finish, use setting-type, sandable topping compound; drying-type, all-purpose compound; or high-build interior coating product

designed for application by airless sprayer and to be used instead of skim coat to produce Level 5 finish.

2.6 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written instructions.
- B. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate. Acceptable products or equal:
 - 1. OSI® F38 Drywall and Panel Adhesive; www.ositough.com
 - 2. Liquid Nails DWP Drywall Construction Adhesive; www.liquidnails.com
 - 3. Franklin International; Titebond Professional Drywall Adhesive; www.titebond.com
- C. Screws: Conform to the standards specified below for attaching gypsum board to the various substrates listed.
 - 1. Metal Framing, 20-Gage and Heavier: ASTM C954.
 - 2. Metal Framing and Furring, 25-Gage: ASTM C1002, Type S.
 - 3. Wood Framing: ASTM C1002, Type W.
 - 4. Gypsum Backing Board: ASTM C1002, Type G.
- D. Nails for attaching Gypsum Board to Wood Framing: ASTM C514.
- E. Acoustical Sealant: Specified in Section 07 92 00 "Joint Sealants."

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and substrates including framing, with installer present, for compliance with requirements and other conditions affecting performance.
- B. Examine framing to ensure that corners and framing are plumb, true and solid and that framing members are properly spaced. Edges and ends of board shall have solid bearing.
- C. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 APPLYING AND FINISHING PANELS, GENERAL

- A. General: Comply with ASTM C840.
- B. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.
- C. 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.

- D. Form control and expansion joints with space between edges of adjoining gypsum panels.
- E. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments. Provide 1/4- to 1/2-inch wide spaces at these locations and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.

3.3 APPLYING INTERIOR GYPSUM BOARD

- A. Install interior gypsum board in the following locations:
 - 1. Mold-Resistant Type: As indicated on drawings.
- B. Nonrated Single Layer Construction:
 - 1. Apply gypsum board with the long dimension at right angles to ceiling framing and at right angles or parallel to wall framing members. Use maximum-length panels to minimize end joints.
 - 2. Attach gypsum board with screws spaced 12 inches on center for ceilings and 16 inches on center for walls. Use 1-inch long screws for metal framing and furring and 1-1/4 inch long screws for wood framing.
- C. Laminating to Substrate: Where gypsum panels are indicated as directly adhered to a substrate (other than studs, joists, furring members, or base layer of gypsum board), comply with gypsum board manufacturer's written instructions and temporarily brace or fasten gypsum panels until fastening adhesive has set.

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.
- B. Control Joints: Install control joints at locations indicated on Drawings. If no control joints are indicated, provide joints to ensure that unbroken wall surfaces are limited to 30-feet in length and unbroken ceiling surfaces are limited to 2500 square feet or 50-feet in either direction. Provide control joints in specific locations approved by Architect for visual effect.
- C. Interior Trim: Install in the following locations:
 - 1. Cornerbead: Use where indicated vertical and horizontal outside corners and angles.
 - 2. LC-Bead: Use at exposed panel edges.
 - 3. L-Bead: Use where indicated.
 - 4. U-Bead: Use at exposed panel edges where indicated.
- D. Edge Sealing: Cut edges, utility holes, and joints of water resistant gypsum board shall be treated with the gypsum board manufacturer's recommended waterproof sealant before installation.
- E. Tolerances: Gypsum board surfaces shall have a maximum variation of 1/8 inch in 10 feet when a straight edge is laid on the surface in any direction and no measurable variation in any 2-foot direction.

3.5 FINISHING GYPSUM BOARD

- 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 for trim products specifically indicated as not intended to receive tape.
- D. Tape and finish joints, corners, fastener heads, and other imperfections in accordance with the manufacturer's specifications and recommendations to provide a smooth finish.
- E. Reinforce joints, wall and ceiling angles, and inside vertical corners with tape embedded in joint compound. Finish joints with not less than 2 applications of joint compound, allowing each application to dry thoroughly and sanding between coats as required.
- F. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C840.
 - 1. Level 1: Provide for ceiling plenum areas and concealed areas, unless a higher level of finish is required for fire-resistive-rated assemblies and sound-rated assemblies. Where Level 1 gypsum board finish is indicated or specified, apply embedding coat of joint compound. Remove excess joint compound.
 - 2. Level 2: Provide for gypsum board panels that are substrates for tackboard panel application. Where Level 2 gypsum board finish is indicated or specified, apply embedding coat of joint compound for first coat and an additional coat of joint compound over all joints angles, fastener heads and accessories. Remove excess joint compound.
 - 3. Level 3: Not used.
 - 4. Level 4: Provide for gypsum board panel surfaces that will be exposed to view unless otherwise indicated; District Standard. Where Level 4 gypsum board finish is indicated or specified, embed tape in finishing compound plus 2 separate coats applied over joints, inside angles, fastener heads, and accessories using ready-mixed, drying type, all-purpose taping compound. Feather out third coat approximately 6-inches from center of joint. After drying, sand or otherwise treat each coat and after last coat of the compound to provide a smooth even surface.
 - 5. Level 5: Not used.
- G. Treat external corners, edges, and ends with metal beads and edge trim. Finish with 3 coats of joint compound and feather out between 8-inches and 10-inches from the nose.
- H. The final application of compound and sanding shall leave all gypsum board surfaces uniformly smooth and in condition to receive specified finish.

3.6 REPAIR, CLEAN-UP AND PROTECTION

- A. Protect adjacent surfaces from drywall compound and promptly remove from floors and other non-drywall surfaces. Repair surfaces stained, marred, or otherwise damaged during drywall application.

- B. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.
- C. Remove and replace panels that are wet, moisture damaged, and mold damaged.
 - 1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
 - 2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.
- D. Repair fastener pops by driving a new fastener approximately 1-1/2 inches from the fastener pop and reset the popped fastener. When face paper is punctured, drive a new fastener approximately 1-1/2 inches from the defective fastener. Fill damaged surfaces with compound.
- E. Upon completion of the work, remove from adjacent surfaces, overspray, splatter and daubs of taping and finish compound and textured finishes. Remove tools, equipment, unused material and cuttings and leave the work in a clean orderly manner.

END OF SECTION

04/19/19

SECTION 09 30 13

CERAMIC TILING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Ceramic mosaic floor tile.
2. Setting materials and grout materials.
3. Edge-protection and transition profiles for tile floors.
4. Related accessories.

B. Related Documents: The Conditions of the Contract and Division 1 apply to this section as fully as if repeated herein.

1.2 REFERENCES

A. The editions of the specifications and standards referenced herein, published by the following organizations, apply to the work only to the extent specified by the reference. Refer to Section 01 42 00 for information concerning availability and use of references.

American National Standards Institute (ANSI)
ASTM International (ASTM)
Tile Council of North America (TCNA)

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. Module Size: Actual tile size plus joint width indicated.

D. Face Size: Actual tile size, excluding spacer lugs.

1.4 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: Where colors and patterns are not specified, submit one set of samples of each type of tile specified showing the manufacturer's full range of standard colors and patterns

for final selection. Where colors and patterns are specified, submit 2 samples of each color type and shape of tile and trim.

- D. Submittal procedures and quantities are specified in Section 01 33 00.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.

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 installed.
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. Requirements for Physically Disabled: Provide ceramic tile flooring meeting the slip resistant requirements of 2016 California Building Code (CBC) Title 24 Part 2; and 2010 ADA Standards for Accessible Design.
- B. Floor tile shall have a coefficient of friction equal to, or greater than, 0.6 in accordance with ASTM C1028.
- C. Installer Qualifications: Employ a firm having a minimum of 5 years successful experience in the installation of ceramic tile and who has specialized in the installation of ceramic tile similar to that required for this Project.
- D. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 1. Build mockup of typical floor tile installation, minimum 25 square feet.
 2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

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. Manufacturers: Acceptable manufacturers or equal:

Dal-Tile International; www.daltile.com

Substitutions: Section 01 25 00 – Substitution Procedures.

- B. Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from single manufacturer.

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.
- 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. Factory Blending: For tile exhibiting color variations within ranges, blend tile in factory and package so tile units taken from one package show same range in colors as those taken from other packages and match approved Samples.
- D. 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: "Standard" grade units meeting the requirements of ANSI A137.1. Deliver tile in sealed cartons, identified with a Master Grade Certificate, on standard form of the Tile Council of North America, certifying grades, type and qualities of tile furnished.
 - 1. Unglazed Porcelain Mosaic Floor Tile: Modular 2" by 2", unglazed porcelain tile with cushioned edge. Floor tile shall have a coefficient of friction equal to, or greater than 0.6 in accordance with ASTM C1028.
 - a. Basis-of-Design Product: Daltile Keystones Series, Mosaic Colorbody Porcelain, Price Groups 1 and 2; Colors as selected by Architect.
 - 2. Accessories: Provide all trim necessary to produce coved bases where shown, and rounded internal and external corners. Provide trim matching wall tile in color and texture.

- a. Basis-of-Design Product: Daltile Keystones Series, Mosaic Colorbody Porcelain, Price Groups 1 and 2; Build-Up Base MB-5B.

2.7 SETTING MATERIALS

A. Installation Material Manufacturers:

- 1. Custom® Building Products; www.custombuildingproducts.com
- 2. MAPEI Corporation; www.mapei.com
- 3. Laticrete International; www.laticrete.com
- 4. Quikrete; www.quikrete.com

B. Latex Portland Cement Mortar (Thinset): ANSI A118.4 / A118.15. Provide acrylic type latex for exterior applications.

Custom Building Products
MAPEI, Keralastic System, consisting of Kerabond, dry-set mortar and keralastic latex admixture.

C. Cementitious Tile Adhesives: ANSI A118.4 / A118.11: Polymer-Enhanced Mortars: Where indicated on the Drawings, and elsewhere as required for setting tile as specified by ANSI A108.5 or A108.12, Dry-Set Portland Cement Mortar or Latex Portland Cement Mortar, over substrates prepared accordingly.

- 1. For use at Walls: Custom Building Products MegaLite® Crack Prevention Mortar or ProLite Fortified Mortar. With Shear Bond Strengths greater than 650 psi, per ANSI A118.4 and A118.15 Section 5.2.4. For wall assemblies where maximum strength is desired.
- 2. For use at Floors: For Crack Prevention due to Movement in Substrate: Custom Building Products MegaLite® Crack Prevention Mortar. With Shear Bond Strengths greater than 650 psi, per ANSI A118.4 and A118.15 Section 5.2.4. To minimize crack propagation from the substrate through the tile assembly, from cracks up to 1/8" wide.

D. Water: Fresh, clean and potable, and free from such amounts of mineral and organic substances as would adversely affect the hardening of cement mortar.

2.8 GROUT MATERIALS

A. Grout: Chemical Resistant, Acrylic and Silicone Resin Based, Single Component Grouting Material, Formulated for Stain Resistance, Meeting Performance Characteristics of ANSI A118.3 and A118.7, for grout joints from 1/16" inch to 1/2" inch in width:

Custom Building Products, FusionPro™ Single Component Grout, High Performance Grout. No mixing is required and is stain resistant. Available in 24 Colors.

B. Elastomeric Joint Caulk: Provide where indicated on the Drawings, and elsewhere as required at joints between floors and walls and at joints between tile and dissimilar materials.

Custom Building Products Commercial 100% Silicone Caulk. Conforms to ASTM C 920 for movement joints in heavy traffic areas and ASTM C 794.

2.9 MISCELLANEOUS MATERIALS

- A. Tile and Grout Cleaner: Acceptable products, or equal:

Aqua Mix, Inc.; Heavy Duty Tile & Grout Cleaner
Custom Building Products; Concentrated Tile & Grout Cleaner

- B. Tile and Grout Sealer: Acceptable products, or equal:

Aqua Mix, Inc.; Sealers Choice Gold Penetrating Sealer
Custom Building Products; SurfaceGard Grout and Tile Sealer

2.10 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.
- C. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

2.11 EDGE-PROTECTION AND TRANSITION PROFILES FOR FLOORS

- A. Basis-of-Design Manufacturer: Schluter Systems, L.P., 194 Pleasant Ridge Road, Plattsburgh, NY 12901-5841. Tel.: (800) 472-4588. Fax: (800) 477-9783. E-mail: specassist@schluter.com. Internet: www.schluter.com.
- B. Basis-of-Design Product: Schluter®-RENO-TK
1. Description: profile with sloped exposed surface, 1/4" (6 mm) deep channel below exposed surface, integrated trapezoid-perforated anchoring leg, and integrated grout joint spacer.
 2. Anchoring Leg: Provide with straight anchoring leg.
 3. Material and Finish:
 - a. AE - Satin Anodized Aluminum
 4. Height: As required to accommodate existing carpet height.

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 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. 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 CERAMIC TILE INSTALLATION

- 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. 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 thicknesses 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.
 2. 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: 1/8 inch.
- H. Cut and drill without marring the tile. Rub cuts smooth with a fine abrasive stone. Set no cut edge against fixtures, cabinets, or other tile without a joint at least 1/16-inch wide. Whenever possible, turn cut edges away from the adjoining wall. Fit tile around electric outlets, plumbing pipes, fixtures and fittings close enough to permit standard plates and collars to overlap the tile.
- I. Keep tile dry while in packages. Take precautions to prevent staining of tiles before they are set. Do not install stained tile.
- J. Interior Floor Installations, Concrete Subfloor:
1. Ceramic Tile Installation: TCNA Method F115A; thinset mortar, single component grout.
 - a. Ceramic Tile Type: As specified in paragraph 2.3.A.1.
 - b. Thinset Mortar, as specified in paragraph 2.7.C.2.
 - c. Grout: As specified in paragraph 2.8.A.
- K. Interior Wall (Cove Base) Installation, Wood or Metal Studs:
1. Ceramic Tile Installation: TCNA Method W244C and ANSI A108.5; thinset mortar on gypsum board substrate:
 - a. Ceramic Tile Type: As specified in paragraph 2.3.A.2.a.
 - b. Thinset Mortar: Dry-Set Portland Cement Mortar or Latex Portland Cement Mortar as specified in paragraph 2.7.C.1.
 - c. Grout: As specified in paragraph 2.8.A.
- L. Apply grout in accordance with ANSI A108.10. Force a maximum of grout into all joints. Grout joints full and integral with setting bed. Before grout sets, strike or tool the joints of cushion edge tile to depth of cushion, filling gaps; and with square-edged tile, fill joints flush with their surface.
- M. Edge Protection and Transition Profiles for Floor Tile: Consult Schluter®-Systems' current technical literature for proper design and installation instructions.
- 3.4 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.

- B. Tile and Grout Sealer: Apply sealer to 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 from tile faces by wiping with soft cloth.

3.5 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.

END OF SECTION

04/19/19

SECTION 09 51 13

ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Acoustical ceilings, including acoustical lay-in panels and suspension systems.
- B. Related Documents: The Conditions of the Contract and Division 1 apply to this section as fully as if repeated herein.

1.2 REFERENCES

- A. The editions of the specifications and standards referenced herein, published by the following organizations, apply to the work only to the extent specified by the reference: Refer to Section 01 42 00 for information concerning availability and use of references.

ASTM International (ASTM)
Acoustical Insulation Manufacturer's Association (AIMA)
Ceilings & Interior Systems Construction Association (CISCA)
DSA Interpretation of Regulations IR 25-2.13
General Services Administration Federal Specifications (Fed. Spec.)

1.3 ACTION SUBMITTALS

- A. Product Data:
 - 1. Submit manufacturer's catalog cuts, specifications, and other data for each component of the acoustical ceiling systems as necessary to demonstrate compliance with these specifications.
- B. Samples: Submit the following samples for review:
 - 1. 12-inch long samples of main tees, cross tees and perimeter molding.
 - 2. 6" by 6" samples of each type of acoustical units to be used in the work.
- C. Submittal procedures and quantities are specified in Section 01 33 00.

1.4 INFORMATIONAL SUBMITTALS

- A. Evaluation Reports: For each acoustical panel ceiling suspension system, from ICC-ES.

1.5 CLOSOUT SUBMITTALS

- A. Maintenance Data: For finishes to include in maintenance manuals.

1.6 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Acoustical Ceiling Panels: Full-size units equal to 2 percent of quantity installed.
 - 2. Suspension-System Components: Quantity of each exposed and concealed component equal to 2 percent of quantity installed.
 - 3. Hold-Down Clips: Equal to 2 percent of quantity installed.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Deliver acoustical units, suspension-system components, and accessories to Project site in original, unopened packages bearing the manufacturer's name, brand designation, and label verifying compliance with these specifications. Store materials in a fully enclosed, conditioned space where they will be protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.
- B. Immediately before installation, store acoustical units for not less than 24 hours at the same temperature and relative humidity as the space where they will be installed.

1.8 PROJECT CONDITIONS

- A. Maintain a uniform temperature of not less than 60 degrees F nor more than 85 degrees F and a relative humidity of not more than 70 percent continuously from 24 hours before installation until 24 hours after completion of work.

1.9 SCHEDULING

- A. Wet operations such as plastering, concrete and masonry work shall be completed and dry before installation of acoustical ceilings. Mechanical, electrical and other work above the ceiling line shall be completed and approved before start of acoustical ceiling installation.

1.10 WARRANTY

- A. Warranty: Manufacturer and Installer agree to repair or replace acoustical panel ceilings that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period: 2 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Seismic Performance Requirements: Furnish and install suspension systems in accordance with the suspension system manufacturer's current ICC Evaluation Services Report and 2016 California Building Code (CBC), Title 24 Part 2, Sec. 1607A.1; CBC Title 24 Part 2, Chapter 25 and Interpretation of Regulations IR 25-2.13 issued by the Division of the State Architect (DSA).
- B. Surface Burning Characteristics: Provide finish materials meeting requirements of Chapter 8 Section 803 of the 2016 CBC Title 24 Part 2 and that have been tested and bear the UL

label and marking, or marking of other testing agency acceptable to the State Fire Marshal, indicating the following fire performance characteristics tested in accordance with ASTM E84.

- a. Flame Spread Index: Not more than 25.
- b. Smoke Developed Index: Not more than 50.

2.2 ACOUSTICAL CEILING UNITS

A. General:

- 1. Low-Emitting Materials: Acoustical ceilings shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- 2. Source Limitations: Obtain each type of acoustical ceiling panel and supporting suspension system from single source from single manufacturer.
- 3. Acoustical Materials: ASTM E1264, with features as specified below. Furnish each type specified from one manufacturer, with the color and texture identical throughout.
 - a. Acoustical materials shall contain a minimum of 30 percent of recycled materials.

B. Acoustical Lay-in Panels: Basis-of-Design product:

Armstrong World Industries; Ultima® Square Lay-in, Item No. 1913 HRC

- 1. Material: Wet-formed mineral fiber with DuraBrite® acoustically transparent membrane.
- 2. Surface Finish: DuraBrite with factory-applied white latex paint.
- 3. Surface Texture: Fine Texture.
- 4. Fire Performance:
 - a. ASTM E84 surface burning characteristics. Flame Spread Index 25 or less. Smoke Developed Index 50 or less (UL labeled).
- 5. ASTM E1264 Classification: Type IV, Form 2, Pattern E, Fire Class A.
- 6. Humidity/Sag Resistance: HumiGuard® Plus; superior resistance to sagging in high humidity conditions.
- 7. Mold/Mildew Protection: Ceiling panels with BioBlock® performance resist the growth of mold and mildew.
- 8. VOC Emissions: GREENGUARD Gold Certified. Product certified for low chemical emissions per UL.Com/GG UL 2818.
- 9. Noise Reduction Coefficient: Minimum 0.75.
- 10. Ceiling Attenuation Class: 35 DB; 11-frequency average.
- 11. Light Reflection Factor: 0.90.

12. Size: 24" by 48" by 3/4" thick.

13. Edge Detail: Square Lay-in.

2.3 SUSPENSION SYSTEM

- A. Exposed Lay-in System: Direct hung system meeting the requirements for Heavy Duty classification of ASTM C635 and E580 Section 5.1. Acceptable products or equal:

Armstrong; Prelude XL HD 7301 main runners and cross runners
Chicago Metallic; 200 main runners; 1204 cross runners
USG Interiors; DX26 main runners; DXO-216 cross runners

1. Main Runners and Cross Tees: Double web type of cold rolled steel with protective coating and with painted steel caps. Width of exposed faces shall be 15/16-inch.
2. Wall Moldings: Cold rolled steel with protective coating.
3. Intersections and Connections: Provide intersections and connections capable of withstanding a mean ultimate test load of 180 pounds or twice the actual load, whichever is greater, in tension when tested in accordance with ASTM C635.
4. Finish: Finish all exposed metal parts with a baked-on vinyl finish, matte white color.

2.4 ACCESSORIES

- A. Hanger Wires: Class 1 zinc coated (galvanized) carbon steel conforming to ASTM A641. Wire shall be #12 gage (0.106" diameter) with soft temper and minimum tensile strength = 70 ksi. The maximum allowable (ASD) tension load for wire meeting this specification is 350 pounds.
- B. Seismic Stabilizer Bars: Manufacturer's standard perimeter stabilizers designed to accommodate seismic forces.
- C. Seismic Struts: Manufacturer's standard compression struts designed to accommodate seismic forces.
- D. Seismic Clips: Manufacturer's standard seismic clips designed and spaced to secure acoustical panels in place.
- E. Hold-Down Clips: Where indicated, provide manufacturer's standard hold-down clips spaced 24 inches o.c. on all cross tees.
- F. Main Beam Splice Clip: Manufacturer's standard splice clip to reinforce main beam carrier where it is cut to make transition at top and bottom of sloped ceilings.

2.5 METAL EDGE MOLDINGS AND TRIM

- A. Roll-Formed, Sheet-Metal Edge Moldings and Trim: Type and profile indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations that comply with seismic design requirements; formed from sheet metal of same material, finish, and color as that used for exposed flanges of suspension-system runners.

1. Edge moldings shall fit acoustical panel edge details and suspension systems indicated and match width and configuration of exposed runners unless otherwise indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, including 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 with requirements for installation tolerances and other conditions affecting performance of acoustical panel ceilings.
- B. Examine acoustical panels before installation. Reject acoustical panels that are wet, moisture damaged, or mold damaged.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. 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.
- B. Layout openings for penetrations centered on the penetrating items.

3.3 INSTALLATION OF CEILING SYSTEMS

- A. Comply with ASTM C636, Section 5.2 of ASTM E580, and manufacturer's written instructions.
- B. Place units as indicated on the drawings. Install with joints true and straight and junctures with ceilings, walls and openings neat and tight. Completed work shall present a smooth plane and level surface, free from unevenness, edge or corner offsets, cupping, scratches and other imperfections.
- C. Perform all cutting required for fixtures, pipes and other work passing through acoustical tile and panels. Neatly and tightly fit units to such work and adjoining work. Fit border units neatly and tightly against abutting surfaces. Replace loose and damaged tiles and panels when directed. Touch-up all damaged finishes. Leave all surfaces clean and free from marking and other disfigurement.
- D. #12 gage hanger wires may be used for up to and including a 4 foot by 4 foot grid spacing and shall be attached to main runners. Splices in hanger wires shall develop 50 percent of the wire allowable load.
- E. Hanger Wires: Space hanger wires as specified for each type of suspension system. Provide each hanger wire in one piece without splices.
 1. Anchor each wire to the structure above by one of the means detailed in CBC Sec. 25 and DSA IR 25-2.13. Bend hanger wires directly across the bulb of the main runner and tight against the connection device at supporting construction, then wrap the wire around itself in 3 tight wraps within 1-1/2 inches.

2. Provide #12-gage hanger wires at the ends of all main and cross runners within 8 inches from the support or within 1/4 of the length of the end tee, whichever is least, for the perimeter of the ceiling area. Perimeter wires are not required when the length of the end tee is 8 inches or less.
 3. Provide trapeze or other supplementary support members at obstructions to maintain hanger spacing. Provide additional hangers, struts or braces as required at all ceiling breaks, soffits or discontinuous areas. Hanger wires that are more than 1 in 6 out of plumb shall have counter-sloping wires.
 4. Ceiling grid members shall be attached to 2 adjacent walls per ASTM E580, Section 5.2.3. Ceiling grid members shall be at least 3/4-inch clear of other walls. If walls run diagonally to ceiling grid system runners, one end of main and cross runners shall be free, with a minimum of 3/4-inch clear at wall.
 5. The width of the perimeter supporting closure angle shall be not less than two inches. Use of perimeter angles with smaller widths in conjunction with proprietary perimeter clips may be acceptable in accordance with Section 5 of DSA IR 25-2.13.
 6. At the perimeter of the ceiling area where main or cross runners are not connected to the adjacent wall, provide interconnection between the runners at the free end to prevent lateral spreading. A metal strut or a #16-gage wire with a positive mechanical connection to the runner may be used and placed within 8 inches of the wall. Where the perpendicular distance from the wall to the first parallel runner is 8 inches or less, the stabilizer or #16 gage wire is not required.
- F. Install wall molding at the perimeter of the defined areas. Attach wall moldings to the wall at not more than 16-inches on center. On two adjacent walls attach each runner to the wall molding with a pop rivet. At opposite walls, provide metal struts or 16-gage wire with mechanical connection to the runner to prevent runners from spreading. Miter all corners of wall molding.
- G. Level the ceiling to within 1/8-inch in 10-feet in any direction.

3.4 LATERAL FORCE BRACING ASSEMBLY INSTALLATION

- A. Lateral force bracing assemblies consisting of a compression strut and four #12 gage splayed bracing wires oriented 90 degrees from each other are required for all ceiling areas.
1. Exception: Lateral force bracing may be omitted for suspended acoustical ceiling systems with a ceiling area not to exceed 144 square feet, for all values of SDS, when perimeter support is provided in accordance with Section 2.2 of IR 25-2.13 and perimeter walls are designed to carry the ceiling lateral forces.
- B. Lateral force bracing assemblies shall be spaced per Table 1 of IR 25-2.13 for all values of the component importance factor (I_p) of the ceiling.
- C. There shall be a brace assembly a distance of not more than one half of the above spacing from each surrounding wall, expansion joint and at the edges of any ceiling vertical offset. For example, where the brace spacing is 8' x 12', the edge distance shall be 4 feet in the direction of the 8 foot spacing and 6 feet in the direction of the 12 foot spacing.
- D. The slope of bracing wires shall not exceed 45 degrees from the horizontal plane and wires shall be taut. Splices in bracing wires shall develop the wire allowable load.
- E. Compression struts shall meet the following requirements:

1. The strut shall be sized to adequately resist the vertical component force induced by the ceiling bracing wires and have a maximum kl/r not to exceed 300. The struts listed in Appendix A meet this requirement for ceilings complying with the general requirements of IR 25-2.13.
2. The strut shall not be more than one (horizontal) in six (vertical) out of plumb.

3.5 ATTACHMENT OF HANGER AND BRACING WIRES

- A. Fasten hanger wires with not less than 3 tight turns in 3 inches. Hanger wire loops shall be tightly wrapped and sharply bent to prevent any vertical movement or rotation of the member within the loops (see ASTM E580, Section 5.2.7.2).
- B. Fasten bracing wires with not less than 4 tight turns in 1-1/2 inches.
- C. 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. Separate all ceiling hanger and bracing wires at least 6 inches from all unbraced ducts, pipes, conduit, etc.
- E. Hanger and bracing wires shall not attach to or bend around obstructions including but not limited to: piping, ductwork, conduit and equipment. Provide trapeze or other supplementary support members at obstructions to allow typical hanger spacing. Brace assemblies must be configured and/or located in order to avoid obstructions in addition to maintaining the required brace assembly spacing.
- F. Provide additional hangers, struts and brace assemblies as required at all ceiling breaks, soffits, or discontinuous areas.
- G. Hanger wires that are more than one (horizontal) in six (vertical) out of plumb shall have counter-sloping wires. Note: See ASTM C636, Figure 1, for counter-sloping methods.
- H. Attachment of the bracing wires to the structure above and to the main runners shall be adequate for the load imposed. The weight (W_p) shall be taken as not less than 4 psf for calculating seismic forces (F_p).
- I. Post-installed anchors (e.g. expansion anchors, screw anchors and power actuated fasteners) shall have a current Evaluation Report acceptable to DSA in accordance with IR A-5.

3.6 CEILING FIXTURES, TERMINALS, AND DEVICES

- A. All fixtures, terminals, and other devices shall be mounted in a manner that will not compromise ceiling performance in accordance with Section 13.5.6.2.2 Item 5 of ASCE 7 as amended by CBC Section 1616A.1.20 (1616.10.16*) and ASTM E580 Sections 5.3 and 5.4.
- B. Ceiling panels shall not support any light fixtures, air terminals or devices.
- C. Penetrations through the ceiling for sprinkler heads and other similar devices that are not integrally tied to the ceiling system in the lateral direction shall have a 2-inch oversized ring, sleeve or adapter through the ceiling tile to allow free movement of 1-inch in all horizontal

directions. Alternatively, per ASTM E580, Section 5.2.8.5, a flexible sprinkler hose fitting that can accommodate 1-inch of ceiling movement shall be permitted to be used in lieu of the oversized ring, sleeve, or adapter.

- D. Slack safety wires shall be considered hanger wires for installation and testing requirements.

3.7 LIGHT FIXTURES

- A. All light fixtures shall be positively attached to the ceiling suspension systems by mechanical means per CEC Article 410.36 to resist a horizontal force equal to the weight of the fixture. A minimum of two screws or approved fasteners are required at each light fixture, per ASTM E580, Section 5.3.1.
- B. Surface-mounted light fixtures shall be attached to the main runner with at least two positive clamping devices on each fixture. The clamping device shall completely surround the supporting ceiling runner and be made of steel with a minimum thickness of #14 gage. Rotational spring catches do not comply. A #12 gage slack safety wire shall be connected from each clamping device to the structure above. Provide additional supports when light fixtures are 8 feet or longer or exceed 56 lb. Maximum spacing between supports shall not exceed 8 feet.
- C. Light fixtures weighing less than or equal to 10 lb. shall have a minimum of one #12 gage slack safety wire connected from the fixture housing to the structure above.
- D. Light fixtures weighing greater than 10 lb. but less than or equal to 56 lbs. may be supported directly on the ceiling runners, but they shall have a minimum of two #12 gage slack safety wires connected from the fixture housing at diagonal corners to the structure above.
 - 1. Exception: All light fixtures greater than two by four feet weighing less than 56 lbs. shall have a #12 gage slack safety wire at each corner.
- E. All Light fixtures weighing greater than 56 lb. shall be independently supported by not less than four taut #12 gage hanger wires (one at each corner) attached from the fixture housing to the structure above or other approved hangers. The four taut #12 gage wires or other approved hangers, including their attachment to the structure above, shall be capable of supporting 4 times the weight of the fixture.

3.8 SERVICES WITHIN THE CEILING

- A. 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 to resist a horizontal force equal to the weight of the component. Screws or approved fasteners are required. A minimum of two attachments are required at each component.
- B. Ceiling-mounted air terminals or other services weighing less than or equal to 20 lb. shall have one #12 gage slack safety wire attached from the terminal or service to the structure above.
- C. Flexible sprinkler hose fittings, ceiling-mounted air terminals or other services weighing more than 20 lb. but less than or equal to 56 lb. shall have two #12 gage slack safety wires (at diagonal corners) connected from the terminal or service to the structure above.

- D. Flexible sprinkler hose fittings, ceiling-mounted air terminals or other services weighing more than 56 lb. shall be supported directly from the structure above by not less than four taut #12 gage hanger wires attached from the terminal or service to the structure above or other approved hangers. The four taut #12 gage wires or other approved hangers, including their attachment to the structure above, must be capable of supporting four times the weight of the unit.

3.9 OTHER DEVICES WITHIN THE CEILING

- A. All lightweight miscellaneous devices, such as strobe lights, occupancy sensors, speakers, exit signs, etc., shall be attached to the ceiling grid per Section 2.6.2 a) of IR 25-2.13. In addition, devices weighing more than 10 lbs. shall have a #12 gage slack safety wire anchored to the structure above per Section 2.6.1 b) of IR 25-2.13. Devices weighing more than 20 lbs. shall be supported from the structure above using details provided by the registered design professional (RDP).

3.10 INSTALLATION OF ACOUSTICAL UNITS

- A. Install acoustical units with undamaged edges and fit accurately into suspension-system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide a neat, precise fit.
 - 1. For square-edged panels, install panels with edges fully hidden from view by flanges of suspension-system runners and moldings.
 - 2. Paint cut edges of panel remaining exposed after installation; match color of exposed panel surfaces using coating recommended in writing for this purpose by acoustical panel manufacturer.
 - 3. 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.
 - a. Hold-Down Clips: Space 24 inches o.c. on all cross runners.
 - 4. Protect lighting fixtures and air ducts to comply with requirements indicated for fire-resistance-rated assembly.

3.11 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.
- B. Remove and replace ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.
- C. Remove all debris resulting from the work of this section.

END OF SECTION

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SECTION 09 51 23

ACOUSTICAL TILE CEILINGS

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes:

1. Acoustical tiles for ceilings.
2. Direct attachment of tiles to substrates with adhesive.

B. Related Documents: The Conditions of the Contract and Division 1 apply to this section as fully as if repeated herein.

1.2 REFERENCES

A. The editions of the specifications and standards referenced herein, published by the following organizations, apply to the work only to the extent specified by the reference: Refer to Section 01 42 00 for information concerning availability and use of references.

B. ASTM International:

1. ASTM E84 – Test Method for Surface Burning Characteristics of Building Materials.
2. ASTM E1264 – Classification for Acoustic Ceiling Products.
3. ASTM D3273 – Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.
4. ASTM D3274 - Standard Test Method for Evaluating Degree of Surface Disfigurement of Paint Films by Fungal or Algal Growth, or Soil and Dirt Accumulation.
5. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.

C. Ceilings and Interior Systems Construction Association:

1. CISCA – Ceilings Systems Handbook.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples for Verification: For each component indicated and for each exposed finish required, prepared on Samples of sizes indicated below:

1. Acoustical Tiles: Set of full-size Samples of each type, color, pattern, and texture.
2. Exposed Moldings and Trim: Set of 6-inch long Samples of each type and color.

C. Submittal procedures and quantities are specified in Section 01 33 00.

1.4 INFORMATIONAL SUBMITTALS

- A. Product Test Reports: For each acoustical ceiling tile, for tests performed by a qualified testing agency.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For finishes to include in maintenance manuals.

1.6 MAINTENANCE MATERIAL MATERIALS

- A. Provide extra materials in the manufacturer's unopened packaging, with the manufacturer's label intact, as detailed below:
 - 1. Acoustical Panels: Minimum 2% of each type installed.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: Must be experienced in the installation of systems similar to those specified herein.
- B. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.
 - 1. Build mockup of typical ceiling area as shown on Drawings; minimum 25 square feet.
 - 2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 - 3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 DELIVERY, STORAGE AND HANDLING

- A. Deliver acoustical tiles, suspension-system components, and accessories to Project site in original, unopened packages and store them in a fully enclosed, conditioned space where they will be protected against damage from moisture, humidity, temperature extremes, 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.

1.9 FIELD 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.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - 1. Flame-Spread Index: Comply with ASTM E 1264 for Class A materials; Flame Spread Index of 25 or less.
 - 2. Smoke-Developed Index: 50 or less.

2.2 ACOUSTICAL TILES, GENERAL

- A. Source Limitations:
 - 1. Acoustical Ceiling Tile: Obtain each type from single source from single manufacturer.
- B. 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.
- C. Acoustical Tile Colors and Patterns: Match appearance characteristics indicated for each product type.
 - 1. Where appearance characteristics of acoustical tiles are indicated by referencing pattern designations in ASTM E 1264 and not manufacturers' proprietary product designations, provide products selected by Architect from each manufacturer's full range that comply with requirements indicated for type, pattern, color, light reflectance, acoustical performance, edge detail, and size.

2.2 ACOUSTICAL TILES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Armstrong World Industries, Inc.
 - 2. USG Interiors, L.L.C.
 - 3. CertainTeed Ceilings; www.certainteed.com
 - 4. Substitutions: Section 01 25 00 – Substitution Procedures.
- B. Basis-of-Design Product: Armstrong Fine Fissured™ Tile; Item 746.
- C. Classification: Provide tiles complying with ASTM E 1264 for type, form, and pattern as follows:
 - 1. Type and Form: Type III, mineral base with painted finish; Form 2, water felted.
 - 2. Pattern: CE (perforated, small holes and lightly textured).
 - 3. Texture: Medium Texture.
- D. Color: White.
- E. LR: Not less than 0.85.
- F. NRC: Not less than 0.55.
- G. CAC: Not less than 35.

- H. Edge/Joint Detail: Square, kerfed and rabbeted, for concealed spline installation.
- I. Thickness: 5/8 inch.
- J. Modular Size: 12 by 12 inches.
- K. Sag Resistance: HumiGuard+.
- L. Broad Spectrum Antimicrobial Fungicide and Bactericide Treatment: Provide acoustical tiles treated with manufacturer's standard antimicrobial formulation that inhibits fungus, mold, mildew, and gram-positive and gram-negative bacteria and showing no mold, mildew, or bacterial growth when tested according to ASTM D 3273 and evaluated according to ASTM D 3274 or ASTM G 21.

2.3 METAL EDGE MOLDINGS AND TRIM

- A. Roll-Formed, Sheet-Metal Edge Moldings and Trim: Type and profile indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations complying with seismic design requirements; formed from sheet metal of same material, finish, and color as that used for exposed flanges of suspension-system runners.
 - 1. Provide manufacturer's standard edge moldings that fit acoustical tile edge details and suspension systems indicated and that match width and configuration of exposed runners unless otherwise indicated.

2.4 MISCELLANEOUS MATERIALS

- A. Acoustical Tile Adhesive: Type recommended by acoustical tile manufacturer, bearing UL label for Class 0-25 flame spread.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, including structural framing and substrates 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 for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Examine acoustical tiles before installation. Reject acoustical tiles that are wet, moisture damaged, or mold damaged.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Unless otherwise directed by the reflected ceiling plan, measure the space in which the ceiling system is to be installed and establish a layout that balances border widths at opposite ends of the ceiling.
- B. When possible, coordinate the ceiling system layout to avoid the use of less than half width panels at the perimeter.

3.3 INSTALLATION OF DIRECTLY ATTACHED ACOUSTICAL TILE CEILINGS

- A. Adhesive Installation: Install acoustical tile by bonding to substrate, using amount of acoustical tile adhesive and procedure recommended in writing by tile manufacturer and as follows:
 - 1. Prime ceiling according to CISCA's "Ceiling Systems Handbook."
 - 2. Remove loose dust from backs of tiles by brushing.
 - 3. Install splines in joints between tiles; maintain level of bottom surface of tiles to a tolerance of 1/8 inch in 12 feet and not exceeding 1/4 inch cumulatively.
 - 4. Maintain tight butt joints, aligned in both directions and coordinated with ceiling fixtures.
- B. Install edge moldings and trim of type indicated at perimeter of acoustical tile ceiling area and where necessary to conceal edges of acoustical units.

3.4 CLEANING

- A. Clean exposed surfaces of acoustical tile ceilings, including trim and edge moldings. 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.

END OF SECTION

04/19/19

SECTION 09 65 13

RESILIENT BASE AND ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Thermoset-rubber base.
 - 2. Rubber molding accessories.
- B. Related Documents: The Conditions of the Contract and Division 1 apply to this section as fully as if repeated herein.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples: For each exposed product and for each color and texture specified, not less than 12 inches long.
- C. Samples for Initial Selection: For each type of product indicated.
- D. Samples for Verification: For each type of product indicated and for each color, texture, and pattern required in manufacturer's standard-size Samples, but not less than 12 inches long.
- E. Product Schedule: For resilient base and accessory products. Use same designations indicated on Drawings.

1.3 DELIVERY, STORAGE, AND HANDLING

- A. Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F or more than 90 deg F.

1.4 FIELD CONDITIONS

- A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F or more than 95 deg F in spaces to receive resilient products during the following time periods:
 - 1. 48 hours before installation.
 - 2. During installation.
 - 3. 48 hours after installation.
- B. After installation and until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F or more than 95 deg F.
- C. Install resilient products after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Low-Emitting Materials: Flooring system shall comply with the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

2.2 THERMOSET-RUBBER BASE

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Armstrong World Industries.
 - 2. Burke Mercer Flooring Products; a division of Burke Industries Inc.
 - 3. Flexco.
 - 4. Roppe Corporation, USA.
 - 5. Johnsonite; A Tarkett Company.
- B. Product Standard: ASTM F 1861, Type TS (rubber, vulcanized thermoset), Group I (solid, homogeneous).
 - 1. Style and Location:
 - a. Style A, Straight: Provide in areas with carpet.
 - b. Style B, Cove: Provide in areas with resilient flooring.
- C. Thickness: 0.125 inch.
- D. Height: 4 inches unless otherwise noted.
- E. Lengths: Coils in manufacturer's standard length.
- F. Outside Corners: Preformed.
- G. Inside Corners: Preformed.
- H. Colors: As selected by Architect from full range of industry colors.

2.3 RUBBER MOLDING ACCESSORY

- A. 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:
 - 1. Armstrong World Industries, Inc.
 - 2. Burke Mercer Flooring Products; a division of Burke Industries Inc.
 - 3. Flexco.
 - 4. Johnsonite; A Tarkett Company.
 - 5. Roppe Corporation, USA.
- B. Description: Carpet edge for glue-down applications; reducer strip for resilient flooring; joiner for tile and carpet; and transition strips.

- C. Profile and Dimensions: As indicated.
- D. Locations: Provide rubber molding accessories in areas indicated.
- E. Colors: As selected by Architect from full range of industry colors..

2.4 INSTALLATION MATERIALS

- A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic-cement-based formulation provided or approved by resilient-product manufacturer for applications indicated.
- B. Adhesives: Water-resistant type recommended by resilient-product manufacturer for resilient products and substrate conditions indicated.
 - 1. Adhesives shall comply with the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
 - 1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
 - 1. Installation of resilient products indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.
- B. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.
- C. Do not install resilient products until they are the same temperature as the space where they are to be installed.
 - 1. At least 48 hours in advance of installation, move resilient products and installation materials into spaces where they will be installed.
- D. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient products.

3.3 RESILIENT BASE INSTALLATION

- A. Comply with manufacturer's written instructions for installing resilient base.
- B. Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.
- C. Install resilient base in lengths as long as practical without gaps at seams and with tops of adjacent pieces aligned.
- D. Tightly adhere resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.
- E. Do not stretch resilient base during installation.
- F. On masonry surfaces or other similar irregular substrates, fill voids along top edge of resilient base with manufacturer's recommended adhesive filler material.
- G. Preformed Corners: Install preformed corners before installing straight pieces.

3.4 RESILIENT ACCESSORY INSTALLATION

- A. Comply with manufacturer's written instructions for installing resilient accessories.
- B. Resilient Molding Accessories: Butt to adjacent materials and tightly adhere to substrates throughout length of each piece. Install reducer strips at edges of floor covering that would otherwise be exposed.

3.5 CLEANING AND PROTECTION

- A. Comply with manufacturer's written instructions for cleaning and protecting resilient products.
- B. Perform the following operations immediately after completing resilient-product installation:
 - 1. Remove adhesive and other blemishes from exposed surfaces.
 - 2. Sweep and vacuum horizontal surfaces thoroughly.
 - 3. Damp-mop horizontal surfaces to remove marks and soil.
- C. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.

END OF SECTION

04/19/19

SECTION 09 65 19

RESILIENT TILE FLOORING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Vinyl composition floor tile.

B. Related Documents: The Conditions of the Contract and Division 1 apply to this section as fully as if repeated herein.

C. Related Sections:

1. Section 02 41 19 - Selective Demolition: Removal of existing VCT flooring.
2. Section 09 65 13 - Resilient Base and Accessories.

1.2 REFERENCES

A. The editions of the specifications and standards referenced herein, published by the following organizations, apply to the work only to the extent specified by the reference. Refer to Section 01 42 00 for information concerning availability and use of references.

ASTM International (ASTM)
General Services Administration Federal Specifications (Fed. Spec.)
National Fire Protection Association (NFPA)

B. Armstrong Flooring Technical Manuals:

1. Armstrong Flooring Guaranteed Installation Systems manual, F-5061
2. Armstrong Flooring Maintenance Recommendations and Procedures, manual, F-8663

C. ASTM International:

1. ASTM E 648 - Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source.
2. ASTM E 662 - Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials.
3. ASTM F 710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring.
4. ASTM F 1066 - Standard Specification for Vinyl Composition Tile.
5. ASTM F 1482 - Standard Guide to Wood Underlayment Products Available for Use Under Resilient Flooring.
6. ASTM F 1861 - Standard Specification for Resilient Wall Base.
7. ASTM F 1869 - Standard Test Method for Measuring Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
8. ASTM F 2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes.

D. National Fire Protection Association (NFPA):

1. NFPA 253 Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source.

2. NFPA 258 Test Method for Specific Optical Density of Smoke Generated by Solid Materials.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For each type of resilient floor tile.
 1. Include floor tile layouts, edges, doorways, enclosing partitions, built-in furniture, cabinets, and cutouts.
- C. Samples:
 1. Tile: Submit full size samples of each different color and pattern of floor tile required.
- D. Manufacturer's Installation Procedures: Submit a current copy of the flooring manufacturer's recommended standard installation procedure for each type of flooring material.
- E. Submittal procedures and quantities are specified in Section 01 33 00.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For each type of floor tile to include in maintenance manuals.
- B. Warranty: Warranty documents specified in paragraph 1.11.B.

1.6 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 1. Furnish an additional 5 percent of each different resilient floor tile furnished on the project, to the Owner for repair purposes. Include the cost of this material in the contract price. Select material from the same run number as the material installed. Identify materials as to location used.

1.7 QUALITY ASSURANCE

- A. Single-Source Responsibility: Provide types of flooring and accessories supplied by one manufacturer, including moisture mitigation systems, primers, leveling and patching compounds, and adhesives.
- B. Regulatory Requirements. The quantity of volatile organic compounds (VOC) used for flooring installation shall not exceed the limits permitted under the current regulations of the Bay Area Air Quality Management District.
- C. Requirements for Physically Disabled: Provide resilient flooring that is stable firm, and meeting the slip resistant requirements of 0.5 minimum in accordance with ASTM D2047, the

2016 California Building Code (CBC) Title 24 Part 2; and 2010 ADA Standards for Accessible Design.

- D. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution. Mockup shall use manufacturer approved installation methods including concrete substrate testing.
 - 1. Build mockups for floor tile including resilient base and accessories.
 - a. Size: Minimum 20 sq. ft. for each type, color, and pattern in location directed by Architect.
 - 2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 - 3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
- E. Pre-Installation Meeting: Conduct pre-installation meeting to verify project requirements, substrate conditions, manufacturer's installation instructions, and manufacturer's warranty requirements. Comply with Section 01 31 13 – Coordination and Project Meetings.
- F. Pre-installation Testing: Conduct pre-installation testing as follows:
 - 1. Moisture Tests: Per ASTM F 2170 - Standard Test Method for Determining Relative Humidity in Concrete Slabs Using in-situ Probes; and ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
 - 2. Bond Test: As described in the Armstrong Floor Guaranteed Installation Systems Manual, F-5061.
 - 3. pH Test: Concrete floors should be tested for pH following the procedures outlined in the current edition of ASTM F710.

1.8 QUALIFICATIONS

- A. Installer Qualifications: A qualified installer who employs workers for this Project who are competent in techniques required by manufacturer for floor tile installation.
 - 1. Engage an installer who employs workers for this Project who are trained or certified by floor tile manufacturer for installation techniques required.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Store floor tile and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 65 deg F or more than 85 deg F, with a relative humidity between 40% and 60%. Store floor tiles on flat surfaces.

1.10 FIELD CONDITIONS

- A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 65 deg F or more than 85 deg F in spaces to receive floor tile during the following time periods:

- C. Vinyl composition tile shall conform to the requirements of ASTM F 1066, "Standard Specification Vinyl Composition Floor Tile", Class 2, through-pattern.
- D. Pattern and Color: Selected by Architect from manufacturer's full range of colors and patterns.
- E. Wearing Surface: Smooth.
- F. Thickness: 0.125 inch.
- G. Size: 12 inches by 12 inches.

2.3 ADHESIVES

- A. Adhesives: Water-resistant type recommended by floor tile and adhesive manufacturers to suit floor tile and substrate conditions indicated.
 - 1. For Tile Installation System, Full Spread: Provide Armstrong S-515 Floor Tile Adhesive; S-525 BBT® Bio-Flooring Adhesive; S-700 Floor Tile Adhesive Thin Spread; or S-750 Premium Floor Tile Adhesive, as recommended by the flooring manufacturer.
 - 2. For Tile High-Moisture Installation Warranty, Full Spread: Provide Armstrong S-515 Floor Tile Adhesive; or S-525 BBT® Bio-Flooring Adhesive; as recommended by the flooring manufacturer.

2.4 ACCESSORIES

- A. For patching, smoothing, and leveling monolithic concrete subfloors, provide Armstrong S-184 Fast-Setting Cement-Based Patch and Underlayment; S-194 Cement-Based Patch, Underlayment and Embossing Leveler / S-195 Underlayment Additive; S-453 Level Strong™ cement based self-leveling compound; or S-456 Patch Strong™ flexible patching and smoothing compound.
- B. For priming porous substrates to aid in adhesive bond strength and reducing subfloor porosity, provide S-454 Prime Strong™ acrylic primer for porous substrates. For non-porous substrates, provide S-455 Prime Strong™ acrylic primer for non-porous substrates.
- C. For creating a moisture barrier, provide S-452 Seal Strong™ two part moisture mitigation system.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Site Verification of Conditions: Verify substrate conditions are acceptable for product installation in accordance with manufacturer's instructions (i.e. moisture tests, bond test, pH test, etc.).
- B. Visually inspect flooring materials, adhesives and accessories prior to installation. Flooring material with visual defects shall not be installed and shall not be considered as a legitimate claim.
- C. Examine subfloors prior to installation to determine that surfaces are smooth and free from cracks, holes, ridges, and other defects that might prevent adhesive bond or impair durability or appearance of the flooring material.

- D. Inspect subfloors prior to installation to determine that surfaces are free from curing, sealing, parting and hardening compounds; residual adhesives; adhesive removers; and other foreign materials that might prevent adhesive bond. Visually inspect for evidence of moisture, alkaline salts, carbonation, dusting, mold, or mildew.
- E. Report conditions contrary to contract requirements that would prevent a proper installation. Do not proceed with the installation until unsatisfactory conditions have been corrected.
- F. Failure to call attention to defects or imperfections will be construed as acceptance and approval of the subfloor. Installation indicates acceptance of substrates with regard to conditions existing at the time of installation.

3.2 PREPARATION

- A. Subfloor Preparation: Smooth concrete surfaces, removing rough areas, projections, ridges, and bumps, and filling low spots, control or construction joints, and other defects with one of the following Armstrong Flooring Products:
 - 1. S-184 Fast-Setting Cement-Based Patch and Underlayment;
 - 2. S-194 Cement-Based Patch, Underlayment and Embossing Leveler / S-195 Underlayment Additive;
 - 3. S-453 Level Strong™ cement based self-leveling compound;
 - 4. S-456 Patch Strong™ flexible patching and smoothing compound;
 - 5. S-454 Prime Strong™ acrylic primer for porous substrates; or
 - 6. S-455 Prime Strong™ acrylic primer for non-porous substrates; as recommended by the flooring manufacturer.
 - 7. Refer to Armstrong Flooring Guaranteed Installation Systems manual, F-5061 and ASTM F 710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring for additional information on subfloor preparation.
- B. Subfloor Preparation Moisture Mitigation (as required): Smooth concrete surfaces, removing rough areas, projections, ridges, and bumps, and filling low spots, control or construction joints, mitigate moisture and other defects with one of the following Armstrong Flooring products:
 - 1. S-184 Fast-Setting Cement-Based Patch and Underlayment.
 - 2. S-194 Cement-Based Patch, Underlayment and Embossing Leveler / S-195 Underlayment Additive.
 - 3. S-453 Level Strong™ cement based self-leveling compound.
 - 4. S-456 Patch Strong™ flexible patching and smoothing compound.
 - 5. S-452 Seal Strong™ two part moisture mitigation system; S-454 Prime Strong™ acrylic primer for porous substrates.
 - 6. S-455 Prime Strong™ acrylic primer for non-porous substrates; as recommended by the flooring manufacturer.
 - 7. Refer to Armstrong Flooring Guaranteed Installation Systems Manual, F-5061 and ASTM F 710 Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring for additional information on subfloor preparation.
- C. Subfloor Cleaning: The surface shall be free of dust, solvents, varnish, paint, wax, oil, grease, sealers, release agents, curing compounds, residual adhesive, adhesive removers and other foreign materials that might affect the adhesion of resilient flooring to the concrete or cause a discoloration of the flooring from below.
 - 1. Remove residual adhesives as recommended by the flooring manufacturer.
 - 2. Remove curing and hardening compounds not compatible with the adhesives used, as indicated by a bond test or by the compound manufacturer's recommendations for flooring.
 - 3. Avoid organic solvents.

4. Spray paints, permanent markers and other indelible ink markers must not be used to write on the back of the flooring material or used to mark the concrete slab as they could bleed through, telegraphing up to the surface and permanently staining the flooring material. If these contaminants are present on the substrate they must be mechanically removed prior to the installation of the flooring material.
 5. Refer to the Armstrong Flooring Guaranteed Installation Systems manual, F-5061 and ASTM F 710 Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring for additional information on subfloor preparation.
- D. Subfloor Moisture Testing: For Tile Installation System, Full Spread when using S-700 or S-750 adhesive, perform subfloor moisture testing in accordance with ASTM F 2170 - Standard Test Method for Determining Relative Humidity in Concrete Slabs Using in-situ Probes, ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride, and Bond Tests as described in the Armstrong Flooring Guaranteed Installation Systems Manual, F-5061, to determine if surfaces are dry; free of curing and hardening compounds, old adhesive, and other coatings; and ready to receive flooring.
1. Relative humidity shall not exceed 80%.
 2. MVER shall not exceed 5 lbs./1000 sq. ft./24 hrs.
 3. On installations where both the Percent Relative Humidity and the Moisture Vapor Emission Rate tests are conducted, results for both tests shall comply with the allowable limits listed above.
 4. Do not proceed with flooring installation until results of moisture tests are acceptable.
 5. All test results shall be documented and retained.
- E. For Tile High-Moisture Installation Warranty when using S-515 Adhesive, perform subfloor moisture testing in accordance with ASTM F 2170 - Standard Test Method for Determining Relative Humidity in Concrete Slabs Using in-situ Probes, ASTM F 1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride, and Bond Tests as described in the Armstrong Flooring Guaranteed Installation Systems Manual, F-5061, to determine if surfaces are dry; free of curing and hardening compounds, old adhesive, and other coatings; and ready to receive flooring.
1. Relative humidity shall not exceed 95%.
 2. MVER shall not exceed 7 lbs./1000 sq. ft./24 hrs.
 3. On installations where both the Percent Relative Humidity and the Moisture Vapor Emission Rate tests are conducted, results for both tests shall comply with the allowable limits listed above.
 4. Do not proceed with flooring installation until results of moisture tests are acceptable.
 5. All test results shall be documented and retained.
- F. Concrete pH Testing: Perform pH tests on concrete floors regardless of their age or grade level. All test results shall be documented and retained.

3.3 FLOOR TILE INSTALLATION

- A. Install flooring in strict accordance with the latest edition of Armstrong Flooring Guaranteed Installation Systems Manual, F-5061. Failure to comply may result in voiding the manufacturer's warranty listed in Article 1.11.
- B. Lay out floor tiles from center marks established with principal walls, discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half tile at perimeter.
- C. Lay tiles square with room axis.

- D. Match floor tiles for color and pattern by selecting tiles from cartons in the same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed tiles.
- E. Lay tiles with grain running in one direction.
- F. Scribe, cut, and fit floor tiles to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, and door frames.
- G. Extend floor tiles into toe spaces, door reveals, closets, and similar openings. Extend floor tiles to center of door openings.
- H. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on floor tiles as marked on substrates. Use chalk or other nonpermanent marking device.
- I. Install floor tiles on covers for telephone and electrical ducts, and similar items in finished floor areas. Maintain overall continuity of color and pattern between pieces of tile installed on covers and adjoining tiles. Tightly adhere tile edges to substrates that abut covers and to cover perimeters.
- J. Adhere floor tiles to flooring substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.
- K. Lay tile when adhesive has set tacky, starting at the center of the room and working toward walls. Embed each tile in adhesive with closely fitted, straight, hairline joints. Do not cut tile except at walls or obstructions. Neatly scribe around pipes, fixtures, and equipment to form tight joints free of gaps. Finished floors shall be smooth and free from buckles, cracks, breaks, waves, and projecting edges and shall fit neatly at pipes and other installations and obstructions. Remove all excess adhesive.

3.4 CLEANING

- A. Perform initial and on-going maintenance according to the latest edition of Armstrong Guaranteed Flooring Installation Systems manual, F-5061.

3.5 PROTECTION

- A. Protect installed flooring as recommended by the flooring manufacturer against damage from rolling loads, other trades, or the placement of fixtures and furnishings. (See Finishing The Job in the latest edition of Armstrong Flooring Guaranteed Installation Systems Manual, F-5061.)

END OF SECTION

04/18/19

SECTION 09 91 23

INTERIOR PAINTING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes surface preparation and the application of paint systems on interior substrates.
- B. Related Documents: The Conditions of the Contract and Division 1 apply to this section as fully as if repeated herein.

1.2 DEFINITIONS

- A. Blocking: Two painted surfaces sticking together such as a painted door sticking to a painted jamb.
- B. PDCA: Painting & Decorating Contractors of America www.pdca.org.
- C. SSPC: Scopes of SSPC Surface Preparation Standards and Specifications. www.sspc.org.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include preparation requirements and application instructions.
 - 1. Indicate VOC content.
- B. Samples for Verification: For each type of paint system and in each color and gloss of topcoat.
 - 1. Submit Samples on rigid backing, 8 inches x 10 inches.
 - 2. Apply coats on Samples in steps to show each coat required for system.
 - 3. Label each coat of each Sample.
 - 4. Label each Sample for location and application area.
- C. Product List: Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules. Include color designations.
- D. Submittal procedures and quantities are specified in Section 01 33 00.

1.4 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra paint materials from the same production run as the materials applied and in the quantities described below. Package with protective covering for storage and identify with labels describing contents. Deliver extra materials to Owner.
- B. Quantity: Furnish Owner with an additional 3 percent, but not less than one gallon of each material and color applied.

1.4 QUALITY ASSURANCE

- A. Mockups: Apply mockups of each paint system indicated and each color and finish selected to verify preliminary selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 - 1. Architect will select one surface to represent surfaces and conditions for application of each paint system.
 - a. Vertical and Horizontal Surfaces: Provide samples of at least 50 sq. ft.
 - b. Other Items: Architect will designate items or areas required.
 - 2. Final approval of color selections will be based on mockups.
 - a. If preliminary color selections are not approved, apply additional mockups of additional colors selected by Architect at no added cost to Owner.
 - 3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 - 4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
- B. The intent and requirements of this section, is that materials, items and surfaces which are normally painted and finished in construction of this type and quality, shall be so included, whether or not said materials, items or surfaces are specifically called out and included in the schedules and notes on the drawings, or is, or is not, specifically mentioned in these specifications.
- C. Paint exposed electrical construction which is not factory finished.
- D. The Room Finish Schedule indicates the location of interior room surfaces to be painted or finished. The schedule indications are general and do not necessarily define the detail requirements. Include detailed refinements and further instructions as may be given for the required complete finishing of spaces and rooms.
- E. Regulatory Requirements. The quantity of volatile organic compounds (VOC) used in paint products shall not exceed the limits permitted under the current regulations for architectural coatings of the Bay Area Air Quality Management District.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Delivery:
 - 1. Deliver paint in manufacturer's labeled and sealed containers. Labels shall include manufacturer's name, brand, type, batch number, color of paint and instructions for reducing. Thin only in accordance with printed directions of manufacturer. Thinning shall comply with the regulations of the air pollution control district having jurisdiction.
 - 2. Do not deliver or use materials other than those specified, or approved.
- B. Storage and Handling: Store paint materials and equipment, when not in actual use, in places specifically assigned for that purpose. Ventilate storage space and provide fire protection. Mix and handle paint in these assigned areas; use metal containers for mixing and handling and designed for safety. Remove paint materials, including rags, tarpaulins, mixers, and empty containers and filled or partially filled containers from the building areas at the close of each working day.

1.6 FIELD CONDITIONS

- A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F

- B. Do not apply paints when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

1.7 WARRANTY

- A. Provide an extended warranty under the provisions of Section 01 78 36.
- B. Warrant painting and finishing against peeling, fading, cracking, blistering, or crazing for a period of 2 years from the date of "Substantial Completion". The written warranty shall include materials and labor. The warranty shall be signed by the paint manufacturer, the painter and the Contractor.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis-of-Design Products: Subject to compliance with requirements, provide products listed from one of the following manufacturers for the paint category indicated.
 - 1. Benjamin-Moore.
 - 2. Dunn-Edwards Corp.
 - 3. PPG Paints.
 - 4. Kelly-Moore Paint Co.
 - 5. Sherwin-Williams Co.
- B. Where a specific name is not given for a product or ingredient, provide item of the best quality of the approved manufacturer, which is normally used for the intended purpose.

2.2 PAINT, GENERAL

- A. Material Compatibility:
 - 1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
 - 2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.
- B. Low-Emitting Materials: Interior paints and coatings shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- C. Colorants: The use of colorants containing hazardous chemicals, such as ethylene glycol, is prohibited.
- D. Primer and sealer coats may be thinned no more than 10 percent, with paint manufacturer's thinner. Use other materials as they come from the can, except as otherwise approved.

2.3 COLOR SELECTION

- A. The Architect will select the finish colors and determine the basic hues of all surfaces to be painted or finished.

- B. Colors: Custom colors as selected by the Architect.
- C. After the actual painting and finishing has started, the Architect retains the right to make minor modifications in tone and shade on the various surfaces to suit the actual lighting conditions encountered. Submit additional samples, as required, to assist the Architect in his final selection.
- D. The number of colors to be used in any given room or space, and on the entire project, will be determined by the Architect.

2.4 MATERIALS

- A. Substitutions: Materials will be considered for substitution subject to requirements specified in Section 01 25 00. Submit chemical formulations of materials proposed for substitution to demonstrate that formulation of substitution is similar to formulation of specified product; or results of test showing that performance of substitution is equivalent to performance of specified product.
- B. Acceptable Products: Unless otherwise specified in the Paint Schedule, acceptable products include the following or equal:
 - 1. Ferrous Metal Primer:

Benjamin-Moore; P04 Acrylic Metal Primer
 Dunn-Edwards Corp.; BRPR00-1 Bloc-Rust
 PPG PAINTS; 4020 Pitt Tech Plus (91 g/L VOC)
 Kelly-Moore Paint Co.; 5725 DTM Acrylic Primer/Finish
 Sherwin-Williams Co.; Pro Industrial ProCryl Universal Metal Primer B66-310
 - 2. Acrylic Enamel Undercoat - Interior:

Benjamin-Moore; 253 Moorcraft Superspec Latex Enamel Undercoat
 Dunn-Edwards Corp.; IKPR00 Interkote
 PPG Paints; 1000 Prep & Prime Enamel Undercoater (92.6 g/L VOC)
 Kelley-Moore Paint Co.; 973 Acry-Plex ZERO VOC Interior Wall Primer Undercoat
 Sherwin-Williams Co.; ProMar 200 Zero VOC Primer B282600
 - 3. Vinyl Acrylic Sealer:

Benjamin-Moore; 534 Ultra Spec 500 Interior Latex Primer
 Dunn-Edwards Corp.; VNPR00 Vinylastic
 PPG Paints; 1000 Hi Hide Interior Primer Sealer (92.6 g/L VOC)
 Kelly-Moore Paint Co.; 971 Acry-Plex Low VOC Interior PVA Primer/Sealer
 Sherwin-Williams Co.; Premium Wall & Wood Primer B28
 - 4. Acrylic Latex Enamel - Semi-Gloss - Interior:

Benjamin-Moore; 539 Ultra spec 500 Semi-Gloss
 Dunn-Edwards Corp.; SPMA50 Suprema Semi-Gloss / SZRO50 SpartaZero
 PPG PAINTS; 6-4510XI Speedhide Zero Semi-Gloss Enamel (Zero VOC)
 Kelly-Moore Paint Co.; 1050 Premium Professional Semi-Gloss Enamel
 Sherwin-Williams Co.; Pro Industrial Waterbased Alkyd Urethane Enamel B53
- C. Primer and sealer coats may be thinned no more than 10 percent, with paint manufacturer's thinner. Use other materials as they come from the can, except as otherwise approved.

- D. Secure the Color Schedule before undercoating. Unless otherwise specified, tint undercoats slightly to approximate the color of the finish coat. Obtain approval of colors before proceeding with the finishing operations.
- E. Where a specific name is not given for a product or ingredient, provide item of the best quality of the approved manufacturer, which is normally used for the intended purpose.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
 - 1. Wood: 15 percent.
 - 2. Gypsum Board: 1 percent.
- C. Gypsum Board Substrates: Verify that finishing compound is sanded smooth.
- D. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
- E. Proceed with coating application only after unsatisfactory conditions have been corrected.
 - 1. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates and paint systems indicated.
- B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
 - 1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
- C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.
 - 1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.
- D. Steel Substrates: Remove rust, loose mill scale, and shop primer, if any. Clean using methods recommended in writing by paint manufacturer, but not less than the following:
 - 1. SSPC-SP 1, "Solvent Cleaning."
 - 2. SSPC-SP 2, "Hand Tool Cleaning."
 - 3. SSPC-SP 11, "Power Tool Cleaning to Bare Metal."

- E. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.
- F. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal fabricated from coil stock to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.
- G. Aluminum Substrates: Remove loose surface oxidation.
- H. Wood Substrates:
 - 1. Scrape and clean knots, and apply coat of knot sealer before applying primer.
 - 2. Sand surfaces that will be exposed to view, and dust off.
 - 3. Prime edges, ends, faces, undersides, and backsides of wood.
 - 4. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.

3.3 APPLICATION

- A. Apply paints according to manufacturer's written instructions and recommendations in "MPI Manual."
 - 1. Use applicators and techniques suited for paint and substrate indicated.
 - 2. The number of coats scheduled is the minimum number of coats required. Additional coat(s) shall be applied at no additional cost to the Owner, to completely hide base material, provide uniform color, and to produce satisfactory finish results.
 - 3. Apply coatings without thinning except as specifically required by label directions, or required by these specifications. In such cases, thinning shall be the minimum reduction permitted.
 - 4. Paint surfaces behind movable items same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed items with prime coat only.
 - 5. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
 - 6. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.
- B. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.
- C. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.
- D. Painting Electrical Work:
 - 1. Paint the following work where exposed to view in occupied spaces:
 - a. Equipment, including panelboards.
 - b. Uninsulated metal piping.
 - c. Uninsulated plastic piping.
 - d. Pipe hangers and supports.
 - e. Metal conduit.
 - f. Plastic conduit.

3.4 CLEANING AND PROTECTION

- A. Touch-Up and Refinishing: Touch up, refinish, or repaint runs, sags, misses, holidays, stains and other defects in the painted surfaces, including inadequate coverage and mil thickness as necessary to produce a first-class workmanlike job.
- B. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- C. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- D. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- E. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.5 PAINTING SCHEDULE

A. Interior Surfaces:

- 1. Metals - Acrylic Latex Enamel Semi-Gloss: (Metals including exposed piping, conduit, electrical panels, miscellaneous brackets, bolts, fasteners, supports, prime coated hardware, casing beads, metal grilles and exposed ducts etc., other than plated or factory finished items).
 - 1 coat Ferrous Metal Primer*
 - 1 coat Acrylic Enamel Undercoat - Interior
 - 1 coat Acrylic Latex Enamel - Semi-Gloss - Interior

*Omit 1st coat on shop-primed surfaces.
- 2. Gypsum Board - Acrylic Latex Enamel Semi-Gloss:
 - 1 coat Vinyl Acrylic Sealer
 - 1 coat Acrylic Enamel Undercoat - Interior
 - 1 coat Acrylic Latex Enamel - Semi-Gloss - Interior
- 3. Wood - Acrylic Latex Enamel - Semi-Gloss:
 - 1 coat Acrylic Enamel Undercoat - Interior
 - 2 coats Acrylic Latex Enamel - Semi-Gloss – Interior

END OF SECTION

04/19/19

SECTION 10 21 13.19

SOLID-COLOR REINFORCED COMPOSITE TOILET COMPARTMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Floor-anchored, solid color reinforced composite substrate toilet compartments configured as toilet enclosures.
- B. Related Documents: The Conditions of the Contract and Division 1 apply to this section as fully as if repeated herein.
- C. Related Requirements:
 - 1. Section 09 22 16 - Non-Structural Metal Framing: Coordination with blocking in walls to secure panels, wall posts, and stiles.
 - 2. Section 09 29 00 - Gypsum Board: Coordination with blocking.
 - 3. Section 10 28 13 - Toilet Accessories.

1.2 ACTION SUBMITTALS

- A. Product Data: Submit manufacturer's technical data for materials, fabrication, finishes, fastenings, hardware, and installation details.
- B. Shop Drawings: Submit shop drawings indicating elevations of partitions, thickness of SCRC material, fastenings, proposed method of anchoring, size and spacing of anchors, details of construction, hardware, fittings, mountings and other related items and installation details.
- C. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.
- D. Verification Samples: For each finish product specified, two samples, minimum size 6 inches square representing actual product, color, and patterns.
- D. Product Schedule: For toilet compartments, prepared by or under the supervision of supplier, detailing location and selected colors for toilet compartment material.
- E. Submittal procedures and quantities are specified in Section 01 33 00.

1.3 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For toilet compartments to include in maintenance manuals.

1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Minimum 10 years experience manufacturing similar products.
- B. Installer Qualifications: Minimum 2 years experience installing similar products.

- C. Single Source Requirements: To the greatest extent possible provide products from a single manufacturer.
- D. Coordination: Furnish inserts and anchorages that must be built into other construction for installation of toilet compartments.
- E. Regulatory Requirements: Provide toilet compartments meeting the requirements for the physically disabled of the 2016 California Building Code (CBC) Title 24 Part 2, and 2010 ADA Standards for Accessible Design.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store materials in the manufacturer's original protective packaging except that should packaging become wet, remove it immediately to avoid wet storage stains.
- B. Store materials in an enclosed shelter providing protection from damage and exposure to the elements.

1.6 PROJECT CONDITIONS

- A. Field Measurements: Verify actual locations of toilet fixtures, walls, columns, ceilings, and other construction contiguous with toilet compartments by field measurements before fabrication.
- B. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

1.7 WARRANTY

- A. Submit manufacturer's extended warranty under the provisions of Section 01 78 36.
- B. Submit Manufacturer's standard 25 year limited warranty for panels and stiles against breakage, corrosion, delamination, and defects in factory workmanship.
- C. Submit Manufacturer's standard 1 year guarantee against defects in material and workmanship for stainless steel mounting brackets

PART 2 - PRODUCTS

2.1 MANUFACTURER

- A. Basis-of-Design Products: Based on the quality and performance requirements of the project, specifications are based solely on the products of Bobrick Washroom Equipment, Inc.; www.bobrick.com; as represented by R.E. Edwards & Assoc 925-829-2942. Location of manufacturing shall be the United States.
- B. Substitutions: Section 01 25 00 – Substitution Procedures.

2.2 SOLID COLOR REINFORCED COMPOSITE (SCRC) SUBSTRATE (SierraSeries)

- A. Solid Color Reinforced Composite (SCRC) Partitions: Bobrick SierraSeries.
1. Color(s): As selected by Architect from manufacturer's standard SierraSeries range.
- B. Toilet Partitions:
1. Configuration: Floor-mounted partitions.
 - a. Basis-of-Design: Bobrick 1092.67 SierraSeries Toilet Partitions, vandal resistant.
 - 1) Design: Custom Height.
 - a) Panel Height: 42 inches.
 - b) Floor Clearance: 6 inches.
 - 2) Hardware: Vandal resistant full-height stainless steel hardware.
 - a) Pilaster height: 48" tall.
- C. Materials: Solid color reinforced composite (SCRC) material for stiles and panels, with Bobrick GraffitiOff® coating, thermoset and integrally fused into homogenous piece; high density polyethylene (HDPE), high density polypropylene not acceptable.
1. Composition: Dyes, organic fibrous material, and polycarbonate/phenolic resins.
 2. Surface Treatment: Non-ghosting, graffiti resistant surface integrally bonded to core through a series of manufacturing steps requiring thermal and mechanical pressure.
 3. Edges: Same color as the surface.
 4. Provide material not less than 3/4-inch thick, with edges eased and free from saw marks.
 - a. Color(s): As selected by Architect from manufacturer's standard SierraSeries range.
- D. Performance Requirements:
1. Graffiti Resistance (ASTM D 6578): Passed cleanability test; 5 staining agents.
 4. Scratch Resistance (ASTM D 2197): Maximum load value exceeds 10 kilograms.
 5. Impact Resistance (ASTM D 2794): Maximum impact force exceeds 30 inch-pounds.
 6. Smoke Developed Index (ASTM E 84): Less than 450.
 7. Flame Spread Index (ASTM E 84): Less than 75.
 8. National Fire Protection Association/International Building Code Interior Wall and Ceiling Finish: Class B.
 9. Uniform Building Code: Class II.
- E. Finished Thickness:
1. Stiles: 3/4 inch.
 2. Panels and Screens: 1/2 inch.
- F. Stiles: Floor-anchored stiles furnished with expansion shields and threaded rods.
1. Leveling Devices: 7 gauge, 3/16 inches thick, corrosion-resistant, chromate-treated, double zinc-plated steel angle leveling bar bolted to stile; furnished with 3/8 inch diameter threaded rods, hex nuts, lock washers, flat washers, spacer sleeves, expansion anchors, and shoe retainers.
 2. Stile Shoes: One-piece, 22 gauge, 18-8 S, Type 304 stainless steel, 4 inch height; tops with 90 degree return to stile. One-piece shoe capable of adapting to 3/4 inch or 1 inch stile thickness and capable of being fastened (by clip) to stiles starting at wall line.
- G. Anchors: Expansion shields and threaded rods at floor connections as applicable.

- H. Hardware: Stainless steel. Chrome-plated “Zamak”, aluminum, extruded plastic hardware not acceptable.
 - 1. Materials: 18-8 S, Type 304, heavy-gauge stainless steel with satin finish.
 - 2. Mounting Brackets: Full-Height.
 - a. Mounting Brackets: 18 gauge stainless steel and extend full height of panel.
 - b. U-Channels: 18 gauge stainless steel; secure panels to stiles.
 - c. Angle Brackets: Secure stiles-to-walls and panels to walls.

2.3 FABRICATION

- A. Fabrication, General: Fabricate toilet compartment components to sizes indicated. Coordinate requirements and provide cutouts for through-partition toilet accessories where required for attachment of toilet accessories.
- B. Floor-Anchored Units: Provide manufacturer's standard corrosion-resistant anchoring assemblies with leveling adjustment nuts at pilasters for structural connection to floor. Provide shoes at pilasters to conceal anchorage.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for fastening, support, alignment, operating clearances, and other conditions affecting performance of the Work.
 - 1. Confirm location and adequacy of blocking and supports required for installation.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Prepare substrates including but not limited to blocking and supports in walls and ceilings at points of attachment using methods recommended by the manufacturer for achieving the best result for the substrates under the project conditions.
 - 1. Inspect areas scheduled to receive compartments for correct dimensions, plumbness of walls, and soundness of surfaces that would affect installation of mounting brackets.
 - 2. Verify spacing of plumbing fixtures to assure compatibility with installation of compartments.
- B. If preparation is the responsibility of another installer, notify Architect in writing of deviations from manufacturer's recommended installation tolerances and conditions.
- C. Do not proceed with installation until substrates have been properly prepared with blocking and supports in walls and ceilings at points of attachment and deviations from manufacturer's recommended tolerances are corrected. Commencement of installation constitutes acceptance of conditions.

3.3 INSTALLATION

- A. General: Comply with manufacturer's written installation instructions. Install units rigid, straight, level, and plumb. Secure units in position with manufacturer's recommended anchoring devices.
 - 1. Maximum Clearances:
 - a. Pilasters and Panels: 1/2 inch.
 - b. Panels and Walls: 1 inch.
 - 2. Full-Height (Continuous) Brackets: Secure panels to walls and to pilasters with full-height brackets.
 - a. Locate bracket fasteners so holes for wall anchors occur in tile joints.
 - b. Align brackets at pilasters with brackets at walls.
 - c. At light gage steel framed walls fasten brackets with toggle or molly bolts into metal studs or backing plates fastened directly to the studs.
- B. Floor-Anchored Units: Set pilasters with anchors penetrating not less than 2 inches into structural floor unless otherwise indicated in manufacturer's written instructions. Level, plumb, and tighten pilasters.

3.4 ADJUSTING AND CLEANING

- A. Touch-up, repair or replace damaged products.
- B. Cleaning: Clean compartments upon completion of work and leave free from imperfections.

END OF SECTION

04/19/19

SECTION 10 28 13

TOILET ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Public-use washroom accessories.

B. Related Documents: The Conditions of the Contract and Division 1 apply to this section as fully as if repeated herein.

C. Related Sections:

1. Section 01 11 00 – Summary of Work: Owner-furnished, Owner-installed products.

1.2 REFERENCES

- A. The editions of standards and specifications published by the following organizations, and referenced herein, apply to the work only to the extent specified by the reference. Refer to Section 01 42 00 for information concerning availability and use of references.

American Society for Testing and Materials (ASTM International)
General Services Administration Federal Specifications (Fed. Spec.)

1.3 SUBMITTALS

- A. Shop Drawings: Provide complete information, diagrams, templates, and installation instructions as required for the installation of all items specified herein, and in sufficient time so that all backing, blocking, framing, and formwork can be properly installed, and so that the work of other trades will not be delayed.
- B. Product Data: Submit manufacturer's literature and brochures, and catalog cuts, showing complete details of all manufactured and fabricated items, including materials, dimensions, gages, profiles, method of mounting, and finishes.
- C. Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required. Use designations indicated on the Drawings or specified herein in product schedule.
- D. Submittal procedures and quantities are specified in Section 01 33 00.

1.4 REGULATORY REQUIREMENTS

- A. Provide toilet accessories meeting the requirements for the physically disabled of the 2016 California Building Code (CBC), and 2010 ADA Standards for Accessible Design.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver toilet accessories to the site in unopened containers labeled with the manufacturer's name and model numbers as they occur on the submittals. Store accessories in their containers in a dry location.

1.6 WARRANTY

- A. Provide an extended warranty under the provisions of Section 01 78 36.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Units specified are based on Bobrick Washroom Equipment Inc. to establish a standard of quality. Acceptable manufacturers or equal:

Bobrick Washroom Equipment Inc.
American Specialties, Inc.
Bradley Corp.
Substitutions: Section 01 25 00 - Substitution Procedures.

2.2 MATERIALS

- A. Stainless Steel: ASTM A666, Type 304, with No. 4 finish (satin), minimum nominal thickness of 0.0312 inch unless otherwise specified.
- B. Sheet Steel: ASTM A1008, cold rolled, commercial quality, 0.0359-inch minimum nominal thickness; surface preparation and metal pretreatment as required for applied finish.
- C. Galvanized Steel Sheet: ASTM A653, G60.
- D. Chromium Plating: ASTM B456, Service Condition Number SC 2 (moderate service), nickel plus chromium electro-deposited on base metal.
- E. Fasteners: Stainless steel except fully concealed fasteners may be galvanized steel.

2.3 FABRICATION

- A. Surface-Mounted Toilet Accessories: Unless otherwise indicated, fabricate units with tight seams and joints, and exposed edges rolled. Provide concealed anchorage where possible.

2.4 TOILET ACCESSORY SCHEDULE

- A. Stainless Steel, Welded, Angle Frame Mirrors:
 - 1. Basis of Design: Bobrick Model B-290 1830.
 - a. Overall Size: 18 inches W x 30 inches H.
 - 2. Angle Frame:
 - a. Materials: Type 304 stainless steel angle 3/4 inch x 3/4 inch, with satin finish with vertical grain on exposed surfaces.

- b. Construction: One-piece, roll-formed construction with continuous integral stiffener.
- c. Design: Beveled design on front of angle to hold mirror tightly against frame; prevents exposure to sharp edges.
- d. Corners: Heliarc welded, ground, and polished smooth.
- 3. Mirror:
 - a. No. 1 quality, 1/4 inch float/plate glass.
 - b. Edges: Protected with plastic filler strips.
 - c. Back of Mirror: Protected by full-size, shock-absorbing, water-resistant, non-abrasive 3/16 inch thick polyethylene padding.
- 4. Mounting: Removable, galvanized steel back with integral horizontal hanging brackets located at top and bottom for mounting on Concealed one-piece rectangular wall hanger(s); galvanized steel back fastened to frame with Concealed screws to permit glass replacement; attachment by rivets or tabs is not acceptable; Concealed Phillips head locking setscrews secure mirror to wall hanger in bottom of frame.
- 5. Other acceptable products or equal:

American Specialties, Inc.; 0600 Series
Bradley Corp.; 700 Series

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Before covering wall framing with gypsum board, examine framing to ensure that backing plates have been installed behind surface mounted accessories in such positions as to receive all attachment screws.
- B. Do not proceed with the work until unsatisfactory conditions have been resolved.

3.2 INSTALLATION

- A. Install accessories in accordance with the manufacturer's printed instructions except install surface mounted accessories other than grab bars with molly or toggle bolts to metal studs or backing plates attached directly to studs.

3.3 ADJUSTING AND CLEANING

- A. Adjust toilet accessories for proper operation and verify that mechanisms function smoothly. Replace damaged or defective items.
- B. Clean and polish all exposed surfaces in strict accordance with manufacturer's recommendations after removing temporary labels and protective coatings.

END OF SECTION

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SECTION 10 44 13

FIRE PROTECTION CABINETS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Fire extinguisher cabinets for existing fire extinguishers.
- B. Related Documents: The Conditions of the Contract and Division 1 apply to this section as fully as if repeated herein.
- C. Related Sections:
 - 1. Section 02 41 19 – Selective Demolition: Salvage of designated (e) fire extinguisher to be reinstalled in new fire extinguisher cabinet.

1.2 REFERENCES

- A. The editions of the specifications and standards referenced herein, published by the following organizations, apply to the work only to the extent specified by the reference. Refer to Section 01 42 00 for information concerning availability and use of references.

ASTM International (ASTM)

National Association of Architectural Metal Manufacturer's (NAAMM)

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Cabinets: Materials description for fire extinguisher cabinets include roughing-in dimensions, details showing mounting methods, relationships to surrounding construction, door hardware, cabinet type and materials, trim style and door construction, door style and materials.
 - 3. Installation instructions for each product specified.
- B. Shop Drawings:
 - 1. Small-scale plans showing locations of fire extinguisher cabinets and individual fire extinguishers.
 - 2. Product Schedules showing each type of cabinet and extinguisher to ensure proper fit and function.
 - 3. Indicate installation procedures and accessories required for a complete installation.
- C. Submittal procedures and quantities are specified in Section 01 33 00.

1.4 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For fire-protection cabinets to include in maintenance manuals.

1.5 REGULATORY REQUIREMENTS

- A. Existing fire extinguishers shall be labeled by Underwriters' Laboratories, Inc (UL) for the specified ratings and classifications, as acceptable to the State Fire Marshal.
- B. Fire extinguisher cabinet doors to open with 5 pounds maximum force.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver cabinets to the site in unopened containers, labeled plainly with the manufacturer's names and brands. Deliver cabinets to the site ready for installation.
- B. Store cabinets in safe, dry locations and do not unpack until needed for installation. Handle and install materials in a manner that will protect them from damage.

PART 2 - PRODUCTS

2.1 FIRE EXTINGUISHER CABINETS

- A. General: Provide fire extinguisher cabinets where indicated, of suitable size for housing fire extinguishers of types and capacities indicated or specified.
- B. Acceptable products or equal:
 - JL Industries; Cosmopolitan Series. (Basis-of-Design product).
 - Larsen's Manufacturing Co.; (SS).
 - Potter-Roemer Div.; Alta (stainless).
- C. Cabinet with Stainless Steel Trim and Door: Cosmopolitan Series.
 - 1. Cabinet Style: Semi-recessed.
 - 2. Components:
 - a. Tub (Semi-recessed Cabinets): Cold-rolled steel.
 - 1) Finish: Factory-applied powder coat paint finish.
 - a) Standard Color: White.
 - b. Door and Trim Construction: Stainless steel; flush doors with 5/8 inch door stop attached by continuous hinge and equipped with black ABS recessed pull with roller catch.
 - 1) Finish: Factory-applied ground and polished finish.
 - a) Standard Finish: #4 directional satin finish.
 - c. Trim Style and Depth:
 - 1) Semi-Recessed Cabinet:
 - b) Square Edge: 1-1/2 inch.
 - 2) Trim Dimensions: 1-3/4 inch face trim on frame and 1-1/4 inch face trim on door.
 - 3. Fire-Rating: Nonfire-rated.

2.2 MOUNTING BRACKETS

- A. Mounting Brackets: Manufacturer's standard steel, designed to secure fire extinguishers to interior of fire extinguisher cabinet, of sizes required for types and capacities of fire extinguishers indicated, with plated or baked-enamel finish (red or black in color).

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

J. L. Industries, Inc., a division of Activar Construction Products Group;
www.activarcpg.com;
Larsen's Manufacturing Co.
Potter-Roemer Div.

2.5 CABINET DOOR STYLE

- A. Door Style: Style V: Vertical Duo Panel; narrow vertical glazing full height of door; with ADAC Flush Pull Handle. Plastic recessed cup-type handle.
- B. Door Glazing: Clear tempered glass.

2.6 FABRICATION

- A. Fire-Extinguisher Cabinets: Provide manufacturer's standard box (tub) with trim, frame, door, and hardware to suit cabinet type, trim style, and door style indicated.
1. Weld joints and grind smooth.
 2. Provide factory-drilled mounting holes.
 3. Prepare doors and frames to receive locks.
 4. Install door locks at factory.
- B. Cabinet Doors: Fabricate doors according to manufacturer's standards, from materials indicated and coordinated with cabinet types and trim styles.
1. Fabricate door frames with tubular stiles and rails and hollow-metal design, minimum 1/2 inch thick.
 2. Fabricate door frames of one-piece construction with edges flanged.
 3. Miter and weld perimeter door frames.
- C. Cabinet Trim: Fabricate cabinet trim in one piece with corners mitered, welded, and ground smooth.

2.7 GENERAL FINISH REQUIREMENTS

- A. Comply with NAAMM's AMP 500, "Metal Finishes Manual for Architectural and Metal Products," for recommendations for applying and designating finishes.
- B. Protect mechanical finishes on exposed surfaces of fire-protection cabinets from damage by applying a strippable, temporary protective covering before shipping.
- C. Finish fire-protection cabinets after assembly.
- D. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine walls and partitions for suitable framing depth and blocking where semi-recessed cabinets will be installed.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Prepare recesses in walls for semi-recessed fire extinguisher cabinets as required by type and size of cabinet and style of trim and to comply with manufacturer's instructions.

3.3 INSTALLATION

- A. Mount items specified herein in locations indicated and at mounting height of +48-inches to fire extinguisher handle above finished floor, or at heights to comply with applicable regulations of State Fire Marshal. Coordinate the cabinet manufacturer's mounting details with other trades as their work progresses.
- B. Securely fasten fire extinguisher cabinets to structure, square and plumb, to comply with manufacturer's instructions. Use oval head fasteners with exposed surfaces of same finish as cabinet. Fasten cabinets to wood studs with full threaded wood screws or with sheet metal screws.
- C. Mounting Brackets: Fasten mounting brackets to surfaces, square and plumb, at locations indicated.
- D. Wall Signs:
 - 1. Location: Where shown or directed.
 - 2. Apply on walls after field painting is completed and has been accepted.

3.4 FIELD QUALITY CONTROL

- A. Ensure that each extinguisher is fully charged, and that inspection of each extinguisher has been performed, as evidenced by the National Association of Fire Equipment Distributors certification tag, just prior to turnover.

3.5 ADJUSTING AND CLEANING

- A. Remove temporary protective coverings and strippable films, if any, as fire-extinguisher cabinets are installed unless otherwise indicated in manufacturer's written installation instructions.
- B. Adjust fire-extinguisher cabinet doors to operate easily without binding. Verify that integral locking devices operate properly.
- C. On completion of fire-extinguisher cabinet installation, clean interior and exterior surfaces as recommended by manufacturer.
- D. Touch up marred finishes, or replace fire-extinguisher cabinets that cannot be restored to factory-finished appearance. Use only materials and procedures recommended or furnished by fire-extinguisher cabinet and mounting bracket manufacturers.

- E. Replace fire-extinguisher cabinets that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION

04/19/19

SECTION 22 00 00
PLUMBING SYSTEMS

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: The work shall consist of furnishing all labor, material, and equipment required to complete the installation of the plumbing systems as indicated on the drawings and described herein, including all incidental work necessary to make it complete and satisfactory and ready for operation. Work shall include, but not be limited to, the following principal items:
 - 1. Demolition of certain plumbing fixtures, equipment, piping and related accessories.
 - 2. Soil, waste and vent piping inside the building including the connection to existing piping.
 - 3. Cold water and hot water piping inside the building including the connection to existing cold water piping.
 - 4. Plumbing fixtures, equipment and trim, including required backing.
 - 5. Trenching and backfilling required for plumbing systems.

1.3 RELATED WORK

- A. Electrical Systems, Division 26.
- B. Heating, Ventilating and Air Conditioning Systems, Section 23 00 00.
- C. Trenching.

1.4 GENERAL REQUIREMENTS

- A. Verification of conditions:
 - 1. Prior to installation of plumbing work, Contractor shall inspect all surfaces to receive said work and arrange with the General Contractor for the satisfactory correction of all defects in workmanship and/or material that could interfere with the work specified herein.
 - 2. Installation of any plumbing work or materials on any surface shall constitute acceptance by the Contractor of such surfaces as being in proper condition to receive herein specified materials.
- B. Examination of site: Examine site prior to bidding. Compare it with drawings and specifications. Check conditions and take measurements, which may affect work. No allowance shall subsequently be made for any extra expense due to failure to make such examination.

- C. Manufacturer's directions: Follow manufacturer's directions covering points not shown on the drawings or specified herein. Manufacturer's directions do not take precedence over drawings and specifications. Where these are in conflict with drawings and specifications, notify Architect for clarifications before installing the work.
- D. Codes: Work and materials shall be in full accordance with all applicable local or state ordinances, California Building Code, California Plumbing Code, National Fire Protection Association, State of California Safety Orders, and State Fire Marshal. Whenever drawings and specifications require larger sizes or higher standards than are required by regulations, drawings and specifications govern. Whenever drawings or specifications require something, which will violate regulations, regulations govern. No extra charge will be paid for furnishing items required by regulations but not specified or shown on drawings.
- E. Cooperation with other trades: Schedule work and cooperate with other divisions to avoid delays, interferences and unnecessary work, conforming to construction schedule, making installation when and where required. A special effort shall be made to coordinate with the mechanical Contractor so as not to block installation of the mechanical systems. The clearances above ceilings on this project are limited and the ductwork and piping are to have the highest priority. All plumbing work is to be coordinated with the mechanical Contractor such that the ductwork and piping can be installed in the locations shown on the mechanical drawings. If installed work is later found to interfere with work of other divisions, make all necessary changes at Contractor's expense.
- F. Licenses, permits, services, and fees: Secure and pay for all licenses required to begin, perform, and complete work.
- G. Quietness of operation: Adjust, repair, or replace any equipment producing objectionable noise or vibration in any occupied areas of building, including providing additional brackets, bracing, etc., to prevent objectionable noise or vibration.
- H. All components of the cold water system are to be in full compliance with CA AB 1953.

1.5 SUBMITTALS

- A. When specific names are used in connection with materials, they are used as standards only, but this implies no right to use other materials or methods unless approved by the Architect.
- B. Decision of the Architect shall govern as to what materials are acceptable substitutions. Burden of proof as to equality of any proposed fixtures, material, or equipment shall be upon the Contractor. Petition in favor of proposed substitute materials shall be made directly by the Contractor. If any tests are necessary to determine quality of proposed items, such tests shall be made at the expense of the Contractor by an unbiased laboratory satisfactory to the Architect.
- C. Submit shop drawings and material list in six (6) copies. Submit material list and shop drawings after official award of contract. Obtain approval of the Architect before installation. Shop drawings shall be submitted for all materials, equipment, and controls.
- D. Check shop drawings and submittals before forwarding to Architect and ascertain that submittals meet all requirements of drawings and specifications and conform to structural space conditions.
- E. Shop drawings also shall be prepared for modifications to architectural, plumbing, electrical, and mechanical work required by proposed materials - i.e., relocation of drains, revised electrical circuits, relocation of penetrations, etc.

- F. Installation of any approved substituted equipment is the Contractor's responsibility and any changes required to work included under other sections for installation of approved substituted equipment must be made to the satisfaction of the Architect and without any additional cost. Approval by Architect of substituted equipment and/or dimension drawings does not waive these requirements.
 - G. Review of drawings and materials submitted for approval shall not be construed as a complete check or constitute a waiver of the requirements of the drawings and specifications. This review shall not relieve the Contractor of the responsibility to fit the proposed materials to the spaces provided and to effect necessary rearrangement or construction of other work. Contractor agrees that shop drawing submittals processed by the Architect do not become contract documents and are not change orders; that the purpose of the shop drawing review is to establish a reporting procedure and is intended for the Contractor's convenience in organizing his work and to permit the Architect to monitor the Contractor's progress and understanding of the design. If deviations, discrepancies, or conflicts between shop drawing submittals and the contract documents are discovered either prior to or after the shop drawing submittals are processed by the Architect, the Contractor agrees that the contract documents shall control and shall be followed.
 - H. Submittal lists shall include the identifying marks assigned to the items. Give name of manufacturer, brand name, and catalog number of each item. Submit complete list at one time with items arranged and identified in numerical sequence within each section and article specifications. Listing items "as specified" without both make and model or type designation is not acceptable, except as noted. Only pipe and fittings not specified by brand names may be listed "as specified" without manufacturer's name, provided proposed materials comply with specification requirements.
 - I. Descriptive Data: Submit six (6) copies of complete description information and performance data covering equipment that is specified but for which catalog plate numbers, brand names, or specific models have not been used.
 - J. Submittal of substitutions shall be limited to one proposal for each type or kind of item, unless otherwise permitted by the Architect.
 - K. Also comply with the requirements of Division 01 - General Requirements.
- 1.6 DRAWINGS, SPECIFICATIONS, AND COORDINATION OF WORK
- A. Drawings are essentially diagrammatic. Size and locations of equipment are generally shown to scale. Make use of data in all contract documents, and verify this information against field conditions.
 - B. The drawings indicate the required size and point of termination of ductwork, pipes, and equipment. Install pipe with all necessary offsets and fittings to conform to the structure, avoid obstructions, preserve headroom, maintain required accessibility, and satisfy the requirements of the governing codes and the standards of good practice.
 - C. The architectural and structural drawings and specifications take precedence over the mechanical drawings in the representation of the general construction work. Refer to the drawings, specifications, and review shop drawings for all work in order to coordinate plumbing work with the other work of the project.
 - D. Where changes in indicated locations or arrangements are necessary due to conditions in building construction, interference with work in other divisions, or conflict in location, make changes at no cost to the Owner deviations, offsets, rises or drops in piping that may be necessary, whether shown or not, shall be made at no expense to Owner.

- E. Bring discrepancies between different drawings, between drawings and actual field conditions, or between drawings and specifications promptly to the attention of the Architect for decision, and stop all work on affected areas subject to resolution of the conflict.

1.7 MATERIALS AND WORKMANSHIP

- A. All materials and equipment to be new and in perfect condition. Materials or equipment for similar uses are to be of same type and manufacturer.
- B. Workmanship shall be of best standard practice of the trade.

1.8 PROTECTION OF EQUIPMENT

- A. The Contractor shall be responsible for damage to any of the work of this section until final acceptance. Cover all openings, apparatus, equipment, and appliances both before and after being set in place to prevent misuse or disfigurement of the apparatus, equipment, or appliances.

1.9 OPENINGS

- A. The Contractor shall cooperate with other trades in providing information for openings required in walls, floors, and roof for pipe and equipment.
- B. The Contractor shall pay all extra costs for cutting of openings as a result of incorrect, delayed, or neglected information.
- C. Make absolutely watertight any openings through waterproofed construction caused by the penetration of piping and in a manner approved by the Architect.

1.10 CLEAN-UP

- A. Thoroughly clean all parts of the apparatus and equipment. Exposed parts which are to be painted shall be thoroughly cleaned and all grease and oil spots removed with cleaning solvent.
- B. Remove all debris and surplus equipment and leave installation in perfect condition ready for use.

1.11 CONSTRUCTION REVIEW

- A. All services rendered by the Architect or any of his consultants consist of professional opinions and recommendations made in accordance with generally accepted engineering practice.
- B. Under no circumstances is it the intent of the Architect or any of his consultants to directly control the physical activities of the Contractor or the Contractor's workmen in the accomplishment of work on this project.
- C. The presence of the field representative of the Architect or any of his consultants at the site is to provide to the Owner and/or Architect an additional source of professional advice, opinions, and recommendations based upon the field representative's observations.

1.12 SAFETY

- A. In accordance with generally accepted construction practices, the Contractor will be solely and completely responsible for conditions on the jobsite, including safety of all persons and property during performance of the work. This requirement will apply continuously and not be limited to normal working hours.
- B. Construction review by the Architect or any of his consultants is not intended to include review of the adequacy of the Contractor's safety measures in, on, or near the construction site or at any other location.

1.13 OPERATING INSTRUCTIONS

- A. Upon completion of work, the Contractor shall place a competent person in charge who will operate the system and instruct the Owner's representative in all details of the operation and maintenance of the plumbing system.
- B. The Contractor shall carefully prepare four (4) descriptive booklets of the entire plumbing systems and a full description of the operation and maintenance of each piece of equipment.
- C. Operating instructions manuals are to include names, addresses, and telephone numbers for the following: Project name, Owner, General Contractor, Plumbing Subcontractor, and equipment manufacturers (including local representatives).
- D. Also comply with the requirements of Division 01 - General Requirements.

1.14 GUARANTEE

- A. The Contractor shall furnish a written guarantee to the Owner that the new materials, equipment, and installation are new, free from mechanical defects, noiseless, and are in perfect operating condition.
- B. The Contractor shall guarantee to replace and repair at his own expense any and all unsatisfactory and defective work and items to the satisfaction of the Owner for a period of one (1) year after the system is put to beneficial use.
- C. The Contractor shall also furnish the Owner with all manufacturer's written guarantees of materials and equipment.
- D. Also comply with the requirements of Division 01 - General Requirements.

1.15 RECORD DRAWINGS

- A. Record drawings are to include all changes made during construction from the design drawings. The record drawings are to show the changes as mark-ups on the design drawings. Shop drawings or CAD drawings will not be accepted as record drawings.
- B. Also comply with the requirements of Division 01 - General Requirements.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Soil, waste and vent piping:

1. Above grade: No-hub cast iron soil pipe and fittings. All pipe and fittings shall conform to CISPI 301, ASTM 888 or ASTM A-74 standards. Pipe and fittings shall be marked with the collective trademark of the Cast Iron Soil Pipe Institute. Pipe and fittings are to be manufactured by AB&I Foundry, Charlotte Pipe, Tyler Pipe or equal. Joints shall be made with No-hub couplings with neoprene gasket, stainless shield and clamp, Tyler pipe, or equal.
2. Below grade: No-hub cast iron soil pipe and fittings. All pipe and fittings shall conform to CISPI 301, ASTM 888 or ASTM A-74 standards. Pipe and fittings shall be marked with the collective trademark of the Cast Iron Soil Pipe Institute. Pipe and fittings are to be manufactured by AB&I Foundry, Charlotte Pipe, Tyler Pipe or equal. Joints shall be made with heavy duty No-hub couplings with neoprene gasket, stainless shield and clamps. Couplings shall be constructed of type 304 stainless steel with 305 stainless steel worm drive screws. Gaskets per ASTM C564. (4 band 80 inch pound torque). Mission Heavy Weight, Husky SD4000, or equal.

B. Cold water and hot water piping:

1. Above grade: Type L copper tubing ANSI H23.1 with wrought copper sweat fittings ANSI B16.22 joined with lead free solder.
2. Below grade: Type K copper tubing ANSI H23.1 with wrought copper sweat fittings ANSI B16.22 joined with lead free solder.

C. Unions and flanges:

1. Steel pipe unions: Malleable iron ground joint pattern with brass to iron seats, 150 psi.
2. Steel pipe flanges: ANSI B16.0, 150 psi forged steel welding type with flat face.
 - a. Copper tubing unions: 150 psi ground joint cast bronze unions with sweat connections.
 - b. Copper tubing flanges: ANSI B16.24, bronze, 150 psi to match standard ASA 150 psi steel flanges with flat face.
 - c. Flange gaskets: Crane Co Cranite, 1/16" full face sheet packing, 150 psi. Coat gaskets with thread lubricant before installation.

D. Dielectric protection:

1. Location: For connection between dissimilar metals in the piping systems to control corrosion caused by galvanic or electrolytic action.
2. Listing: Victaulic Style 47, Lochinvar V-line, or equal.
 - a. Insulated couplings: Threaded for sizes 2" and smaller, grooved or flanged for 2-1/2" and larger.

E. Thread lubricant for steel pipe:

1. Amite Joint Seal Compound No. 250. or equal.

F. Valves: Shall be a product of single manufacturer, Red-White or equal.

1. Check valves (threaded): #236, bronze swing check, 125 psi.
2. Check valves (solder): #237, bronze swing check, 125 psi.
3. Ball valves (threaded): #5092, bronze, 125 psi.
4. Ball valves (solder): #5095, bronze, 125 psi.
5. Valves shall be same size as line in which they are installed. No valve shall be installed with stem pointed below horizontal.

- G. Pipe sleeves: Core holes with rotary diamond tooth core drills.
- H. Pipe hangers and supports: Superstrut or equal.
1. Plumbing piping – soil, waste, and vent piping:
 - a. Conform to ASME B31.9.
 - b. Hangers for pipe sizes 1/2 inch to 1-1/2 inches: Malleable iron, adjustable swivel, split ring.
 - c. Hangers for pipe sizes 2 inches and over: Carbon steel, adjustable, clevis.
 - d. Multiple or trapeze hangers: Steel channels with welded spacers and hanger rods.
 - e. Copper pipe support: Carbon steel ring, adjustable, copper plated.
 2. Plumbing piping – cold water:
 - a. Conform to ASME B31.9
 - b. Hangers for pipe sizes 1/2 inch to 1-1/2 Inches: Malleable iron, adjustable swivel, split ring.
 - c. Hangers for cold pipe sizes 2 inches and over: Carbon steel, adjustable, clevis.
 - d. Hangers for hot pipe sizes 2 inches to 4 inches and over: Carbon steel, adjustable, clevis.
 - e. Multiple or trapeze hangers: Steel channels with welded supports and hanger rods.
 - f. Copper pipe support: Carbon steel ring, adjustable, copper plated.
- I. Seismic bracing: Conform to SMACNA Seismic Restraint Manual Guidelines for Mechanical Systems, Second Edition, 1998.
- J. Cleanouts:
1. Zurn, Josam, J.K. Smith or equal, as scheduled on drawings. Cleanouts shall be furnished with flashing collars when installed in membraned slabs. Furnish suitable wrought iron or steel wrenches for each style of cleanout plug cap.
 2. Cleanouts at interior finished floor areas:
 - a. Lacquered cast iron with anchor flange, reversible clamping collar, threaded top assembly, and round gasketed scored cover in service areas and round gasketed depressed cover to accept floor finish in finished floor areas.
 3. Cleanouts at interior finished wall areas:
 - a. Line type with lacquered cast iron body and round epoxy coated gasketed cover, and round stainless steel access cover secured with machine screw.
 4. Cleanouts at interior unfinished accessible areas: Caulked or threaded type. Provide bolted stack cleanouts on vertical rainwater leaders.
- K. Insulation:
1. Hot water piping:
 - a. Owens/Corning Fiberglass ASJ/SSL-II, or equal, heavy density, 2-piece sectional pipe insulation, jacketed with vapor barrier laminate, continuous pressure sealing adhesive lap and butt joint strip, 1-1/2" thick.
 - b. Apply insulation over clean, dry surfaces butting adjoining sections firmly together, seal smoothly and securely with self-sealing longitudinal lap. Adhere factory furnished 3" wide pressure sealing strips to joints.
 - c. Insulate fittings with fiberglass strips and finish with one-piece PVC fitting cover (Zeston).

L. Piping identification:

1. Piping identification shall be manufactured by Marking Services, Incorporated or equal.
2. Materials:
 - a. Color: Unless specified otherwise, conform with ANSI/ASME A13.1.
 - b. Plastic nameplates: Laminated 3-layer plastic with engraved black 2 inch high letters on light contrasting background color.
 - c. Metal tags: brass aluminum with stamped letters; tag size minimum 1-1/2 inch diameter with smooth edges.
 - d. Plastic pipe markers: Factory fabricated, flexible, semi-rigid, preformed to fit around pipe or pipe covering; minimum information indicating flow direction arrow and fluid being conveyed.

M. Plumbing fixtures: Make and model as scheduled on the drawings or equal.

1. Fixtures and trim: As described in manufacturer's catalog with modifications noted.
2. Vitreous ware fixtures: White, twice-fired, vitreous china.
3. Fixture trim and exposed metal items: Chromeplated unless otherwise noted. Pipes passing through finished walls shall have chromeplated escutcheon plates.
4. Install stops in each water supply to fixtures.
5. No unoccupied fixture faucet holes shall be permitted.
6. Fit exposed fixture setting bolts with china caps.
7. Properly support and securely fasten all fixtures to adequate backing per manufacturer's recommendations.
8. Point up joints between fixtures and wall or floors with white mastic. Mastic shall have sufficient resiliency to prevent cracking or pulling away from wall due to fixture movement.
9. Rough-in and set fixtures to height shown on Architectural drawings or as standard for the industry.
10. Set metering faucets for 10 second run time.

N. Escutcheon plates: For pipes passing through finished ceilings, walls, and floors in conspicuous locations, use chromium-plated steel floor and ceiling plates with set screw or other approved means of holding securely in place.

O. Flashing and counterflashing: For cast iron pipe penetrations through roof, use 4 pound lead flashing with counterflashing. For copper pipe penetration through roof, use copper flashing and counterflashing. Follow the roofing manufacturer's recommendations for all roof penetrations, curbs, platforms, and sleepers.

P. Access panels:

1. In areas other than toilet rooms: Karp Model DSC-214-M, or equal prime coated steel with 14 gauge door and trim and 16 gauge frame, continuous concealed piano hinge, flush screwdriver operated cam latch, size shall be 12"x12".
2. In toilet rooms: Karp Model DSC-214-M, or equal, Type 304 stainless steel, continuous concealed piano hinge, flush screwdriver operated cam latch, size shall be 12"x12".

Q. Underground, uninsulated, steel pipe lines: Shall be wrapped conforming to AWWA HO C203.

R. Equipment scheduled on drawings:

1. Water closets.
2. Lavatories.

3. Sink.
4. Water hammer arrestors.
5. Floor cleanouts.
6. Wall cleanouts.
7. Instantaneous hot water heater.

PART 3 - EXECUTION

3.1 GENERAL

- A. Support exposed and concealed piping on specified hangers properly spaced and set to allow piping to adjust for temperature change expansion and contraction. Evenly space and support piping in parallel.
- B. Install equipment, products and materials in complete accordance with the manufacturer's installation requirements and recommendations.
- C. Coordinate with other trades to provide continuous support channel for all pipes and conduit in exposed locations.
- D. Conceal piping in ceilings, furred walls, partitions and pipe spaces, except where noted otherwise. Provide maximum head room and run piping to maintain proper clearance for piping runs beforehand and with other divisions to ensure clearance. Where work of other divisions prevents installation of piping shown on drawings, reroute piping as directed by Architect at no extra cost to Owner.
- E. Install exposed piping parallel to or at right angles with building walls.
- F. No valve, piece of equipment, or trim shall support the weight of any pipe. Install valves, traps, cleanouts, etc., in accessible locations.
- G. Install piping free from traps and air pockets.
- H. Use special wrenches in assembly of polished, chrome-plated tubing and fittings so that no tool marks are left on pipe fittings.
- I. Wherever changes in sizes of piping occur, use reducing fittings.
- J. Install unions adjacent to threaded valves, equipment, and at other points where required for disassembly.
- K. Provide sleeves wherever pipes run through walls, slabs, beams, footing, and floors large enough for passage of pipe and/or pipe insulation. Sufficiently size sleeves to allow for contraction and expansion of pipe. Pack sleeves with approved packing material. Pack sleeves in walls and slabs below grade and through exterior walls above grade with waterproof mastic or grout.
- L. Set floor drains and floor cleanouts so top of plate and rim will be flush with top of finish flooring.
- M. Where sleeves are missed or misplaced during canning, core holes with rotary diamond tooth core drills.
- N. Fit exposed pipes which pass through walls, ceilings, or floors in finished rooms and conspicuous locations with escutcheon plates.

- O. Install insulating unions or flanges at ferrous and non-ferrous piping connections.
- P. Install water hammer arrestors at all locations of fast closing positive shut-off valves and equipment with fast closing or solenoid valves; including but not limited to flush valves, single handle faucets, dishwashers, etc. Install behind wall access panel with ball shut-off valve. Follow manufacturer's installation instructions for proximity to valve and specific configuration of inlet piping.
- Q. Install trap primers in accordance with manufacturer's installation instructions.
- R. Install 12" long air chamber on hose bibbs and non-single handle faucets including, but not limited to, mop sink faucets.
- S. Minimum bury for exterior piping: 30" below finish grade, except as otherwise noted or determined by invert elevations.
- T. Provide maximum head room and run piping to maintain proper clearance for piping runs. Coordinate beforehand and with other divisions to insure clearance

3.2 PIPE HANGERS, SUPPORTS, AND BRACES

- A. General: Support piping from building structure so that there is no apparent deflection in piping runs. Fit piping with steel sway braces and anchors to prevent vibration and/or horizontal displacement under load when required. Support piping only by approved pipe hangers. Pipes shall not be supported from, or braced to, ducts, other pipes, conduits, or any materials except building structure. Piping or equipment shall not be supported or hung by wire, rope, plumbers tape, or blocking of any kind.
- B. Hanger spacing (not for piping or multiple piping supports):

<u>Type of Pipe</u>	<u>1" diam. & smaller</u>	<u>1-1/4" diam. & lgr</u>
Steel pipe	8'- 0"	10'- 0"
Copper tubing	6'- 0"	8'- 0"
Cast iron pipe	All sizes 5'- 0" max. and not less than one hanger per joint	
- C. Multiple piping support: 6'- 0".
- D. Support vertical piping at each floor level with riser clamps.
- E. Piping at completion of job shall be rigid and immobile. Install additional pipe supports, brackets, and hangers as required to accomplish a rigid and immobile piping system.
- F. Double wrap copper pipe with heavy vinyl tape where pipe comes in contact with ferrous materials.

3.3 EXCAVATING, TRENCHING, AND BACKFILLING

- A. Trenches: Shall have uniform grades. In case of over-excavation, fill to bottom of pipe with selected fill or sand. Provide dewatering pumping as required. Comply with Division 31 – Sitework.
- B. Shoring: Comply with Division 31 - Sitework.
- C. Cleaning of trenches: After pipe lines have been tested, inspected, and approved, and prior to backfilling, remove forms, trash, and debris from trenches, then backfill.
- D. Backfill and compaction: Comply with **Division 31 - Sitework**.

3.4 CLEANING

- A. General: Thoroughly clean exterior and interior of piping, equipment, and materials before systems are put in operation. Clean plumbing fixtures with soap and water. Remove marks and labels. Clean and polish chrome. Remove paint, concrete, plaster, and other foreign materials. Clean valve handles and stems of any paint, dirt, or other foreign materials. Clean drains of dirt and debris. Remove shipping paper from cleanout covers and drain strainers and polish. Remove and clean out dirt and debris from pipe spaces, including wire and blocking.

3.5 ADJUSTMENTS

- A. Adjust water closet and urinal flush valves to provide proper flush. Adjust faucets to their normal working conditions. Adjust drinking fountains and bottle fillers to their proper flow conditions.

3.6 TESTING

- A. Soil, waste and vent piping: Test with minimum height of stand pipe 10'-0". Test duration to be a minimum of four (4) hours.
- B. Cold water and hot water piping: Hydrostatically test under a pressure of 150 psi at highest point for a minimum test duration of four (4) hours.
- C. If systems are tested in sections, include connection to previously tested section. Final pressures at end of test period shall be no more nor less than that caused by expansion or contraction of test medium due to temperature changes. Apply tests for a minimum period of four (4) hours or as required by local codes or agencies having jurisdiction. Where testing pressures are higher than rated pressure for equipment, or special trim, remove and bypass item with temporary piping for purposes of test.

3.7 PIPING IDENTIFICATION

- A. Installation:
 - 1. Degrease and clean surfaces to receive adhesive for identification materials.
 - 2. Plastic nameplates: Install with corrosive-resistant mechanical fasteners or adhesive.
 - 3. Plastic or metal tags: Install with corrosive-resistant chain.
 - 4. Plastic pipe markers: Install in accordance with manufacturer's instructions. Maximum spacing is to be 20 feet on center.
 - 5. Valves: Identify valves in main and branch piping with tags.
 - 6. All exposed piping and piping above accessible ceilings shall be neatly identified spaced not more than twenty (20) feet on center.
 - 7. In addition to the maximum spacing listed above, labeling is to occur at each change of direction in piping and at each side of the wall where the piping penetrates a wall.

3.8 STERILIZATION OF WATER PIPING

- A. At the completion of all work and after the system is tested, flushed, and cleaned, all potable water lines shall be sterilized in accordance with local Department of Public Health, "AWWA" Standard C601, and the following:
 - 1. Water treatment firm shall be Bennett Marine Utility, Inc., Burlingame, California, or approved equal.

2. A solution of sodium hypochlorite containing not less than 200 ppm of free chlorine shall be injected into the system in such a manner as to insure that the entire system is completely filled with the solution. During this procedure, all valves shall be operated and out-lets shall be tested for residual chlorine. Injection shall continue until all outlets indicate at least 200 ppm of free chlorine.
3. After injection, the system shall be isolated and the solution held in retention for a period of not less than three (3) hours. Tests shall be made for residual chlorine for retention. If such tests indicate less than 200 ppm of residual chlorine, the entire procedure shall be repeated. After satisfactory sterilization has been effected, the system shall be flushed from an approved source, until all traces of chlorine have been removed or until the chlorine content is no greater than that in the existing supply.
4. A Certificate of Sterilization/Chlorination, together with bacteriological reports, shall be prepared by the water treatment firm and delivered to the Architect and mechanical engineer stating the work has been done in accordance with the specifications set forth above and prior to final acceptance by Owner.

END OF SECTION

04/19/19

SECTION 23 00 00

HEATING, VENTILATING AND AIR CONDITIONING SYSTEMS

PART 1 - GENERAL

1.1 GENERAL CONDITIONS

- 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. The work shall consist of furnishing all labor, material, and equipment required to complete the installation of the heating, ventilating, and air conditioning (HVAC) systems as indicated on the Drawings and described herein, including all incidental work necessary to make it complete and satisfactory and ready for operation. Work shall include, but not be limited to, the following principal items:
 - 1. Demolition of certain HVAC equipment, duct, controls and related accessories.
 - 2. Roof exhaust fan.
 - 3. Exhaust ductwork systems complete with necessary volume dampers, access doors, hangers, supports, and accessories.
 - 4. Miscellaneous, including instruments, sleeves, flashings, tags and markings, and all accessories and items necessary for a complete installation.
 - 5. Testing and adjusting all system components.
 - 6. Testing and balancing of all air systems.

1.3 RELATED WORK

- A. Plumbing Systems, Section 22 00 00.
- B. Electrical Systems, Division 26.

1.4 GENERAL REQUIREMENTS

- A. Verification of conditions: Prior to installation of HVAC work, inspect all surfaces to receive said work and arrange for the satisfactory correction of all defects in workmanship and/or material that could interfere with the work specified herein. Installation of any HVAC work or materials on any surface shall constitute acceptance of such surfaces as being in proper condition to receive herein specified materials.
- B. Codes: Work and materials shall be in full accordance with all applicable local or state ordinances, California Building Code, California Mechanical Code, National Fire Protection Association, State of California Safety Orders, and State Fire Marshal. Whenever drawings and specifications require larger sizes or higher standards than are required by regulations, drawings and specifications govern. Whenever drawings or specifications require something, which will violate regulations, regulations govern. No extra charge will be paid for furnishing items required by regulations but not specified or shown on drawings.
- C. Reference standards: Published specifications, standards, tests, or recommended methods of trade, industry, or governmental organizations apply to work of this Section where cited below:

1. Air Moving and Conditioning Association (AMCA).
2. American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE).
3. American Society of Mechanical Engineers (ASME).
4. American Society of Plumbing Engineers (ASPE).
5. Associated Air Balance Council (AABC).
6. National Electrical Manufacturers Association (NEMA).
7. National Fire Protection Association (NFPA).
8. Sheet Metal and Air Conditioning Contractors National Association (SMACNA).
9. California Building Code (CBC).
10. State of California - OSHA.
11. California Mechanical Code (CMC).
12. The State of California Codes and Safety Orders.
13. 2016 California Building Energy Efficiency Standards (Title 24).
14. State Fire Marshal requirements (SFM).
15. Air Conditioning and Refrigeration Institute (ARI).
16. State of California Environmental Quality Act.
17. American Society of Testing and Materials (ASTM).
18. Underwriters Laboratories (UL).
19. Occupational Safety and Health Act (OSHA).
20. National Bureau of Standards (NBS).
21. American National Standards Institute (ANSI).
22. AMCA Standard 99: Standards Handbook.
23. AMCA/ANSI Standard 204: Balance Quality and Vibration Levels for Fans.
24. AMCA Standard 210: Laboratory Methods of Testing Fans for Ratings.
25. AMCA Standard 300: Reverberant Room Method for Sound Testing of Fans.
26. AMCA Standard 500: Test Methods for Louvers, Dampers and Shutters.
27. ARI Standard 410: Forced-Circulation Air-Cooling and Air-Heating Coil.
28. ANSI/ASHRAE 15: Safety Code for Mechanical Refrigeration.
29. ASHRAE Standard 52: Gravimetric and Dust Spot Procedures for Testing Air Cleaning Devices Used in General Ventilation for Removing Particulate Matter.
30. ASHRAE/ANSI Standard 111: Practices for Measurement, Testing, Adjusting and Balancing of Building Heating, Ventilation, Air-Conditioning and Refrigeration Systems.
31. ASME Section VIII: Unified Pressure Vessel Code.
32. UL Standard 1995: Heating and Cooling Equipment.
33. ASTM A-525: Specification for General Requirements for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process.
34. ASHRAE Standard 62.1-2016: Ventilation for Acceptable Indoor Air Quality.
35. ANSI/ASHRAE Standard 55-2013: Thermal Environmental Conditions for Human Occupancy.

D. Materials and workmanship:

1. All materials and equipment to be new and in perfect condition. Materials or equipment for similar uses are to be of same type and manufacturer.
2. Workmanship shall be of best standard practice of the trade.

E. Protection of equipment:

1. The Contractor shall be responsible for any damage to any of the work of this section until final acceptance. Cover all duct, pipe and equipment openings, and cover all apparatus, equipment, and appliances both before and after being set in place to prevent misuse or disfigurement of the apparatus, equipment, or appliances.

F. Openings:

1. Cooperate with other trades in providing information as to openings required in walls, floors, and roof for ducts and equipment.
2. Pay all extra costs for cutting of openings as a result of incorrect, delayed, or neglected information.
3. Make absolutely watertight any openings through waterproofed construction caused by the penetration of ductwork or piping, in a manner approved by the Architect.

G. Cleanup:

1. Thoroughly clean all parts of the apparatus and equipment. Exposed parts, which are to be painted shall be thoroughly cleaned of cement, plaster, and other materials, and all grease and oil spots removed with cleaning solvent.
2. Inside of all pipes, ducts, etc., shall be flushed or cleaned before being placed in operation, and all strainers shall be cleaned after operational tests.
3. Remove all debris and surplus equipment and leave installation in perfect condition ready for use.

H. Construction review:

1. All services rendered by the Architect or any of his consultants consist of professional opinions and recommendations made in accordance with generally accepted Architectural practice.
2. Under no circumstances is it the intent of the Architect or any of his consultants to directly control the physical activities of the Contractor or the Contractor's workmen in the accomplishment of the Work.
3. The presence of the field representative of the Architect or any of his consultants at the site is to provide to the Owner and/or Architect an additional source of professional advice, opinions, and recommendations based upon the field representative's observations.

I. Safety:

1. In accordance with generally accepted construction practices, the Contractor will be solely and completely responsible for conditions on the project site including safety of all persons and property during performance of the work. This requirement will apply continuously and not be limited by normal working hours.
2. Construction review by the Architect or any of his consultants is not intended to include review of the adequacy of the Contractor's safety measures in, on, or near the project site or at any other location.

J. Welder's qualifications:

1. All welding must be performed by registered welders qualified to perform welding operations in accordance with ASME Code Standards.

1.5 SUBMITTALS

- A. When specific names are used in connection with materials, they are used as standards only, but this does not imply the right to use other materials or methods unless approved by the Architect.
- B. Decision of the Architect shall govern as to what materials are acceptable substitutions. Burden of proof as to equality of any proposed fixtures, material, or equipment shall be upon the Contractor. Petition in favor of proposed substitute materials shall be made directly by the Contractor. If any tests are necessary to determine equality of proposed items, such tests shall be made at the expense of the Contractor by an unbiased laboratory satisfactory to the Architect.

- C. Submit shop drawings and material list in six (6) copies. Submit material list and shop drawings after official award of contract. Obtain approval of the Architect before installation. Shop drawings shall be submitted for all materials, equipment, and controls.
- D. Check shop drawings and submittals before forwarding to Architect and ascertain that submittals meet all requirements of drawings and specifications and conform to structural conditions available.
- E. Shop drawings also shall be prepared for modifications to architectural, structural, plumbing, electrical, and mechanical work required by proposed materials - i.e., relocation of drains, revised electrical circuits, relocation of penetrations, etc.
- F. Installation of any approved substituted equipment is the Contractor's responsibility, and any changes required to work included under other sections for installation of approved substituted equipment must be made to the satisfaction of the Architect and without any additional cost. Approval by Architect of substituted equipment and/or dimension drawings does not waive these requirements.
- G. Review of drawings and materials submitted for approval shall not be construed as a complete check or constitute a waiver of the requirements of the drawings and specifications but will indicate that the material submitted is acceptable in quality, utility, and capacity. This review shall not relieve the Contractor of the responsibility to fit the proposed materials to the spaces provided and to effect necessary rearrangement or construction of other work. Contractor agrees that shop drawing submittals processed by the Architect do not become contract documents and are not change orders; that the purpose of the shop drawing review is to establish a reporting procedure and is intended for the Contractor's convenience in organizing his work and to permit the Architect to monitor the Contractor's progress and understanding of the design. If deviations, discrepancies, or conflicts between shop drawing submittals and the contract documents are discovered either prior to or after the shop drawing submittals are processed by the Architect, the Contractor agrees that the contract documents shall control and shall be followed.
- H. Submittal lists shall include the identifying marks assigned to the items. Give name of manufacturer, brand name, and catalog number of each item. Submit complete list at one time with items arranged and identified in numerical sequence within each section and article of the specifications. Listing items "as specified" without both make and model or type designation is not acceptable except pipe and pipe fittings not specified by brand names, which may be listed "as specified" without manufacturer's name, provided proposed materials comply with specification requirements.
- I. Descriptive Data: Submit complete description, information, and performance data covering equipment which is specified but for which catalog plate numbers, brand names, or specific models have not been used. Include fan performance curves for all equipment with fans and for each individual fan submitted.
- J. Submittal of substitutions shall be limited to one (1) proposal for each type or kind of item, unless otherwise permitted by the Architect.
- K. Also comply with the requirements of Division 01 - General Requirements.

1.6 DRAWINGS, SPECIFICATIONS, AND COORDINATION OF WORK

- A. Drawings are essentially diagrammatic. Size and locations of equipment are generally shown to scale. Make use of data in all contract documents, and verify this information against field conditions.

- B. The drawings indicate the required size and point of termination of ductwork, pipes, and equipment. Install pipe with all necessary offsets and fittings to conform to the structure, avoid obstructions, preserve headroom, maintain required accessibility, and satisfy the requirements of the governing codes and the standards of good practice.
- C. The architectural and structural drawings and specifications take precedence over the mechanical drawings in the representation of the general construction work. Refer to the drawings, specifications, and review shop drawings for all work in order to coordinate mechanical work with the other work of the project.
- E. Where changes in indicated locations or arrangements are necessary due to conditions in building construction, rearrangement of equipment, or conflict in location, make such changes at no cost to the Owner, provided that the change is ordered before pipe ductwork and/or equipment is installed and that the length of run is not revised by more than 5 percent of the indicated run.
- F. Bring discrepancies between different drawings, between drawings and actual field conditions, or between drawings and specifications promptly to the attention of the Architect for decision, and stop all work on affected areas subject to resolution of the conflict.

1.7 OPERATING INSTRUCTIONS

- A. Upon completion of the work, the Contractor shall place a competent person in charge who will operate the system and instruct the Owner's representatives in all details of the operation and maintenance of each piece of equipment and each system.
- B. The Contractor shall carefully prepare four (4) descriptive binders of the entire HVAC system and a full description of the operation and maintenance of each piece of equipment. The binders shall have tabs indicating each type of equipment with sub-dividers indicating the equipment symbol shown on the drawings. An index shall be provided with page numbers for each type of equipment and each piece of equipment. The binders shall be well organized to provide easy reference.
- C. Operating instruction manuals are to include names, addresses, and telephone numbers for the following: project name, Owner, Mechanical Contractor, and equipment manufacturers (including local representatives).
- D. Also comply with the requirements of Division 01 - General Requirements.

1.8 GUARANTEE

- A. The Contractor shall furnish a written guarantee to the Owner that the materials, equipment, and installation are new, free from mechanical defects, noiseless, and are in perfect operating condition.
- B. The Contractor shall guarantee to replace and repair at his own expense any and all unsatisfactory and defective work and items to the satisfaction of the Owner for a period of at least one (1) year after the completion of construction and the HVAC systems are put to beneficial use.
- C. The Contractor shall also furnish the Owner with all manufacturer's written guarantees of materials and equipment.
- D. Also comply with the requirements of Division 01 - General Requirements.

1.9 RECORD DRAWINGS

- A. Record drawings are to include all changes made during construction from the design drawings. The record drawings are to show changes as mark-ups on the design drawings. Shop drawings or CAD drawings will not be accepted as record drawings.
- B. Comply with the requirements of Division 01 – General Requirements.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Access doors:
 - 1. General: All concealed equipment, valves, controls, fire/smoke dampers, volume dampers, etc., shall be provided with access doors which shall be furnished and installed by the general Contractor. Coordination for the location of access doors to ensure access to all HVAC equipment requiring access is the responsibility of this section of work. Access doors are not required in removable ceilings. Access doors which provide access to fire/smoke dampers are to be labeled with one-half inch (1/2") high letters reading "Fire/Smoke Damper."
 - 2. Access doors shall be bonderized steel, with flush screwdriver operated cam latch, fitted with concealed hinges, factory prime coated. Doors shall be Milcor, or equal, Style "A" for acoustical tile, Style "B" for acoustical plaster, Style "K" for non-acoustical plaster, and Style "M" elsewhere, 24" square unless otherwise noted on the drawings. Access doors in 1 or 2-hour construction shall be Milcor or equal U/L "B" label doors.

2.2 EQUIPMENT

- A. Roof exhaust fan:
 - 1. Exhaust fans are to be Greenheck Series G-VG or equal direct drive, roof-curb mounted, centrifugal roof exhausters.
 - 2. Fans shall have non-overloading, backwardly inclined, centrifugal wheels, bird-screens, direct drive EC motor and drive assembly, aluminum housing, backdraft damper, and disconnect switch, all completely weatherproofed for outdoor installation.
 - 3. Provide all options and accessories as scheduled on the drawings.

2.3 SYSTEMS

- A. Air distribution duct systems:
 - 1. Exhaust duct and fittings:
 - a. Pressure/velocity classification: +2.0" SP to - 2.0" SP for exhaust ducts, 2,500 fpm.
 - b. General: Ductwork shall be round spiral lock seam or rectangular galvanized steel construction.
 - c. Duct Construction:
 - 1) General: Construction shall be in accordance with the latest ASHRAE

Standards, SMACNA 1995 - Second Edition with Addendum No. 1 November 1997 HVAC Duct Construction Standards, California State Mechanical Code, and the Title 24 energy standards.

- 2) All duct joints and seams are to be constructed to meet the requirements of the 1995 SMACNA HVAC Duct Construction Standards noted above. Manufactured joints, such as Ductmate or TDC, are to be installed in strict accordance with the manufacturer's installation requirements.
 - 3) Care shall be taken to ensure that all duct reinforcing requirements are met.
 - 4) All 90° branch fittings for round ducts are to be of the conical tee type, conical saddle tap, or as detailed on the drawings.
 - 5) All spiral round duct and fittings inside buildings to be United McGill, Uni-Seal, or equal.
 - 6) Spiral duct joints are to be fabricated using sleeve type couplings.
 - 7) Commercial gauge adjustable elbows may be used in concealed areas for duct sizes up through 14" diameter. For duct sizes greater than 14" diameter and where duct is exposed, elbows shall be United McGill "Uni-Seal" gored elbows or equal.
 - 8) All spiral round duct shall be installed in strict accordance with the manufacturer's requirements.
 - 9) All rectangular duct, fittings and plenums are to be constructed in accordance with 2005 SMACNA, HVAC Duct Construction Standards noted above.
 - 10) Provide galvanized steel angle ring, 2" wide at all locations where exposed ducts penetrate walls. Angle rings are to be installed to present a finished and aesthetically pleasing appearance.
 - 11) All exposed duct, fittings, sealants and apparatus are to be installed suitable for painting.
 - 12) All elbows and bends are to be made with the minimum inside radius equal to 1.5 times the duct diameter or centerline radius ($R/W=1.5$), where possible. If field conditions do not allow 1.5 inside radius, provide elbow and bend radius as long as possible. Elbow and bend radius shall be no less than that shown on the drawings. All conditions with less than 1.5 inside radius must be approved by the Architect, prior to fabrication and/or installation.
 - 13) Non-radius, square heel and throat rectangular elbows, with or without turning vanes, are not acceptable unless specifically shown on the drawings.
 - 14) All radius elbows in rectangular ductwork are to include one (1) splitter vane, located at a distance of 1/3 of the duct width as measured in from the elbow throat.
- d. Ducts are to be sealed so as to conform to SMACNA Duct Seal Class C. Duct tape as a sealant is not acceptable. A brush applied, high pressure duct sealant is to be utilized, MEI or equal. Sealant is to be verified that it is suitable for painting. Sealant is to be applied in a neat manner in exposed duct locations. Duct sealant is to be applied in complete accordance with the manufacturer's application instructions.

B. Insulation:

1. Ductwork:

a. General:

- 1) Adhesives and insulation materials: Composite fire and smoke hazard ratings maximum 25 for Flame Spread and 50 for Smoke Developed. Adhesives to be waterproof.

2) Anti-microbial agent surface coating: EPA-registered biocide, ASTM C-1338, ASTM G-21, ASTM G-22.

- b. 1" Duct liner: Ducts shown on the drawings to be internally lined with 1" liner are to be lined in the interior with 1 inch thick, 1.5 pounds per cubic foot duct liner with a minimum R-value of 4.2. Duct liner shall be installed in complete accordance with the manufacturer's installation instructions. Ducts shall be increased in size to accommodate lining without loss of area. Lined ducts need not be covered. Duct liner to be Johns Manville Permacote Linacoustic Standard, Certainteed Type 150 ToughGard R with Enhanced Surface, or equal.

C. Supports and anchors:

1. Supports and anchors are to be as shown on the drawings. If supports and anchors are not shown on the drawings the following applies:
2. Hanger rods: Steel, threaded both ends, threaded one end, or continuous threaded.
3. Flashing:
 - a. Follow the roof manufacturer's recommendations for all roof penetrations, curbs, platforms, and sleepers.
4. Sleeves:
 - a. Sleeves for pipes through nonfire rated floors: Form with 18 gauge galvanized steel.
 - b. Sleeves for pipes through nonfire rated beams, walls, footings, and potentially wet floors: Form with steel pipe or 18 gauge, 1.2 mm thick galvanized steel.
 - c. Sleeves for pipes through fire rated and fire resistive floors and walls, and fireproofing: Prefabricated fire rated sleeves, including seals, UL Listed.
 - d. Sleeves for round ductwork: Form with galvanized steel.
 - e. Sleeves for rectangular ductwork: Form with galvanized steel or wood.
 - f. Stuffing fire stopping insulation: Glass fiber type, noncombustible.
 - g. Caulk: Acrylic sealant.

D. Vibration isolation:

1. Refer to the drawings for vibration isolation requirements.
2. Vibration isolation is to be Mason Industries or equal.

E. Electrical work:

1. The following electrical work is required to be provided and installed under Division 26:
 - a. Motor starters and disconnect switches for all motors, except where specifically specified, to be furnished by the equipment manufacturer.
 - b. Line voltage wiring and conduit to motors, motor starters, and disconnect switches.
 - c. Line voltage wiring and conduit to switches as indicated on temperature control diagrams.
 - d. Line voltage wiring and conduit for remote control of motors.
 - e. Conduit only as required for low voltage temperature control system.
2. If Contractor furnishes equipment requiring changes in electrical work, it shall be the responsibility of the Contractor to arrange and pay for such changes to result in no additional cost to the Owner.
3. Contractor shall be responsible for checking electrical drawings and verifying actual voltage to be supplied before ordering equipment.

4. Contractor shall provide for the complete installation of wiring and controls required for heating, ventilating, and air conditioning equipment, and shall be responsible for the proper operation of the complete system.
- F. Testing, adjusting, and balancing:
1. Scope includes but is not limited to:
 - a. Testing, adjustment, and balancing of air systems.
 - b. Measurement of final operating condition of HVAC systems.
 2. References:
 - a. AABC: National standards for field measurement and instrumentation, total system balance.
 - b. ASHRAE: Systems handbook: Testing, adjusting, and balancing.
 - c. NEBB: Procedural standards for testing, balancing, and adjusting of environmental systems.
 3. Submittals:
 - a. Submit name of adjusting and balancing agency for approval.
 - b. Provide reports in soft cover, letter size, 3-ring binder manuals, complete with index page and indexing tabs, with cover identification at front and side. Include set of reduced drawings with air outlets and equipment identified to correspond with data sheets and indicating thermostat locations.
 4. Report forms:
 - a. Submit reports on AABC National Standards for Total System Balance or NEBB forms.
 - b. Forms shall include the following information:
 - 1) Title page:
 - a) Company name
 - b) Company address
 - c) Company telephone number
 - d) Project name
 - e) Project location
 - f) Project Contractor
 - g) Project altitude
 - 2) Instrument list:
 - a) Instrument
 - b) Manufacturer
 - c) Model
 - d) Serial number
 - e) Range
 - f) Calibration date
 - 3) Air moving equipment:
 - a) Location
 - b) Manufacturer
 - c) Model
 - d) Air flow, specified and actual
 - e) Return air flow, specified and actual
 - f) Outside air flow, specified and actual
 - g) Total static pressure (total external), specified and actual
 - h) Inlet pressure
 - i) Discharge pressure
 - j) Fan RPM
 - 4) Electric motors:
 - a) Manufacturer

- b) HP/BHP
 - c) Phase, voltage, amperage; nameplate, actual, no load.
 - d) RPM
 - e) Service factor
 - f) Starter size, rating, heater elements
- 5) Roof exhaust fan data:
 - a) Location
 - b) Manufacturer
 - c) Model
 - d) Air flow, specified and actual
 - e) Total static pressure (total external), design and actual
 - f) Inlet pressure
 - g) Discharge pressure
 - h) Fan RPM
- 5. Air balance tolerances:
 - a. Air balance shall be made with least possible friction.
 - b. Allowances shall be made for air filter resistance at the time of the tests. The main air supplies shall be at design air quantity with pressure drop across the air filter bank at simulated dirty condition.
 - c. Air balance tolerances:
 - 1) Exhaust air: The exhaust air quantity is to be plus 5%, minus 5% from the design air quantity.
- 6. Project record documents:
 - a. Comply with Division 01 requirements.
 - b. Accurately record actual locations of flow measuring stations and balancing valves and rough setting.
- 7. Quality assurance:
 - a. The HVAC system Contractor is to perform the testing, adjusting and balancing work. Perform work under supervision of AABC Certified Test and Balance Engineer or NEBB Certified Testing, Balancing, and Adjusting Supervisor.
 - b. Total system balance shall be performed in accordance with AABC National Standards for Field Measurement and Instrumentation, Total System Balance, ASHRAE Systems Handbook, or NEBB Procedural Standards for Testing, Balancing, and Adjusting of Environmental Systems.
 - c. Schedule and sequence work to ensure completion of work before substantial completion of project.
- 8. Examination:
 - a. Before commencing work, verify that systems are complete and operable. Ensure the following:
 - 1) Equipment is operable and in a safe and normal condition.
 - 2) Control systems are installed complete and operable.
 - 3) Proper thermal overload protection is in place for electrical equipment.
 - 4) Duct systems are clean of debris.
 - 5) Correct fan rotation.
 - 6) Duct system leakage has been minimized.
 - 7) Report any defects or deficiencies noted during performance of service to the Architect.
 - 8) Promptly report abnormal conditions in mechanical systems or conditions which prevent system balance.
 - 9) If, for design reasons, system cannot be properly balanced, report as soon as observed.

- 10) Beginning of work means acceptance of existing conditions.
9. Preparation:
- a. Provide instruments required for testing, adjusting, and balancing operations.
 - b. Provide additional balancing devices as required.
10. Adjusting:
- a. Recorded data shall represent actually measured or observed condition.
 - b. Permanently mark settings of dampers and other adjustment devices allowing settings to be restored. Set and lock memory stops.
 - c. After adjustment, take measurements to verify balance has not been disrupted or that such disruption has been rectified.
 - d. Leave systems in proper working order, replacing belt guards, closing access doors, closing doors to electrical switch boxes, and restoring thermostats to specified settings.
 - e. At final inspection, recheck random selections of data recorded in report. Recheck points or areas as selected and witnessed by Owner's Representative.
11. Air system procedure:
- a. Adjust air handling and distribution systems to provide required exhaust air quantities at all locations.
 - b. Measure air quantities at air inlets.
 - c. Use volume control devices to regulate air quantities only to extent that adjustments do not create objectionable air motion or sound levels. Effect volume control by duct internal devices such as dampers and splitters.
 - d. Vary total system air quantities by adjustment of fan speeds.
 - e. Provide system schematic with required and actual air quantities recorded at each outlet or inlet.

PART 3 - EXECUTION

3.1 GENERAL

- A. For the actual fabrication, installation, and testing of work under this section, use only thoroughly trained and experienced workmen who are properly qualified for the work they perform. All installers are to be completely familiar with the manufacturer's current recommended methods of installation and shall so execute.

3.2 EQUIPMENT

- A. All equipment is to be installed to meet the manufacturer's installation instructions, guidelines, and recommendations.

3.3 SPECIAL REQUIREMENTS

- A. During construction meet or exceed all requirements of ASHRAE standard 62.1-2016 Chapter 7, Construction and System Start-up.
- B. Provide temporary construction ventilation. Continuously ventilate during installation of materials that emit volatile organic compounds (VOC) and after installation until emissions dissipate including, but not limited to, applications of adhesives, paints, floor coatings, stains and varnishes. Exhaust areas to outside the buildings; do not transfer air to other enclosed spaces. If continuous ventilation is not possible using the building's HVAC

system, then ventilate using operable windows and temporary fans that have the capacity to provide a minimum of three (3) air changes per hour in the area requiring ventilation.

- C. All fans in the HVAC system are to be turned off and all supply and return openings are to be sealed from dust and debris infiltration during dust producing activities such as drywall installation, sanding, sweeping or blowing, carpet installation, etc.
- D. Allow products that have odors and significant VOC emissions to off-gas in dry, well-ventilated space for a sufficient period to dissipate odors and emissions prior to delivery to the construction site. Condition products without containers and packaging to maximize off-gassing of VOCs. Condition products in a ventilated warehouse or other building.
- E. Where odorous and/or high VOC-emitting products are applied on-site, apply them prior to installation of porous and fibrous materials including foams.
- F. Vacuum carpeted and other accessible surfaces (use a certified vacuum or HEPA vacuum that meets or exceeds the CRI Seal of Approval/Green Label Vacuum Cleaner Program criteria for vacuum cleaning performance) after construction is complete and prior to occupancy.
- G. Oil film on sheet metal shall be removed before shipment to site. On-site, inspect ducts to confirm that no oil film is present and remove any oil that is present. If ducts contain dust and dirt, clean them immediately, prior to substantial completion and prior to using the ducts to circulate air. HVAC system components or duct work may only be cleaned, coated, or have applied to its surface disinfectants, pesticides or biocides that are registered and particularly labeled for use in HVAC systems by state and federal EPA.

3.4 DUCT AND ACCESSORIES

A. Special requirements:

- 1. All duct and fittings are to be sealed using Durodyne Dyn-O-Wrap or equal minimum 3 mil puncture resistant, UV resistant, from the time of manufacture to the time of installation.
- 2. All duct and fittings left open during installation are to be fully sealed using Durodyne Dyn-O-Wrap or equal minimum 3 mil puncture resistant, UV resistant, waterproof duct wrap.

B. Installation:

- 1. Locate ducts with sufficient space around equipment to allow normal operating and maintenance activities.
- 2. Connect terminal units to main supply air with galvanized steel duct.
- 3. Connect diffusers to low pressure ducts in concealed locations with 5 feet maximum length of flexible duct. Hold in place with strap or clamp to prevent duct from collapsing above diffuser.
- 4. Provide balancing dampers at points on supply, return, and exhaust systems where branches are taken from larger ducts as required for air balancing.
- 5. Provide balancing dampers on medium pressure systems where indicated.
- 6. Provide fire/smoke dampers at locations indicated. Install with required perimeter mounting angles, sleeves, breakaway duct connection, corrosion resistant springs, bearings, bushings, and hinges.
- 7. Provide flexible connections immediately adjacent to equipment in ducts associated with fans and motorized equipment.
- 8. Provide duct access doors for inspection and cleaning before and after filters, coils, fans, automatic dampers, at fire/smoke dampers, and elsewhere as indicated.

- Provide minimum 8 x 8 inch size for hand access, 18 x 18 inch size for shoulder access, and as indicated.
9. Provide duct test holes where indicated and required for testing and balancing purposes.
 10. Check location of outlets and inlets and make necessary adjustments in position to conform with Architectural features, symmetry, and lighting arrangement.
 11. Install diffusers to ductwork with airtight connection.
 12. Paint ductwork visible behind air outlets and inlets matte black.

3.5 SUPPORTS AND ANCHORS

A. Fabrication:

1. Size sleeves large enough to allow for movement due to expansion and contraction. Provide for continuous insulation wrapping.
2. Design hangers without disengagement of supported pipe.
3. Prime coat exposed steel hangers and support. Hangers and supports located in crawl spaces, pipe shafts, and suspended ceiling spaces are not considered exposed.

B. Equipment bases and supports:

1. Provide templates, anchor bolts, and accessories for mounting and anchoring equipment.

C. Flashing:

1. Provide flexible flashing and metal counterflashing where piping and ductwork penetrate weather or waterproofed walls, and roofs in accordance with roofing manufacturer's recommendations.
2. Provide acoustical lead flashing around ducts and pipes penetrating building wall from roof-mounted equipment. Flashing to be installed in accordance with manufacturer's instructions for sound control.

D. Sleeves:

1. Where piping or ductwork penetrates ceiling or wall, close off space between pipe or duct and adjacent work with fire stopping insulation and caulk seal airtight. Provide close fitting metal collar or escutcheon covers at both sides of penetration.
2. Install steel escutcheons at finished surfaces.

3.6 SYSTEM TEST AND STARTUP

- A. Check the installation and connection requirements for conformance with the manufacturer's installation instructions for each piece of equipment.
- B. Perform the step-by-step checkout and startup procedures for each piece of equipment in accordance with the manufacturer's startup instructions.
- C. Make all necessary control and system adjustments and operate the system in its final configuration for a period of ten (10) working days for the purpose of proving satisfactory performance. During this period, instruct such persons as Owner may designate in proper operation, care, and maintenance of the systems.

END OF SECTION

SECTION 26 05 00

BASIC ELECTRICAL MATERIALS AND METHODS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Electrical identification.
 - 2. Utility company electricity-metering components.
 - 3. Electrical demolition.
 - 4. Cutting and patching for electrical construction.
- B. Refer to drawings for applicable codes.

1.2 SUBMITTALS

- A. Product Data: For utility company electricity-metering components.
- B. Shop Drawings: Dimensioned plans and sections or elevation layouts and single-line diagram of electricity-metering component assemblies specific to this Project.

1.3 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Devices for Utility Company Electricity Metering: Comply with utility company published standards.
- C. Comply with NFPA 70.

1.4 COORDINATION

- A. Coordinate chases, slots, inserts, sleeves, and openings for electrical supports, raceways, and cable with general construction work.
- B. Sequence, coordinate, and integrate installing electrical materials and equipment for efficient flow of the Work. Coordinate installing large equipment that requires positioning before closing in the building.
- C. Coordinate electrical service connections to components furnished by utility companies.
 - 1. Coordinate installation and connection of exterior underground and overhead utilities and services, including provision for service entrances and electricity-metering components.
- D. Coordinate location of access panels and doors for electrical items that are concealed by finished surfaces.
- E. Where electrical identification devices are applied to field-finished surfaces, coordinate installation of identification devices with completion of finished surface.

PART 2 - PRODUCTS

2.1 SUPPORTING DEVICES

- A. Material: Cold-formed steel, with corrosion-resistant coating.
- B. Metal Items for Use Outdoors or in Damp Locations: Hot-dip galvanized steel.
- C. Slotted-Steel Channel: Flange edges turned toward web, and 9/16-inch- diameter slotted holes at a maximum of 2 inches o.c., in webs. Strength rating to suit structural loading.
- D. Slotted Channel Fittings and Accessories: Recommended by the manufacturer for use with the type and size of channel with which used.
 - 1. Materials: Same as channels and angles, except metal items may be stainless steel.
- E. Raceway and Cable Supports: Manufactured clevis hangers, riser clamps, straps, threaded C-clamps with retainers, ceiling trapeze hangers, wall brackets, and spring-steel clamps or click-type hangers.
- F. Pipe Sleeves: ASTM A 53, Type E, Grade A, Schedule 40, galvanized steel, plain ends.
- G. Cable Supports for Vertical Conduit: Factory-fabricated assembly consisting of threaded body and insulating wedging plug for nonarmored electrical cables in riser conduits. Plugs have number and size of conductor gripping holes as required to suit individual risers. Body constructed of malleable-iron casting with hot-dip galvanized finish.
- H. Expansion Anchors: Carbon-steel wedge or sleeve type.
- I. Toggle Bolts: All-steel springhead type.
- J. Powder-Driven Threaded Studs: Heat-treated steel.

2.2 ELECTRICAL IDENTIFICATION

- A. Identification Device Colors: Use those prescribed by ANSI A13.1, NFPA 70, and these Specifications.
- B. Colored Adhesive Marking Tape for Raceways, Wires, and Cables: Self-adhesive vinyl tape, not less than 1 inch wide by 3 mils thick.
- C. Tape Markers for Conductors: Vinyl or vinyl-cloth, self-adhesive, wraparound type with preprinted numbers and letters.
- D. Color-Coding Cable Ties: Type 6/6 nylon, self-locking type. Colors to suit coding scheme.
- E. Underground Warning Tape: Permanent, bright-colored, continuous-printed, vinyl tape compounded for permanent direct-burial service, and with the following features:
 - 1. Not less than 6 inches wide by 4 mils thick.
 - 2. Embedded continuous metallic strip or core.
 - 3. Printed legend that indicates type of underground line.
- F. Engraved-Plastic Labels, Signs, and Instruction Plates: Engraving stock, melamine plastic laminate punched or drilled for mechanical fasteners 1/16-inch minimum thickness for signs up to 20 sq. in. and 1/8-inch minimum thickness for larger sizes. Engraved legend in black letters on white background.

- G. Warning and Caution Signs: Preprinted; comply with 29 CFR 1910.145, Chapter XVII. Colors, legend, and size appropriate to each application.
 - 1. Interior Units: Aluminum, baked-enamel-finish, punched or drilled for mechanical fasteners.
 - 2. Exterior Units: Weather-resistant, nonfading, preprinted, cellulose-acetate butyrate with 0.0396-inch, galvanized-steel backing. 1/4-inch grommets in corners for mounting.
- H. Fasteners for Nameplates and Signs: Self-tapping, stainless-steel screws or No. 10/32 stainless-steel machine screws with nuts and flat and lock washers.

2.3 EQUIPMENT FOR UTILITY COMPANY'S ELECTRICITY METERING

- A. Comply with requirements of electrical power utility company for all new service entrance equipment, raceways and structures.

PART 3 - EXECUTION

3.1 ELECTRICAL EQUIPMENT INSTALLATION

- A. Headroom Maintenance: If mounting heights or other location criteria are not indicated, arrange and install components and equipment to provide maximum possible headroom.
- B. Materials and Components: Install level, plumb, and parallel and perpendicular to other building systems and components, unless otherwise indicated.
- C. Equipment: Install to facilitate service, maintenance, and repair or replacement of components. Connect for ease of disconnecting, with minimum interference with other installations.
- D. Right of Way: Give to raceways and piping systems installed at a required slope.

3.2 ELECTRICAL SUPPORTING DEVICE APPLICATION

- A. Damp Locations and Outdoors: Hot-dip galvanized materials or nonmetallic, slotted channel system components.
- B. Dry Locations: Steel materials.
- C. Strength of Supports: Adequate to carry present and future loads, times a safety factor of at least four with, 200-lb minimum design load for each support element.

3.3 SUPPORT INSTALLATION

- A. Support parallel runs of horizontal raceways together on trapeze- or bracket-type hangers.
- B. Size supports for multiple raceway or cable runs so capacity can be increased by a 25 percent minimum in the future.
- C. Support individual horizontal single raceways with separate, malleable-iron pipe hangers or clamps except use spring-steel fasteners for 1-1/2-inch and smaller single raceways above suspended ceilings and for fastening raceways to slotted channel and angle supports.

- D. Install sleeves for cable and raceway penetrations of concrete slabs and walls unless core-drilled holes are used. Install sleeves for cable and raceway penetrations of masonry and fire-rated gypsum walls and of all other fire-rated floor and wall assemblies. Install sleeves during erection of concrete and masonry walls.
- E. Secure electrical items and their supports to building structure, using the following methods unless other fastening methods are indicated:
 - 1. Wood: Wood screws or screw-type nails.
 - 2. Gypsum Board: Toggle bolts. Seal around sleeves with joint compound, both sides of wall.
 - 3. Masonry: Toggle bolts on hollow block and expansion bolts on solid block. Seal around sleeves with mortar, both sides of wall.
 - 4. New Concrete: Concrete inserts with machine screws and bolts.
 - 5. Existing Concrete: Expansion bolts.
 - 6. Structural Steel: Spring-tension clamps.
 - a. Comply with AWS D1.1 for field welding.
 - 7. Light Steel Framing: Sheet metal screws.
 - 8. Fasteners for Damp, Wet, or Weather-Exposed Locations: Stainless steel.
 - 9. Light Steel: Sheet-metal screws.
 - 10. Fasteners: Select so load applied to each fastener does not exceed 25 percent of its proof-test load.

3.4 IDENTIFICATION MATERIALS AND DEVICES

- A. Install at locations for most convenient viewing without interference with operation and maintenance of equipment.
- B. Coordinate names, abbreviations, colors, and other designations used for electrical identification with corresponding designations indicated in the Contract Documents or required by codes and standards. Use consistent designations throughout Project.
- C. Self-Adhesive Identification Products: Clean surfaces before applying.
- D. Tag and label circuits designated to be extended in the future. Identify source and circuit numbers in each cabinet, pull and junction box, and outlet box. Color-coding may be used for voltage and phase identification.
- E. Install continuous underground plastic markers during trench backfilling, for exterior underground power, control, signal, and communication lines located directly above power and communication lines. Locate 6 to 8 inches below finished grade. If width of multiple lines installed in a common trench or concrete envelope does not exceed 16 inches, overall, use a single line marker.
- F. Install warning, caution, and instruction signs where required to comply with 29 CFR 1910.145, Chapter XVII, and where needed to ensure safe operation and maintenance of electrical systems and of items to which they connect. Indoors install engraved plastic-laminated instruction signs with approved legend where instructions are needed for system or equipment operation. Install metal-backed butyrate signs for outdoor items.
- G. Install engraved-laminated emergency-operating signs with white letters on red background with minimum 3/8-inch- high lettering for emergency instructions on power transfer, load shedding, and other emergency operations.

3.5 ELECTRICITY-METERING EQUIPMENT

- A. Install utility company metering equipment according to utility company's written requirements. Provide grounding and empty conduits as required by utility company.

3.6 FIRESTOPPING

- A. Apply firestopping to cable and raceway sleeves and other penetrations of fire-rated floor and wall assemblies to restore original undisturbed fire-resistance ratings of assemblies. Firestopping installation is specified in Division 7 Section "Penetration Firestopping."

3.7 DEMOLITION

- A. Protect existing electrical equipment and installations indicated to remain. If damaged or disturbed in the course of the Work, remove damaged portions and install new products of equal capacity, quality, and functionality.
- B. Accessible Work: Remove exposed electrical equipment and installations, indicated to be demolished, in their entirety.
- C. Abandoned Work: Cut and remove buried raceway and wiring, indicated to be abandoned in place, 2 inches below the surface of adjacent construction. Cap raceways and patch surface to match existing finish.
- D. Remove, store, clean, reinstall, reconnect, and make operational components indicated for relocation.

3.8 CUTTING AND PATCHING

- A. Cut, channel, chase, and drill floors, walls, partitions, ceilings, and other surfaces required to permit electrical installations. Perform cutting by skilled mechanics of trades involved.
- B. Repair, refinish and touch up disturbed finish materials and other surfaces to match adjacent undisturbed surfaces.

END OF SECTION

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SECTION 26 05 13

CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes building wires and cables and associated connectors, splices, and terminations for wiring systems rated 600 V and less.

1.2 SUBMITTALS

- A. Field quality-control test reports.

1.3 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

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

2.2 CONDUCTORS AND CABLES

- A. Manufacturers:
 - 1. American Insulated Wire Corp.; a Leviton Company.
 - 2. General Cable Corporation.
 - 3. Senator Wire & Cable Company.
 - 4. Southwire Company.
- B. Refer to Part 3 "Conductor and Insulation Applications" Article for insulation type, cable construction, and ratings.
- C. Conductor Material: Copper complying with NEMA WC 5 or 7; solid conductor for No. 10 AWG and smaller, stranded for No. 8 AWG and larger.
- D. Conductor Insulation Types: Type THW, THHN-THWN or XHHW complying with NEMA WC 5 or 7

2.3 CONNECTORS AND SPLICES

- A. Manufacturers:
 - 1. AFC Cable Systems, Inc.
 - 2. AMP Incorporated/Tyco International.
 - 3. Hubbell/Anderson.
 - 4. O-Z/Gedney; EGS Electrical Group LLC.
 - 5. 3M Company; Electrical Products Division.
- B. Description: Factory-fabricated connectors and splices of size, ampacity rating, material, type, and class for application and service indicated.

PART 3 - EXECUTION

3.1 CONDUCTOR AND INSULATION APPLICATIONS

- A. Service Entrance: Type THHN-THWN, single conductors in raceway.
- B. Exposed Feeders: Type THHN-THWN, single conductors in raceway.
- C. Feeders Concealed in Ceilings, Walls, and Partitions: Type THHN-THWN, single conductors in raceway.
- D. Feeders Concealed in Concrete, below Slabs-on-Grade, and in Crawlspace: Type THHN-THWN, single conductors in raceway.
- E. Exposed Branch Circuits, including in Crawlspace: Type THHN-THWN, single conductors in raceway.
- F. Branch Circuits Concealed in Ceilings, Walls, and Partitions: Type THHN-THWN, single conductors in raceway.
- G. Branch Circuits Concealed in Concrete and below Slabs-on-Grade: Type THHN-THWN, single conductors in raceway.
- H. Cord Drops and Portable Appliance Connections: Type SO, hard service cord.
- I. Fire Alarm Circuits: Type THHN-THWN, in raceway.
- J. Class 1 Control Circuits: Type THHN-THWN, in raceway.
- K. Class 2 Control Circuits: Type THHN-THWN, in raceway.

3.2 INSTALLATION

- A. Conceal cables in finished walls, ceilings, and floors, unless otherwise indicated.
- B. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.
- C. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.

- D. Install exposed cables parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.
- E. Support cables according to Division 26 Section "Basic Electrical Materials and Methods."
- F. Seal around cables penetrating fire-rated elements according to Division 7 Section "Penetration Firestopping."
- G. Identify and color-code conductors and cables according to Division 26 Section "Basic Electrical Materials and Methods."
- H. Make splices and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.
- I. Wiring at Outlets: Install conductor at each outlet, with at least 6 inches of slack.

3.3 FIELD QUALITY CONTROL

- A. Testing: Perform each electrical test and visual and mechanical inspection stated in NETA ATS, Section 7.3.1. Certify compliance with test parameters.
- B. Test Reports: Prepare a written report to record the following:
 - 1. Test procedures used.
 - 2. Test results that comply with requirements.
 - 3. Test results that do not comply with requirements and corrective action taken to achieve compliance with requirements.

END OF SECTION

04/19/19

SECTION 26 05 33

RACEWAYS AND BOXES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes raceways, fittings, boxes, enclosures, and cabinets for electrical wiring.

1.2 SUBMITTALS

- A. Product Data: For surface raceways, wire ways and fittings, floor boxes, hinged-cover enclosures, and cabinets indicated.

1.3 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

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

2.2 METAL CONDUIT AND TUBING

- A. Manufacturers:
 - 1. AFC Cable Systems, Inc.
 - 2. Alflec Inc.
 - 3. Anamet Electrical, Inc.; Anaconda Metal Hose.
 - 4. Electri-Flex Co.
 - 5. Grinnell Co./Tyco International; Allied Tube and Conduit Div.
 - 6. LTV Steel Tubular Products Company.
 - 7. Manhattan/CDT/Cole-Flex.
 - 8. O-Z Gedney; Unit of General Signal.
 - 9. Wheatland Tube Co.
- B. Rigid Steel Conduit: ANSI C80.1.
- C. IMC: ANSI C80.6.

- D. EMT and Fittings: ANSI C80.3.
 - 1. Fittings: Set-screw or compression type.
- E. FMC: Aluminum.
- F. LFMC: Flexible steel conduit with PVC jacket.
- G. Fittings: NEMA FB 1; compatible with conduit and tubing materials.

2.3 NONMETALLIC CONDUIT AND TUBING

- A. Manufacturers:
 - 1. American International.
 - 2. Anamet Electrical, Inc.; Anaconda Metal Hose.
 - 3. Arnco Corp.
 - 4. Cantex Inc.
 - 5. Certainteed Corp.; Pipe & Plastics Group.
 - 6. Condux International.
 - 7. ElecSYS, Inc.
 - 8. Electri-Flex Co.
 - 9. Lamson & Sessions; Carlon Electrical Products.
 - 10. Manhattan/CDT/Cole-Flex.
 - 11. RACO; Division of Hubbell, Inc.
 - 12. Spiralduct, Inc./AFC Cable Systems, Inc.
 - 13. Thomas & Betts Corporation.
- B. RNC: NEMA TC 2, Schedule 40 and Schedule 80 PVC.
- C. RNC Fittings: NEMA TC 3; match to conduit or tubing type and material.

2.4 SURFACE RACEWAYS

- A. Surface Metal Raceways: Galvanized steel with snap-on covers. Finish with manufacturer's standard prime coating.
 - 1. Manufacturers:
 - a. Airey-Thompson Sentinel Lighting; Wiremold Company (The).
 - b. Thomas & Betts Corporation.
 - c. Walker Systems, Inc.; Wiremold Company (The).
 - d. Wiremold Company (The); Electrical Sales Division.
- B. Surface Nonmetallic Raceways: Two-piece construction, manufactured of rigid PVC compound with matte texture and manufacturer's standard color.

1. Manufacturers:
 - a. Butler Manufacturing Co.; Walker Division.
 - b. Enduro Composite Systems.
 - c. Hubbell, Inc.; Wiring Device Division.
 - d. Lamson & Sessions; Carlon Electrical Products.
 - e. Panduit Corp.
 - f. Walker Systems, Inc.; Wiremold Company (The).
 - g. Wiremold Company (The); Electrical Sales Division.
 - C. Types, sizes, and channels as indicated and required for each application, with fittings that match and mate with raceways.
- 2.5 BOXES, ENCLOSURES, AND CABINETS
- A. Manufacturers:
 1. Cooper Crouse-Hinds; Div. of Cooper Industries, Inc.
 2. Emerson/General Signal; Appleton Electric Company.
 3. Erickson Electrical Equipment Co.
 4. Hoffman.
 5. Hubbell, Inc.; Killark Electric Manufacturing Co.
 6. O-Z/Gedney; Unit of General Signal.
 7. RACO; Division of Hubbell, Inc.
 8. Robroy Industries, Inc.; Enclosure Division.
 - B. Sheet Metal Outlet and Device Boxes: NEMA OS 1.
 - C. Cast-Metal Outlet and Device Boxes: NEMA FB 1, Type FD, with gasketed cover.
 - D. Nonmetallic Outlet and Device Boxes: NEMA OS 2.
 - E. Floor Boxes: Cast metal, fully adjustable, rectangular.
 - F. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.
 - G. Cast-Metal Pull and Junction Boxes: NEMA FB 1, cast aluminum with gasketed cover.
 - H. Hinged-Cover Enclosures: NEMA 250, Type 1, with continuous hinge cover and flush latch.
 1. Metal Enclosures: Steel, finished inside and out with manufacturer's standard enamel.
 - I. Cabinets: NEMA 250, Type 1, galvanized steel box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel. Hinged door in front cover with flush latch and concealed hinge. Key latch to match panelboards. Include metal barriers to separate wiring of different systems and voltage and include accessory feet where required for freestanding equipment.

2.6 FACTORY FINISHES

- A. Finish: For raceway, enclosure, or cabinet components, provide manufacturer's standard prime-coat finish ready for field painting.

2.7 CABLE TRAY

- A. Cable tray shall be aluminum, rung type, 24"W x 4"H, with rung spacing of 6", per NEMA VE 1 requirements.

PART 3 - EXECUTION

3.1 RACEWAY APPLICATION

- A. Outdoors:
 - 1. Exposed: Rigid steel or IMC.
 - 2. Concealed: Rigid steel or IMC.
 - 3. Underground, Single Run: RNC.
 - 4. Underground, Grouped: RNC.
 - 5. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFMC.
 - 6. Boxes and Enclosures: NEMA 250, Type 3R.
- B. Indoors:
 - 1. Exposed: EMT.
 - 2. Concealed: EMT.
 - 3. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): FMC; except use LFMC in damp or wet locations.
 - 4. Damp or Wet Locations: Rigid steel conduit.
 - 5. Boxes and Enclosures: NEMA 250, Type 1, except as follows:
 - a. Damp or Wet Locations: NEMA 250, Type 4, stainless steel.
- C. Minimum Raceway Size: 3/4-inch trade size.
- D. Conduits used for fiber optic cable installation shall be provided with inner duct.
- E. Raceway Fittings: Compatible with raceways and suitable for use and location.
 - 1. Intermediate Steel Conduit: Use threaded rigid steel conduit fittings, unless otherwise indicated.
 - 2. PVC Externally Coated, Rigid Steel Conduits: Use only fittings approved for use with that material. Patch all nicks and scrapes in PVC coating after installing conduits.

3.2 INSTALLATION

- A. Keep raceways at least 6 inches away from parallel runs of flues and steam or hot-water pipes. Install horizontal raceway runs above water and steam piping.

- B. Complete raceway installation before starting conductor installation.
- C. Support raceways as specified in Division 16 Section "Basic Electrical Materials and Methods."
- D. Install temporary closures to prevent foreign matter from entering raceways.
- E. Protect stub-ups from damage where conduits rise through floor slabs. Arrange so curved portions of bends are not visible above finished slab.
- F. Provide inner duct in conduit for all fiber optic cable installation.
- G. Provide flexible metal conduits for conduits installed inside cabinets.
- H. Make bends and offsets so ID is not reduced. Keep legs of bends in same plane and keep straight legs of offsets parallel, unless otherwise indicated.
- I. Conceal conduit and EMT within finished walls, ceilings, and floors, unless otherwise indicated.
 - 1. Install concealed raceways with a minimum of bends in shortest practical distance, considering type of building construction and obstructions, unless otherwise indicated.
- J. Raceways Embedded in Slabs: Install in middle 1/3 of slab thickness where practical and leave at least 2 inches of concrete cover.
 - 1. Secure raceways to reinforcing rods to prevent sagging or shifting during concrete placement.
 - 2. Space raceways laterally to prevent voids in concrete.
 - 3. Run conduit larger than 1-inch trade size parallel or at right angles to main reinforcement. Where at right angles to reinforcement, place conduit close to slab support.
 - 4. Change from nonmetallic tubing to Schedule 80 nonmetallic conduit, rigid steel conduit, or IMC before rising above floor.
- K. Install exposed raceways parallel or at right angles to nearby surfaces or structural members and follow surface contours as much as possible.
 - 1. Run parallel or banked raceways together on common supports.
 - 2. Make parallel bends in parallel or banked runs. Use factory elbows only where elbows can be installed parallel; otherwise, provide field bends for parallel raceways.
- L. Join raceways with fittings designed and approved for that purpose and make joints tight.
 - 1. Use insulating bushings to protect conductors on all raceways 2" and larger.
- M. Tighten set screws of threadless fittings with suitable tools.
- N. Terminations:
 - 1. Where raceways are terminated with locknuts and bushings, align raceways to enter squarely and install locknuts with dished part against box. Use two locknuts, one inside and one outside box.
 - 2. Where raceways are terminated with threaded hubs, screw raceways or fittings tightly into hub so end bears against wire protection shoulder. Where chase nipples are

used, align raceways so coupling is square to box; tighten chase nipple so no threads are exposed.

- O. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 200-lb tensile strength. Leave at least 12 inches of slack at each end of pull wire.
- P. Telephone and Signal System Raceways, 2-Inch Trade Size and Smaller: In addition to above requirements, install raceways in maximum lengths of 150 feet and with a maximum of two 90-degree bends or equivalent. Separate lengths with pull or junction boxes where necessary to comply with these requirements.
- Q. Install raceway sealing fittings at suitable, approved, and accessible locations and fill them with UL-listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank cover plate having a finish similar to that of adjacent plates or surfaces. Install raceway sealing fittings at the following points:
 - 1. Where conduits pass from warm to cold locations, such as boundaries of refrigerated spaces.
 - 2. Where otherwise required by NFPA 70.
- R. Stub-up Connections: Extend conduits through concrete floor for connection to freestanding equipment. Install with an adjustable top or coupling threaded inside for plugs set flush with finished floor. Extend conductors to equipment with rigid steel conduit; FMC may be used 6 inches above the floor. Install screwdriver-operated, threaded plugs flush with floor for future equipment connections.
- S. Flexible Connections: Use maximum of 72 inches of flexible conduit for recessed and semirecessed lighting fixtures; for equipment subject to vibration, noise transmission, or movement; and for all motors. Use LFMC in damp or wet locations. Install separate ground conductor across flexible connections.
- T. Surface Raceways: Install a separate, green, ground conductor in raceways from junction box supplying raceways to receptacle or fixture ground terminals.
- U. Set floor boxes level and flush with finished floor surface.
- V. Install hinged-cover enclosures and cabinets plumb. Support at each corner.
- W. Install cable tray in accordance with NEMA VE 2 requirements.

3.3 PROTECTION

- A. Provide final protection and maintain conditions that ensure coatings, finishes, and cabinets are without damage or deterioration at time of Substantial Completion.
 - 1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
 - 2. Repair damage to PVC or paint finishes with matching touchup coating recommended by manufacturer.

END OF SECTION

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SECTION 26 05 53

IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Identification of electrical equipment and devices for all renovation and new building projects.

1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: List of legends and description of materials and process used for Identification of materials and method.
- C. Samples: One for each type of materials specified.

1.3 QUALITY ASSURANCE

- A. All identification material and methods, engraved labels, conductor numbers, branch circuit schedules, relay panel schedules, identification for circuit breakers and underground utility markers shall meet Code requirements and industry standards.
- B. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. For Engraved Labels: Lamicoid.
- B. For Conductor Numbers: Brady.
- C. For Underground Utilities Ribbon: Allen Systems, Inc.

2.2 IDENTIFICATION MATERIALS AND METHODS

- A. Coordinate names, abbreviations and other designations with equipment specified in this or other Divisions of the Specification or identified by the District.
- B. Conform to requirements of the CEC, latest adopted version with amendments by local AHJs including warning labeling and identification on existing equipment.
- C. Furnish products listed by UL or other testing firm acceptable to AHJ.

2.3 ENGRAVED LABELS

- A. Melamine plastic laminate, white with black core, 1/16-inch thick.
- B. Dymo tape labels are not acceptable.

2.4 CONDUCTOR NUMBERS

- A. Manufacturers standard vinyl-cloth self-adhesive cable and conductor markers of the wraparound type. Preprinted black numbers on yellow field.

2.5 BRANCH CIRCUIT SCHEDULES

- A. Provide branch circuit identification schedules, typewritten, clearly filled out, to identify load connected to each circuit and location of load. Numbers to correspond to numbers assigned to each circuit breaker pole position.
- B. Provide two columns, odd numbers in left column, even numbers in right column, with 3-inch-wide line for typing connected load information.

2.6 RELAY PANEL SCHEDULES

- A. Provide typewritten schedule to identify the incoming circuit, the controlled load, and the controlling devices for each relay.

2.7 IDENTIFICATION FOR CIRCUIT NUMBERS

- A. Provide permanent identification number in or on panelboard dead-front adjacent to each circuit breaker pole position. Square D adhesive is approved, other adhesives by specific prior approval only.
- B. Horizontal centerline of engraved numbers to correspond with centerline of circuit breaker pole position.
- C. Detectable plastic ribbon, 6-inch wide by 4 mil thick.

2.8 UNDERGROUND UTILITY MARKERS

- A. Color code as recommended by APWA. Safety Red for electric power distribution. Safety Alert Orange for telephone, signal, data and cable TV.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Fasten labels to equipment in a secure and permanent manner.
- B. Mark underground utilities in conformance with APWA.
- C. Where signs are to be applied to surfaces which require finish, install identification after completion of painting.
- D. Engravers standard letter style, minimum 3/16-inch high capital letters.
- E. Drill or punch labels for mechanical fastening except where adhesive mounting is necessary because of substrate. Use self tapping stainless steel screws.
- F. Install an engraved label on each major unit of electrical equipment indicating both equipment name and circuit serving equipment (e.g. "EF-1, CKT. 2P1-1,3,5), including but not limited to the following items:
 - 1. Disconnect switches, identify item of equipment controlled.
 - 2. Relays.
 - 3. Contactors.
 - 4. Time switches.
 - 5. Override switches.

6. Service disconnect and distribution switches, identify connected load.
 7. Branch circuit panelboards.
 8. Central or master unit of each electrical system including communication/signal systems, unless the unit incorporates its own self-explanatory identification.
- G. Install engraved on the inside of flush panels, visible when door is opened. Install label on outside of surface panel.
- H. Apply markers on each conductor for power, control, signaling and communications circuits where wires of more than one circuit are present.
- I. Match conductor identification used in panelboards, shop drawings, contract documents and similar previously established identification for division 26 work.
- J. Provide branch circuit identification schedules, typewritten, clearly filled out, to identify load connected to each circuit and location of load. Numbers to correspond to numbers assigned to each circuit breaker pole position.
- K. Provide two columns, odd numbers in left column, even numbers in right column, with 3-inch-wide line for typing connected load information.
- L. Provide typewritten schedule to identify the incoming circuit, the controlled load, and the controlling devices for each relay.
1. Imprint over entire length of ribbon in permanent black letters, the system description, selected from manufacturer's standard legend which most accurately identifies the subgrade system.
 2. Install continuous tape, 6 to 8 inches below finish grade, for each exterior underground raceway.
 3. Where multiple small lines are buried in a common trench and do not exceed an overall width of 16 inches, install a single marker. Over 16 inch width of lines, install multiple tapes not over 10 inches apart (edge to edge) over the entire group of lines.

END OF SECTION

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SECTION 26 09 23

LIGHTING CONTROL DEVICES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Time switches.
 - 2. Photoelectric relays.
 - 3. Occupancy sensors.
 - 4. Multipole lighting relays.
 - 5. Multipole lighting contactors.
 - 6. Basic control contactor panels.
 - 7. System clock.
 - 8. Exterior photocell.

1.2 SUBMITTALS

- A. Product Data: For each type of lighting control device indicated.
- B. Field quality-control test reports.
- C. Operation and maintenance data.
- D. Shop drawings: Submit dimensional drawings of all lighting control system components and accessories.
- E. Typical wiring diagram: Submit typical wiring diagrams for all components including, but not limited to, contactor panels, contactors, photocells, switches, occupancy sensors, and daylighting controls.

1.3 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with 47 CFR 15, Subparts A and B, for Class A digital devices.
- C. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

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

1. Contactors and Relays:
 - a. Automatic Switch Co.
 - b. Challenger Electrical Equipment Corp.
 - c. Cutler-Hammer Products; Eaton Corporation.
 - d. Furnas Electric Co.
 - e. GE Lighting Controls.
 - f. Hubbell Lighting, Inc.
 - g. Siemens Energy and Automation, Inc.
 - h. Square D Co.; Power Management Organization.
 - i. Zenith Controls, Inc.
2. Time Switches:
 - a. Diversified Electronics, Inc.
 - b. Grasslin Controls Corp.
 - c. Intermatic, Inc.
 - d. Leviton Manufacturing.
 - e. Paragon Electric Co., Inc.
 - f. Tork, Inc.
 - g. Zenith Controls, Inc.
 - h. Watt Stopper, Inc. (The).
3. Photoelectric Relays:
 - a. Allen-Bradley/Rockwell Automation.
 - b. Area Lighting Research, Inc.
 - c. Fisher Pierce.
 - d. Grasslin Controls, Corp.
 - e. Intermatic, Inc.
 - f. Paragon Electric Co., Inc.
 - g. Rhodes, M H , Inc.
 - h. SSAC, Inc.
 - i. Tork, Inc.
4. Occupancy Sensors:
 - a. Watt Stopper, Inc. (The).

- b. Honeywell, Inc.; Home and Building Controls.
 - c. Hubbell Lighting, Inc.
 - d. Lightolier.
 - e. Lithonia Control Systems.
 - f. MyTech Corporation.
 - g. Novitas, Inc.
 - h. RAB Electric Manufacturing Co., Inc.
5. Basic control contactor panels and associated accessories:
- a. Watt Stopper, Inc. (The).
 - b. Lithonia control systems
 - c. Leviton company Inc.
 - d. GE Industrial Systems; Total Lighting Control.

2.2 GENERAL LIGHTING CONTROL DEVICE REQUIREMENTS

- A. Line-Voltage Surge Protection: Include in all 120- and 277-V solid-state equipment. Comply with UL 1449 and with ANSI C62.41 for Category A locations.

2.3 TIME SWITCHES

- A. Description: Solid-state programmable type with alphanumeric display complying with UL 917.
 - 1. Astronomic dial.
 - 2. Two contacts, rated 30 A at 277-V ac, unless otherwise indicated.
 - 3. Two pilot-duty contacts, rated 2 A at 240-V ac, unless otherwise indicated.
 - 4. Eight-day program uniquely programmable for each weekday and holidays.
 - 5. Skip-day mode.

2.4 PHOTOELECTRIC RELAYS

- A. Outdoor Sealed Units: Solid state, with single-pole, double-throw dry contacts rated to operate connected relay or contactor coils or microprocessor input, and complying with UL 773A Weathertight housing, resistant to high temperatures and equipped with sun-glare shield and ice preventer.
 - 1. Light-Level Monitoring Range: 0 to 3500 fc (0 to 37 673 lx), with an adjustment for turn-on/turn-off levels.
 - 2. Time Delay: Prevents false operation.

2.5 OCCUPANCY SENSORS

- A. Ceiling and Non-Switch-Box Mounting Units: Unit receives control power from a separately mounted auxiliary power and control unit, and operates power switching contacts in that unit in response to signals from sensors.

1. Auxiliary Power and Control Units: Matched to sensors with which used. Features as follows:
 - a. Relays rated for a minimum of 20-A normal ballast load or 13-A tungsten filament or high-inrush ballast load.
 - b. Sensor Power Supply: Rated to supply the number of connected sensors.
- B. Switch-Box-Mounting Units: Unit receives power directly from switch leg of the 120- or 277-V ac circuit it controls and operates integral power switching contacts rated 800 W at 120-V ac, and 1000 W at 277-V ac, minimum.
 1. Manual Override Switch: Turns lights on/off manually regardless of elapsed time delay.
- C. Operation: Turns lights on when room or covered area is occupied and off when unoccupied, unless otherwise indicated.
 1. Time Delay for Turning Lights Off: Adjustable over a range from 1 to 15 minutes, minimum.
 2. Ambient-Light-Level Control: Adjustable for setting a level of ambient illumination above which sensor will not turn lights on when occupancy is sensed.
- D. Passive-Infrared Type: Detects occupancy by a combination of heat and movement in zone of coverage. Each sensor detects occupancy anywhere in an area of 1000 sq. ft. (93 sq. m) by detecting occurrence of 6-inch (150-mm) minimum movement of any portion of a human body that presents a minimum target of 36 sq. in. (232 sq. cm) to the sensor.
- E. Ultrasonic Type: Emits a beam of ultrasonic energy and detects occupancy through use of Doppler's principle in discerning movement in zone of coverage by sensing a change in pattern of reflected ultrasonic energy.
- F. Dual-Technology Type: Uses a combination of passive-infrared and ultrasonic detection methods to distinguish between occupied and unoccupied conditions for area covered. Particular technology or combination of technologies that controls each function (on or off) is selectable in the field by operating controls on unit.
- G. Unless otherwise noted, provide dual-technology type occupancy sensors where shown.

2.6 MULTIPOLE CONTACTORS AND RELAYS

- A. Description: Electrically operated and mechanically held, and complying with UL 508 and NEMA ICS 2.
 1. Listed Current Rating for Switching: Consistent with type of load served, including tungsten filament, inductive, and high-inrush ballast (ballasts with 15 percent or less total harmonic distortion of normal load current).
 2. Control Coil Voltage: Match control power source.

2.7 BASIC CONTROL CONTACTOR PANELS

- A. Description: Shall be UL listed and consist of following:
 1. Tub: Empty NEMA 1 enclosure that can accept an interior sized to accept up to 16, 32, or 64 contactor poles.
 2. Cover: Surface or Flush as required, with captive screws in a hinged, lockable configuration.

3. Interior: Metal back plate and barrier for separation of high voltage (class 1) and low voltage (class 2) wiring. Intelligence board with eight channels of control provided regardless of interior size. Interiors shall be provided with up to 16, 32, or 64 DIN rail mounted contactor poles.

B. Features:

1. Contactors shall be DIN rail mounted, four pole, normally closed, electrically held with coil voltage to match panel control power voltage. Contactors shall be compatible with all lighting, ballast and HID loads and be rated for 20 Amp tungsten up to 277V and rated for 30 Amp ballast and general use up to 600V. Provide 20% spare contactor poles.
2. Eight automatic control channels for operating contactors controlling exterior and/or interior lighting. Each channel shall be individually configurable to meet project needs. Each channel shall include an LED light status indicator to provide channel status and a separate ON/OFF/Auto switch for manual channel control.
3. Clock port for connection to an optional system clock. When a system clock is installed, eight override inputs are activated providing logic control of the eight channels from external photocells, switches, occupancy sensors, timers, daylighting controllers, etc.
4. Expansion terminals shall be provided for low voltage wiring connection between main and expansion panels in a multiple panel system. All automatic channel operation in the designated main panel (panel with the system clock), shall signal expansion panels' corresponding channels to operate.
5. Auxiliary power for operating optional system devices provides 350mA at 24VDC and 350mA at 24VAC power.

2.8 SYSTEM CLOCK

A. Description:

1. The system time clock shall be installed in the main or central panel of a multiple panel system or in each panel when individual panel time control is desired. The system clock shall provide time-based control with eight year time back-up, non-volatile memory program storage, automatic daylight savings adjustment, selectable 12/24 hour time formats and selectable date formats. All clock programming shall be accessible from the clock front display/keypad.

B. Features:

1. Control of eight control channels shall be available on the clock. Provide status and manual ON/OFF control of each channel from the front display and keypad.
2. The clock shall have control of eight individual override inputs, which can be used to connect external devices such as photocells, switches and daylighting controllers. Each of these inputs can be configured to operate as a photocell, as an ON/Auto switch, as a maintained ON/OFF switch, or as a momentary ON/OFF switch.
3. Schedules shall be assigned to any combination of days of the week and/or 3 holiday day types. Other scheduling features shall include:
 - i) Temporary schedules: schedules that execute on an assigned day then automatically delete themselves from memory.
 - ii) Repeating schedules: repeat a schedule at intervals that are adjustable from 5 minutes to 10 hours.

4. 32 perpetual holidays assigned to any one of three holiday day schedules and continuing for 1 to 120 days. Holiday dates shall be specific day/month/year, or perpetual dates including day/month/all years or day of the week in a given month every year or self-calculating Easter Sunday.
5. Astronomic capability for calculating sunrise and sunset based on time, latitude, longitude, and time zones. All scheduled astronomic/time operations shall be interlocked so loads are not turned on when astronomic off times are earlier than scheduled on times or astronomic on times are later than scheduled off times. Each schedule shall have an independent astronomic offset of + 120 minutes.
6. Following a power outage, the system clock shall run a start-up process that executes schedules that would have been missed during the power outage.

C. Description:

1. The exterior photocell shall offer a footcandle range of 1-15 and an eight-second time delay. The photocell shall mount on the exterior or roof of a building with its light level window facing the northern sky. The photocell shall provide an ON signal when the ambient light level drops below a user-defined dark setpoint, and an OFF signal when the ambient light level rises above a user-defined light setpoint.

D. Features:

1. The photocell shall use a set of normally open, isolated relay contacts that are rated for one Amp at 30 VAC/VDC.
2. The photocell shall have an adjustable ON/OFF dark setpoint.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Mounting heights indicated are to bottom of unit for suspended devices and to center of unit for wall-mounting devices.

3.2 CONTROL WIRING INSTALLATION

- A. Install wiring between sensing and control devices according to manufacturer's written instructions and as specified in Division 26 Section "Basic Electrical Materials and Methods."
- B. Bundle, train, and support wiring in enclosures.

3.3 IDENTIFICATION

- A. Identify components and power and control wiring according to Division 26 Section "Identification for Electrical Systems."

3.4 FIELD QUALITY CONTROL

- A. Inspect control components for defects and physical damage, testing laboratory labeling, and nameplate compliance with the Contract Documents.
- B. Electrical Tests: Use particular caution when testing devices containing solid-state components. Perform the following according to manufacturer's written instructions:
 1. Continuity tests of circuits.

2. Operational Tests: Set and operate devices to demonstrate their functions and capabilities in a methodical sequence that cues and reproduces actual operating functions. Record control settings, operations, and functional observations.
3. Correct deficiencies, make necessary adjustments, and retest. Verify that specified requirements are met.

3.5 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain lighting control devices. Refer to Division 1 Section "Closeout Procedures - Demonstration and Training."

END OF SECTION

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SECTION 26 27 26

WIRING DEVICES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Single and duplex receptacles, ground-fault circuit interrupters.
 - 2. Single- and double-pole snap switches and dimmer switches.
 - 3. Device wall plates.
 - 4. Floor service outlets, poke-through assemblies and multi-outlet assemblies.

1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: List of legends and description of materials and process used for pre marking wall plates.
- C. Samples: One for each type of device and wall plate specified, in each color specified.

1.3 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Wiring Devices:
 - a. Bryant Electric, Inc./Hubbell Subsidiary.
 - b. Eagle Electric Manufacturing Co., Inc.
 - c. Hubbell Incorporated; Wiring Device-Kellems.
 - d. Leviton Mfg. Company Inc.
 - e. Pass & Seymour/Legrand; Wiring Devices Div.
 - 2. Multi-outlet Assemblies:
 - a. Hubbell Incorporated; Wiring Device-Kellems.
 - b. Wiremold Company (The).

3. Poke-Through, Floor Service Outlets and Telephone/Power Poles:

- a. Hubbell Incorporated; Wiring Device-Kellems.
- b. Pass & Seymour/Legrand; Wiring Devices Div.
- c. Square D/Groupe Schneider NA.
- d. Thomas & Betts Corporation.
- e. Wiremold Company (The).

2.2 RECEPTACLES

- A. Straight-Blade-Type Receptacles: Comply with NEMA WD 1, NEMA WD 6, DSCC W-C-596G, and UL 498.
- B. Straight-Blade and Locking Receptacles: Heavy-Duty grade.
- C. Straight-Blade Receptacles: Hospital grade.
- D. GFCI Receptacles: Straight blade, non-feed-through type, Hospital or Heavy-Duty grade, with integral NEMA WD 6, Configuration 5-20R duplex receptacle; complying with UL 498 and UL 943. Design units for installation in a 2-3/4-inch- deep outlet box without an adapter.

2.3 SWITCHES

- A. Single- and Double-Pole Switches: Comply with DSCC W-C-896F and UL 20.
- B. Snap Switches: Heavy-Duty grade, quiet type.
- C. Combination Switch and Receptacle: Both devices in a single gang unit with plaster ears and removable tab connector that permit separate or common feed connection.
 1. Switch: 20 A, 120/277-V ac.
 2. Receptacle: NEMA WD 6, Configuration 5-15R.
- D. Dimmer Switches: Modular, full-wave, solid-state units with integral, quiet on/off switches and audible frequency and EMI/RFI filters.
 1. Control: Continuously adjustable slider; with single-pole or three-way switching to suit connections.
 2. Incandescent Lamp Dimmers: Modular, 120 V, 60 Hz with continuously adjustable rotary knob, toggle switch, or slider; single pole with soft tap or other quiet switch; EMI/RFI filter to eliminate interference; and 5-inch wire connecting leads.
 3. Fluorescent Lamp Dimmer Switches: Modular; compatible with dimmer ballasts; trim potentiometer to adjust low-end dimming; dimmer-ballast combination capable of consistent dimming with low end not greater than 20 percent of full brightness.

2.4 WALL PLATES

- A. Single and combination types to match corresponding wiring devices.
 1. Plate-Securing Screws: Metal with head color to match plate finish.
 2. Material for Finished Spaces:
 - a. Steel with white baked enamel, suitable for field painting

- b. 0.035-inch- thick, satin-finished stainless steel (above counters and in restrooms)
- 3. Material for Unfinished Spaces: Galvanized steel.
- 4. Material for Wet Locations: Cast aluminum with spring-loaded lift cover, and listed and labeled for use in "wet locations."

2.5 FLOOR SERVICE FITTINGS

- A. Type: Modular, flush-type, dual-service units suitable for wiring method used.
- B. Compartments: Barrier separates power from voice and data communication cabling.
- C. Service Plate: Rectangular, solid brass with satin finish.
- D. Power Receptacle: NEMA WD 6, Configuration 5-15R, gray finish, unless otherwise indicated.
- E. Voice and Data Communication Outlet: See telecommunication specifications for requirements.

2.6 POKE-THROUGH ASSEMBLIES

- A. Description: Factory-fabricated and -wired assembly of below-floor junction box with multichanneled, through-floor raceway/firestop unit and detachable matching floor service outlet assembly.
 - 1. Service Outlet Assembly: Flush type with two simplex receptacles and space for two RJ-45 jacks.
 - 2. Size: Selected to fit nominal 4-inch cored holes in floor and matched to floor thickness.
 - 3. Fire Rating: Unit is listed and labeled for fire rating of floor-ceiling assembly.
 - 4. Closure Plug: Arranged to close unused 4-inch cored openings and reestablish fire rating of floor.
 - 5. Wiring Raceways and Compartments: For a minimum of four No. 12 AWG conductors; and a minimum of four, 4-pair, Category 5 voice and data communication cables.

2.7 MULTIOUTLET ASSEMBLIES

- A. Components of Assemblies: Products from a single manufacturer designed for use as a complete, matching assembly of raceways and receptacles.
- B. Raceway Material: PVC.
- C. Wire: No. 12 AWG.

2.8 FINISHES

- A. Color:
 - 1. Wiring Devices Connected to Normal Power System: As selected by Architect, unless otherwise indicated or required by NFPA 70.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install devices and assemblies level, plumb, and square with building lines.
- B. Install wall dimmers to achieve indicated rating after derating for ganging.
- C. Install unshared neutral conductors on line and load side of dimmers.
- D. Arrangement of Devices: Unless otherwise indicated, mount flush, with long dimension vertical, and with grounding terminal of receptacles on bottom. Group adjacent switches under single, multigang wall plates.
- E. Remove wall plates and protect devices and assemblies during painting.
- F. Adjust locations of floor service outlets to suit arrangement of partitions and furnishings.

3.2 IDENTIFICATION

- A. Comply with Division 26 Section "Basic Electrical Materials and Methods."
 - 1. Receptacles: Identify panelboard and circuit number from which served. Use hot, stamped or engraved machine printing with black-filled lettering on face of plate, and durable wire markers or tags inside outlet boxes.

3.3 CONNECTIONS

- A. Ground equipment according to Division 26 Section "Grounding and Bonding."
- B. Connect wiring according to Division 26 Section "Conductors and Cables."

3.4 FIELD QUALITY CONTROL

- A. Perform the following field tests and inspections:
 - 1. After installing wiring devices and after electrical circuitry has been energized, test for proper polarity, ground continuity, and compliance with requirements.
 - 2. Test GFCI operation with both local and remote fault simulations according to manufacturer's written instructions.
- B. Remove malfunctioning units, replace with new units, and retest as specified above.

END OF SECTION

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SECTION 26 51 00

INTERIOR LIGHTING

PART 1 - GENERAL

1.1 SUMMARY

- A. Provide new direct/indirect lighting with average of 50 foot-candles horizontal and minimum of 5 foot-candles vertical.

1.2 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in CEC, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with:
 - 1. CEC: California Electrical Code.
 - 2. UL:
 - a. UL 875 - Light Emitting Diode (LED) Lighting Sources for Use in Lighting Products
 - b. UL 1598 - Luminaires.
 - c. UL 1012 - Power Units Other Than Class 2.
 - d. UL 1310 - Class 2 Power Units.
 - e. UL 2108 - Low Voltage Lighting Systems.
 - 3. ANSI:
 - a. C78.377.2008 Specifications for the Chromaticity of Solid State Lighting Products
 - 4. IESNA:
 - a. LM 79-80 - Approved Method for the Electrical and Photometric Measurements of Solid-State Lighting Products.
 - b. LM 80-08 - Approved Method for lumen Maintenance Testing of LED Light Sources.
 - c. TM 20-11 - Projecting Long Term Lumen Maintenance of LED Light Sources.
- C. NFPA 101 Compliance: Comply with visibility and luminance requirements for exit signs.

1.3 SUBMITTALS

- A. Manufacturer's Product Data:
 - 1. List of Materials: For each item, Include:
 - a. Manufacturer.
 - b. Model number.
 - c. Listing: UL, City Lab or none.
 - d. Quantity.
 - 2. Manufacturer's Product Data: In sequence of List of Materials, Data sheet for each item, including all accessories, marked for proposed product.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
 - 1. Products: Subject to compliance with requirements, provide one of the products specified.

2.2 FIXTURES AND COMPONENTS, GENERAL

- A. Air-Handling Fixtures: For use with plenum ceiling for air return and heat extraction and for attaching an air-diffuser-boot assembly specified in Division 15 Section "Diffusers, Registers, and Grilles."
 - 1. Air Supply Units: Slots in one or both side trims join with air-diffuser-boot assemblies.
 - 2. Heat Removal Units: Air path leads through lamp cavity.
 - 3. Combination Heat Removal and Air Supply Unit: Heat is removed through lamp cavity at both ends of the fixture door with air supply same as for air supply units.
 - 4. Dampers: Operable from outside fixture for control of return-air volume.
 - 5. Static Fixtures: Air supply slots are blanked off, and fixture appearance matches active units.

2.3 LIGHTING FIXTURES

- A. Fixture: Energy efficient volumetric type meeting Title 24 and District standards.

2.4 EXIT SIGNS

- A. General: Comply with UL 924; for sign colors and lettering size, comply with authorities having jurisdiction.
- B. Internally Lighted Signs:
 - 1. Lamps for AC Operation: Light-emitting diodes with 25 years warranty..
- C. Self-Powered Exit Signs (Battery Type): Integral automatic charger in a self-contained power pack.
 - 1. Battery: Sealed, maintenance-free, nickel-cadmium type with special warranty.
 - 2. Charger: Fully automatic, solid-state type with sealed transfer relay.
 - 3. Operation: Relay automatically energizes lamp from battery when circuit voltage drops to 80 percent of nominal voltage or below. When normal voltage is restored, relay disconnects lamps from battery, and battery is automatically recharged and floated on charger.

2.5 EMERGENCY LIGHTING UNITS

- A. General: Self-contained units complying with UL 924.
 - 1. Battery: Sealed, maintenance-free, lead-acid type with minimum 10-year nominal life and special warranty.
 - 2. Charger: Fully automatic, solid-state type with sealed transfer relay.
 - 3. Operation: Relay automatically turns lamp on when power supply circuit voltage drops to 80 percent of nominal voltage or below. Lamp automatically disconnects from battery when voltage approaches deep-discharge level. When normal voltage is restored, relay disconnects lamps from battery, and battery is automatically recharged and floated on charger.
 - 4. Wire Guard: Where indicated, heavy-chrome-plated wire guard protects lamp heads or fixtures.

5. Integral Time-Delay Relay: Holds unit on for fixed interval when power is restored after an outage; time delay permits high-intensity-discharge lamps to restrike and develop adequate output.

2.6 LED LIGHTING

- A. Correlated color temperature (CCT): 3500 °K.
- B. Color rendering index (CRI): 75 minimum.
- C. Off-state power consumption: The power draw of the luminaire (including PE or remote monitoring unit) shall not exceed 2.50 watts when in the off state.
- D. Operating environment: Luminaire shall be able to operate normally in temperatures from -20° C to 50° C.
- E. Cooling system: Shall consist of a heat sink with no fans, pumps, or liquids, and shall be resistant to debris buildup that does not degrade heat dissipation performance.
- F. Lumen depreciation: LED module(s)/array(s) shall deliver at least 70% of initial lumens, when installed for a minimum of 100,000 hours.
- G. Lighting Distribution: Per lighting fixture schedule and in accordance with IESNA Lighting Distributions.
- H. Maximum amperage at LED: Maximum amperage at LED shall not exceed driver current to meet lumen depreciation value described above but shall not exceed 700 mA per mm² of chip. Multi-current (dimming) driver output shall be within the limits described in this Section. Provision only for dimming function controllable via networked control system.
- I. The Driver and LED arrays shall be designed for multi-current input operation, with adjustable ratings at 350 mA, 525 mA and 700 mA.
- J. Transient protection: Per IEEE C.62.41-1991, Class A operation. The line transient shall consist of seven strikes of a 100k HZ ring wave, Min. 10kV level, for both common mode and differential mode.
- K. Operating temperature: Power supply shall operate between -20° C and 50° C.
- L. Frequency: Output operating frequency must be ≥ 120 Hz (to avoid visible flicker) and input operating frequency of 60 Hz.
- M. Interference: Power supplies shall meet FCC 47 CFR Part 15/18 (Consumer Emission Limits).
- N. Noise: Power supply shall have a Class A sound rating per ANSI Standard C63.4.
- O. Fixture Warranty: Manufacturer shall warranty to replace defective light fixtures or parts thereof for a period of 5 years.

2.7 FIXTURE SUPPORT COMPONENTS

- A. Comply with Division 26 Section "Basic Electrical Materials and Methods" for channel- and angle-iron supports and nonmetallic channel and angle supports.
- B. Single-Stem Hangers: 1/2-inch.

- C. Twin-Stem Hangers: Two, 1/2-inch steel tubes with single canopy designed to mount a single fixture. Finish same as fixture.
- D. Wires: ASTM A 641/A 641M, Class 3, soft temper, zinc-coated, 12 gage.
- E. Wires For Humid Spaces: ASTM A 580/A 580M, Composition 302 or 304, annealed stainless steel, 12 gage.
- F. Rod Hangers: 3/16-inch minimum diameter, cadmium-plated, threaded steel rod.
- G. Hook Hangers: Integrated assembly matched to fixture and line voltage and equipped with threaded attachment, cord, and locking-type plug.

2.8 LIGHTING CONTROL DEVICES

- A. Dimming Driver Controls: Sliding-handle type with on/off control; compatible with driver and having light output and energy input over the full dimming range.
- B. Light Level Sensor: Detect changes in ambient lighting level and provide dimming range of 20 to 100 percent in response to change.
 - 1. Sensor Capacity: At least 40 electronic dimming driver.
 - 2. Adjustable Ambient Detection Range: 10 to 100 fc minimum
- C. Occupancy Sensors: Adjustable sensitivity and off delay time range of 5 to 15 minutes.
 - 1. Device Color:
 - a. Wall Mounted: White.
 - b. Ceiling Mounted: White.
 - 2. Occupancy detection indicator.
 - 3. Ultrasonic Sensors: Crystal controlled with circuitry that causes no detection interference between adjacent sensors.
 - 4. Infrared Sensors: With daylight filter and lens to afford coverage applicable to space to be controlled.
 - 5. Combination Sensors: Ultrasonic and infrared sensors combined.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Fixtures: Set level, plumb, and square with ceilings and walls. Install lamps in each fixture.
- B. Support for Fixtures in or on Grid-Type Suspended Ceilings: Provide both grid and additional wire supports. Refer to DSA IR 25-2/1.11 for requirements.
 - 1. Install a minimum of four ceiling support system rods or wires for each fixture. Locate not more than 6 inches from fixture corners.
 - 2. Support Clips: Fasten to fixtures and to ceiling grid members at or near each fixture corner with clips that are UL listed for the application.
 - 3. Fixtures of Sizes Less Than Ceiling Grid: Install as indicated on reflected ceiling plans or center in acoustical panel, and support fixtures independently with at least two 3/4-inch metal channels spanning and secured to ceiling tees.
 - 4. Install at least one independent support rod or wire from structure to a tab on lighting fixture. Wire or rod shall have breaking strength of the weight of fixture at a safety factor of 3.
- C. Suspended Fixture Support: As follows:
 - 1. Pendants and Rods: Where longer than 48 inches, brace to limit swinging.

2. Stem-Mounted, Single-Unit Fixtures: Suspend with twin-stem hangers.
 3. Continuous Rows: Use tubing or stem for wiring at one point and tubing or rod for suspension for each unit length of fixture chassis, including one at each end.
 4. Continuous Rows: Suspend from cable.
- D. Air-Handling Fixtures: Install with dampers closed and ready for adjustment.
- E. Adjust aimable fixtures to provide required light intensities.

END OF SECTION

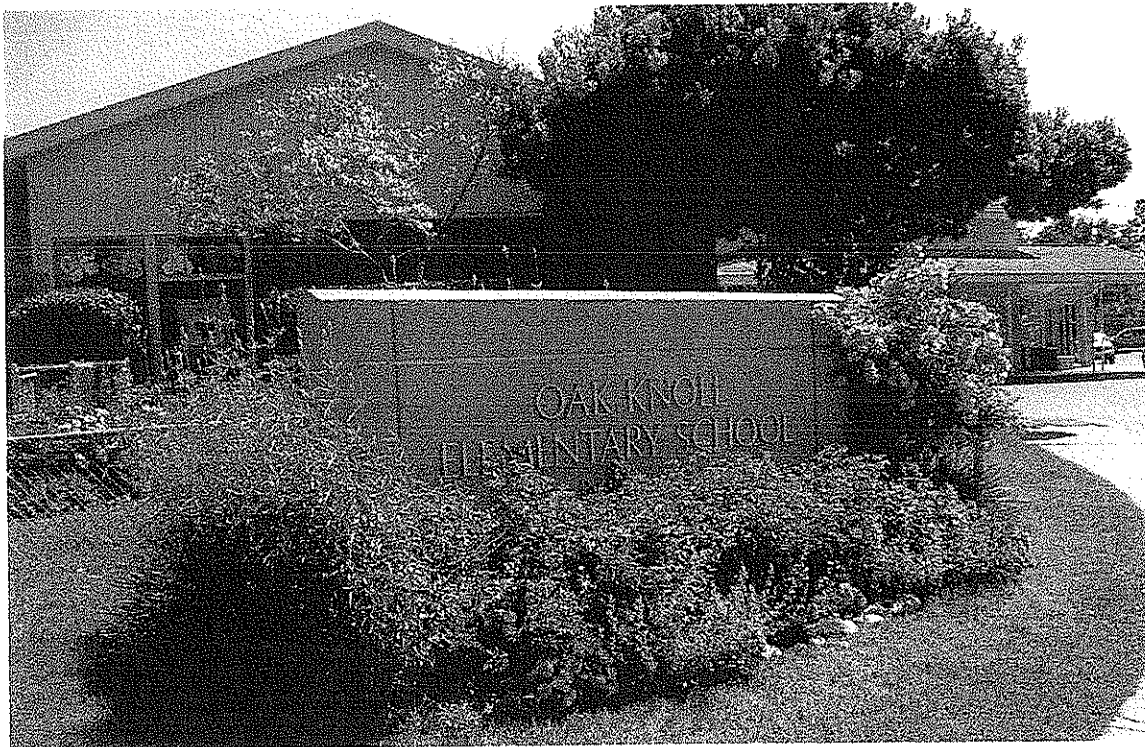
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NORTH TOWER *environmental*

ASBESTOS AND LEAD SURVEY REPORT

**OAK KNOLL ELEMENTARY SCHOOL
1895 OAK KNOLL LANE
MENLO PARK, CALIFORNIA**



PREPARED FOR:

**MENLO PARK CITY SCHOOL DISTRICT
181 ENCINAL AVENUE
ATHERTON, CALIFORNIA, 94027**

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May 31, 2007

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**OAK KNOLL ELEMENTARY SCHOOL
1895 OAK KNOLL LANE
MENLO PARK, CALIFORNIA**

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**ASBESTOS and LEAD SURVEY REPORT
OAK KNOLL ELEMENTARY SCHOOL
1895 OAK KNOLL LANE
MENLO PARK, CALIFORNIA**

A. EXECUTIVE SUMMARY

This summary is not to be read as a stand alone document. The report shall be read in its entirety. The reader must review the detailed information provided in the accompanying text. Any interpretation, use and conclusion resulting from the data contained in this report is the responsibility of the reader.

Asbestos:

Material	Location	Result
Floor Tile/Mastic	A, G	5-15%
Drywall/Joint Compound	G, C (Room 18 Closet)	1-3%
Window/Door Caulk	Throughout School	1-10%
TSI-Pipe Runs	Attic- Throughout School	1-10%
TSI-Pipe Elbows	Attic- Throughout School	5-15%
TSI-Pipe Runs	Encased in Concrete Floors - Throughout School	PACM
Transite Pipes	Wing G beneath Concrete; Also throughout as irrigation piping	PACM
Fire Core Doors	Throughout School	PACM
Roofing	Throughout School	PACM
Vapor Barrier	Beneath Floors	PACM

Lead:

Category	Surface
Lead-Based Paint	Interior and Exterior Door Components; Exterior Wood Window Components; Exterior Metal Support Poles, Fascia; Interior Multipurpose Window Guards
Lead-Containing Paint	Interior Window Components; Ceiling Tile; Metal Ducting; Wood Ceiling Beams; Crown Molding; Drywall; Wood Panels; Tackboard Walls; Plaster; Concrete Block Walls; Vinyl Walls; Exterior Building Wood Walls, Downspouts, Stucco, Window Components, Canopy Stucco and Wood, and Block; Gymnasium Floor Stain;

B. INTRODUCTION

North Tower Environmental was requested by the Menlo Park City School District to develop an Asbestos and Lead Survey Report for Oak Knoll Elementary School. The purpose of the Asbestos and Lead survey was to identify asbestos-containing materials (ACM) and lead-based paint (LBP). The sampling is intended to provide preliminary data for the purpose of complying with the United States Environmental Protection Agency, National Emissions Standard for Hazardous Air Pollutants (US EPA NESHAP), as required prior to conducting a renovation or demolition of a regulated structure, and to comply with the California Occupational Safety and Health Administration Lead in Construction regulation 1532.1.

The survey and report were completed by Carolyn Henry, a Cal/OSHA Certified Asbestos Consultant (#92-837) and Department of Health Services Accredited Lead Inspector/Assessor (#2451). The building survey and collection of bulk material samples were conducted in January and February of 2007.

The approach used to meet the stated objective did not include the use of destructive surveying methods, such as breaking into wall voids, and penetrating inaccessible ceiling or floor cavities to locate suspect materials.

C. BACKGROUND

Site Description: The site is located at 1895 Oak Knoll Lane, Menlo Park, California. The school buildings are composed of wood and stucco. The interior is composed of wood, drywall, plaster and tackboard walls, 12" and 9" floor tile, carpeted and ceramic tile floors and walls in the restrooms. Newer mechanical rooms are located within classrooms and departments. The original Boiler Room and Mechanical Rooms no longer exist.

Abandoned insulated piping exists in some areas of the canopy and building attic spaces; in some areas there is no insulation on the piping but there is asbestos insulation debris on the floor in the canopy and attic spaces. Presumed asbestos insulation radiant piping also exists beneath the concrete floors, an exterior patio and between buildings.

The Oak Knoll Elementary School consists of several older structures built over time ranging from 1952 to 1959. Additional structures were also built in 1999. Significant major renovations have been completed over the years.

D. OTHER SITE CONDITIONS

Presumed Asbestos Containing Material (PACM):

- Vapor Barrier: It is suspected there may be an asbestos containing vapor barrier under the wood floor of the gym and ceramic tile floor in the restrooms and possibly all concrete floors. This could not be investigated without damaging the wood floor of the gym or concrete floors.
- Fire Doors: It is suspected that there may be asbestos insulation within the core of the fire-rated doors.
- Abandoned Concrete Encased Piping: Based upon as-built drawing review, radiant heating lines run through the concrete floors and connect underground in between the buildings. The piping is presumed to be wrapped with a asbestos (i.e. insulation, tar, felt).
- Roofing Fields: Roofing Mastics were samples but not Roofing Fields

Thermal System Insulation Note: During the survey, North Tower Environmental inspected above dropped ceilings and within wall cavities (where access was possible) in order to identify the location of asbestos-containing pipe insulation. The information presented in this report reflects NTE's observations. NTE did not observe any hard-packed or air cell suspect asbestos pipe insulation in the attics of the G Wing or Room 31 and 32 (non-ACM fiberglass insulation was observed in these areas). NTE observed and noted the presence asbestos-containing pipe insulation in the K, C, D and Multi-Purpose Wing attics and canopy attics and presumes that this material also runs behind walls in some areas (non-ACM fiberglass insulation was also observed in these areas). In some areas of the C and D Wing, NTE observed asbestos insulation only in the form of debris on the floor of the building attic or canopy attic.

Ceramic Tile: The restrooms were found to be recently renovated with new ceramic tile walls and floors. Therefore, the ceramic tile was not sampled.

E. WORK DESCRIPTION: SURVEY AND FINDINGS

Bulk Asbestos Sample Collection: Bulk samples were collected from various interior and exterior materials suspected to contain asbestos by cutting the materials with a razor knife. The sample collection was performed in January and February of 2007. Sampling was generally conducted in a manner that minimized damage to the building, did not leave unsightly marks, and did not create a health hazard for building occupants or inspectors.

All samples, along with a completed chain of custody, were sent to Analytical labs of San Francisco (ALSF). ALSF is accredited by the National Institute of Standards and Technology and by the National Voluntary Laboratory Accreditation Program. ALSF analyzed these samples by polarized light microscopy (PLM).

Lead-Based Paint Testing Procedures

NTE visually inspected the painted structural components for damaged and/or deteriorating paint conditions. A X-Ray Fluorescence Spectrum Analyzer was used to sample for lead paint. NTE sampled a portion of each significant exposed painted surface on the interior of the structure. Carolyn Henry (DHS #I-2541) and James Ratti (DHS #I-316), DHS Certified Lead Inspector/Assessors, performed the testing on February 23-24 and March 1, 2007.

An XRF analyzer can measure the concentration of lead in a coating without damaging the coating during the sampling process. The XRF calculates the weight of lead per a defined, measured area. The results are reported in milligrams of lead per square centimeter (mg/cm²).

The purpose of the survey was to gain baseline information on the presence of lead and LBP throughout the structure. Such data will be of use in minimizing potential exposures to employees and to contract employees who may encounter lead while engaged in operations which may disturb lead in dust or paint.

Asbestos Sample Results

The results of the analysis indicated that asbestos was present in the materials noted below. Based upon analytical results and visual observations, the materials listed below were determined to be ACM or ACCM.

A-Wing (K1-K5)		
Material	Location	Result
Floor Tile/Mastic	Room K1 (Beneath Carpet) Room K2 (Beneath 1'x1' Tile and Carpet) Room K3 (Beneath 1'x1' Tile and Carpet) Room K4 (Beneath 1'x1' Tile and Carpet)	5-15%
Window/Door Caulk	Throughout School	1-10
TSI-Pipe Runs	Attic- Throughout School	1-10
TSI-Pipe Elbows	Attic- Throughout School	5-15
Fire Core Doors	Throughout School	PACM
Roofing	Throughout School	PACM
Vapor Barrier	Beneath Floors	PACM

C-Wing (Classrooms 7-18)		
Material	Location	Result
Window/Door Caulk	Throughout School	1-10%
TSI-Pipe Runs	Attic- Throughout School	1-10
TSI-Pipe Elbows	Attic- Throughout School	5-15
Drywall/Joint Compound	Building C-Room 18 Closet	1-3
Fire Core Doors	Throughout School	PACM
Roofing	Throughout School	PACM
Vapor Barrier	Beneath Floors	PACM
D-Wing (Classrooms 19-26)		
Material	Location	Result
Window/Door Caulk	Throughout School	1-10%
TSI-Pipe Runs	Attic- Throughout School	1-10
TSI-Pipe Elbows	Attic- Throughout School	5-15
Fire Core Doors	Throughout School	PACM
Roofing	Throughout School	PACM
Vapor Barrier	Beneath Floors	PACM
G-Wing (Classrooms 27-30)		
Material	Location	Result
Window/Door Caulk	Throughout School	1-10%
TSI-Pipe Runs	Attic- Throughout School	1-10
TSI-Pipe Elbows	Attic- Throughout School	5-15
Drywall/Joint Compound	Select Walls and Attic Mechanical Room	1-3
Fire Core Doors	Throughout School	PACM
Roofing	Throughout School	PACM
Vapor Barrier	Beneath Floors	PACM

Multi-Purpose Building		
Material	Location	Result
Window/Door Caulk	Throughout School	1-10%
TSI-Pipe Runs	Attic- Throughout School	1-10
TSI-Pipe Elbows	Attic- Throughout School	5-15
Fire Core Doors	Throughout School	PACM
Roofing	Throughout School	PACM
Vapor Barrier	Beneath Floors	PACM

Lead Testing Results

Category	Surface
Lead-Based Paint	Interior and Exterior Door Components; Exterior Wood Window Components; Exterior Metal Support Poles, Fascia; Interior Multipurpose Window Guards
Lead-Containing Paint	Interior Window Components; Ceiling Tile; Metal Ducting; Wood Ceiling Beams; Crown Molding; Drywall; Wood Panels; Tackboard Walls; Plaster; Concrete Block Walls; Vinyl Walls; Exterior Building Wood Walls, Downspouts, Stucco, Window Components, Canopy Stucco and Wood, and Block; Gymnasium Floor Stain;

A total of 546 XRF readings were collected from surface coatings on selected building components. XRF sampling and analysis resulted in 30 of the 546 samples exceeding the U.S. Department of Housing and Urban Development (HUD) definition of lead-based paint (i.e., 0.5% by weight or 1.0 mg/cm²). Other paint samples contained detectable concentrations of lead, but less than 1.0 mg/cm² lead.

Paint tested on the interior and exterior of the buildings contains lead. When considering XRF sample results, which have already tested positive for lead, they may be placed in one of two categories. **Lead-Based Paint**, which is any paint containing greater than or equal to 1.0 mg/cm² lead. The sample may also have a lower lead content and be considered **Lead-Containing Paint**, which is any paint indicating detectable concentrations of lead but less than 1.0 mg/cm² lead.

Lead-Based Paint (LBP) is present on door and window components; walkway columns; downspouts; facia; and E Building Exterior wall; MP wood shed.

Lead containing paint is present on door and window components; some wood and plaster walls and ceilings; gymnasium floor stain; some ceramic tile glazing; acoustical tile ceiling; gutters; canopy stucco; exterior stucco; louvers; and ball hut exterior facia and soffit.

F. LIMITATIONS

The reported results of the presence of ACMs and LBP presented in this report are intended for discussion and informational purposes only. These results should not be solely used in the preparation or design of specific asbestos and lead abatement response options without the supplement of additional field-specific and material-specific information.

The judgments, conclusions, and recommendations described in this report pertain to the conditions judged to be present or applicable at the time the work was performed. Future conditions may differ from those described herein and this report is not intended for use in future evaluations of the facility unless an update is conducted by a Certified Asbestos Consultant and DHS certified employee familiar with currently used asbestos and lead survey practices and this subject facility.

North Tower Environmental performed its services using that degree of care and skill ordinarily exercised under similar conditions by reputable members of our profession practicing in the same or similar locality. No other warranty, expressed or implied, is made or intended by our performance of consulting services or by furnishing our written report. This report has been prepared on behalf of and exclusively for the use of Menlo Park City School District. This report shall not, in whole or in part, be disseminated or conveyed to any other party, or be used or relied upon by any other party, in whole or in part, without the prior written consent of North Tower Environmental.

Use of this report is provided to Menlo Park City School District solely for its exclusive use and shall be subject to the terms and conditions in the applicable agreement between Menlo Park City School District and North Tower Environmental. Any third party use of this report shall also be subject to the terms and conditions governing the work in the agreement between Menlo Park City School District and North Tower Environmental. Any unauthorized release or misuse of this report shall be without risk to North Tower Environmental.

Certain information contained in this report may have been rightfully provided to North Tower by third parties or other outside sources. North Tower Environmental does not make any warranties or representations, whether expressed or implied, regarding the accuracy of such information, and shall not be held accountable or responsible in the event that any such inaccuracies are present.

G. RECOMMENDATIONS

- Prior to any planned construction work, the following should be conducted:
 - 1) North Tower should review final architectural drawings and conduct destructive sampling for asbestos;
 - 2) An asbestos and lead specification should be developed; and
 - 3) An lead-related construction work plan should be developed.
- Construction work involving the disturbance or removal of ACMs (materials containing greater than 0.1% asbestos) should be conducted by licensed, certified, and registered asbestos abatement contractors. Work involving the disturbance of ACMs should be performed in accordance with applicable federal, state, and local laws and regulations. Such work should also be conducted in conformance with an Asbestos Abatement Specification developed by a Certified Asbestos Consultant.
- For all work to be performed on ceramic tile, painted or stained surfaces, the contractor must comply with Cal/OSHA Construction Safety Orders – Lead, Section 1532.1, Title 8, CCR and DHS Title 17. The work (presumably renovation work) shall be performed in compliance with applicable regulations in order to protect employee, the environment and the surrounding community from the potential hazards associated with lead.
- The ceramic floor and wall tile in all bathrooms contain detectable concentrations of lead, but less than 1.0 mg/cm² lead. Destructive sampling of this material should be performed prior to renovation/demolition.
- The asbestos pipe insulation debris noted in the canopy attics and building attics (specifically noted in canopy attic adjacent to Rooms 21 and 22 and above Room 18) should be cleaned up/ removed.

OAK KNOLL ELEMENTARY SCHOOL

1-37-07

18 OCTOBER, 2005

OAK KNOLL ELEMENTARY SCHOOL SUMMARY OF ASBESTOS CONTAINING MATERIALS

NOTES:

1. With the exception of 31-32, Portables are Leased and not part of this survey.
2. 1999 Bldgs. are not part of this survey

SUMMARY of LEAD INSPECTION

Lead-Based Paint

Interior/ Exterior Door Components; Exterior Wood Window Components; Exterior Metal Support Poles, Fascia; Interior Multipurpose Window Guards

Lead-Containing Paint

Interior and Exterior Window Components; Ceiling Tile; Metal Ducting; Wood Ceiling Beams; Crown Molding; Drywall; Wood Panels; Tackboard; Plaster; Concrete Block Walls; Vinyl Walls; Exterior Wood

C WING: (1952 Classrooms 14-16;
1959 Classrooms 17-18)

- Window and Door Caulk
- Abandoned TSI lines (above ceiling)

A WING: (1952 Classrooms K1-K5)

- Floor Tile and Mastic:
 - Room K1 (Beneath Carpet)
 - Room K2, K3, K4 (Beneath 1"x1" Tile and Carpet)
- Window and Door Caulk
- Abandoned TSI lines (above ceiling)

GYMNASIUM (1952)

- Window and Door Caulk
- Abandoned TSI lines (above ceiling)

D WING: (1952 Classrooms 19-21;
1956 Classrooms 22-26)

- Window and Door Caulk
- Abandoned TSI lines (above ceiling)

PORTABLES 31-32

- Window and Door Caulk
- No Asbestos detected
- Roofing is PACM

FIGURE 1

*PRESUMED ASBESTOS CONTAINING MATERIAL **

ALL BUILDINGS

- Roofing Fields (most roofs are expected to be non-asbestos)
- Fire Core Doors
- Abandoned TSI lines: (radiant heating system encased in concrete floor and underground between buildings)
- Vapor Barriers (beneath concrete floors)



0 15 45 75

TABLE I
SUMMARY OF SUSPECT ASBESTOS-CONTAINING MATERIAL SAMPLE RESULTS

Oak Knoll Elementary School
1895 Oak Knoll Lane
Menlo Park, California 94025

Sample No.	Location	Building Material	Asbestos Content
NT-2462-021007-401	Building A, Classroom K2 at Ceiling	1' x 1' Ceiling Tile	No Asbestos Detected
NT-2462-021007-402	Building A, Classroom K2 at Wall	Fiberboard Wall	No Asbestos Detected
NT-2462-021007-403	Building A, Classroom K2 at Wall	Black/Tan Glue (behind fiberboard wall)	No Asbestos Detected
NT-2462-021007-405	Building A, Classroom K2 at Upper Wall	1' x 2' Tile	No Asbestos Detected
NT-2462-021007-406	Building A, Classroom K2 at Floor (top layer)	1' x 1' Floor Tile and Mastic (with older floor tile debris)	None Detect in Vinyl None Detect in Gold Glue 5 to 15% in Brown Floor Tile
NT-2462-021007-407	Building A, Classroom K2 at Floor (bottom layer)	Older Floor Tile and Mastic	10 to 15% in Brown Floor Tile None Detect in Gray Glue
NT-2462-021007-408	Building A, Classroom K2 at Wall	Tan Basecoat Mastic and Joint Compound	No Asbestos Detected
NT-2462-021007-409	Building A, Classroom K2 at Wall Near Door	Composite sample of Sheetrock and Joint Compound	No Asbestos Detected

Sample No.	Location	Building Material	Asbestos Content
NT-2462-021007-410	Building A, Classroom K2 at Ceiling Above Tile	Vapor Barrier	No Asbestos Detected
NT-2462-021007-411	Building A, Classroom K2 at Window Between Frame and Wall	Window Caulk	No Asbestos Detected
NT-2462-021007-412	Building A, Classroom K1 at Ceiling	1' x 1' Ceiling Tile (gray with white paint)	No Asbestos Detected
NT-2462-021007-413	Building A, Classroom K1 at Wall	Composite sample of Sheetrock and Joint Compound	No Asbestos Detected
NT-2462-021007-414	Building A, Classroom K1 at Wall	Gray Tackboard Glue	No Asbestos Detected
NT-2462-021007-415	Building A, Classroom K1 at Ceiling	Tan Glue on Ceiling Tile	No Asbestos Detected
NT-2462-021007-416	Building A, Classroom K1 at Floor	Older Green Floor Tile and Mastic	None Detect in Yellow Glue 5 to 15% in Green Floor Tile None Detect in Black Mastic
NT-2462-021007-417	Building A, Classroom K1 at Floor	1' x 1' Black Floor Tile and Mastic	No Asbestos Detected
NT-2462-021007-418	Building A, Classroom K5 at Floor	1' x 1' Black Floor Tile and Mastic	No Asbestos Detected
NT-2462-021007-419	Building A, Classroom K5 at Floor	Yellow and Brown Carpet Mastic	No Asbestos Detected
NT-2462-021007-420	Building C, Room Number 13 at Wall	Composite sample of Sheetrock and Joint Compound	No Asbestos Detected
NT-2462-021007-421	Building C, Room Number 13 at Wall	Drywall Texture	No Asbestos Detected

Sample No.	Location	Building Material	Asbestos Content
NT-2462-021007-423	Building C, Room Number 13 at Floor	Carpet Glue	No Asbestos Detected
NT-2462-021007-424	Building C, Room Number 11 at Wall Behind Sink	Fiberboard Skim Coat	No Asbestos Detected
NT-2462-021007-425	Building C, Room Number 11 at Sink	Sink Undercoat	No Asbestos Detected
NT-2462-021007-426	Building C, Room Number 10 at Wall (Courtyard Side)	Drywall Texture	No Asbestos Detected
NT-2462-021007-427	Building C, Room Number 8 at Wall Behind Tile	Black/Brown/White Mastic	No Asbestos Detected
NT-2462-021007-428	Building C, Room Number 8 at Wall	1' x 1' Wall Tile	No Asbestos Detected
NT-2462-021007-429	Multi-Purpose Building at Ceiling	Joint Compound	No Asbestos Detected
NT-2462-021007-430	Multi-Purpose Building at Wall	Plaster	No Asbestos Detected
NT-2462-021007-431	Multi-Purpose Building at Gymnasium Wall	Drywall Texture	No Asbestos Detected
NT-2462-021007-432	Multi-Purpose Building at Gymnasium at Wall	Composite sample of Sheetrock, Joint Compound and Texture	No Asbestos Detected
NT-2462-021007-433	Multi-Purpose Building at Kitchen Floor	Black Mastic and Concrete	No Asbestos Detected

Sample No.	Location	Building Material	Asbestos Content
NT-2462-021007-434	Multi-Purpose Building at Attic Pipe Insulation – Pipe Run	Pipe Run Insulation (black paper, foil and fiberglass)	No Asbestos Detected
NT-2462-021007-435	Multi-Purpose Building at Attic Pipe Insulation – Pipe Elbow	Pipe Elbow Insulation (hard pack)	5 to 15% amosite 5 to 10% chrysotile
NT-2462-021007-436	Multi-Purpose Building at Attic Pipe Insulation – Pipe Run	Pipe Run Insulation (fiberglass, gray paper and black felt)	5 to 10% in Pink/Tan Felt 1 to 3% in Black Felt and Tar
NT-2462-021007-437	Multi-Purpose Building at Attic Wall	Unfinished Plaster	No Asbestos Detected
NT-2462-021007-438	Multi-Purpose Building at Attic Wall	Tar and Felt Paper	No Asbestos Detected
NT-2462-030107-439	(Rooms 14-15-16) Room 14 (1956)	1x1 Floor Tile and Brown Mastic	No Asbestos Detected in Off-White Tile or Yellow Glue
NT-2462-030107-440	(Rooms 14-15-16) Room 14 (1956)	Carpet Glue (Yellow)	No Asbestos Detected in Yellow Glue and Gray Concrete
NT-2462-030107-441	(Rooms 14-15-16) Room 14 (1956)	Tackboard	HOLD
NT-2462-030107-442	(Rooms 14-15-16) Room 14 (1956)	1x1 Ceiling Tile (Brown With White Paint)	No Asbestos Detected in White Coating and Gold Acoustic Tile
NT-2462-030107-443	(Rooms 14-15-16) Room 14 (1956) – Above Door	Cinder Block, Mortar and Paint	No Asbestos Detected in White / Gold / Green Paints and Gray Concrete
NT-2462-030107-444	(Rooms 14-15-16) Room 14 (1956)	Base Cove Mastic	No Asbestos Detected in Tan Vinyl and Yellow Glue
NT-2462-030107-445	(Rooms 14-15-16) Room 15 (1956)	Carpet Glue	HOLD
NT-2462-030107-446	(Rooms 14-15-16) Room 15 (1956)	Tackboard	HOLD
NT-2462-030107-447	(Rooms 14-15-16) Room 15 (1956)	Tackboard Adhesive (Yellow)	HOLD
NT-2462-030107-448	(Rooms 14-15-16) Room 15 (1956)	Tackboard Compound	HOLD
NT-2462-030107-449	(Rooms 14-15-16) Room 15 (1956)	Vapor Barrier (Between CT and Wood)	No Asbestos Detected in Brown / Black Tar Paper

Sample No.	Location	Building Material	Asbestos Content
NT-2462-030107-450	(Rooms 14-15-16) Room 15 (1956)	Fiberglass and Paper	No Asbestos Detected in White / Gold Coating, Gold Acoustic Tile, Brown / Black Tar Paper and Yellow Glass Wool
NT-2462-030107-450B	(Rooms 14-15-16) Room 15 (1956)	Door Caulk (Interior Between Door & Cinder Block)	5 to 10% in Gold Caulk with White Paint
NT-2462-030107-451	(Rooms 17-18) Room 17 (1959)	Window Caulk (Interior Between Frame & Cinder Block)	No Asbestos Detected in Silver Caulk with Off-White Paint
NT-2462-030107-452	(Rooms 17-18) Room 17 (1959)	2x4 Ceiling Tile	HOLD
NT-2462-030107-453	(Rooms 17-18) Room 17 (1959)	Tape Between Ceiling Tile	No Asbestos Detected
NT-2462-030107-454	(Rooms 17-18) Room 17 (1959)	Cinder Block / Paint (Interior)	HOLD
NT-2462-030107-455	(Rooms 17-18) Room 17 (1959)	Tackboard & Yellow Mastic	HOLD
NT-2462-030107-456	(Rooms 17-18) Room 17 (1959)	1x1 Floor Tile and Yellow Mastic	HOLD
NT-2462-030107-457	(Rooms 17-18) Room 17 (1959)	Base Cove and Adhesive	HOLD
NT-2462-030107-458	(Rooms 17-18) Room 18 (1959)	Sink Undercoat	No Asbestos Detected in Gray Coating
NT-2462-030107-459	(Rooms 17-18) Room 18 (1959)	Tackboard with White Skim	HOLD
NT-2462-030107-460	(Rooms 17-18) Room 18 (1959) – Attic	Fine Gray Duct	5 to 10% in Tan Insulation with Plastic Foam (Styrofoam)
NT-2462-030107-461	(Rooms 17-18) Room 18 (1959) – Attic	Gray Insulation Debris	5 to 10% Off-White Insulation
NT-2462-030107-462	(Rooms 17-18) Room 18 (1959) – Ceiling Closet	Drywall / Joint Compound	None Detected in White Paint 1 to 3% in White Compound, Tape and Compound None Detected in Off-White Sheetrock
NT-2462-030107-463	(Rooms 23-26) Room 26 (1959)	Gray Sink Undercoating	HOLD
NT-2462-030107-464	(Rooms 23-26) Room 26 (1959)	Interior Door Caulk (Between Door and Tackboard)	HOLD
NT-2462-030107-465	(Rooms 23-26) Room 26 (1959)	Yellow Glue (Behind Wood Trim Above Tack Board)	No Asbestos Detected in Yellow Glue / Caulk and White / Pink Paints
NT-2462-030107-466	(Rooms 23-26) Room 26 (1959)	Tackboard and Wallpaper	HOLD

Sample No.	Location	Building Material	Asbestos Content
NT-2462-030107-467	(Rooms 23-26) Room 26 (1959)	Door Kickboard	No Asbestos Detected in Tan-Painted Brown Formica with Glue and White Paint
NT-2462-030107-468	(Rooms 23-26) Room 25 (1959)	1x1 Floor Tile with Yellow and Black Mastic	No Asbestos Detected In Beige Tile, Yellow Glue and Black Mastic
NT-2462-030107-469	(Rooms 23-26) Room 25 (1959)	1x1 Floor Tile with Yellow Mastic	HOLD
NT-2462-030107-470	(Rooms 23-26) Room 25 (1959)	Carpet Glue & Mastic	HOLD
NT-2462-030107-471	(Rooms 23-26) Room 24 (1959)	1x1 Floor Tile with Yellow and Black Mastic	HOLD
NT-2462-030107-472	(Rooms 23-26) Room 26 (1959)	Interior Door Caulk (Between Cinder Block and Doors)	5 to 10% in White Painted Gold Caulk
NT-2462-030107-473	(Rooms 23-26) Room 26 (1959)	Tackboard with Skimcoat and Adhesive	HOLD
NT-2462-030107-474	(Rooms 23-26) Room 23 (1959)	Vapor Barrier (Above Ceiling Tile)	No Asbestos Detected in Gold / Black Paper and Tar Paper
NT-2462-030107-475	(Rooms 23-26) Room 23 (1959)	Cinder Block Mortar (at Windows)	HOLD
NT-2462-030107-476	(Rooms 23-26) Room 23 (1959)	1x1 Ceiling Tile (Brown with White Paint)	HOLD
NT-2462-030107-477	(Rooms 23-26) Room 23 (1959)	Base Cove with Mastic	HOLD
NT-2462-030107-478	(Rooms 19-20-21) Canopy Attic (1953)	Mudded Elbows	3 to 10% in Off-White Insulation with Cotton Canvas
NT-2462-030107-479	(Rooms 19-20-21) Janitor's Closet (1953)	Plaster Ceiling	No Asbestos Detected in White Paint, White Coarse Plaster and Gray Concrete
NT-2462-030107-480	(Rooms 19-20-21) Canopy Attic (1953)	TSI Debris	3 to 10% in Off-White Insulation with Cotton
NT-2462-030107-481	(Rooms 19-20-21) Attic (1953)	Black Vapor Barrier	No Asbestos Detected Black Felt and Tar
NT-2462-030107-482	(Rooms 19-20-21) Attic (1953)	White Ceiling Board	No Asbestos Detected in Tan Acoustic Tile
NT-2462-030107-483	(Rooms 19-20-21) Janitor's Closet (1953)	Black Vapor Barrier (Beneath Stucco)	No Asbestos Detected in Black Tar and Felt

Sample No.	Location	Building Material	Asbestos Content
NT-2462-030107-484	NO SAMPLE		
NT-2462-030107-485	(Rooms 19-20-21) Room 21 (1953)	1x2 Wall Tile (Brown with White Paint)	No Asbestos Detected in White Coating and Gold Acoustic Tile
NT-2462-030107-486	NO SAMPLE		
NT-2462-030107-487	(Rooms 19-20-21) Room 21 (1953)	Tackboard with Skimcoat and Wallpaper Adhesive	HOLD
NT-2462-030107-488	(Rooms 19-20-21) Room 20 (1953)	Yellow Floor Carpet with Mastic and Brown Mastic	No Asbestos Detected in Yellow Glue and Tan Concrete
NT-2462-030107-489	(Rooms 19-20-21) Room 19 (1953)	Work Table Top	No Asbestos Detected in Brown / Black Vinyl and Gold Glue
NT-2462-030107-490	(Rooms 19-20-21) Room 19 (1953)	Drywall / Joint Compound and Base Cove Mastic	No Asbestos Detected in Black Felt & Tar
NT-2462-030107-491	(Rooms 19-20-21) Room 19 (1953)	Wall Texture	No Asbestos Detected in White Paint, White Compound, Tape, Compound and White Sheetrock
NT-2462-030107-492	(Rooms 19-20-21) Room 19 (1953)	Interior Caulk (at Door of Tackwall)	HOLD
NT-2462-030107-493	(Rooms 19-20-21) Room 19 (1953)	1x1 Floor Tile with Yellow and Brown Glue	HOLD
NT-2462-030107-494	(Rooms 19-20-21) Room 19 (1953)	1x1 Ceiling Tile (Brown with White Paint)	HOLD
NT-2462-030107-495	(Rooms 19-20-21) Room 19 (1953)	Vapor Barrier (Above 1x1 Ceiling Tile)	HOLD
NT-2462-030107-496	(Rooms 19-20-21) Attic (1953)	Duct Tape	No Asbestos Detected Tan/Off-White Silver Coating, Off-White Cotton Canvas (2) and Bottom Scrapings
NT-2462-030107-497	(Rooms 19-20-21) Attic (1953)	Fiberglass TSI with Canvas Jacket	No Asbestos Detected in Off-White Yellow Canvas and Yellow Glass Wool
NT-2462-030107-498	(Rooms 27-30) Room 29 (1959)	Skim / Texture (on Drywall Ceiling)	No Asbestos Detected in White Paint and White Compound

Sample No.	Location	Building Material	Asbestos Content
NT-2462-030107-499	(Rooms 27-30) Attic (1959)	Fiberglass TSI Line Elbow (Hard Canvas Wrapped)	No Asbestos Detected in Off-White Coating, White Canvas and Yellow Glass Wool
NT-2462-030107-500	(Rooms 27-30) Attic (1959)	Tape on HVAC Ducts	No Asbestos Detected in White Coating and Off-White Canvas
NT-2462-030107-501	(Rooms 27-30) Attic (1959)	HVAC Vibration Cloth	No Asbestos Detected in Black Rubber and White Canvas
NT-2462-030107-502	(Rooms 27-30) Attic (1959)	Drywall / Joint Compound	1 to 3% in Off-White Compound None Detect in Off-White Sheetrock
NT-2462-030107-503	(Rooms 27-30) Room 29A (1959)	Carpet Glue	HOLD
NT-2462-030107-504	(Rooms 27-30) Room 29A (1959)	Drywall / Joint Compound / Texture	HOLD
NT-2462-030107-505	(Rooms 27-30) Room 29 (1959)	Base Cove / Adhesive / Tackboard	No Asbestos Detected in Off-White Glue, White Coating & Nylon Canvas, White Compound and Brown Fiberboard
NT-2462-030107-506	(Rooms 27-30) Room 29D (1959)	Drywall / Joint Compound (At Chase)	None Detected in White / Green Paints 1 to 3% in Yellow Compound None Detected in White Sheetrock
NT-2462-030107-507	(Rooms 27-30) Room 28 (1959)	Drywall / Joint Compound / Texture	No Asbestos Detected in White Compound, Tap, Compound and White Sheetrock
NT-2462-030107-508	(Rooms 27-30) Room 28 (1959)	1x1 Floor Tile and Yellow Mastic	HOLD
NT-2462-030107-509	(Rooms 27-30) Room 28 (1959)	Base Cove / Adhesive / Tackboard	HOLD
NT-2462-030107-510	(Rooms 27-30) Room 28 (1959)	Carpet Glue	No Asbestos Detected in Yellow Glue and Gray Concrete
NT-2462-030107-511	(Rooms 27-30) Room 30 (1959)	Old Floor Tile (Beneath Closet Wall)	5 to 10% in Pink Tile 10 to 20% in Black Mastic

Sample No.	Location	Building Material	Asbestos Content
NT-2462-030107-512	(Rooms 27-30) Room Attic	Brown Sealant Inside Vents	No Asbestos Detected in White Paint and Gray-Red Concrete
NT-2462-030107-513	(Rooms 27-30) Exterior	Stucco	5 to 15% Tan Caulk
NT-2462-030107-514	No Sample		
NT-2462-030107-515	Wing A	Gray Window Caulk (Aluminum Frame)	Trace (<1%) in Gray Putty with Paint
NT-2462-030107-516	Wing A	Gray Sealant (Sidewalk)	HOLD
NT-2462-030107-517	Wing A	Plaster Canopy	None Detected in Off-White Paint and Gray Concrete
NT-2462-030107-518	Wing A	Plaster Soffet	HOLD
NT-2462-030107-519	Wing A	Stucco Wall	None Detected in Green Paint, Off-White Coarse Finishing Plaster and Gray Concrete
NT-2462-030107-520	Wing C (Next to 13)	Stucco Wall	None Detected in Tan / Green Paints, White Coarse Finishing Plaster and Gray Concrete
NT-2462-030107-521	Wing C (Room 14)	Window Caulk (Aluminum Frame)	1 to 2% in Tan Putty
NT-2462-030107-522	Wing C (Room 14)	Brick & Mortar	None Detected in Off-White Paint, White Coarse Finishing Plaster and Tan Concrete
NT-2462-030107-523	Wing D (By Room 21)	Plaster Canopy	HOLD
NT-2462-030107-524	Wing C (Room 9)	Gray Window Caulk	HOLD
NT-2462-030107-525	Wing C (Room 9)	Gray Sealant (Wood Frame & Window Frame)	None Detected in Gray / Gold / Off-White Paints and Gray Caulk / Putty
NT-2462-030107-526	Multi-Purpose Building	Stucco Wall	HOLD
NT-2462-030107-527	Multi-Purpose Building	Plaster Canopy	None Detected in Off-White Paint and Loose Tan Concrete
NT-2462-030107-528	Wing D (Room 21)	Concrete Exterior Wall Base	None Detected in Tan / Gray / Yellow / Red Paints, Brown Coarse Finishing and Gray Concrete
NT-2462-030107-529	Wing D (Room 20)	Window Caulk	HOLD

Sample No.	Location	Building Material	Asbestos Content
NT-2462-030107-530	Wing D (Room 21)	Stucco -- Mechanical Room	HOLD
NT-2462-030107-531	Wing D (Room 25)	Sidewalk Sealant	HOLD
NT-2462-030107-532	Wing D (Room 26)	Brick & Mortar	HOLD
NT-2462-030107-533	Wing D (Room 24)	Window Caulk	2 to 5% in Brown-Green Putty with Surface Debris
NT-2462-030107-534	Wing G (Room 30)	Window Caulk	1 to 3% in White Putty
NT-2462-030107-535	Wing G (Room 28)	Sidewalk Sealant	None Detected in Gray / White Caulk with Minor Debris
NT-2462-030107-536	Wing G (Room 27)	Brick & Mortar	None Detected in Tan / Gray / Gold / Gray Paints and Gray Concretes (2 Types)
NT-2462-041307-537	Portable 32, Above Sink	Tack Board and Drywall	None Detected in White Wall Covering With Nylon Mesh, Off-White Glue, Gold Fiberboard and White Sheetrock Plaster
NT-2462-041307-538	Portable 32, Above Sink	2 x 4 Ceiling Tile	None Detected in White Coating and Tan Acoustic
NT-2462-041307-539	Portable 32, On Plywood	Carpet Mastic	None Detected in Gold Glue on Wood
NT-2462-041307-540	Portable 32, On Ramp	Exterior Non-Skid	None Detected in Gray-Red Coating and Sand on Rust
NT-2462-041307-541	Portable 32, On Sink	Sink Undercoat	None Detected in Gray Paint / Coating
NT-2462-041307-542	Portable 32, By Door	Base Cove and Mastic	None Detected in Gray-Blue Vinyl
NT-2462-041307-543	Portable 31, On Plywood	Carpet Mastic	None Detected in Gold Flue on Wood
NT-2462-041307-544	Portable 31, Above Sink	2 x 4 Ceiling Tile	None Detected in White Coating and Tan Acoustic Tile
NT-2462-041307-545	Portable 31, On Sink	Sink Undercoat	None Detected in Gray Paint / Coating

Sample No.	Location	Building Material	Asbestos Content
NT-2462-041307-546	Portable 31, By Door	Base Cove and Mastic	None Detected in Gray-Blue Vinyl
NT-2462-041307-547	Portable 31, Back Wall By Large Vent	Tack Board and Drywall	None Detected in White Wall Covering With Nylon Mesh, Off-White Glue, Gold Fiberboard and White Sheetrock
NT-2462-041307-548	Portable 32, Back Wall By Large Vent	Tack Board and Drywall	None Detected in White Wall Covering With Nylon Mesh, Off-White Glue, Gold Fiberboard and White Sheetrock
NT-2462-041307-549	Portable 31, At Metal Seems of Both Portables	Exterior Sealant	None Detected in Gray / Red Paints and Gray Caulk
NT-2462-041307-550	Portable 32, Around Windows Back Side	Exterior Sealant	None Detected in Off-White Paints and Gray Caulk
NT-2462-041307-551	Portable 31, At Metal Foundation of Both Portables	Exterior Sealant	None Detected in Tan / Gray Red / Gray Paints, Gray Caulk, and Gold Felt With Glue
NT-2462-041307-552	Wing G, By Portable 31	Exterior Brick and Mortar	None Detected in Tan / Gray / Gold Paints and Gray / Brown Loose Plasters
NT-2462-041307-553	Wing G, Around Vents Above Door 30	Exterior Sealant	None Detected in Silver / Gray Caulk
NT-2462-041307-554	Wing G, Around Window Frame By Door 28	Exterior Sealant	None Detected in White Caulk and Off-White Foam
NT-2462-041307-555	Wing G, Girl's Restroom Wall By Sink	Ceramic Tile and Grout	None Detected in White Ceramic Tile, Off-White Grout, Off-White Coarse Plaster and White Paint, Compound and Tape
NT-2462-041307-556	Wing G, Back Side Under Windows	Exterior Stucco	None Detected in Gray / Yellow / Orange Paints, Gray Finishing Plaster and Gray Plaster
NT-2462-041307-557	Wing G, Girl's Restroom Wall Above Sink	1 x 2 Ceiling Tile	None Detected in White Coating and Gold Acoustic Tile

Sample No.	Location	Building Material	Asbestos Content
NT-2462-041307-558	Wing G, Girl's Restroom Ceiling Above Sink	Drywall Composite	1 to 3% in Off-White Compound None Detected in White Sheetrock
NT-2462-041307-559	Wing G, Girl's Restroom Far Wall By Bill Stall	Drywall Composite	None Detected in White Paint, White Compound, Tape, Compound and White Sheetrock
NT-2462-041307-560	Multi-Purpose Building, Metal Cap on Parapet Roof	Exterior Sealant	None Detected in Tan-Gray Caulk
NT-2462-041307-561	Multi-Purpose Building, At Vent Cap Penetration on Roof	Roof Tar	None Detected in Brown Surface Tar / Caulk
NT-2462-041307-562	Roof, Between Multipurpose Building and Wing D	Roof Canopy	None Detected in Gray Gravel Tar Surface and Tar Glass Felts (3)
NT-2462-041307-563	Roof, On Small Air Unit At Far End of Wing C	Roof Tar	None Detected in Brown / Black Surface Tar / Caulk
NT-2462-041307-564	Roof, Between 13 & 14 – Wing C	Roof Canopy	None Detected in Gray Gravel and Tar Surface, Tar and Nylon Felt, Tar and Glass Felts (3) and Brown Paper Felt
NT-2462-041307-565	Office Roof, HVAC Duct Work	Exterior Sealant	None Detected in Gray / Gold Glue
NT-2462-041307-566	Wing D, Behind Light Switch On Tack Board And Wood	Compound	None Detected in Gold Glue, Off-White Compound on Tape
NT-2462-041307-567	Multi-Purpose Building, In Attic Above Kitchen	Plaster	None Detected in Tan Paint and White Texture Plaster
NT-2462-041307-568	Wing C, In Attic Above C Wing	Drywall Composite	None Detected in Off-White Compound, Tap, Compound and White Sheetrock

Sample No.	Location	Building Material	Lead Content
NT-2462-041307-569L	Wing G, Girl's Restroom – Far Wall by Big Stall	Red Ceramic Tile	<7 mg / kg

POLARIZED LIGHT MICROSCOPY ANALYSIS FOR ASBESTOS CONTENT

Client: NORTH TOWER ENVIRONMENTAL
 3900 GEARY BLVD, SUITE 301
 SAN FRANCISCO, CALIFORNIA 94118

Report Number: UB1001

Date: FEBRUARY 12-13, 2007

Analyst: OLGA KIST

Date Analyzed: FEBRUARY 12-13, 2007

Sample Collector: CAROLYN HENRY

Collection Date: N/A

Project #: NT-2462
Location: OAK KNOLL E.S.

5 Sample(s) containing Asbestos

36 Sample(s) Analyzed 36 Sample(s) Received 2/10/07 15:00 Sample #		ASBESTOS TYPE AND % OR NONE DETECTED	NONASBESTOS Other Fibers (%) Balance
1. NT-2462-401	BUILDING "A" - K2 / 1 X 1 CT A) WHITE COATING B) GOLD ACOUSTIC TILE	NONE DETECTED NONE DETECTED	SYN, CARB, MISC. CELL 80-90
2. NT-2462-402	BUILDING "A" - K2 / FIBERBOARD WALL A) WHITE WALLCOVERING W/ WHITE CANVAS W/ GLUE B) WHITE COATING C) TAN FIBERBOARD	NONE DETECTED NONE DETECTED NONE DETECTED	CELL, SYN 10-20 / SYN, CARB, STARCH, MISC. CELL 70-80
3. NT-2462-403	BUILDING "A" - K2 / BLACK/TAN GLUE (BEHIND FIBERBOARD WALL) A) GOLD GLUE WITH TAN FIBERS B) BROWN GLUE	NONE DETECTED NONE DETECTED	CELL 5-10 / BINDER, SILI, MISC.
4. NT-2462-404	NOT RECEIVED		
5. NT-2462-405	BUILDING "A" - K2 / 1 X 2 TILE (UPPER WALL) A) WHITE COATING B) GOLD ACOUSTIC TILE	NONE DETECTED NONE DETECTED	SYN, CARB, SILI, MISC. CELL 80-90
6. NT-2462-406	BUILDING A - K2 / 1 X 1 FLOOR TILE/MASTIC (WITH OLD FT DEBRIS ON BOTTOM) A) OFF-WHITE-BROWN VINYL B) GOLD GLUE C) BROWN TILE	NONE DETECTED NONE DETECTED CHRY 5-15	SYN, CARB, BINDER, CARB, MISC.
7. NT-2462-407	BUILDING A - K2 / FLOOR TILE/MASTIC (OLD) A) BROWN TILE B) GRAY GLUE	CHRY 10-15 NONE DETECTED	SYN, CARB, SILI, MISC.

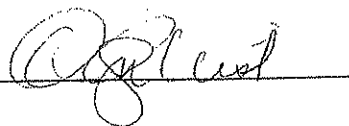
CHRY: Chrysotile
 AMOS: Amosite
 CROC: Crocidolite
 TREM: Tremolite/Actinolite
 ANTH: Anthophyllite

CELL: Cellulose
 GL: Fiberglass/Mineral Wool
 SYN: Synthetic
 CARB: Carbonates
 SILI: Mixed Silicates

POLY: Polyethylene
 FTALC: Fibrous Talc
 FGYP: Fibrous Gypsum
 FELD: Feldspar
 CASI: Calcium Silicates

Bulk samples analyzed in accordance with "Method for the Determination of Asbestos in Bulk Building Materials" EPA/600/R-93/116, July 1993. The detection limit is 1%. Quantitation of asbestos is by calibrated visual estimation. Analytical Labs San Francisco, Inc. (ALSF) is recognized under the National Laboratory Accreditation Program for satisfactory compliance with criteria established in Title 15, Part 7 code of Federal Regulations and accredited for bulk asbestos fiber analysis (NVLAP lab code: 101909-0). Asbestos fibers less than 0.2 microns cannot be resolved by light microscope. This report must not be reproduced except in full, without the written approval of ALSF and pertains only to the samples analyzed.

AUTHORIZED SIGNATURE



DATE

2/14/07

POLARIZED LIGHT MICROSCOPY ANALYSIS FOR ASBESTOS CONTENT

Client: NORTH TOWER ENVIRONMENTAL
 3900 GEARY BLVD, SUITE 301
 SAN FRANCISCO, CALIFORNIA 94118

Report Number: UB1001
Date: FEBRUARY 12-13, 2007
Analyst: OLGA KIST
Date Analyzed: FEBRUARY 12-13, 2007
Sample Collector: CAROLYN HENRY
Collection Date: N/A

Project #: NT-2462
Location: OAK KNOLL E.S.

5 Sample(s) containing Asbestos

36 Sample(s) Analyzed 36 Sample(s) Received 2/10/07 15:00		ASBESTOS	NONASBESTOS
Sample #		TYPE AND % OR NONE DETECTED	Other Fibers (%) Balance
8. NT-2462-408	BUILDING "A" - K2 / TAN BASECOVE MASTIC/JC		
	A) OFF-WHITE GLUES	NONE DETECTED	BINDER, CARB, PERLITE, SYN, MISC.
	B) WHITE PAINT	NONE DETECTED	
	C) OFF-WHITE COMPOUND, TAPE, COMPOUND	NONE DETECTED	CELL 10-20
9. NT-2462-409	BUILDING "A" - K2 (NEAR DOOR) / DRYWALL/JC		
	A) OFF-WHITE PAINT	NONE DETECTED	CELL, GL 40-50 / CARB, PERLITE, SYN,
	B) WHITE COMPOUND (SKIMCOAT) AND TAPE	NONE DETECTED	GYPSUM, MISC.
	C) WHITE SHEETROCK	NONE DETECTED	
10. NT-2462-410	BUILDING "A" - K2 / VAPOR BARRIER (ABOVE CT)		
	BROWN/BLACK TAR PAPER	NONE DETECTED	CELL 50-60 / ASPHALT, SILI, MISC.
11. NT-2462-411	BUILDING "A" - K2 / WINDOW CAULK (BETWEEN WOOD FRAME AND DRYWALL) (INTERIOR)		
	WHITE CAULK WITH CANVAS AND PAINT ON WOOD	NONE DETECTED	SYN, CELL 1-3 / SYN, CARB, SILI, MISC.
12. NT-2462-412	BUILDING "A" - K1 / 1 X 1 CT (GRAY WITH WHITE PAINT)		
	WHITE ACOUSTIC TILE	NONE DETECTED	GL 50-60 / SILI, SYN, CARB, MISC.
13. NT-2462-413	BUILDING "A" - K1 ATTIC / DRYWALL/JC		
	WHITE SHEETROCK	NONE DETECTED	CELL, GL 30-40 / GYPSUM, MISC.
14. NT-2462-414	BUILDING "A" - K1 / GRAY TACK BOARD GLUE		
	OFF-WHITE GLUE	NONE DETECTED	BINDER, CARB, MISC.
15. NT-2462-415	BUILDING "A" - K1 / TAN GLUE ON CT		
	TAN GLUE WITH MINOR ACOUSTIC TILE AND PAPER	NONE DETECTED	GL, CELL 2-5 / BINDER, CARB, SILI, MISC.

CHRYS: Chrysotile
 AMOS: Amosite
 CROC: Crocidolite
 TREM: Tremolite/Actinolite
 ANTH: Anthophyllite

CELL: Cellulose
 GL: Fiberglass/Mineral Wool
 SYN: Synthetic
 CARB: Carbonates
 SILI: Mixed Silicates

POLY: Polyethylene
 FTALC: Fibrous Talc
 FGYP: Fibrous Gypsum
 FELD: Feldspar
 CASI: Calcium Silicates

Bulk samples analyzed in accordance with "Method for the Determination of Asbestos in Bulk Building Materials" EPA/600/R-93/116, July 1993. The detection limit is 1%. Quantitation of asbestos is by calibrated visual estimation. Analytical Labs San Francisco, Inc. (ALSF) is recognized under the National Laboratory Accreditation Program for satisfactory compliance with criteria established in Title 15, Part 7 code of Federal Regulations and accredited for bulk asbestos fiber analysis (NVLAP lab code: 101909-0). Asbestos fibers less than 0.2 microns cannot be resolved by light microscope. This report must not be reproduced except in full, without the written approval of ALSF and pertains only to the samples analyzed.

AUTHORIZED SIGNATURE



DATE 2/16/07



ANALYTICAL LABS SAN FRANCISCO INC.

POLARIZED LIGHT MICROSCOPY ANALYSIS FOR ASBESTOS CONTENT

Client: NORTH TOWER ENVIRONMENTAL
3900 GEARY BLVD, SUITE 301
SAN FRANCISCO, CALIFORNIA 94118

Report Number: UB1001
Date: FEBRUARY 12-13, 2007
Analyst: OLGA KIST
Date Analyzed: FEBRUARY 12-13, 2007
Sample Collector: CAROLYN HENRY
Collection Date: N/A

Project #: NT-2462
Location: OAK KNOLL E.S.

5 Sample(s) containing Asbestos

36 Sample(s) Analyzed 36 Sample(s) Received 2/10/07 15:00 Sample #		ASBESTOS TYPE AND % OR NONE DETECTED	NONASBESTOS Other Fibers (%) Balance
16. NT-2462-416	BUILDING A - K1 / FLOOR TILE/MASTIC (OLD) (GREEN) A) YELLOW GLUE B) GREEN TILE C) BLACK MASTIC	NONE DETECTED CHRY5 5-15 NONE DETECTED	SYN, CARB, ASPHALT, BINDER, MISC.
17. NT-2462-417	BUILDING "A" - K1 / 1 X 1 FT/MASTIC (BLACK) A) OFF-WHITE-BROWN TILE B) YELLOW GLUE C) GRAY LEVELING D) BLACK MASTIC	NONE DETECTED NONE DETECTED NONE DETECTED NONE DETECTED	SYN, CARB, FLYASH, BINDER, ASPHALT, MISC.
18. NT-2462-418	BUILDING "A" - K5 / 1 X 1 FT/MASTIC (BLACK) A) WHITE-GRAY TILE B) YELLOW GLUE C) GRAY LEVELING ON CONCRETE	NONE DETECTED NONE DETECTED NONE DETECTED	SYN, CARB, FLYASH, BINDER, MISC.
19. NT-2462-419	BUILDING "A" - K5 / YELLOW AND BROWN CARPET MASTIC A) YELLOW GLUE B) GRAY CONCRETE	NONE DETECTED NONE DETECTED	CELL <1 / SILI, CARB, BINDER, MISC.
20. NT-2462-420	BUILDING "C" ROOM 13 / DRYWALL/JC A) WHITE-TAN PAINTS B) WHITE COMPOUND, TAPE, COMPOUND C) WHITE SHEETROCK	NONE DETECTED NONE DETECTED NONE DETECTED	CELL, GL 20-30 / CARB, PERLITE, SYN, GYPSUM, MISC.
21. NT-2462-421	BUILDING "C" ROOM 13 / DRYWALL TEXTURE A) WHITE PAINT B) WHITE COMPOUND	NONE DETECTED NONE DETECTED	CELL 20-30 / CARB, PERLITE, MICA, SYN, MISC.

AMOS: Amosite
CROC: Crocidolite
TREM: Tremolite/Actinolite
ANTH: Anthophyllite

GL: Fiberglass/Mineral Wool
SYN: Synthetic
CARB: Carbonates
SILI: Mixed Silicates

FTALC: Fibrous Talc
FGYP: Fibrous Gypsum
FELD: Feldspar
CA5I: Calcium Silicates

Bulk samples analyzed in accordance with "Method for the Determination of Asbestos in Bulk Building Materials" EPA/600/R-93/116, July 1993. The detection limit is 1%. Quantitation of asbestos is by calibrated visual estimation. Analytical Labs San Francisco, Inc. (ALSF) is recognized under the National Laboratory Accreditation Program for satisfactory compliance with criteria established in Title 15, Part 7 code of Federal Regulations and accredited for bulk asbestos fiber analysis (NVLAP lab code: 101909-0). Asbestos fibers less than 0.2 microns cannot be resolved by light microscope. This report must not be reproduced except in full, without the written approval of ALSF and pertains only to the samples analyzed.

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467 Potrero Avenue, San Francisco, CA 94110 (415) 552-4595 FAX 552-0730

POLARIZED LIGHT MICROSCOPY ANALYSIS FOR ASBESTOS CONTENT

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 3900 GEARY BLVD, SUITE 301
 SAN FRANCISCO, CALIFORNIA 94118

Report Number: UB1001
Date: FEBRUARY 12-13, 2007
Analyst: OLGA KIST
Date Analyzed: FEBRUARY 12-13, 2007
Sample Collector: CAROLYN HENRY
Collection Date: N/A

Project #: NT-2462
Location: OAK KNOLL E.S.

5 Sample(s) containing Asbestos

36 Sample(s) Analyzed 36 Sample(s) Received 2/10/07 15:00 Sample #		ASBESTOS TYPE AND % OR NONE DETECTED	NONASBESTOS Other Fibers (%) Balance
22. NT-2462-422	NOT RECEIVED		
23. NT-2462-423	BUILDING "C" ROOM 13 / CARPET GLUE (NO BLACK MASTIC) A) YELLOW GUMMY GLUE B) GRAY CONCRETE	NONE DETECTED NONE DETECTED	SILI, CARB, BINDER, MISC.
24. NT-2462-424	BUILDING "C" ROOM 11 (BEHIND SINK) / FIBERBOARD SKIM GRAY CAULK	NONE DETECTED	CELL 3-5 / CARB, SILI, BINDER, MISC.
25. NT-2462-425	BUILDING "C" ROOM 11 / SINK UNDERCOAT A) WHITE COATING B) BROWN ACOUSTIC TILE	NONE DETECTED NONE DETECTED	CELL 80-90 SYN, CARB, MISC.
26. NT-2462-426	BUILDING "C" ROOM 10 (COURTYARD SIDE) / DRYWALL TEXTURE A) WHITE PAINT B) WHITE COMPOUND C) WHITE SHEETROCK	NONE DETECTED NONE DETECTED NONE DETECTED	CELL, GL 30-40 / GYPSUM, CARB, MICA, PERLITE, MISC.
27. NT-2462-427	BUILDING "C" ROOM 8 (BACK WALL) / BLACK/BROWN/WHITE MASTIC ON WOOD (BEHIND WALL TILE) A) WHITE PAINT ON WOOD B) GOLD ACOUSTIC TILE C) BROWN/BLACK TAR PAPER	NONE DETECTED NONE DETECTED NONE DETECTED	ASPHALT, SILI, SYN, MISC. CELL 80-90 CELL 50-60
28. NT-2462-428	BUILDING "C" ROOM 8 (BACK WALL) / 1 X 1 CT (WALL TILE) A) WHITE COATING B) GOLD ACOUSTIC TILE	NONE DETECTED NONE DETECTED	SYN, CARB, MISC. CELL 80-90

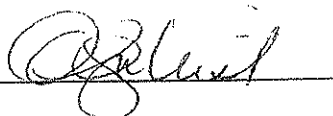
AMOS: Amosite
 CROC: Crocidolite
 TREM: Tremolite/Actinolite
 ANTH: Anthophyllite

GL: Fiberglass/Mineral Wool
 SYN: Synthetic
 CARB: Carbonates
 SILI: Mixed Silicates

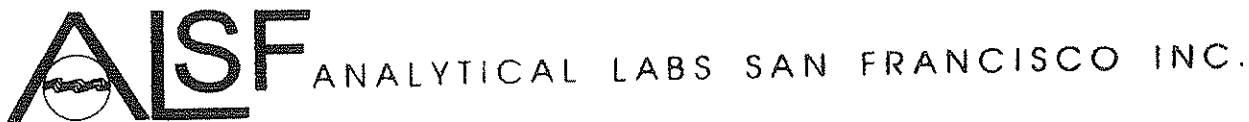
FTALC: Fibrous Talc
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Date Analyzed: FEBRUARY 12-13, 2007
Sample Collector: CAROLYN HENRY
Collection Date: N/A

Project #: NT-2462
Location: OAK KNOLL E.S.

5 Sample(s) containing Asbestos

36 Sample(s) Analyzed 36 Sample(s) Received 2/10/07 15:00 Sample #		ASBESTOS TYPE AND % OR NONE DETECTED	NONASBESTOS Other Fibers (%) Balance
29. NT-2462-429	MULTI-PURPOSE BUILDING / JOINT COMPOUND (CEILING) A) WHITE PAINT B) WHITE COMPOUND	NONE DETECTED NONE DETECTED	CARB, MICA, PERLITE, SYN, MISC.
30. NT-2462-430	MULTI-PURPOSE BUILDING / PLASTER WALL A) WHITE/GREEN PAINTS B) WHITE FINISHING PLASTER C) OFF-WHITE TEXTURE PLASTER	NONE DETECTED NONE DETECTED NONE DETECTED	SILI, GYPSUM, CARB, PERLITE, SYN, MISC.
31. NT-2462-431	MULTI-PURPOSE BUILDING GYM / DRYWALL/TEXTURE A) OFF-WHITE PAINT B) WHITE COMPOUND, TAPE, COMPOUND	NONE DETECTED NONE DETECTED	CARB, MICA, SYN, PERLITE, MISC.
32. NT-2462-432	MULTI-PURPOSE BUILDING GYM / DRYWALL/JC/TEXTURE A) OFF-WHITE PAINT B) WHITE COMPOUND, TAPE, COMPOUND C) WHITE SHEETROCK	NONE DETECTED NONE DETECTED NONE DETECTED	CELL 20-30 / GYPSUM, CARB, MICA, SYN MISC.
33. NT-2462-433	MULTI-PURPOSE BUILDING KITCHEN / BLACK MASTIC/CONCRETE BELOW 1 X 1 FT A) CLEAR GLUE B) TAN LEVELING C) TAN CONCRETE	NONE DETECTED NONE DETECTED NONE DETECTED	SILI, CARB, FLYASH, BINDER, MISC.
34. NT-2462-434	MULTI-PURPOSE BUILDING ATTIC / TSI RUN (BLACK PAPER; FOIL AND YELLOW FIBERGLASS) A) WHITE COATING B) GOLD/BLACK/SILVER ALUMINUM TAR PAPER C) YELLOW GLASS WOOL	NONE DETECTED NONE DETECTED NONE DETECTED	SYN, MICA, ASPHALT, MISC. CELL 50-60 GL 80-90

CHRY: Chrysotile
AMOS: Amosite
CROC: Crocidolite
TREM: Tremolite/Actinolite
ANTH: Anthophyllite

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GL: Fiberglass/Mineral Wool
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CARB: Carbonates
SILI: Mixed Silicates

POLY: Polyethylene
FTALC: Fibrous Talc
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DATE 2/16/07

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POLARIZED LIGHT MICROSCOPY ANALYSIS FOR ASBESTOS CONTENT

Client: NORTH TOWER ENVIRONMENTAL
 3900 GEARY BLVD, SUITE 301
 SAN FRANCISCO, CALIFORNIA 94118

Report Number: UB1001
Date: FEBRUARY 12-13, 2007
Analyst: OLGA KIST
Date Analyzed: FEBRUARY 12-13, 2007
Sample Collector: CAROLYN HENRY
Collection Date: N/A
5 Sample(s) containing Asbestos

Project #: NT-2462
Location: OAK KNOLL E.S.

36 Sample(s) Analyzed 36 Sample(s) Received 2/10/07 15:00 Sample #		ASBESTOS TYPE AND % OR NONE DETECTED	NONASBESTOS Other Fibers (%) Balance
35. NT-2462-435	MULTI-PURPOSE BUILDING ATTIC / TSI ELBOW (HARD-PACKED) WHITE INSULATION WITH CANVAS WRAP	AMOS 5-15, CHRYS 5-10	CELL 10-15 / MAGNESITE, CARB, MISC.
36. NT-2462-436	MULTI-PURPOSE BUILDING ATTIC / TSI RUN (FIBERGLASS; PAPER GRAY; BLACK FELT) A) PINK-TAN FELT B) BLACK FELT AND TAR	CHRYS 5-10 CHRYS 1-3	CELL, HAIR, SYN 60-70 / ASPHALT, MISC. CELL, HAIR, SYN 50-60
37. NT-2462-437	MULTI-PURPOSE BUILDING ATTIC / PLASTER WALL (UNFINISHED) GRAY/WHITE TEXTURE PLASTER	NONE DETECTED	CELL <1 / SILI, GYPSUM, PERLITE, MISC.
38. NT-2462-438	MULTI-PURPOSE BUILDING ATTIC / TAR AND FELT PAPER A) WHITE COATING B) BLACK FELT AND TAR C) OFF-WHITE GLASS WOOL	NONE DETECTED NONE DETECTED NONE DETECTED	GYPSUM, PERLITE, ASPHALT, MISC. CELL, GL 60-70 GL 70-80

021207

LABORATORY BLANK (1866 GLASS FIBERS)

NONE DETECTED

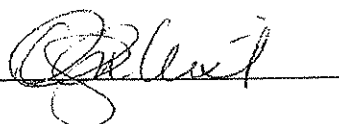
CHRYS: Chrysotile
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ANALYTICAL LABS SAN FRANCISCO INC.

POLARIZED LIGHT MICROSCOPY ANALYSIS FOR ASBESTOS CONTENT

Client: NORTH TOWER ENVIRONMENTAL
3900 GEARY BLVD, SUITE 301
SAN FRANCISCO, CALIFORNIA 94118

Report Number: UC0107
Date: MARCH 8-9, 2007
Analyst: OLGA KIST
Date Analyzed: MARCH 8-9, 2007
Sample Collector: CAROLYN HENRY
Collection Date: N/A

Project #: NT2462
Location: OAK KNOLL

11 Sample(s) containing Asbestos

44 Sample(s) Analyzed 74 Sample(s) Received 3/1/07 16:00		ASBESTOS	NONASBESTOS
Sample #		TYPE AND % OR NONE DETECTED	Other Fibers (%) Balance
1. NT2462-439	(RMS 14-15-16) RM 14 / 1 X 1 FT/YELLOW & BROWN MASTIC		
	A) OFF-WHITE TILE	NONE DETECTED	SYN, CARB, BINDER, MISC.
	B) YELLOW GLUE	NONE DETECTED	
2. NT2462-440	(RMS 14-15-16) RM 14 / CARPET GLUE (YELLOW)		
	A) YELLOW GLUE	NONE DETECTED	CELL, SYN <1-2 / SILI, CARB, IRON OXIDES,
	B) GRAY CONCRETE	NONE DETECTED	BINDER, MISC.
3. NT2462-441	HOLD		
4. NT2462-442	(RMS 14-15-16) RM 14 / 1 X 1 CT (BROWN W/ WHITE PAINT)		
	A) WHITE COATING	NONE DETECTED	SYN, CARB, BINDER, MISC.
	B) GOLD ACOUSTIC TILE	NONE DETECTED	CELL 80-90
5. NT2462-443	(RMS 14-15-16) RM 14 (ABOVE DOOR) / CINDER BLOCK/MORTAR PAINT		
	A) WHITE/GOLD/GREEN PAINTS	NONE DETECTED	SILI, CARB, PUMICE, MISC.
	B) GRAY CONCRETE	NONE DETECTED	
6. NT2462-444	(RMS 14-15-16) RM 14 / BASECOVE MASTIC		
	A) TAN VINYL	NONE DETECTED	SYN, CARB, BINDER, MISC.
	B) YELLOW GLUE	NONE DETECTED	
7. NT2462-445	HOLD		
8. NT2462-446	HOLD		
9. NT2462-447	HOLD		

CHRY: Chrysotile
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3/9/07

POLARIZED LIGHT MICROSCOPY ANALYSIS FOR ASBESTOS CONTENT

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 3900 GEARY BLVD, SUITE 301
 SAN FRANCISCO, CALIFORNIA 94118

Report Number: UC0107
 Date: MARCH 8-9, 2007
 Analyst: OLGA KIST
 Date Analyzed: MARCH 8-9, 2007
 Sample Collector: CAROLYN HENRY
 Collection Date: N/A

Project #: NT2462
 Location: OAK KNOLL

11 Sample(s) containing Asbestos

44 Sample(s) Analyzed 74 Sample(s) Received 3/1/07 16:00		ASBESTOS	NONASBESTOS
Sample #		TYPE AND % OR NONE DETECTED	Other Fibers (%) Balance
10. NT2462-448	HOLD		
11. NT2462-449	(RMS 14-15-16) RM 15 / VAPOR BARRIER (BETWEEN CT & WOOD) BROWN/BLACK TAR PAPER	NONE DETECTED	CELL 50-60 / ASPHALT, MISC.
12. NT2462-450	(RMS 14-15-16) RM 15 / FIBERGLASS & PAPER A) WHITE/GOLD COATING B) GOLD ACOUSTIC TILE C) BROWN/BLACK TAR PAPER D) YELLOW GLASS WOOL	NONE DETECTED NONE DETECTED NONE DETECTED NONE DETECTED	SYN, BINDER, CARB, ASPHALT, MISC. CELL 70-80 CELL 50-60 GL 80-90, CELL <1
13. NT2462-450B	(RMS 14-15-16) RM 15 (1956) / DOOR CAULK (INTERIOR) (BETWEEN DOOR & CINDER BLOCK) GOLD CAULK W/ WHITE PAINT	CHRY5 5-10	GL 1-3 / BINDER, SILI, CARB, SYN, MISC.
14. NT2462-451	(RMS 17-18) RM 17 (1959) / WINDOW CAULK (INT) (BETWEEN FRAME & CINDER BLOCK) SILVER CAULK WITH OFF-WHITE PAINT	NONE DETECTED	BINDERS, CARB, METAL FLAKES, MISC.
15. NT2462-452	HOLD		
16. NT2462-453	(RMS 17-18) RM 17 (1959) / TAPE BETWEEN CT WHITE TAPE	NONE DETECTED	CELL 80-90 / MISC.
17. NT2462-454	HOLD		
18. NT2462-455	HOLD		
19. NT2462-456	HOLD		
20. NT2462-457	HOLD		

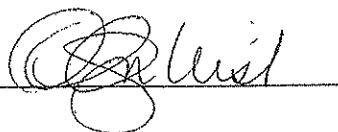
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Sample Collector: CAROLYN HENRY
Collection Date: N/A
11 Sample(s) containing Asbestos

Project #: NT2462
Location: OAK KNOLL

44 Sample(s) Analyzed 74 Sample(s) Received 3/1/07 16:00		ASBESTOS	NONASBESTOS
Sample #		TYPE AND % OR NONE DETECTED	Other Fibers (%) Balance
21. NT2462-458	(RMS 17-18) RM 17 (1959) / SINK UNDERCOAT GRAY COATING	NONE DETECTED	CELL 10-20 / SYN, CARB, MICA, BINDER, MISC.
22. NT2462-459	HOLD		
23. NT2462-460	(RMS 17-18) RM 18 (1959) / FINE GRAY DUCT (ATTIC) TAN INSULATION W/ PLASTIC FOAM (STYROFOAM)	CHRY 5-10	GL 20-30 / FLYASH, MISC.
24. NT2462-461	(RMS 17-18) RM 18 (1959) / GRAY INSULATION DEBRIS (ATTIC) OFF-WHITE INSULATION	CHRY 5-10	GL 20-30, CELL 1-3 / FLYASH, MISC.
25. NT2462-462	(RMS 17-18) RM 18 (1959) / DRYWALL/JC CEILING (CLOSET) A) WHITE PAINT B) WHITE COMPOUND, TAPE, COMPOUND C) OFF-WHITE SHEETROCK	NONE DETECTED CHRY 1-3 NONE DETECTED	CELL, GL 20-30 / GYPSUM, CARB, MICA, SYN, MISC.
26. NT2462-463	HOLD		
27. NT2462-464	HOLD		
28. NT2462-465	(RMS 23-26) RM 26 (1959) / YELLOW GLUE (BEHIND WOOD TRIM ABOVE TACKBOARD) A) YELLOW GLUE/CAULK B) WHITE/PINK PAINTS	NONE DETECTED NONE DETECTED	BINDER, CARB, SYN, MISC.
29. NT2462-466	HOLD		

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Report Number: UC0107
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Analyst: OLGA KIST
Date Analyzed: MARCH 8-9, 2007
Sample Collector: CAROLYN HENRY
Collection Date: N/A

Project #: NT2462
Location: OAK KNOLL

11 Sample(s) containing Asbestos

44 Sample(s) Analyzed 74 Sample(s) Received 3/1/07 16:00		ASBESTOS	NONASBESTOS
Sample #		TYPE AND % OR NONE DETECTED	Other Fibers (%) Balance
30. NT2462-467	(RMS 23-26) RM 26 (1959) / DOOR KICKBOARD A) TAN-PAINTED BROWN FORMICA & GLUE B) WHITE PAINT	NONE DETECTED NONE DETECTED	CELL 60-70 / BINDER, SYN, CARB, MISC.
31. NT2462-468	(RMS 23-26) ROOM 25 (1959) / 1 X 1 FT W/ YELLOW & BLACK BLACK MASTIC A) BEIGE TILE B) YELLOW GLUE C) BLACK MASTIC	NONE DETECTED NONE DETECTED NONE DETECTED	SYN, CARB, BINDER, ASPHALT, MISC.
32. NT2462-469	HOLD		
33. NT2462-470	HOLD		
34. NT2462-471	HOLD		
35. NT2462-472	(RMS 23-26) ROOM 26 (1959) / INT. DOOR CAULK (BETWEEN CINDER BLOCK & DOORS) WHITE-PAINTED GOLD CAULK	CHRY5 5-10	BINDER, CARB, GYPSUM, SYN, MISC.
36. NT2462-473	HOLD		
37. NT2462-474	(RMS 23-26) ROOM 23 (1959) / VAPOR BARRIER (ABOVE CT) GOLD/BLACK PAPER AND TAR PAPER	NONE DETECTED	CELL 60-70 / ASPHALT, MISC.
38. NT2462-475	HOLD		
39. NT2462-476	HOLD		
40. NT2462-477	HOLD		

CHRY5: Chrysotile
AMOS: Amosite
CROC: Crocidolite
TREM: Tremolite/Actinolite
ANTH: Anthophyllite

CELL: Cellulose
GL: Fiberglass/Mineral Wool
SYN: Synthetic
CARB: Carbonates
SLI: Mixed Silicates

POLY: Polyethylene
FTALC: Fibrous Talc
FGYP: Fibrous Gypsum
FELD: Feldspar
CAI: Calcium Silicates

Bulk samples analyzed in accordance with "Method for the Determination of Asbestos in Bulk Building Materials" EPA/600/R-93/116, July 1993. The detection limit is 1%. Quantitation of asbestos is by calibrated visual estimation. Analytical Labs San Francisco, Inc. (ALSF) is recognized under the National Laboratory Accreditation Program for satisfactory compliance with criteria established in Title 15, Part 7 code of Federal Regulations and accredited for bulk asbestos fiber analysis (NVLAP lab code: 101909-0). Asbestos fibers less than 0.2 microns cannot be resolved by light microscope. This report must not be reproduced except in full, without the written approval of ALSF and pertains only to the samples analyzed.

AUTHORIZED SIGNATURE

DATE

3/9/07



ANALYTICAL LABS SAN FRANCISCO INC.

POLARIZED LIGHT MICROSCOPY ANALYSIS FOR ASBESTOS CONTENT

Client: NORTH TOWER ENVIRONMENTAL
3900 GEARY BLVD, SUITE 301
SAN FRANCISCO, CALIFORNIA 94118

Report Number: UC0107
Date: MARCH 8-9, 2007
Analyst: OLGA KIST
Date Analyzed: MARCH 8-9, 2007
Sample Collector: CAROLYN HENRY
Collection Date: N/A
11 Sample(s) containing Asbestos

Project #: NT2462
Location: OAK KNOLL

44 Sample(s) Analyzed		ASBESTOS	NONASBESTOS
74 Sample(s) Received 3/1/07 16:00		TYPE AND % OR	Other Fibers (%)
Sample #		NONE DETECTED	Balance
41. NT2462-478	(RMS 19-20-21) CANOPY ATTIC (1953) / MUDDER ELBOW OFF-WHITE INSULATION W/ COTTON CANVAS	CHRY 3-10	GL 20-30, CELL 10-20 / FLYASH, MISC.
42. NT2462-479	(RMS 19-20-21) JANITOR CLOSET (1953) / PLASTER CEILING A) WHITE PAINT B) WHITE COARSE PLASTER C) GRAY CONCRETE	NONE DETECTED NONE DETECTED NONE DETECTED	SIL, CARB, GYPSUM, SYN, MISC.
43. NT2462-480	(RMS 19-20-21) CANOPY ATTIC (1953) / TSI DEBRIS OFF-WHITE INSULATIONS W/ COTTON	CHRY 3-10	GL 15-20, CELL 3-5 / GYPSUM, CARB, MISC.
44. NT2462-481	(RMS 19-20-21) ATTIC (1953) / BLACK VAPOR BARRIER BLACK FELT & TAR	NONE DETECTED	GL 30-40 / ASPHALT, MISC.
45. NT2462-482	(RMS 19-20-21) ATTIC (1953) / WHITE CEILING BOARD TAN ACOUSTIC TILE	NONE DETECTED	GL, CELL 40-50 / PERLITE, MISC.
46. NT2462-483	(RMS 19-20-21) JANITOR CLOSET (1953) / BLACK VAPOR BARRIER (BENEATH STUCCO) BLACK TAR & FELT	NONE DETECTED	CELL 50-60 / ASPHALT, MISC.
47. NT2462-484	NOT RECEIVED		
48. NT2462-485	(RMS 19-20-21) ROOM 21 (1953) / 1 X 2 WALL TILE (BROWN W/ WHITE PAINT) A) WHITE COATING B) GOLD ACOUSTIC TILE	NONE DETECTED NONE DETECTED	SYN, CARB, MISC. CELL 80-90

CHRY: Chrysotile
AMOS: Amosite
CROC: Crocidolite
TREM: Tremolite/Actinolite
ANTH: Anthophyllite

CELL: Cellulose
GL: Fiberglass/Mineral Wool
SYN: Synthetic
CARB: Carbonates
SIL: Mixed Silicates

POLY: Polyethylene
FTALC: Fibrous Talc
FGYP: Fibrous Gypsum
FELD: Feldspar
CAS: Calcium Silicates

Bulk samples analyzed in accordance with "Method for the Determination of Asbestos in Bulk Building Materials" EPA/600/R-93/116, July 1993. The detection limit is 1%. Quantitation of asbestos is by calibrated visual estimation. Analytical Labs San Francisco, Inc. (ALSF) is recognized under the National Laboratory Accreditation Program for satisfactory compliance with criteria established in Title 15, Part 7 code of Federal Regulations and accredited for bulk asbestos fiber analysis (NVLAP lab code: 101909-0). Asbestos fibers less than 0.2 microns cannot be resolved by light microscope. This report must not be reproduced except in full, without the written approval of ALSF and pertains only to the samples analyzed.

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ANALYTICAL LABS SAN FRANCISCO INC.

POLARIZED LIGHT MICROSCOPY ANALYSIS FOR ASBESTOS CONTENT

Client: NORTH TOWER ENVIRONMENTAL
3900 GEARY BLVD, SUITE 301
SAN FRANCISCO, CALIFORNIA 94118

Report Number: UC0107
Date: MARCH 8-9, 2007
Analyst: OLGA KIST
Date Analyzed: MARCH 8-9, 2007
Sample Collector: CAROLYN HENRY
Collection Date: N/A

Project #: NT2462
Location: OAK KNOLL

11 Sample(s) containing Asbestos

44 Sample(s) Analyzed 74 Sample(s) Received 3/1/07 16:00		ASBESTOS	NONASBESTOS
Sample #		TYPE AND % OR NONE DETECTED	Other Fibers (%) Balance
49. NT2462-486	NOT RECEIVED		
50. NT2462-487	HOLD		
51. NT2462-488	(RMS 19-20-21) ROOM 20 (1953) / YELLOW FLOOR CARPET & MASTIC & BROWN MASTIC		
	A) YELLOW GLUE	NONE DETECTED	SYN 1-3 / SILI, CARB, IRON OXIDES, BINDER, MISC.
	B) TAN CONCRETE	NONE DETECTED	
52. NT2462-489	(RMS 19-20-21) ROOM 19 (1953) / WORK TABLE TOP		
	A) BROWN/BLACK VINYL	NONE DETECTED	SYN, CARB, BINDER, MISC.
	B) GOLD GLUE	NONE DETECTED	
53. NT2462-490	(RMS 19-20-21) ROOM 19 (1953) / DRYWALL/JC/BASECOVE MASTIC		
	BLACK FELT & TAR	NONE DETECTED	GL 30-40 / ASPHALT, MISC.
54. NT2462-491	(RMS 19-20-21) ROOM 19 (1953) / WALL TEXTURE		
	A) WHITE PAINT	NONE DETECTED	CELL, GL 20-30 / CARB, MICA, GYPSUM, SYN, MISC
	B) WHITE COMPOUND, TAPE, COMPOUND	NONE DETECTED	
	C) WHITE SHEETROCK	NONE DETECTED	
55. NT2462-492	HOLD		
56. NT2462-493	HOLD		
57. NT2462-494	HOLD		
58. NT2462-495	HOLD		

CHRY: Chrysotile
AMOS: Amosite
CROC: Crocidolite
TREM: Tremolite/Actinolite
ANTH: Anthophyllite

CELL: Cellulose
GL: Fiberglass/Mineral Wool
SYN: Synthetic
CARB: Carbonates
SILI: Mixed Silicates

POLY: Polyethylene
FTALC: Fibrous Talc
FGYP: Fibrous Gypsum
FELD: Feldspar
CASI: Calcium Silicates

Bulk samples analyzed in accordance with "Method for the Determination of Asbestos in Bulk Building Materials" EPA/600/R-93/116, July 1993. The detection limit is 1%. Quantitation of asbestos is by calibrated visual estimation. Analytical Labs San Francisco, Inc. (ALSF) is recognized under the National Laboratory Accreditation Program for satisfactory compliance with criteria established in Title 15, Part 7 code of Federal Regulations and accredited for bulk asbestos fiber analysis (NVLAP lab code: 101909-0). Asbestos fibers less than 0.2 microns cannot be resolved by light microscope. This report must not be reproduced except in full, without the written approval of ALSF and pertains only to the samples analyzed.

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ANALYTICAL LABS SAN FRANCISCO INC.

POLARIZED LIGHT MICROSCOPY ANALYSIS FOR ASBESTOS CONTENT

Client: NORTH TOWER ENVIRONMENTAL
3900 GEARY BLVD, SUITE 301
SAN FRANCISCO, CALIFORNIA 94118

Report Number: UC0107
Date: MARCH 8-9, 2007
Analyst: OLGA KIST
Date Analyzed: MARCH 8-9, 2007
Sample Collector: CAROLYN HENRY
Collection Date: N/A

Project #: NT2462
Location: OAK KNOLL

11 Sample(s) containing Asbestos

44 Sample(s) Analyzed 74 Sample(s) Received 3/1/07 16:00		ASBESTOS	NONASBESTOS
Sample #		TYPE AND % OR NONE DETECTED	Other Fibers (%) Balance
59. NT2462-496	(RMS 19-20-21) ATTIC (1953) / DUCT TAPE (ATTIC)		
	A) TAN/OFF-WHITE SILVER COATING	NONE DETECTED	SYN, CARB, BINDER, MISC.
	B) OFF-WHITE COTTON CANVAS (2)	NONE DETECTED	CELL 40-50
	C) BOTTOM SCRAPINGS	NONE DETECTED	CELL, GL 1-3
60. NT2462-497	(RMS 19-20-21) ATTIC (1953) / FIBERGLASS TSI W/ CANVAS JACKET		
	A) OFF-WHITE CANVAS	NONE DETECTED	GL, CELL 80-90 / BINDER, MISC.
	B) YELLOW GLASS WOOL	NONE DETECTED	
61. NT2462-498	(RMS 27-30) ROOM 29 (1959) / SKIM/TEXTURE (ON DRYWALL CEILING)		
	A) WHITE PAINT	NONE DETECTED	SYN, CARB, PERLITE, MISC.
	B) WHITE COMPOUND	NONE DETECTED	
62. NT2462-499	(RMS 27-30) ATTIC (1959) / FG TSI LINE ELBOW (HARD CANVAS WRAPPED)		
	A) OFF-WHITE COATING	NONE DETECTED	SYN, SILI, MISC.
	B) WHITE CANVAS	NONE DETECTED	CELL 70-80
	C) YELLOW GLASS WOOL	NONE DETECTED	GL 80-90
63. NT2462-500	(RMS 27-30) ATTIC (1959) / TAPE ON HVAC DUCTS		
	A) WHITE COATING	NONE DETECTED	SYN, SILI, MISC.
	B) OFF-WHITE CANVAS	NONE DETECTED	CELL 70-80
64. NT2462-501	(RMS 27-30) ATTIC (1959) / HVAC VIBRATION CLOTH BLACK RUBBER & WHITE CANVAS	NONE DETECTED	SYN 40-50 / SYN, OPAQUES, MISC.

CHRY: Chrysotile
AMOS: Amosite
CROC: Crocidolite
TREM: Tremolite/Actinolite
ANTH: Anthophyllite

CELL: Cellulose
GL: Fiberglass/Mineral Wool
SYN: Synthetic
CARB: Carbonates
SILI: Mixed Silicates

POLY: Polyethylene
FTALC: Fibrous Talc
FGYP: Fibrous Gypsum
FELD: Feldspar
CASI: Calcium Silicates

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DATE 3/9/07



ANALYTICAL LABS SAN FRANCISCO INC.

POLARIZED LIGHT MICROSCOPY ANALYSIS FOR ASBESTOS CONTENT

Client: NORTH TOWER ENVIRONMENTAL
3900 GEARY BLVD, SUITE 301
SAN FRANCISCO, CALIFORNIA 94118

Report Number: UC0107
Date: MARCH 8-9, 2007
Analyst: OLGA KIST
Date Analyzed: MARCH 8-9, 2007
Sample Collector: CAROLYN HENRY
Collection Date: N/A

Project #: NT2462
Location: OAK KNOLL

11 Sample(s) containing Asbestos

44 Sample(s) Analyzed 74 Sample(s) Received 3/1/07 16:00 Sample #		ASBESTOS TYPE AND % OR NONE DETECTED	NONASBESTOS Other Fibers (%) Balance
65. NT2462-502	(RMS 27-30) ATTIC (1959) / DRYWALL/JC A) OFF-WHITE COMPOUND B) OFF-WHITE SHEETROCK	CHRY 1-3 NONE DETECTED	CELL 10-20 / GYPSUM, CARB, MICA, MISC.
66. NT2462-503	HOLD		
67. NT2462-504	HOLD		
68. NT2462-505	(RMS 27-30) RM 29 (1959) / BASECOVE/ADHESIVE/TACKBOARD A) OFF-WHITE GLUE B) WHITE COATING & NYLON CANVAS C) WHITE COMPOUND D) BROWN FIBERBOARD	NONE DETECTED NONE DETECTED NONE DETECTED NONE DETECTED	BINDER, SYN, CARB, PERLITE, MICA, MISC. SYN 30-40 CELL 80-90
69. NT2462-506	(RMS 27-30) RM 29D (1959) / DRYWALL/JC (AT CHASE) A) WHITE/GREEN PAINTS B) YELLOW COMPOUND C) WHITE SHEETROCK	NONE DETECTED CHRY 1-3 NONE DETECTED	CELL, GL 20-30 / GYPSUM, CARB, MICA, SYN, MISC.
70. NT2462-507	(RMS 27-30) RM 28 (1959) / DRYWALL/JC/TEXTURE A) WHITE COMPOUND, TAPE, COMPOUND B) WHITE SHEETROCK	NONE DETECTED NONE DETECTED	CELL, GL 30-40 / CARB, PERLITE, GYPSUM, MISC.
71. NT2462-508	HOLD		
72. NT2462-509	HOLD		

CHRY: Chrysotile
AMOS: Amosite
CROC: Crocidolite
TREM: Tremolite/Actinolite
ANTH: Anthophyllite

CELL: Cellulose
GL: Fiberglass/Mineral Wool
SYN: Synthetic
CARB: Carbonates
SIL: Mixed Silicates

POLY: Polyethylene
FTALC: Fibrous Talc
FGYP: Fibrous Gypsum
FELD: Feldspar
CASI: Calcium Silicates

Bulk samples analyzed in accordance with "Method for the Determination of Asbestos in Bulk Building Materials" EPA/600/R-93/116, July 1993. The detection limit is 1%. Quantitation of asbestos is by calibrated visual estimation. Analytical Labs San Francisco, Inc. (ALSF) is recognized under the National Laboratory Accreditation Program for satisfactory compliance with criteria established in Title 15, Part 7 code of Federal Regulations and accredited for bulk asbestos fiber analysis (NVLAP lab code: 101909-0). Asbestos fibers less than 0.2 microns cannot be resolved by light microscope. This report must not be reproduced except in full, without the written approval of ALSF and pertains only to the samples analyzed.

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ANALYTICAL LABS SAN FRANCISCO INC.

POLARIZED LIGHT MICROSCOPY ANALYSIS FOR ASBESTOS CONTENT

Client: NORTH TOWER ENVIRONMENTAL
3900 GEARY BLVD, SUITE 301
SAN FRANCISCO, CALIFORNIA 94118

Report Number: UC0107

Date: MARCH 8-9, 2007

Analyst: OLGA KIST

Date Analyzed: MARCH 8-9, 2007

Sample Collector: CAROLYN HENRY

Collection Date: N/A

Project #: NT2462
Location: OAK KNOLL

11 Sample(s) containing Asbestos

44 Sample(s) Analyzed 74 Sample(s) Received 3/1/07 16:00 Sample #		ASBESTOS TYPE AND % OR NONE DETECTED	NONASBESTOS Other Fibers (%) Balance
73. NT2462-510	(RMS 27-30) RM 28 (1959) / CARPET GLUE A) YELLOW GLUE B) GRAY CONCRETE	NONE DETECTED NONE DETECTED	SILI, CARB, BINDER, MISC.
74. NT2462-511	(RMS 27-30) ROOM 30 (1959) / OLD FT (BENEATH CLOSET WALL) A) PINK TILE B) BLACK MASTIC	CHRY5 5-10 CHRY5 10-20	SYN, CARB, ASPHALT, MISC.
75. NT2462-512	(RMS 27-30) ATTIC / BROWN SEALANT INSIDE VENTS A) WHITE PAINT B) GRAY-RED CONCRETE	NONE DETECTED NONE DETECTED	SILI, IRON OXIDES, SYN, MISC.
76. NT2462-513	(RMS 27-30) / EXT. STUCCO TAN CAULK	CHRY5 5-15	BINDER, CARB, SILI, MISC.

030507 LABORATORY BLANK (1866 GLASS FIBERS)
CHRY5: Chrysotile
AMOS: Amosite
CROC: Crocidolite
TREM: Tremolite/Actinolite
ANTH: Anthophyllite

NONE DETECTED

CELL: Cellulose

GL: Fiberglass/Mineral Wool

SYN: Synthetic

CARB: Carbonates

SILI: Mixed Silicates

POLY: Polyethylene

FTALC: Fibrous Talc

FGYP: Fibrous Gypsum

FELD: Feldspar

CASI: Calcium Silicates

Bulk samples analyzed in accordance with "Method for the Determination of Asbestos in Bulk Building Materials" EPA/600/R-93/116, July 1993. The detection limit is 1%. Quantitation of asbestos is by calibrated visual estimation. Analytical Labs San Francisco, Inc. (ALSF) is recognized under the National Laboratory Accreditation Program for satisfactory compliance with criteria established in Title 15, Part 7 code of Federal Regulations and accredited for bulk asbestos fiber analysis (NVLAP lab code: 101909-0). Asbestos fibers less than 0.2 microns cannot be resolved by light microscope. This report must not be reproduced except in full, without the written approval of ALSF and pertains only to the samples analyzed.

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ANALYTICAL LABS SAN FRANCISCO INC.

POLARIZED LIGHT MICROSCOPY ANALYSIS FOR ASBESTOS CONTENT

Client: NORTH TOWER ENVIRONMENTAL
3900 GEARY BLVD, SUITE 301
SAN FRANCISCO, CALIFORNIA 94118

Report Number: UC0511
Date: MARCH 12, 2007
Analyst: OLGA KIST
Date Analyzed: MARCH 12, 2007
Sample Collector: CAROLYN HENRY
Collection Date: N/A

Project #: NT2462
Location: OAK KNOLL - EXTERIOR

3 Sample(s) containing Asbestos

12 Sample(s) Analyzed 22 Sample(s) Received 3/5/07 15:00		ASBESTOS	NONASBESTOS
Sample #		TYPE AND % OR NONE DETECTED	Other Fibers (%) Balance
1. NT2462-515	WING A / GRAY WINDOW CAULK (ALUM FRAME) GRAY PUTTY WITH PAINT	CHRY5 <1	CARB, SILI, BINDER, SYN, MISC.
2. NT2462-516	HOLD		
3. NT2462-517	WING A / PLASTER CANOPY A) OFF-WHITE PAINT B) GRAY CONCRETE	NONE DETECTED NONE DETECTED	SILI, CEMENT, SYN, CARB, MISC.
4. NT2462-518	HOLD		
5. NT2462-519	WING A / STUCCO WALL A) GREEN PAINT B) OFF-WHITE COARSE FINISHING PLASTER C) GRAY CONCRETE	NONE DETECTED NONE DETECTED NONE DETECTED	SILI, CEMENT, CARB, SYN, MISC.
6. NT2462-520	WING C (NEXT TO RM 13) / STUCCO WALL A) TAN/GREEN PAINTS B) WHITE COARSE FINISHING PLASTER C) GRAY CONCRETE	NONE DETECTED NONE DETECTED NONE DETECTED	SILI, CEMENT, CARB, SYN, MISC. GL 1-3
7. NT2462-521	WING C (RM 14) / WINDOW CAULK (ALUM FRAME) TAN PUTTY	CHRY5 1-2	CARB, SILI, BINDER, MISC.

CHRY5: Chrysotile
AMOS: Amosite
CROC: Crocidolite
TREM: Tremolite/Actinolite
ANTH: Anthophyllite

CELL: Cellulose
GL: Fiberglass/Mineral Wool
SYN: Synthetic
CARB: Carbonates
SILI: Mixed Silicates

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FTALC: Fibrous Talc
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3/13/07



ANALYTICAL LABS SAN FRANCISCO INC.

POLARIZED LIGHT MICROSCOPY ANALYSIS FOR ASBESTOS CONTENT

Client: NORTH TOWER ENVIRONMENTAL
3900 GEARY BLVD, SUITE 301
SAN FRANCISCO, CALIFORNIA 94118

Report Number: UC0511

Date: MARCH 12, 2007

Analyst: OLGA KIST

Date Analyzed: MARCH 12, 2007

Sample Collector: CAROLYN HENRY

Collection Date: N/A

Project #: NT2462

Location: OAK KNOLL - EXTERIOR

3 Sample(s) containing Asbestos

12 Sample(s) Analyzed 22 Sample(s) Received 3/5/07 15:00 Sample #		ASBESTOS TYPE AND % OR NONE DETECTED	NONASBESTOS Other Fibers (%) Balance
8. NT2462-522	WING C (RM 14) / BRICK AND MORTAR A) OFF-WHITE PAINT B) WHITE COARSE FINISHING PLASTER C) TAN CONCRETE	NONE DETECTED NONE DETECTED NONE DETECTED	SILI, CEMENT, CARB, SYN, MISC.
9. NT2462-523	HOLD		
10. NT2462-524	HOLD		
11. NT2462-525	WING C (RM 9) / GRAY SEALANT (WOOD AND WINDOW FRAMES) A) GRAY/GOLD/OFF-WHITE PAINTS B) GRAY CAULK/PUTTY	NONE DETECTED NONE DETECTED	BINDER, CARB, MICA, SYN, MISC.
12. NT2462-526	HOLD		
13. NT2462-527	MP BLDG / PLASTER CANOPY A) OFF-WHITE PAINT B) LOOSE TAN CONCRETE	NONE DETECTED NONE DETECTED	SILI, CEMENT, SYN, CARB, MISC.
14. NT2462-528	WING D (RM 21) / CONCRETE EXT. WALL BASE A) TAN/GRAY/YELLOW/RED PAINTS B) BROWN COARSE FINISHING C) GRAY CONCRETE	NONE DETECTED NONE DETECTED NONE DETECTED	SILI, CEMENT, IRON OXIDES, SYN, CARB, MISC. GL <1

CHRY: Chrysotile
AMOS: Amorite
CROC: Crocidolite
TREM: Tremolite/Actinolite
ANTH: Anthophyllite

CELL: Cellulose
GL: Fiberglass/Mineral Wool
SYN: Synthetic
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POLARIZED LIGHT MICROSCOPY ANALYSIS FOR ASBESTOS CONTENT

Client: NORTH TOWER ENVIRONMENTAL
 3900 GEARY BLVD, SUITE 301
 SAN FRANCISCO, CALIFORNIA 94118

Report Number: UC0511
 Date: MARCH 12, 2007
 Analyst: OLGA KIST
 Date Analyzed: MARCH 12, 2007
 Sample Collector: CAROLYN HENRY
 Collection Date: N/A

Project #: NT2462
 Location: OAK KNOLL - EXTERIOR

3 Sample(s) containing Asbestos

12 Sample(s) Analyzed		ASBESTOS	NONASBESTOS
22 Sample(s) Received 3/5/07 15:00		TYPE AND % OR	Other Fibers (%)
Sample #		NONE DETECTED	Balance
15. NT2462-529	HOLD		
16. NT2462-530	HOLD		
17. NT2462-531	HOLD		
18. NT2462-532	HOLD		
19. NT2462-533	HOLD		
20. NT2462-534	WING G (RM 30) / WINDOW CAULK WHITE PUTTY	CHRY 1-3	BINDER, CARB, SILI, MISC.
21. NT2462-535	WING G (RM 28) / SIDEWALK SEALANT GRAY/WHITE CAULK WITH MINOR CONCRETE	NONE DETECTED	SYN, SILI, STARCH, MISC.
22. NT2462-536	WING G (RM 27) / BRICK AND MORTAR A) TAN/GRAY/GOLD/GRAY PAINTS B) GRAY CONCRETES (2 TYPES)	NONE DETECTED NONE DETECTED	SILI, PUMICE, CEMENT, CARB, SYN, MISC.

031207 LABORATORY BLANK (1866 GLASS FIBERS)
 CHRY: Chrysotile
 AMOS: Amosite
 CROC: Crocidolite
 TREM: Tremolite/Actinolite
 ANTH: Anthophyllite

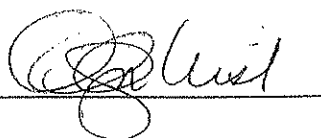
NONE DETECTED

CELL: Cellulose
 GL: Fiberglass/Mineral Wool
 SYN: Synthetic
 CARB: Carbonates
 SILI: Mixed Silicates

POLY: Polyethylene
 FTALC: Fibrous Talc
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AUTHORIZED SIGNATURE



DATE

3/13/07



ANALYTICAL LABS SAN FRANCISCO INC.

POLARIZED LIGHT MICROSCOPY ANALYSIS FOR ASBESTOS CONTENT

Client: NORTH TOWER ENVIRONMENTAL
3900 GEARY BLVD, SUITE 301
SAN FRANCISCO, CALIFORNIA 94118

Report Number: UC0511S

Date: APRIL 2, 2007

Analyst: OLGA KIST

Date Analyzed: APRIL 2, 2007

Sample Collector: CAROLYN HENRY

Collection Date: N/A

Project #: NT2462

Location: OAK KNOLL - EXTERIOR

1 Sample(s) containing Asbestos

SUPPLEMENTAL REPORT TO UC0511

1 Sample(s) Analyzed

1 Sample(s) Received 3/5/07 15:00

Sample #

ASBESTOS

NONASBESTOS

TYPE AND % OR

Other Fibers (%)

NONE DETECTED

Balance

19. NT2462-533 WING D (RM 24) / WINDOW CAULK
BROWN-GREEN PUTTY WITH SURFACE DEBRIS

CHRY5 2-5

CARB, SILI, BINDER, OPAQUES, MISC.

040207 LABORATORY BLANK (1866 GLASS FIBERS)
CHRY5: Chrysotile
AMOS: Amosite
CROC: Crocidolite
TREM: Tremolite/Actinolite
ANTH: Anthophyllite

NONE DETECTED

CELL: Cellulose

GL: Fiberglass/Mineral Wool

SYN: Synthetic

CARB: Carbonates

SILI: Mixed Silicates

POLY: Polyethylene

FTALC: Fibrous Taic

FGYP: Fibrous Gypsum

FELD: Feldspar

CASI: Calcium Silicates

Bulk samples analyzed in accordance with "Method for the Determination of Asbestos in Bulk Building Materials" EPA/600/R-93/116, July 1993. The detection limit is 1%. Quantitation of asbestos is by calibrated visual estimation. Analytical Labs San Francisco, Inc. (ALSF) is recognized under the National Laboratory Accreditation Program for satisfactory compliance with criteria established in Title 15, Part 7 code of Federal Regulations and accredited for bulk asbestos fiber analysis (NVLAP lab code: 101909-0). Asbestos fibers less than 0.2 microns cannot be resolved by light microscope. This report must not be reproduced except in full, without the written approval of ALSF and pertains only to the samples analyzed.

AUTHORIZED SIGNATURE

DATE

4/3/07



ANALYTICAL LABS SAN FRANCISCO INC.

POLARIZED LIGHT MICROSCOPY ANALYSIS FOR ASBESTOS CONTENT

Client: NORTH TOWER ENVIRONMENTAL
3900 GEARY BLVD, SUITE 301
SAN FRANCISCO, CALIFORNIA 94118

Report Number: UD1607
Date: APRIL 19-20, 2007
Analyst: OLGA KIST
Date Analyzed: APRIL 19-20, 2007
Sample Collector: GARY LOWE
Collection Date: APRIL 13, 2007

Project #: NT-2462
Location: OAK KNOLL

1 Sample(s) containing Asbestos

32 Sample(s) Analyzed		ASBESTOS	NONASBESTOS
32 Sample(s) Received 4/16/07 15:00		TYPE AND % OR	Other Fibers (%)
Sample #	Location / Description	NONE DETECTED	Balance
1. NT2462-041307-537	ABOVE SINK PORTABLE 32 / TACK BOARD AND DRYWALL		
	A) WHITE WALLCOVERING WITH NYLON MESH	NONE DETECTED	CELL, SYN 5-15 / GYPSUM, CARB, SYN, BINDER,
	B) OFF-WHITE GLUE	NONE DETECTED	MISC.
	C) GOLD FIBERBOARD	NONE DETECTED	CELL 80-90
	D) WHITE SHEETROCK PLASTER	NONE DETECTED	CELL 1-3
2. NT2462-041307-538	ABOVE SINK PORTABLE 32 / 2 X 4 CEILING		
	A) WHITE COATING	NONE DETECTED	PERLITE, BINDER, MICA, SILI, MISC.
	B) TAN ACOUSTIC	NONE DETECTED	CELL, GL 50-60
3. NT2462-041307-539	ON PLYWOOD PORTABLE 32 / CARPET MASTIC		
	GOLD GLUE ON WOOD	NONE DETECTED	CELL 1-3 / BINDER, SILI, MISC.
4. NT2462-041307-540	ON RAMP PORTABLE 32 / EXTERIOR NON-SKID		
	GRAY-RED COATINGS AND SAND ON RUST	NONE DETECTED	SYN, SILI, IRON OXIDES, OPAQUES, MISC.
5. NT2462-041307-541	ON SINK PORTABLE 32 / SINK UNDERCOAT		
	GRAY PAINT/COATING	NONE DETECTED	CELL 5-15 / SYN, CARB, SILI, MICA, MISC.
6. NT2462-041307-542	BY DOOR PORTABLE 32 / COVE BASE AND MASTIC		
	A) GRAY-BLUE VINYL	NONE DETECTED	SYN, SILI, BINDER, CARB, MISC.
	B) WHITE GLUE	NONE DETECTED	
7. NT2462-041307-543	ON PLYWOOD PORTABLE 31 / CARPET MASTIC		
	GOLD GLUE ON WOOD	NONE DETECTED	CELL <1 / BINDER, SILI, CARB, MISC.

ASBESTOS TYPES

CHRY: Chrysotile
AMOS: Amosite
CROC: Crocidolite
TREM: Tremolite/Actinolite
ANTH: Anthophyllite

NONASBESTOS

CELL: Cellulose
GL: Fiberglass/Mineral Wool
SYN: Synthetic
CARB: Carbonates
SILI: Mixed Silicates
POLY: Polyethylene
FTALC: Fibrous Talc
FGYP: Fibrous Gypsum
FELD: Feldspar
CASI: Calcium Silicates

Bulk samples analyzed in accordance with "Method for the Determination of Asbestos in Bulk Building Materials" EPA/600/R-93/116, July 1993. The detection limit is 1%. Quantitation of asbestos is by calibrated visual estimation. Analytical Labs San Francisco, Inc. (ALSF) is recognized under the National Laboratory Accreditation Program for satisfactory compliance with criteria established in Title 15, Part 7 code of Federal Regulations and accredited for bulk asbestos fiber analysis (NVLAP lab code: 101909-0). Asbestos fibers less than 0.2 microns cannot be resolved by light microscope. This report must not be reproduced except in full, without the written approval of ALSF and pertains only to the samples analyzed.

AUTHORIZED SIGNATURE

DATE

4/20/07

467 Potrero Avenue, San Francisco, CA 94110 (415) 552-4595 FAX 552-0730



ANALYTICAL LABS SAN FRANCISCO INC.

POLARIZED LIGHT MICROSCOPY ANALYSIS FOR ASBESTOS CONTENT

Client: NORTH TOWER ENVIRONMENTAL
3900 GEARY BLVD, SUITE 301
SAN FRANCISCO, CALIFORNIA 94118

Report Number: UD1607
Date: APRIL 19-20, 2007
Analyst: OLGA KIST
Date Analyzed: APRIL 19-20, 2007
Sample Collector: GARY LOWE
Collection Date: APRIL 13, 2007

Project #: NT2462
Location: OAK KNOLL

1 Sample(s) containing Asbestos

32 Sample(s) Analyzed 32 Sample(s) Received 4/16/07 15:00 Sample # Location / Description		ASBESTOS TYPE AND % OR NONE DETECTED	NONASBESTOS Other Fibers (%) Balance
8. NT2462-041307-544	ABOVE SINK PORTABLE 31 / 2 X 4 CEILING TILE		
	A) WHITE COATING	NONE DETECTED	PERLITE, SYN, BINDER, SILI, MICA, MISC.
	B) TAN ACOUSTIC TILE	NONE DETECTED	CELL, GL 50-60
9. NT2462-041307-545	ON SINK PORTABLE 31 / SINK UNDERCOAT GRAY PAINT/COATING	NONE DETECTED	CELL 5-15 / SYN, CARB, SILI, MICA, MISC.
10. NT2462-041307-546	BY DOOR PORTABLE 31 / COVE BASE AND MASTIC		
	A) GRAY-BLUE VINYL	NONE DETECTED	SYN, SILI, BINDER, CARB, MISC.
	B) WHITE GLUE	NONE DETECTED	
11. NT2462-041307-547	BACK WALL BY LARGE VENT PORTABLE 31 / TACK BOARD AND DRYWALL		
	A) WHITE WALLCOVERING WITH NYLON MESH	NONE DETECTED	SYN, CELL 10-20 / GYPSUM, CARB, SYN, BINDER, MISC.
	B) OFF-WHITE GLUE	NONE DETECTED	
	C) GOLD FIBERBOARD	NONE DETECTED	CELL 80-90
	D) WHITE SHEETROCK	NONE DETECTED	CELL, GL 10-20
12. NT2462-041307-548	BACK WALL BY LARGE VENT PORTABLE 32 / TACK BOARD AND DRYWALL		
	A) WHITE WALLCOVERING WITH NYLON MESH	NONE DETECTED	SYN, CELL 10-20 / GYPSUM, CARB, SYN, BINDER, MISC.
	B) OFF-WHITE GLUE	NONE DETECTED	
	C) GOLD FIBERBOARD	NONE DETECTED	CELL 80-90
	D) WHITE SHEETROCK	NONE DETECTED	CELL, GL 10-20
13. NT2462-041307-549	AT METAL SEAMS BOTH PORTABLES / EXTERIOR SEALANT		
	A) GRAY/RED PAINTS	NONE DETECTED	SYN, SILI, IRON OXIDES, MISC.
	B) GRAY CAULK	NONE DETECTED	

ASBESTOS TYPES

CHRY: Chrysotile
AMOS: Amosite
CROC: Crocidolite
TREM: Tremolite/Actinolite
ANTH: Anthophyllite

NONASBESTOS

CELL: Cellulose
GL: Fiberglass/Mineral Wool
SYN: Synthetic
CARB: Carbonates
SIL: Mixed Silicates
POLY: Polyethylene
FTALC: Fibrous Talc
FGYP: Fibrous Gypsum
FELD: Feldspar
CASI: Calcium Silicates

Bulk samples analyzed in accordance with "Method for the Determination of Asbestos in Bulk Building Materials" EPA/600/R-93/116, July 1993. The detection limit is 1%. Quantitation of asbestos is by calibrated visual estimation. Analytical Labs San Francisco, Inc. (ALSF) is recognized under the National Laboratory Accreditation Program for satisfactory compliance with criteria established in Title 15, Part 7 code of Federal Regulations and accredited for bulk asbestos fiber analysis (NVLAP lab code: 101909-0). Asbestos fibers less than 0.2 microns cannot be resolved by light microscope. This report must not be reproduced except in full, without the written approval of ALSF and pertains only to the samples analyzed.

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4/20/07

467 Potrero Avenue, San Francisco, CA 94110 (415) 552-4595 FAX 552-0730



ANALYTICAL LABS SAN FRANCISCO INC.

POLARIZED LIGHT MICROSCOPY ANALYSIS FOR ASBESTOS CONTENT

Client: NORTH TOWER ENVIRONMENTAL
3900 GEARY BLVD, SUITE 301
SAN FRANCISCO, CALIFORNIA 94118

Report Number: UD1607
Date: APRIL 19-20, 2007
Analyst: OLGA KIST
Date Analyzed: APRIL 19-20, 2007
Sample Collector: GARY LOWE
Collection Date: APRIL 13, 2007

Project #: NT-2462
Location: OAK KNOLL

1 Sample(s) containing Asbestos

32 Sample(s) Analyzed 32 Sample(s) Received 4/16/07 15:00 Sample # Location / Description		ASBESTOS TYPE AND % OR NONE DETECTED	NONASBESTOS Other Fibers (%) Balance
14. NT2462-041307-550	AROUND WINDOWS BACK SIDE / EXTERIOR SEALANT A) OFF-WHITE PAINTS B) GRAY CAULK	NONE DETECTED NONE DETECTED	SYN, SILI, IRON OXIDES, MISC.
15. NT2462-041307-551	AT METAL FOUNDATION BOTH PORTABLES / EXTERIOR SEALANT A) TAN/GRAY/RED/GRAY PAINTS B) GRAY CAULK C) GOLD FELT WITH GLUE	NONE DETECTED NONE DETECTED NONE DETECTED	SYN, SILI, IRON OXIDES, BINDER, MISC. CELL 70-80
16. NT2462-041307-552	BY P31 G WING / EXTERIOR BRICK AND MORTAR A) TAN/GRAY/GOLD PAINTS B) GRAY/BROWN LOOSE PLASTERS	NONE DETECTED NONE DETECTED	SILI, CARB, IRON OXIDES, PUMICE, SYN, MISC.
17. NT2462-041307-553	AROUND VENTS ABOVE DOOR 30 / EXTERIOR SEALANT SILVER/GRAY CAULK	NONE DETECTED	SYN, METAL FLAKES, SILI, MISC.
18. NT2462-041307-554	AROUND WINDOWS FRAME BY DOOR 28 / EXTERIOR SEALANT A) WHITE CAULK B) OFF-WHITE FOAM	NONE DETECTED NONE DETECTED	SYN, SILI, MISC.
19. NT2462-041307-555	GIRL RESTROOM WALL BY SINK / CERAMIC TILE AND GROUT A) WHITE CERAMIC TILE B) OFF-WHITE GROUT C) OFF-WHITE COARSE PLASTER D) WHITE PAINT, COMPOUND, TAPE	NONE DETECTED NONE DETECTED NONE DETECTED NONE DETECTED	SILI, CALCINED CLAY, CARB, GYPSUM, PERLITE, SYN, MISC. CELL 5-10

ASBESTOS TYPES

CHRY: Chrysotile
AMOS: Amosite
CROC: Crocidolite
TREM: Tremolite/Actinolite
ANTH: Anthophyllite

NONASBESTOS

CELL: Cellulose
GL: Fiberglass/Mineral Wool
SYN: Synthetic
CARB: Carbonates
SILI: Mixed Silicates
POLY: Polyethylene
FTALC: Fibrous Talc
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CASI: Calcium Silicates

Bulk samples analyzed in accordance with "Method for the Determination of Asbestos in Bulk Building Materials" EPA/600/R-93/116, July 1993. The detection limit is 1%. Quantitation of asbestos is by calibrated visual estimation. Analytical Labs San Francisco, Inc. (ALSF) is recognized under the National Laboratory Accreditation Program for satisfactory compliance with criteria established in Title 15, Part 7 code of Federal Regulations and accredited for bulk asbestos fiber analysis (NVLAP lab code: 101909-0). Asbestos fibers less than 0.2 microns cannot be resolved by light microscope. This report must not be reproduced except in full, without the written approval of ALSF and pertains only to the samples analyzed.

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4/20/07

467 Potrero Avenue, San Francisco, CA 94110 (415) 552-4595 FAX 552-0730

POLARIZED LIGHT MICROSCOPY ANALYSIS FOR ASBESTOS CONTENT

Client: NORTH TOWER ENVIRONMENTAL
3900 GEARY BLVD, SUITE 301
SAN FRANCISCO, CALIFORNIA 94118

Report Number: UD1607
Date: APRIL 19-20, 2007
Analyst: OLGA KIST
Date Analyzed: APRIL 19-20, 2007
Sample Collector: GARY LOWE
Collection Date: APRIL 13, 2007

Project #: NT2462
Location: OAK KNOLL

1 Sample(s) containing Asbestos

32 Sample(s) Analyzed 32 Sample(s) Received 4/16/07 15:00 Sample # Location / Description		ASBESTOS TYPE AND % OR NONE DETECTED	NONASBESTOS Other Fibers (%) Balance
20. NT2462-041307-556	BACK SIDE OF G UNDER WINDOWS / EXTERIOR STUCCO A) GRAY/YELLOW/ORANGE PAINTS B) GRAY FINISHING PLASTER C) GRAY PLASTER	NONE DETECTED NONE DETECTED NONE DETECTED	CELL <1 / SILI, CARB, SYN, MISC.
21. NT2462-041307-557	GIRL RESTROOM WALL ABOVE SINK / 1 X 2 CEILING TILE A) WHITE COATING B) GOLD ACOUSTIC TILE	NONE DETECTED NONE DETECTED	CASI 1-3 / GYPSUM, SILI, MICA, SYN, MISC. GL 70-80
22. NT2462-041307-558	GIRL RESTROOM CEILING ABOVE SINK / DRYWALL COMPOSITE A) OFF-WHITE COMPOUND B) WHITE SHEETROCK	CHRY 1-3 NONE DETECTED	CELL, GL 20-30 / GYPSUM, CARB, MICA, MISC.
23. NT2462-041307-559	GIRL RESTROOM FAR WALL BY BIG STALL / DRYWALL COMPOSITE A) WHITE PAINT B) WHITE COMPOUND, TAPE, COMPOUND C) WHITE SHEETROCK	NONE DETECTED NONE DETECTED NONE DETECTED	CELL, GL 10-20 / GYPSUM, CARB, PERLITE SYN, MISC.
24. NT2462-041307-560	ROOF OF MP METAL CAP ON PARAPET ROOF / EXTERIOR SEALANT TAN-GRAY CAULK	NONE DETECTED	SYN, CARB, MISC.
25. NT2462-041307-561	AT VENT CAP PEN MP ROOF / ROOF TAR BROWN SURFACE TAR/CAULK	NONE DETECTED	CELL 10-20, GL <1 / ASPHALT, SILI, MICA, SYN, MISC.
26. NT2462-041307-562	BETWEEN MP AND D WING / ROOF CANOPY A) GRAY GRAVEL TAR SURFACE B) TAR AND GLASS FELTS (3)	NONE DETECTED NONE DETECTED	ASPHALT, SILI, CARB, MISC. CELL, GL 10-20

ASBESTOS TYPES

CHRY: Chrysotile
AMOS: Amosite
CROC: Crocidolite
TREM: Tremolite/Actinolite
ANTH: Anthophyllite

NONASBESTOS

CELL: Cellulose
GL: Fiberglass/Mineral Wool
SYN: Synthetic
CARB: Carbonates
SILI: Mixed Silicates
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FTALC: Fibrous Talc
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DATE

4/20/07



ANALYTICAL LABS SAN FRANCISCO INC.

POLARIZED LIGHT MICROSCOPY ANALYSIS FOR ASBESTOS CONTENT

Client: NORTH TOWER ENVIRONMENTAL
3900 GEARY BLVD, SUITE 301
SAN FRANCISCO, CALIFORNIA 94118

Report Number: UD1607
Date: APRIL 19-20, 2007
Analyst: OLGA KIST
Date Analyzed: APRIL 19-20, 2007
Sample Collector: GARY LOWE
Collection Date: APRIL 13, 2007

Project #: NT2462
Location: OAK KNOLL

1 Sample(s) containing Asbestos

32 Sample(s) Analyzed 32 Sample(s) Received 4/16/07 15:00		ASBESTOS	NONASBESTOS
Sample #	Location / Description	TYPE AND % OR NONE DETECTED	Other Fibers (%) Balance
27. NT2462-041307-563	ON SMALL AIR UNIT FAR END OF C WING / ROOF TAR BROWN/BLACK SURFACE TAR/CAULK	NONE DETECTED	CELL 5-15 / SYN, ASPHALT, SILI, MICA, MISC.
28. NT2462-041307-564	BETWEEN 13 AND 14 C WING / ROOF CANOPY A) GRAY GRAVEL AND TAR SURFACE B) TAR AND NYLON FELT C) TAR AND GLASS FELTS (3) D) BROWN PAPER FELT	NONE DETECTED NONE DETECTED NONE DETECTED NONE DETECTED	ASPHALT, SILI, CARB, SYN, MISC. SYN, GL 10-20 GL, CELL 15-20 CELL 80-90
29. NT2462-041307-565	OFFICE ROOF ON HVAC DUCTWORK / EXTERIOR SEALANT GRAY/GOLD GLUE	NONE DETECTED	BINDER, SILI, MISC.
30. NT2462-041307-566	BEHIND LIGHT SWITCH ON TACK BOARD AND WOOD / COMPOUND A) GOLD GLUE B) OFF-WHITE COMPOUND ON TAPE	NONE DETECTED NONE DETECTED	CARB, MICA, PERLITE, BINDER, STARCH MISC. CELL 10-20
31. NT2462-041307-567	IN ATTIC ABOVE KITCHEN / PLASTER A) TAN PAINT B) WHITE TEXTURE PLASTER	NONE DETECTED NONE DETECTED	GYPSUM, SILI, PERLITE, MISC. CELL <1-2, GL <1
32. NT2462-041307-568	ATTIC ABOVE C WING ROOM 10 / DRYWALL COMPOSITE A) OFF-WHITE COMPOUND, TAPE, COMPOUND B) WHITE SHEETROCK	NONE DETECTED NONE DETECTED	CELL, GL 10-20 / GYPSUM, MICA, MISC.

041607

LABORATORY BLANK (1866 GLASS FIBERS)

NONE DETECTED

ASBESTOS TYPES

CHRY: Chrysotile
AMOS: Amosite
CROC: Crocidolite
TREM: Tremolite/Actinolite
ANTH: Anthophyllite

NONASBESTOS

CELL: Cellulose
GL: Fiberglass/Mineral Wool
SYN: Synthetic
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AUTHORIZED SIGNATURE

DATE

4/20/07

North Tower Environmental

3900 Geary Boulevard, Suite 301
San Francisco, California 94118-3251

Phone Number: (415) 933-8170
Fax Number: (415) 933-8171

Laboratory: ALSF Analysis: PLM ☒ TEM AA Other (see Comments)
Turn-Around Time 24-Hour Rush Other

Project Number: <u>NT-2462</u>		Project Name/Location: <u>Oak Knoll E.S.</u>		Comments:	
Project Manager: <u>CMH</u>		Sample Information		Sample Location	
Sample Number	Date				
1	-401	1x1 CT		Bldg. A - K2	
2	402	Fiberboard Wall		" A - K2	
3	403	Black/Tan Glue (behind Fib. Bld Wall)		" A - K2	
4	404	---		---	
5	405	1x2 tile (upper wall)		Bldg. A - K2	
6	406	1x1 FT / Mastic (with old FT debris on bottom)		" " - K2	
7	407	FT / Mastic (old)		" " - K2	
8	408	Tan Basecoat Mastic / SC		" " - K2	
9	409	Drywall / SC		" " - K2 (neg door)	
10	410	Vapor Barrier (above CT)		" " - K2	
11	411	Window (caulk + drywall) (interior)		" " - K2	
12	412	1x1 CT (gray w/ white paint)		" " - K1	
13	413	Drywall / SC		" " - K1-atc	

Special Instructions:

Relinquished By: <u>CMH</u>	Signature: <u>[Signature]</u>	Date: <u>2/10/07</u>
Relinquished By:	Signature:	Date:

North Tower Environmental

3900 Geary Boulevard, Suite 301
San Francisco, California 94118-3251


Phone Number: (415) 933-8170
Fax Number: (415) 933-8171

Analysis: PLM ☒ TEM ☐ AA ☐ Other (see Comments)
Turn-Around Time 24-Hour Rush Other

Laboratory: _____

Project Number:		Project Name/Location: Oak Knoll E.S.		Comments:	
Project Manager: CMH		Sample Information		Sample Location	
Sample Number	Date				
414		Gray Tack board Glue		Bldg. A - K1	
415		Tan Glue on CT		" " - K1	
416		FT/Mastic (old) (green)		" " - K1	
417		1x1 FT/Mastic (black)		" " - K1	
418		1x1 FT/Mastic (black)		" " - K5	
419		Yellow + Brown Carpet Mastic		" " - K5	
420		Drywall/SC		Bldg. C - Rm.13	
421		Drywall Texture		" " - Rm.13	
422					
423		Carpet Glue (no black mastic)		Bldg. C - Rm.13	
424		Fiberboard Skim		" " - Rm.11 (behind sink)	
425		Sink Undercoat		" " - Rm.11	
426		Drywall Texture		" " - Rm.10 (courtyard side)	

Special Instructions:

Relinquished By: 	Signature: _____	Date: 2/10/07
Relinquished By: _____	Signature: _____	Date: _____

UB100

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North Tower Environmental

3900 Geary Boulevard, Suite 301
San Francisco, California 94118-3251

Phone Number: (415) 933-8170
Fax Number: (415) 933-8171

ALST

Analysis:

PLM ☒ TEM ☐ AA ☐ Other (see Comments)

Turn-Around Time 24-Hour Rush Other

Laboratory:

Project Number:		Project Name/Location:		Comments:	
NT 2462		Oak Knoll ES			
Sample Number		Date		Sample Information	
427				Black/Brown/White Mastic (on wood) Bldg. C - Rm. 8 (back wall)	
428				1 x 1 CT (wall + tile) " " Rm. 8 (" ")	
429				Joint Compound (ceiling) Multi-Purpose Bldg.	
430				Plaster Wall " " "	
431				Drywall Texture Multi-Purpose Bldg - GYM	
432				Drywall / JC / Texture " " - GYM	
433				Black Mastic / Concrete below 1x1ft " " - Kitchen	
434				TSE Run (Black paper, Foil & yellow fiberglass) " " - AHC	
435				TSE Elbow (hard packed) " " - "	
436				TSE Run (Fiberglass; paper gray; black felt) " " - "	
437				Plaster Wall (unfinished) " " - "	
438				Tar & felt Paper " " - "	
439					

Special Instructions:

Relinquished By:

Signature:

Date: 2/14/07

Received By: M. Calhoun

Signature:

Date: 2/10/07

Relinquished By:

Signature:

Date:

Received By:

Signature:

Date:

3:00

pg. 1 of 1
UC010 7 44 Sample

NORTH TOWER ENVIRONMENTAL

3900 Geary Boulevard Suite 301, San Francisco, California 94118 (415) 933-8170 (415) 933-8171 fax

Turn Around Time: RUSH 24 Hours 48 Hours 72 Hours

Chain of Custody Record

Analysis: PLM AA TEM

Project Number: NT2462		Project Name: Oak Knoll	
Project Manager:		Comments:	
Sample Number	Date	Sample Information	Sample Location
NT2462-439		1X1 FT/Yellow/Brown Mastie	[Rms 14-15-16] - Rm 14 (1956)
- 440		Carpet Glue (yellow)	" "
- 441		Tackboard	" "
- 442		1X1 CT (brown/white paint)	" "
- 443		Cinder Block/Mastie/Paint	" " (above door)
- 444		Basecoat/Mastie	" "
- 445		Carpet Glue	" Rm 15
- 446		Tackboard	" " (at overhead)
- 447		Tackboard Adhesive (yellow)	" "
- 448		Tackboard Compound	" "
- 449		Vapor Barrier (between CT & Wood)	" "
- 450		Fiberglass & Paper	" "
Relinquished By: CMH	Signature: <i>[Signature]</i>	Received By: M. Oulaf	Signature: <i>[Signature]</i>
	Date: 3/1/07		Date: 4:00

UC010 7

Ty. & 4 1

UCO107

NORTH TOWER ENVIRONMENTAL

3900 Geary Boulevard Suite 301, San Francisco, California 94118 (415) 933-8170 (415) 933-8171 fax

Turn Around Time: RUSH 24 Hours 48 Hours 72 Hours

Chain of Custody Record

Analysis: PLM AA TEM Page 1 of 1

Project Number:		Project Name: Det Knoll	
Project Manager:		Comments:	
Sample Number	Date	Sample Information	Sample Location
450B		Door Caulk (int) (between door & under block)	Rooms 14-15-16 - Rm 15 (1956)
451		Window Caulk (int) (between frame & cradle)	Rooms 17-18 - Room 17 (1959)
452		2x4 CT	" " - " 17 " HOLD
453		Tape @ between CT	" " - " 17 " "
454		Cinder Block / Paint (int)	" " - " 17 " HOLD
455		Tackboard & Yellow Mastic	" " - " 17 " HOLD
456		1x1 FT & Yellow "	" " - " 17 " HOLD
457		Basecoat / Adhesive	" " - " 17 " HOLD
458		Sink Undercoat	" " - " 17 " "
459		Tackboard / White Skin	" " - Rm 18 " HOLD
460		Fine Gray Dust (atlc)	" " - Rm 18 " "
461		Gray Insulation Debris (atlc)	" " - Rm 18 " "
Relinquished By: CMH	Signature: <i>[Signature]</i>	Received By: M-Alfaro	Signature: <i>[Signature]</i>
	Date: 2/1/07		Date: 2/1/07

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pg. 7 of 7
UC010 7

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Turn Around Time: RUSH 24 Hours 48 Hours 72 Hours

Chain of Custody Record

Analysis: PLM AA TEM Page 1 of 1

Project Number:		Project Name: <u>Dock Crawl</u>	
Project Manager:		Comments:	
Sample Number	Date	Sample Information	Sample Location
462		Daywall/IC ceiling (closet)	Rooms 17-18 - Room 18 - (1959)
463		Gray Sink Undercoat	Rooms 23-26 - Room 26 (1959)
464		Int. Door Caulk (between door & tackboard)	" " " "
465		Yellow Glue (behind wood trim)	" " " "
466		Tackboard / wall paper	" " " "
467		Door Tackboard	" " " "
468		1X1 FT w/ Yellow & Black Mastic	" " Room 25
469		" " Yellow Mastic	" " " "
470		Carpet Glue & Mastic	" " " "
471		1X1 FT / Yellow & Black Mastic	" " Room 24
472		Int. Door Caulk (between window & doors)	" " Room 26
473		Tackboard / Skim / Adhesive	" " " "
Relinquished By: <u>CMH</u>	Signature: <u>[Signature]</u>	Received By: <u>M. Olfat</u>	Signature: <u>[Signature]</u>
	Date: <u>3/1/07</u>		Date: <u>4-00</u>

UC010 7

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Chain of Custody Record

Analysis: PLM AA TEM Page 1 of 1

Project Number:		Project Name: Oak Knoll		
Project Manager:		Comments:		
Sample Number	Date	Sample Information	Sample Location	Remarks or Area
474		Vapor Barrier (above CT)	Rooms 23-26 - Room 23 (1959)	
475		Cinder Block Mortar (at Windows)	" " " "	HOLD
476		1x1 CT (brown w/ white paint)	" " " "	HOLD
477		Basement / Master	" " " "	HOLD
478		Mudded Elbow	Rooms 19-20-21 - Canopy Attic (1953)	
479		Plaster Ceiling	" " - Jan Clozst "	
480		T&E Debris	" " - Canopy Attic "	
481		Black Vapor Barrier	" " - Attic "	
482		White Ceiling Board	" " " "	
483		Black Vapor Barrier (beneath Stairs)	" " - Jan Clozst "	
485		1x2 Wall Tile (brown w/ white paint)	" " " - Room 21 "	
Relinquished By: C.M.H.	Signature: [Signature]	Received By: M. Adams	Signature: [Signature]	Date: 3/1/07 4:00

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Turn Around Time: RUSH 24 Hours 48 Hours 72 Hours

Analysis: PLM AA TEM Page 1 of 1

Project Number:		Project Name: <u>Oak Knoll</u>		
Project Manager:		Comments:		
Sample Number	Date	Sample Information	Sample Location	Remarks or Area
487		Taskboard / SKim / Wallpaper Adhesive	Rooms 19-20-21 - Room 21 (1953)	HOLD
488		Floor Carpet Mastix + Brown Mastix	" " - Room 20	"
489		Work Table - Top	" " - Room 19	"
490		Drywall / SC / Basecoat Mastix	" " " "	"
491		Wall Texture	" " " "	"
492		Int. Caulk (at door / tackwall)	" " " "	HOLD
493		1X1 FT of Yellow + Brown Glue	" " " "	HOLD
494		1X1 CT (brown / white paint)	" " " "	HOLD
495		Vapor Barrier (above 1X1 CT)	" " " "	HOLD
496		Duct Tape (ASTC)	" " - AHIC	"
497		Fiberglass TSI of Canvas Sacket	" " - AHIC	"
Relinquished By: <u>CML</u>	Signature: <u>[Signature]</u>	Received By: <u>M. Adams</u>	Signature: <u>[Signature]</u>	Date: <u>5/1/07</u>

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Turn Around Time: RUSH 24 Hours 48 Hours 72 Hours

Chain of Custody Record

Analysis: PLM AA TEM

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Project Number:		Project Name: <u>Dak Knoll</u>		Remarks of Area	
Project Manager:		Comments:			
Sample Number	Date	Sample Information	Sample Location	Remarks of Area	
498		Skim/Texture (on drywall ceiling)	Room 29	(MS4)	
499		FG ^{TS} Line Elbow (hard corner wrapped)	" " - AHIC		
500		Tape on HVAC ducts	" " - AHIC		
501		HVAC Vibration Cloth	" " - "		
502		Drywall/JS	" " - "		
503		Carpet Glue	" " - Rm 29A	HOLD	
504		Drywall/JS/Texture	" " - " "	HOLD	
505		Buacore/Adhesive/Tackboard	" " - Rm 29		
506		Drywall/JS (at chase)	" " - Rm 29D		
507		Drywall/JS/Texture	" " - Room 28		
508		1X1 FT + Yellow Mastic	" " - Room 28	HOLD	
509		Buacore/Adhesive/Tackboard	" " - Room 28	HOLD	
Relinquished By: <u>CMH</u>	Signature: <u>M. Olfaro</u>	Received By: <u>M. Olfaro</u>	Signature: <u>M. Olfaro</u>	Date: <u>3/1/07</u>	Date: <u>4:00</u>

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Turn Around Time: RUSH 24 Hours 48 Hours 72 Hours

Analysis: (PLAN)

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Turn Around Time: RUSH 24 Hours 48 Hours 72 Hours

Analysis: PLM AA TEM

Page 1 of 1

Project Number: NT2462		Project Name: Oak Knoll - Exterior	
Project Manager:		Comments:	
Sample Number	Date	Sample Information	Sample Location
NT2462-515		Gray Window Caulk (Alum frame)	Wing A
NT2462-516		Gray Sealant (sidewalk)	" "
517		Plaster Canopy	" "
518		Plaster Soffit	" "
519		Stucco Wall	" "
520		" "	Wing C (next to B)
521		Window Caulk (alum frame)	" C (m 14)
522		Brick + Mortar	" C (m 14)
523		Plaster Canopy	" D (by m 21)
524		Gray Window Caulk	" C (m 9)
525		Gray Sealant (wood frame + window frame)	" C (m 9)
526		Stucco Wall	" MP Bldg
Relinquished By: CMH	Signature: <i>[Signature]</i>	Received By: M. Alvar	Signature: <i>[Signature]</i>
	Date: 3/15		Date: 3/15
			Time: 3:00

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Chain of Custody Record

Analysis: PLM AA TEM Page 1 of 3

Project Number: NT-2462		Project Name: Oak Knoll	
Project Manager: Carolyn Henry		Comments: Asbestos Survey	
Sample Number	Date	Sample Information	Sample Location
NT-2526-041307-537	4/13/2007	Tack Board and Drywall	Above Sink Portable 32
NT-2526-041307-538		2x4 Ceiling Tile	Above Sink Portable 32
NT-2526-041307-539		Carpet Mastic	on plywood Portable 32
NT-2526-041307-540		Exterior Non-Skid	on ramp Portable 32
NT-2526-041307-541		Sink under coat	On Sink Portable 32
NT-2526-041307-542		Cove Base and Mastic	by door Portable 32
NT-2526-041307-543		Carpet Mastic	on plywood Portable 31
NT-2526-041307-544		2x4 Ceiling Tile	Above Sink Portable 31
NT-2526-041307-545		Sink under coat	On Sink Portable 31
NT-2526-041307-546		Cove Base and Mastic	by door Portable 31
NT-2526-041307-547		Tack Board and Drywall	Back wall by large vent Portable 31
NT-2526-041307-548		Tack Board and Drywall	Back wall by large vent Portable 32
Relinquished By: Gary B. Lowe	Signature: <i>Gary B. Lowe</i>	Received By: <i>M. DeLano</i>	Signature: <i>M. DeLano</i>
	Date: 4/13/2007	Date: 4/16/07	Date: 4/16/07
			3.00

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Turn Around Time: RUSH 24 Hours 48 Hours 72 Hours

Chain of Custody Record

Analysis: PLM AA TEM Page 2 of 3

Project Number: NT-2462		Project Name: Oak Knoll		
Project Manager: Carolyn Henry		Comments: Asbestos Survey		
Sample Number	Date	Sample Information	Sample Location	Remarks or Area
NT-2526-041307-549	4/13/2007	Exterior Sealant	At metal seems both portables	P31
NT-2526-041307-550		Exterior Sealant	Around windows back side	P32
NT-2526-041307-551		Exterior Sealant	At metal foundation both portables	P31
NT-2526-041307-552		Exterior Brick and Mortar	by P31 G wing	G
NT-2526-041307-553		Exterior Sealant	Around Vents above door 30	G
NT-2526-041307-554		Exterior Sealant	Around windows frame by door 28	G
NT-2526-041307-555		Ceramic Tile and Grout	Girl restroom wall by sink	G
NT-2526-041307-556		Exterior Stucco	Back side of G under Windows	G
NT-2526-041307-557		1x2 Ceiling Tile	Girl restroom wall above sink	G
NT-2526-041307-558		Drywall Composite	Girl restroom ceiling above sink	G
NT-2526-041307-559		Drywall Composite	Girl restroom far wall by big stall	G
NT-2526-041307-560		Exterior Sealant	Roof of MP metal cap on parapet roof	MP
Relinquished By: Gary B. Lowe	Signature: Gary B. Lowe	Date: 4/13/2007	Received By: M. O'Leary	Date: 4/16/07
			Signature: M. O'Leary	Date: 4/16/07

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Turn Around Time: RUSH (24 Hours) 48 Hours 72 Hours

Chain of Custody Record

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Analysis: (PLAN)

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Metals Analysis of Bulks

North Tower Environmental
Carolyn Henry
3900 Geary Blvd, Suite 301
San Francisco, CA 94118

Client ID: 3186
Report Number: M085137
Date Received: 04/17/07
Date Analyzed: 04/17/07
Date Printed: 04/17/07
First Reported: 04/17/07

Job ID / Site: NT-2462, Oak Knoll

FAI Job ID: 3186-2087

Sample Number	Lab Number	Analyte	Result	Result Units	Reporting Limit*	Method Reference
NT-2462-041307-569L	30284459	Pb	< 7	mg/kg	7	EPA 3050B/7420

* The Units for the Reporting Limit (practical quantitation limit) are the same as the Units for the Final Results.

Dave Sandusky, Laboratory Supervisor, Hayward Laboratory

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Turn Around Time: RUSH (24 Hours) 48 Hours 72 Hours

Chain of Custody Record

Analysis: PLM (AA) TEAM

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XRF LEAD PAINT INSPECTION REPORT

PROJECT LOCATION:

**Oak Knoll School
Building Interiors
1895 Oak Knoll Lane
Menlo Park, CA 94025**

INSPECTION DATE: 02/22/07

INSTRUMENT TYPE: R M D

MODEL LPA-1

XRF TYPE ANALYZER

Serial Number:1025

ACTION LEVEL: 1.0 mg/cm2**

OPERATOR LICENSE: I-316

**STATEMENT: Lead Paint Inspection As Agreed.
No representations are made for any areas not tested.**

SIGNED  **Date 3/30/07**

**DHS Inspector ID #2461
North Tower Environmental
3900 Geary Blvd., # 301
San Francisco, CA 94118
Phone: 415-933-8170**

BY REPORT OF LEAD PAINT INSPECTION FOR: Menlo Park City School District

Inspection Date:	02/22/07	Oak Knoll School
Report Date:	2/26/2007	Interior
Statement Level:	1.0	1895 Oak Knoll Lane
Report No.	02/22/07 12:42	Menlo Park, CA 94025
Total Readings:	423 Actionable: 3	
Job Started:	02/22/07 12:42	
Job Finished:	02/22/07 18:33	

Lead Co.	Wall	Structure	Location	Member	Paint Cond	Substrate	Paint Color	Lead (mg/cm ²)	Mode
Interior 83	Room 044 A	Multi Wind.Guard	Purp. Ctr		I	Metal	White	1.8	QM
Interior 872	Room 059 B	Janitor Door	Ctr Rgt casing		I	Wood	Gray	1.0	QM
Comment: Between boys and girls rooms									
Interior 400	Room 064 C	Rm 24 Door	Rgt Lft casing		I	Metal	Gray	1.0	QM

Calibration Readings

----- End of Readings -----

DETAILED REPORT OF LEAD PAINT INSPECTION FOR: Menlo Park City School District

Inspection Date: 02/22/07 Oak Knoll School

Date: 2/26/2007
 Placement Level: 1.0
 Report No. 02/22/07 12:42
 Total Readings: 423
 Job Started: 02/22/07 12:42
 Job Finished: 02/22/07 18:33

Interior
 1895 Oak Knoll Lane
 Menlo Park, CA 94025

Lead	Paint	Paint	Lead	
Cond	Substrate	Color	(mg/cm ²)	Mode
o. Wall	Structure	Location	Member	
Interior Room 001 K 1				
15	A	Ceiling		I Acc.Tile White 0.1 QM
07	A	Window	Rgt Sill	I Wood White 0.0 QM
08	A	Window	Rgt Lft casing	I Wood White 0.1 QM
006	A	Door	Rgt Lft casing	I Wood Gray -0.2 QM
005	A	Door	Rgt U Ctr	I Wood Gray 0.3 QM
004	B	Wall	L Ctr	I Tackboard White -0.1 QM
014	B	Duct	Lft	I Metal Beige 0.1 QM
013	C	Door	Lft Lft casing	I Metal Gray -0.2 QM
012	C	Door	Lft U Ctr	I Metal Gray -0.2 QM
011	D	Wall	U Lft	I Tackboard White 0.0 QM
010	D	Window	Rgt Rgt casing	I Wood Gray -0.1 QM
009	D	Window	Rgt Sill	I Wood Gray -0.1 QM
Interior Room 002 K 2				
	A	Window	Lft Rgt casing	I Wood Gray -0.1 QM
021	A	Window	Lft Sill	I Wood Gray 0.1 QM
020	A	Door	Lft Rgt casing	I Wood Gray 0.0 QM
019	A	Door	Lft U Ctr	I Wood Gray -0.1 QM
023	B	Duct	Lft	I Metal White -0.1 QM
018	B	Crown Mldg	Ctr	I Wood Gray -0.1 QM
025	C	Door	Rgt Rgt casing	I Wood White 0.0 QM
016	D	Wall	L Ctr	I Tackboard White -0.3 QM
017	D	Wall	U Ctr	I Acc.Tile White 0.2 QM
024	D	Chair rail	Ctr	I Wood Brown 0.0 QM
Interior Room 003 Workroom				
026	B	Wall	U Ctr	I Tackboard White -0.1 QM
030	C	Door	Lft Rgt casing	I Wood Gray -0.1 QM
029	C	Door	Lft U Ctr	I Wood Gray -0.1 QM
027	D	Wall	U Ctr	I Tackboard White 0.2 QM
028	D	Ceiling		I Drywall White 0.2 QM
Interior Room 004 K 3				
035	A	Window	Rgt Sill	I Wood Gray -0.1 QM
036	A	Window	Rgt Lft casing	I Wood Gray 0.2 QM
034	A	Door	Lft Lft casing	I Wood Gray 0.0 QM
033	A	Door	Lft U Ctr	I Wood Gray 0.0 QM
038	B	Duct	Lft	I Metal White 0.0 QM
037	B	Crown Mldg	Ctr	I Wood Gray 0.0 QM
032	C	Wall	U Ctr	I Acc.Tile White -0.2 QM
1	D	Wall	L Ctr	I Tackboard White -0.1 QM

Interior Room 005 K 4					I	Acc.Tile	White	-0.1	QM
5	A	Ceiling			I	Wood	White	-0.1	QM
13	A	Window	Ctr	Sill	I	Wood	White	0.0	QM
14	A	Window	Ctr	Lft casing	I	Wood	Gray	0.2	QM
12	A	Door	Lft	Rgt casing	I	Wood	Gray	-0.1	QM
11	A	Door	Lft	U Ctr	P	Wood	Gray	0.0	QM
46	B	Duct	Lft		I	Metal	White	0.1	QM
39	D	Wall	L Ctr		I	Tackboard	White	0.0	QM
40	D	Wall	U Ctr		I	Acc.Tile	White		QM

Interior Room 006 K 5					I	Acc.Tile	White	-0.1	QM
49	A	Ceiling			I	Wood	White	-0.1	QM
52	B	Window	Rgt	Sill	I	Wood	White	-0.2	QM
53	B	Window	Rgt	Lft casing	I	Wood	Gray	0.0	QM
55	B	Door	Ctr	Lft casing	I	Wood	Gray	0.0	QM
54	B	Door	Ctr	U Lft	I	Wood	Gray	0.0	QM
47	C	Wall	L Ctr		I	Tackboard	White	0.0	QM
48	C	Wall	U Ctr		I	Acc.Tile	White	0.0	QM
51	C	Door	Lft	Lft casing	I	Wood	Gray	-0.1	QM
50	C	Door	Lft	U Ctr	I	Wood	Gray	0.0	QM
56	D	Wall	L Rgt		I	Tackboard	White	-0.1	QM
57	D	Duct	Ctr		I	Metal	White		QM

Interior Room 007 Boys Room					I	Ceram.Tile	White	-0.2	QM
058	A	Wall	L Ctr		I	Ceram.Tile	Blue	-0.3	QM
059	A	Wall	U Ctr		I	Ceram.Tile	Blue	-0.1	QM
	A	Baseboard	Ctr		I	Ceram.Tile	Gray	0.0	QM
061	A	Floor			I	Metal	Gray	-0.1	QM
063	D	Door	Lft	Lft jamb	I	Wood	Gray	-0.1	QM
062	D	Door	Lft	U Ctr	I	Wood	Gray		QM

Interior Room 008 Rm 8					I	Drywall	White	-0.3	QM
064	A	Wall	L Lft		I	Wood	Gray	-0.1	QM
069	A	Door	Lft	Lft casing	I	Metal	Gray	0.0	QM
068	A	Door	Lft	U Lft	I	Acc.Tile	White	0.2	QM
067	C	Ceiling			I	Wood	Gray	0.0	QM
071	C	Door	Rgt	Lft jamb	I	Wood	Gray	-0.2	QM
070	C	Door	Rgt	U Ctr	I	Tackboard	White	-0.2	QM
065	D	Wall	L Lft		I	Acc.Tile	White	0.3	QM
066	D	Wall	U Lft		I				

Interior Room 009 Rm 9					I	Tackboard	White	-0.2	QM
072	A	Wall	L Lft		I	Wood	White	0.3	QM
076	A	Window	Ctr	Sill	I	Wood	White	-0.1	QM
077	A	Window	Ctr	Lft casing	I	Drywall	White	-0.1	QM
073	C	Wall	U Rgt		I	Wood	Gray	0.0	QM
075	C	Door	Rgt	Lft jamb	I	Wood	Gray	0.0	QM
074	C	Door	Rgt	U Ctr	I				

Interior Room 010 Rm 10					I	Tackboard	White	0.0	QM
078	A	Wall	L Rgt		I	Wood	White	-0.1	QM
083	A	Window	Rgt	Sill	I	Wood	White	0.1	QM
4	A	Window	Rgt	Lft casing	I	Acc.Tile	White	-0.1	QM
079	C	Wall	U Rgt		I				

	C	Ceiling			I	Acc.Tile	White	0.1	QM
2	C	Door	Rgt	Lft casing	I	Wood	Gray	0.2	QM
1	C	Door	Rgt	U Lft	I	Wood	Red	-0.1	QM

Interior Room 011 Rm 11

85	A	Wall	L Lft		I	Tackboard	White	0.0	QM
			Ctr	Sill	I	Wood	White	-0.1	QM
91	A	Window			I	Wood	White	0.0	QM
92	A	Window	Ctr	Lft casing	I	Wood	White	0.0	QM
87	C	Wall	U Rgt		I	Acc.Tile	White	0.0	QM
88	C	Ceiling			I	Acc.Tile	White	0.1	QM
90	C	Door	Rgt	Rgt casing	I	Wood	Gray	0.0	QM
89	C	Door	Rgt	U Ctr	I	Wood	Green	-0.1	QM
86	C	Crown Mldg	Ctr		I	Wood	Gray	-0.2	QM
93	D	Duct	Ctr		I	Metal	White	-0.1	QM

Interior Room 012 Rm 12

94	A	Wall	L Lft		I	Tackboard	White	-0.1	QM
			Rgt	Sill	I	Wood	Gray	0.0	QM
99	A	Window	Rgt	Lft casing	I	Wood	Gray	0.0	QM
100	A	Window			I	Wood	Gray	0.0	QM
095	C	Wall	U Rgt		I	Acc.Tile	White	-0.1	QM
096	C	Ceiling			I	Acc.Tile	White	-0.1	QM
098	C	Door	Rgt	Lft casing	I	Wood	Gray	-0.1	QM
097	C	Door	Rgt	U Ctr	I	Wood	Yellow	0.0	QM

Interior Room 013 Rm 13

101	A	Wall	L Lft		I	Tackboard	White	-0.2	QM
			Ctr	Sill	I	Wood	Gray	-0.1	QM
101	A	Window			I	Wood	Gray	0.0	QM
107	A	Window	Ctr	Lft casing	I	Wood	Gray	0.0	QM
108	B	Crown Mldg	Ctr		I	Wood	Gray	-0.2	QM
102	C	Wall	U Ctr		I	Drywall	White	0.0	QM
103	C	Ceiling			I	Acc.Tile	White	-0.1	QM
105	C	Door	Rgt	Lft jamb	I	Wood	Gray	-0.2	QM
104	C	Door	Rgt	U Ctr	I	Wood	Gray	-0.2	QM

Interior Room 014 Boys Room 2

109	A	Wall	L Ctr		I	Ceram.Tile	White	-0.4	QM
110	A	Wall	U Ctr		I	Ceram.Tile	Blue	-0.3	QM
111	A	Baseboard	Ctr		I	Ceram.Tile	Blue	-0.3	QM
112	A	Floor			I	Ceram.Tile	Gray	-0.1	QM
113	A	Ceiling			I	Drywall	White	-0.1	QM
115	B	Door	Ctr	Lft jamb	I	Wood	Blue	-0.1	QM
114	B	Door	Ctr	U Ctr	I	Wood	Blue	-0.2	QM

Comment: Behind K 13

Interior Room 015 Janitor

116	A	Wall	L Ctr		I	Plaster	White	-0.1	QM
118	A	Ceiling			I	Plaster	White	-0.3	QM
120	B	Door	Ctr	Lft jamb	I	Wood	White	0.0	QM
117	D	Wall	L Ctr		I	Plaster	White	-0.2	QM
119	D	Ceiling	Ctr		I	Wood	Beige	0.1	QM

Interior Room 016 Girls

121	A	Wall	L Ctr		I	Ceram.Tile	White	-0.2	QM
122	A	Wall	U Ctr		I	Ceram.Tile	Purple	-0.1	QM

	A	Baseboard	Ctr		I	Ceram.Tile	Purple	-0.3	QM
4	A	Floor			I	Ceram.Tile	Gray	-0.2	QM
7	A	Ceiling			I	Drywall	White	-0.1	QM
16	B	Door	Rgt	Lft casing	I	Wood	Blue	0.1	QM
25	B	Door	Rgt	U Ctr	I	Wood	Gray	0.0	QM
Comment: Behind K 13									

Interior Room 017 Office									
34	A	Floor			I	Ceram.Tile	Beige	-0.1	QM
30	A	Ceiling			I	Acc.Tile	White	-0.1	QM
33	A	Door	Rgt	Rgt casing	I	Metal	White	-0.3	QM
32	A	Door	Rgt	U Ctr	I	Metal	White	-0.5	QM
29	B	Wall	U Ctr		I	Drywall	White	-0.1	QM
31	B	Crown Mldg	Ctr		I	Wood	Gray	0.1	QM
28	D	Wall	L Ctr		I	Tackboard	White	-0.1	QM

Interior Room 018 Principal									
136	A	Ceiling			I	Acc.Tile	White	-0.1	QM
135	B	Wall	L Ctr		I	Tackboard	White	-0.1	QM
139	B	Window	Rgt	Rgt casing	I	Wood	Gray	-0.4	QM
138	D	Door	Lft	Rgt casing	I	Metal	Gray	-0.2	QM
137	D	Door	Lft	U Ctr	I	Wood	Gray	-0.1	QM

Interior Room 019 V Principal									
141	A	Ceiling			I	Acc.Tile	White	0.0	QM
140	B	Wall	L Ctr		I	Tackboard	White	-0.3	QM
	B	Door	Lft	Lft casing	I	Metal	Gray	0.0	QM
142	B	Door	Lft	U Lft	I	Metal	Gray	-0.4	QM

Interior Room 020 Conf. Room									
144	A	Wall	L Ctr		I	Drywall	White	0.2	QM
145	A	Ceiling			I	Acc.Tile	White	0.0	QM
147	D	Door	Rgt	Lft casing	I	Metal	Gray	-0.3	QM
146	D	Door	Rgt	U Ctr	I	Wood	Gray	-0.2	QM

Interior Room 021 Nurse									
148	A	Wall	L Ctr		I	Tackboard	White	-0.1	QM
149	A	Ceiling			I	Acc.Tile	White	0.1	QM
151	D	Door	Lft	Lft casing	I	Wood	Gray	-0.1	QM
150	D	Door	Lft	U Ctr	I	Wood	Gray	0.0	QM

Interior Room 022 Nurse Bath									
152	A	Wall	L Ctr		I	Tackboard	White	-0.2	QM
153	A	Ceiling			I	Drywall	White	0.0	QM
155	D	Door	Rgt	Rgt casing	I	Metal	Gray	-0.1	QM
154	D	Door	Rgt	U Ctr	I	Wood	Gray	-0.3	QM

Interior Room 023 Staff Bath									
156	A	Wall	L Ctr		I	Tackboard	White	-0.1	QM
157	A	Ceiling			I	Drywall	White	0.0	QM
159	B	Door	Ctr	Rgt casing	I	Metal	Gray	-0.1	QM
158	B	Door	Ctr	U Lft	I	Wood	Gray	-0.2	QM

Interior Room 024 TeachLounge

	A	Wall	L Ctr		I	Tackboard	White	-0.1	QM
51	D	Wall	L Ctr		I	Drywall	White	-0.1	QM
62	D	Ceiling			I	Acc.Tile	White	0.0	QM
64	D	Door	Ctr	Lft casing	I	Metal	Gray	-0.1	QM
63	D	Door	Ctr	U Ctr	I	Wood	Gray	-0.5	QM

Interior Room 025 Workroom

69	A	Door	Ctr	Rgt casing	I	Metal	Gray	0.0	QM
68	A	Door	Ctr	U Ctr	I	Wood	Gray	0.0	QM
65	C	Wall	L Ctr		I	Tackboard	White	0.0	QM
66	D	Wall	L Ctr		I	Tackboard	White	-0.1	QM
67	D	Ceiling			I	Acc.Tile	White	-0.1	QM

Interior Room 026 Data Closet

170	A	Wall	L Ctr		I	Drywall	White	-0.1	QM
171	A	Ceiling			I	Drywall	White	0.1	QM
172	C	Panel	Ctr		I	Wood	White	0.1	QM
174	D	Door	Ctr	Rgt casing	I	Metal	Gray	-0.1	QM
173	D	Door	Ctr	U Ctr	I	Wood	Gray	-0.2	QM

Interior Room 027 Rm 1

175	A	Wall	U Ctr		I	Drywall	White	0.0	QM
177	A	Ceiling			I	Acc.Tile	White	-0.1	QM
180	A	Door	Rgt	Rgt casing	I	Metal	Gray	0.0	QM
179	A	Door	Rgt	U Ctr	I	Metal	Gray	-0.1	QM
176	B	Wall	L Rgt		I	Tackboard	White	0.0	QM
	B	Crown Mldg	Ctr		I	Wood	Gray	-0.1	QM

Interior Room 028 Rm 2

181	A	Wall	L Lft		I	Tackboard	White	0.0	QM
183	A	Ceiling			I	Acc.Tile	White	0.0	QM
187	A	Window	Ctr	Sash	I	Wood	Gray	-0.3	QM
186	A	Door	Lft	Lft jamb	I	Metal	Gray	-0.1	QM
185	A	Door	Lft	U Rgt	I	Metal	Gray	-0.1	QM
184	B	Crown Mldg	Ctr		I	Wood	Gray	-0.1	QM
182	D	Wall	U Ctr		I	Drywall	White	-0.1	QM

Interior Room 029 Rm 3

188	A	Wall	U Ctr		I	Drywall	White	0.0	QM
191	A	Door	Lft	Rgt jamb	I	Metal	Gray	-0.1	QM
190	A	Door	Lft	U Ctr	I	Metal	Gray	0.1	QM
192	A	Crown Mldg	Ctr		I	Wood	Gray	0.1	QM
189	D	Wall	L Lft		I	Tackboard	White	0.1	QM

Interior Room 030 Rm 4

193	A	Wall	U Ctr		I	Drywall	White	-0.1	QM
195	A	Ceiling			I	Acc.Tile	White	-0.1	QM
197	A	Door	Lft	Rgt jamb	I	Metal	Gray	-0.1	QM
196	A	Door	Lft	U Ctr	I	Metal	Gray	0.0	QM
194	D	Wall	L Rgt		I	Tackboard	White	-0.1	QM

Interior Room 031 Rm 5

190	A	Ceiling			I	Acc.Tile	White	-0.2	QM
198	B	Wall	L Ctr		I	Drywall	White	-0.1	QM

0	B	Door	Ctr	Rgt jamb	I	Metal	Gray	0.0	QM
03	B	Door	Ctr	Rgt casing	I	Metal	Gray	0.0	QM
01	B	Door	Ctr	U Ctr	I	Metal	Gray	0.0	QM
09	D	Wall	L Ctr		I	Tackboard	White	0.2	QM

Interior Room 032 Girls Rm

04	A	Wall	L Ctr		I	Ceram.Tile	White	-0.1	QM
05	A	Wall	U Ctr		I	Ceram.Tile	Purple	-0.1	QM
06	A	Baseboard	Ctr		I	Ceram.Tile	Purple	-0.1	QM
07	A	Floor			I	Ceram.Tile	Gray	-0.1	QM
10	C	Door	Ctr	Rgt casing	I	Metal	Gray	-0.1	QM
09	C	Door	Ctr	U Ctr	I	Metal	Gray	-0.2	QM
08	D	Ceiling			I	Drywall	White	-0.1	QM

Comment: next to room 5

Interior Room 033 Boys Rm

211	A	Wall	L Ctr		I	Ceram.Tile	White	-0.2	QM
212	A	Wall	U Ctr		I	Ceram.Tile	Blue	-0.2	QM
213	A	Baseboard	Ctr		I	Ceram.Tile	Blue	-0.3	QM
214	A	Floor			I	Ceram.Tile	Gray	-0.1	QM
215	A	Ceiling			I	Drywall	White	-0.1	QM
217	B	Door	Ctr	Lft jamb	I	Metal	Gray	-0.1	QM
216	B	Door	Ctr	U Ctr	I	Metal	Gray	-0.1	QM

Comment: Next to room 4

Interior Room 034 Library

219	A	Wall	L Ctr		I	Tackboard	White	-0.3	QM
220	A	Ceiling			I	Acc.Tile	White	-0.1	QM
222	D	Duct	Ctr		I	Metal	White	0.0	QM
221	B	Conduit	Rgt		I	Metal	White	0.0	QM
225	C	Floor			I	Ceram.Tile	Gray	-0.1	QM
231	C	Ceill.Beam	Ctr		I	Wood	Gray	-0.1	QM
218	D	Wall	L Ctr		I	Tackboard	White	-0.1	QM
224	D	Door	Ctr	Lft casing	I	Metal	Gray	-0.2	QM
223	D	Door	Ctr	U Ctr	I	Metal	Gray	-0.2	QM

Interior Room 035 Server Rm

226	A	Wall	U Ctr		I	Drywall	White	0.0	QM
227	C	Wall	U Ctr		I	Drywall	White	-0.1	QM
229	D	Door	Lft	Lft jamb	I	Wood	Gray	-0.1	QM
228	D	Door	Lft	U Ctr	I	Wood	Gray	-0.3	QM
230	D	Duct	Ctr		I	Metal	White	0.0	QM

Interior Room 036 Lib. Office

232	A	Wall	L Ctr		I	Vinyl	White	0.0	QM
233	A	Ceiling			I	Acc.Tile	White	0.2	QM
235	B	Door	Ctr	Lft casing	I	Metal	Gray	-0.1	QM
234	B	Door	Ctr	U Lft	I	Wood	Gray	0.2	QM

Interior Room 037 ComputerLab

239	A	Wall	L Lft		I	Drywall	White	-0.3	QM
6	B	Wall	L Lft		I	Tackboard	White	-0.2	QM
238	D	Door	Rgt	Lft casing	I	Metal	Gray	-0.1	QM

	D	Door	Rgt	U Lft	I	Metal	Gray	-0.1	QM
Interior Room 038 Staff Bath									
1	A	Ceiling			I	Drywall	White	-0.3	QM
3	A	Door	Lft	Rgt jamb	I	Metal	Gray	-0.1	QM
12	A	Door	Lft	U Ctr	I	Metal	Gray	-0.2	QM
10	B	Wall	L Ctr		I	Tackboard	White	-0.2	QM
Interior Room 039 Rm 14									
44	A	Wall	L Ctr		I	Block	White	-0.1	QM
48	A	Window	Ctr	Rgt casing	I	Metal	White	-0.1	QM
51	A	Door	Lft	Rgt casing	I	Metal	Gray	-0.3	QM
50	A	Door	Lft	U Rgt	I	Wood	Gray	0.1	QM
49	C	Ceiling			I	Acc.Tile	White	-0.2	QM
47	C	Door	Rgt	Lft jamb	I	Metal	Gray	0.5	QM
46	C	Door	Rgt	U Ctr	I	Wood	Gray	0.2	QM
45	D	Wall	L Lft		I	Tackboard	White	0.0	QM
Interior Room 040 Rm 15									
252	A	Wall	L Ctr		I	Block	White	-0.1	QM
254	A	Ceiling			I	Acc.Tile	White	-0.2	QM
257	A	Window	Ctr	Lft jamb	I	Metal	White	-0.2	QM
256	A	Door	Ctr	Rgt casing	I	Metal	Gray	-0.1	QM
255	A	Door	Ctr	U Ctr	I	Wood	Gray	0.2	QM
258	B	Crown Mldg	Ctr		I	Wood	Gray	-0.1	QM
253	D	Wall	L Lft		I	Tackboard	White	-0.4	QM
Interior Room 041 Rm 16									
259	A	Wall	L Rgt		I	Block	White	0.0	QM
262	A	Door	Ctr	Rgt casing	I	Metal	Gray	0.0	QM
261	A	Door	Ctr	U Lft	I	Wood	Gray	0.0	QM
260	C	Wall	L Ctr		I	Tackboard	White	0.2	QM
263	C	Ceiling			I	Acc.Tile	White	0.2	QM
Interior Room 042 Rm 17									
264	A	Wall	L Ctr		I	Tackboard	White	0.0	QM
265	B	Wall	L Lft		I	Drywall	White	-0.1	QM
268	B	Duct	Ctr		I	Metal	White	-0.2	QM
267	D	Door	Rgt	Lft jamb	I	Metal	Gray	0.4	QM
266	D	Door	Rgt	U Ctr	I	Wood	Purple	-0.2	QM
Interior Room 043 Rm 18									
269	A	Wall	L Ctr		I	Tackboard	White	-0.1	QM
273	A	Door	Rgt	Lft jamb	I	Metal	Gray	-0.1	QM
272	A	Door	Rgt	U Ctr	I	Wood	Gray	-0.1	QM
270	C	Wall	L Rgt		I	Block	White	0.0	QM
271	C	Panel	Rgt		I	Wood	White	0.0	QM
Comment: Science Lab									
Interior Room 044 Multi Purp.									
284	A	Floor			I	Wood	Stain	-0.1	QM
285	A	Window	Rgt	Rgt casing	I	Wood	Gray	0.0	QM
270	A	Door	Lft	Rgt casing	I	Metal	Gray	-0.1	QM
279	A	Door	Lft	U Ctr	I	Metal	Gray	-0.2	QM

	A	Wind.Guard	Ctr		I	Metal	White	1.8	QM
14	C	Wall	U Ctr		I	Drywall	White	-0.1	QM
78	C	Chair rail	Lft		I	Wood	Gray	0.0	QM
75	C	Column	Rgt	U column	I	Wood	White	-0.1	QM
77	C	Crown Mldg	Lft		I	Wood	Gray	0.3	QM
81	C	Duct	Rgt		I	Metal	White	0.0	QM
76	D	Wall	U Ctr		I	Tackboard	White	0.1	QM
82	D	HoopSupport	Ctr		I	Metal	Black	0.0	QM

Interior Room 045 Storage

86	A	Wall	L Ctr		I	Drywall	White	0.0	QM
89	B	Door	Ctr	Rgt casing	I	Metal	Gray	-0.1	QM
88	B	Door	Ctr	U Ctr	I	Wood	Gray	-0.2	QM
87	C	Duct	Rgt		I	Metal	White	-0.1	QM

Comment: in multi purpose room

Interior Room 046 Rm 6

293	A	Ceiling			I	Acc.Tile	White	0.0	QM
294	A	Door	Rgt	U Ctr	I	Wood	Blue	0.0	QM
290	C	Wall	U Lft		I	Tackboard	White	0.0	QM
292	C	Door	Lft	Rgt casing	I	Metal	Gray	-0.1	QM
291	C	Door	Lft	U Ctr	I	Wood	Gray	-0.2	QM

Interior Room 047 Kitchen

295	A	Wall	U Ctr		I	Drywall	White	-0.1	QM
297	A	Ceiling			I	Plaster	White	0.0	QM
	C	Wall	U Ctr		I	Drywall	White	0.0	QM
299	C	Door	Lft	Lft jamb	I	Wood	Gray	-0.1	QM
298	C	Door	Lft	U Ctr	I	Metal	Gray	-0.1	QM
300	C	Closet	Lft	Wall	I	Drywall	White	-0.1	QM
304	D	Ceill.Beam	Lft		I	Wood	Gray	0.0	QM

Interior Room 048 Janitor

305	A	Wall	U Rgt		I	Plaster	White	-0.3	QM
306	B	Wall	U Lft		I	Plaster	White	-0.1	QM
309	B	Door	Ctr	Lft casing	I	Wood	Gray	0.2	QM
308	B	Door	Ctr	U Lft	I	Wood	Gray	0.0	QM
307	D	Duct	Lft		I	Metal	White	-0.1	QM

Interior Room 049 Rm 7

310	A	Wall	L Ctr		I	Tackboard	White	-0.1	QM
311	A	Ceiling			I	Drywall	White	-0.1	QM
313	B	Door	Rgt	Rgt casing	I	Wood	Gray	0.2	QM
312	B	Door	Rgt	U Ctr	I	Metal	Gray	-0.1	QM

Interior Room 050 Girls Room

314	A	Wall	L Ctr		I	Ceram.Tile	White	0.0	QM
315	A	Wall	U Ctr		I	Ceram.Tile	Purple	-0.3	QM
316	A	Baseboard	Rgt		I	Ceram.Tile	Purple	-0.2	QM
317	A	Floor			I	Ceram.Tile	Gray	-0.3	QM
318	A	Ceiling			P	Drywall	White	-0.2	QM
320	B	Door	Ctr	Lft casing	I	Metal	Gray	0.0	QM
9	B	Door	Ctr	U Ctr	I	Metal	Gray	-0.1	QM

Comment: next to room 7

Interior Room 051 MultiRestRm

24	B	Door	Ctr	Lft casing	I	Wood	Gray	-0.1	QM
23	B	Door	Ctr	U Ctr	I	Wood	Gray	-0.2	QM
22	C	Ceiling			I	Drywall	White	-0.2	QM
21	D	Wall	U Lft		P	Drywall	White	-0.3	QM

Comment: Restroom in multi purpose room

Interior Room 052 StaffRestRm

25	A	Wall	U Ctr		I	Tackboard	White	0.0	QM
28	B	Door	Ctr	Lft casing	I	Metal	Gray	0.0	QM
27	B	Door	Ctr	U Ctr	I	Wood	Gray	-0.1	QM
26	D	Ceiling			I	Drywall	White	0.2	QM

Interior Room 053 Storeroom

329	A	Wall	U Ctr		I	Drywall	White	0.1	QM
330	A	Ceiling			I	Drywall	White	-0.1	QM
331	A	Duct	Rgt		I	Metal	White	-0.2	QM
333	B	Door	Ctr	Lft casing	I	Metal	Gray	-0.1	QM
332	B	Door	Ctr	U Lft	I	Metal	Gray	-0.2	QM

Comment: next to staff restroom

Interior Room 054 Rm 19

334	A	Wall	L Ctr		I	Drywall	White	-0.1	QM
338	A	Door	Rgt	Rgt casing	I	Wood	White	0.1	QM
337	A	Door	Rgt	U Lft	I	Metal	White	0.0	QM
	B	Wall	L Lft		I	Tackboard	White	0.0	QM
330	B	Wall	U Ctr		I	Acc.Tile	White	0.0	QM
341	C	Window	Rgt	Rgt casing	I	Wood	Gray	0.1	QM
340	C	Door	Rgt	Rgt casing	I	Wood	Gray	0.0	QM
339	C	Door	Rgt	U Ctr	I	Wood	Gray	-0.1	QM

Interior Room 055 Rm 20

342	A	Wall	L Rgt		I	Tackboard	White	-0.1	QM
345	A	Ceiling			I	Acc.Tile	White	-0.1	QM
348	A	Window	Rgt	Sill	I	Wood	Gray	-0.1	QM
349	A	Window	Rgt	Lft casing	I	Wood	Gray	-0.1	QM
343	C	Wall	L Rgt		I	Tackboard	White	0.0	QM
347	C	Door	Rgt	Rgt casing	I	Wood	Gray	0.0	QM
346	C	Door	Rgt	U Lft	I	Wood	Gray	-0.2	QM
344	D	Wall	U Ctr		I	Acc.Tile	White	0.3	QM

Interior Room 056 Rm 21

350	A	Wall	L Lft		I	Drywall	White	-0.1	QM
356	A	Ceiling			I	Acc.Tile	White	-0.1	QM
354	A	Window	Ctr	Sill	I	Wood	Gray	0.0	QM
355	A	Window	Ctr	Lft casing	I	Wood	Gray	-0.2	QM
353	C	Door	Rgt	Lft jamb	I	Wood	Gray	-0.1	QM
352	C	Door	Rgt	U Ctr	I	Wood	Gray	-0.2	QM
351	D	Wall	L Ctr		I	Tackboard	White	0.0	QM

Interior Room 057 Costodian

7	A	Wall	L Ctr		I	Plaster	White	-0.1	QM
58	A	Ceiling			I	Plaster	White	-0.1	QM

	B	Door	Lft	Lft jamb	I	Metal	Gray	0.0	QM
9	B	Door	Lft	U Ctr	I	Wood	Gray	0.0	QM
1	B	Electrical	Lft		I	Metal	White	-0.1	QM

Comment: next to room 21

Interior Room 058 Boys Room

52	A	Wall	L Ctr		I	Ceram.Tile	White	-0.4	QM
63	A	Wall	U Ctr		I	Ceram.Tile	Blue	-0.5	QM
64	A	Baseboard	Rgt		I	Ceram.Tile	Blue	-0.4	QM
65	A	Floor			I	Ceram.Tile	Gray	-0.3	QM
67	B	Door	Lft	Rgt casing	I	Wood	Gray	0.0	QM
66	B	Door	Lft	U Ctr	I	Wood	Gray	-0.1	QM
68	D	Ceiling			I	Drywall	White	-0.4	QM

Comment: nest to room 21

Interior Room 059 Janitor

369	A	Wall	L Ctr		I	Plaster	White	-0.1	QM
370	A	Ceiling			I	Plaster	White	0.2	QM
372	B	Door	Ctr	Rgt casing	I	Wood	Gray	1.0	QM
371	B	Door	Ctr	U Ctr	I	Wood	Gray	-0.2	QM
374	D	Pipe	Lft		I	Metal	White	0.0	QM
373	D	Panel	Rgt		I	Metal	White	0.0	QM

Comment: Between boys and girls rooms

Interior Room 060 Girls Rm

	A	Wall	L Ctr		I	Ceram.Tile	White	-0.2	QM
376	A	Wall	U Ctr		I	Ceram.Tile	Purple	-0.4	QM
377	A	Baseboard	Rgt		I	Ceram.Tile	Purple	-0.1	QM
378	A	Floor			I	Ceram.Tile	Gray	-0.4	QM
382	A	Ceiling			I	Plaster	White	-0.1	QM
380	B	Door	Ctr	Rgt casing	I	Wood	Gray	0.5	QM
379	B	Door	Ctr	U Ctr	I	Wood	Gray	-0.1	QM
381	C	Window	Ctr	Sash	I	Metal	Black	-0.5	QM

Interior Room 061 22 A

384	A	Wall	L Ctr		I	Block	White	-0.1	QM
385	A	Window	Ctr	Sill	I	Concrete	White	-0.1	QM
383	D	Wall	U Ctr		I	Tackboard	White	0.2	QM
387	D	Door	Lft	Lft casing	I	Metal	Gray	0.3	QM
386	D	Door	Lft	U Ctr	I	Wood	Gray	-0.1	QM

Interior Room 062 22 B

391	A	Ceiling			I	Plaster	White	0.2	QM
390	C	Door	Rgt	Rgt jamb	I	Metal	Gray	-0.1	QM
389	C	Door	Rgt	U Ctr	I	Wood	Gray	0.2	QM
388	D	Wall	L Ctr		I	Block	White	0.0	QM

Interior Room 063 Rm 23

396	B	Crown Mldg	Ctr		I	Wood	Gray	0.0	QM
392	C	Wall	L Rgt		I	Tackboard	White	0.2	QM
393	C	Wall	U Rgt		I	Block	White	0.2	QM
5	C	Door	Ctr	Lft casing	I	Metal	Gray	0.3	QM
394	C	Door	Ctr	U Ctr	I	Wood	Gray	0.0	QM

Interior Room 064 Rm 24

07	A	Wall	L Ctr		I	Block	White	-0.1	QM
01	B	Wall	L Rgt		I	Drywall	White	-0.1	QM
08	C	Wall	L Ctr		I	Tackboard	White	-0.1	QM
00	C	Door	Rgt	Lft casing	I	Metal	Gray	1.0	QM
99	C	Door	Rgt	U Ctr	I	Wood	Gray	0.1	QM

Interior Room 065 Rm 25

03	A	Wall	L Ctr		I	Block	White	-0.1	QM
02	C	Wall	L Ctr		I	Tackboard	White	-0.1	QM
05	C	Door	Rgt	Lft casing	I	Wood	Gray	0.4	QM
04	C	Door	Rgt	U Ctr	I	Wood	Gray	0.0	QM
06	C	Closet	Lft	Wall	I	Drywall	White	0.0	QM

Interior Room 066 Rm 26

108	A	Wall	L Ctr		I	Block	White	0.1	QM
110	C	Door	Rgt	Lft casing	I	Wood	Gray	-0.1	QM
109	C	Door	Rgt	U Ctr	I	Wood	Gray	0.3	QM
107	D	Wall	L Ctr		I	Tackboard	White	0.0	QM

Interior Room 067 Rm 31

411	A	Wall	U Rgt		I	Vinyl	Gray	0.2	QM
412	A	Window	Ctr	Sill	I	Metal	Brown	0.4	QM
415	C	Door	Lft	Lft casing	I	Metal	Red	-0.1	QM
414	C	Door	Lft	U Ctr	I	Wood	White	-0.1	QM
	D	Ceil.Beam	Ctr		I	Metal	White	-0.3	QM

Comment: Portable

Interior Room 068 Rm 32

417	A	Ceiling			I	Acc.Tile	White	-0.1	QM
420	A	Window	Rgt	Sill	I	Metal	Brown	0.4	QM
419	C	Door	Rgt	Lft casing	I	Metal	Red	-0.2	QM
418	C	Door	Rgt	U Ctr	I	Metal	White	-0.1	QM
416	D	Wall	L Lft		I	Vinyl	Beige	0.0	QM

Calibration Readings

001								1.2	TC
002								1.1	TC
003								1.1	TC
301								1.0	TC
302								0.9	TC
303								1.0	TC
421								1.2	TC
422								1.1	TC
423								1.0	TC

----- End of Readings -----

DISTRIBUTION REPORT OF LEAD PAINT INSPECTION FOR: Menlo Park City School District

Inspection Date: 02/22/07
Report Date: 2/26/2007

Oak Knoll School
Interior

Agent Level: 1.0
 Report No. 02/22/07 12:42
 Total Reading Sets: 414
 Job Started: 02/22/07 12:42
 Job Finished: 02/22/07 18:33

1895 Oak Knoll Lane
 Menlo Park, CA 94025

Structure	Structure Distribution				
	Total	Positive	Negative	Inconclusive	
Baseboard	8	0 <0%>	8 <100%>	0 <0%>	
Ceil. Beam	4	0 <0%>	4 <100%>	0 <0%>	
Ceiling	49	0 <0%>	49 <100%>	0 <0%>	
Chair rail	2	0 <0%>	2 <100%>	0 <0%>	
Closet Wall	2	0 <0%>	2 <100%>	0 <0%>	
Column U column	1	0 <0%>	1 <100%>	0 <0%>	
Conduit	1	0 <0%>	1 <100%>	0 <0%>	
Crown Mldg	11	0 <0%>	11 <100%>	0 <0%>	
Door Lft casing	28	1 <4%>	27 <96%>	0 <0%>	
Door Lft jamb	15	0 <0%>	15 <100%>	0 <0%>	
Door Rgt casing	27	1 <4%>	26 <96%>	0 <0%>	
Door Rgt jamb	5	0 <0%>	5 <100%>	0 <0%>	
Door U Ctr	59	0 <0%>	59 <100%>	0 <0%>	
Door U Lft	12	0 <0%>	12 <100%>	0 <0%>	
Door U Rgt	2	0 <0%>	2 <100%>	0 <0%>	
Electrical	13	0 <0%>	13 <100%>	0 <0%>	
Floor	1	0 <0%>	1 <100%>	0 <0%>	
HoopSupport	11	0 <0%>	11 <100%>	0 <0%>	
Panel	1	0 <0%>	1 <100%>	0 <0%>	
Pipe	3	0 <0%>	3 <100%>	0 <0%>	
Wall	1	0 <0%>	1 <100%>	0 <0%>	
Wind.Guard	121	0 <0%>	121 <100%>	0 <0%>	
Window Lft casing	1	1 <100%>	0 <0%>	0 <0%>	
Window Lft jamb	11	0 <0%>	11 <100%>	0 <0%>	
Window Rgt casing	1	0 <0%>	1 <100%>	0 <0%>	
Window Sash	6	0 <0%>	6 <100%>	0 <0%>	
Window Sill	2	0 <0%>	2 <100%>	0 <0%>	
Inspection Totals:	414	3 <1%>	411 <99%>	0 <0%>	

XRF LEAD PAINT INSPECTION REPORT

PROJECT LOCATION:

**Oak Knoll School
Building Interiors
1895 Oak Knoll Lane
Menlo Park, CA 94025**

INSPECTION DATE: 02/22/07

INSTRUMENT TYPE: R M D

MODEL LPA-1

XRF TYPE ANALYZER

Serial Number:1025

ACTION LEVEL: 1.0 mg/cm2**

OPERATOR LICENSE: I-316

**STATEMENT: Lead Paint Inspection As Agreed.
No representations are made for any areas not tested.**

SIGNED



Date 3/30/07

**DHS Inspector ID #2461
North Tower Environmental
3900 Geary Blvd., # 301
San Francisco, CA 94118
Phone: 415-933-8170**

Summary Report of Lead Paint Inspection for: Menlo Park City School District

Inspection Date:	02/22/07	Oak Knoll School
Report Date:	2/26/2007	Building Exteriors
Statement Level:	1.0	1895 Oak Knoll Lane
Report No.	02/22/07 18:34	Menlo Park, CA 94025
Total Readings:	123 Actionable: 27	
Job Started:	02/22/07 18:34	
Job Finished:	02/22/07 20:22	

Lead No.	Wall	Structure	Location	Member	Paint Cond	Substrate	Paint Color	Lead (mg/cm ²)	Mode
Exterior Room 001 A Wing									
008	A	Window	Rgt	Sill	I	Wood	White	5.5	QM
010	A	Door	Rgt	Rgt casing	I	Wood	Gray	5.1	QM
015	B	Door	Ctr	Rgt casing	I	Wood	Blue	5.8	QM
016	B	Support Pole	Ctr		I	Metal	Gray	>9.9	QM
019	C	Window	Ctr	Sill	I	Wood	White	2.6	QM
006	D	Window	Rgt	Sill	I	Wood	Gray	2.6	QM
005	D	Support Pole	Ctr		I	Metal	Gray	6.1	QM
Exterior Room 002 B Wing									
	A	Window	Lft	Sill	I	Wood	White	4.0	QM
024	A	Fire Exting.	Lft		I	Metal	Gray	1.0	QM
025	A	Support Pole	Ctr		I	Metal	White	6.8	QM
034	B	Fascia			I	Wood	Gray	1.6	QM
032	B	Door	Rgt	Rgt casing	I	Wood	Blue	4.0	QM
030	B	Support Pole	Ctr		I	Metal	White	4.1	QM
Exterior Room 003 C Wing 1									
037	A	Window	Rgt	Rgt casing	I	Wood	White	3.0	QM
036	A	Window	Rgt	Sill	I	Wood	White	3.8	QM
039	A	Door	Rgt	Lft casing	I	Wood	Blue	2.4	QM
046	C	Fascia			I	Wood	Gray	3.0	QM
043	C	Support Pole	Rgt		I	Metal	White	4.2	QM
Exterior Room 005 C Wing 3									
064	D	Support Pole	Ctr		I	Metal	Gray	>9.9	QM
Exterior Room 006 D Wing 1									
070	D	Support Pole	Ctr		I	Metal	White	4.3	QM
Exterior Room 007 D Wing 2									
087	A	Window	Ctr	Sill	I	Wood	White	2.4	QM
080	C	Window	Rgt	Sill	I	Wood	White	2.7	QM
081	C	Window	Rgt	Lft casing	I	Wood	White	2.4	QM
084	C	Door	Rgt	Lft casing	I	Wood	White	2.4	QM
083	C	Door	Rgt	U Ctr	I	Wood	Blue	1.3	QM
9	C	Support Pole	Rgt		I	Metal	White	2.9	QM

1	ior Room 010 G Wing 1					
5	A Support Pole	Ctr	I Metal	White	7.3	QM

libration Readings

----- End of Readings -----

DETAILED REPORT OF LEAD PAINT INSPECTION FOR: Menlo Park City School District

Inspection Date: 02/22/07
 Report Date: 2/26/2007
 Statement Level: 1.0
 Report No. 02/22/07 18:34
 Total Readings: 123
 Job Started: 02/22/07 18:34
 Job Finished: 02/22/07 20:22

Oak Knoll School
 Building Exteriors
 1895 Oak Knoll Lane
 Menlo Park, CA 94025

Lead No.	Wall	Structure	Location	Member	Paint Cond	Substrate	Paint Color	Lead (mg/cm ²)	Mode
Exterior Room 001 A Wing									
012	A	Wall	L Lft		I	Wood	Gray	0.0	QM
004	A	Wall	L Rgt		I	Wood	Gray	0.2	QM
007	A	Wall	U Rgt		I	Stucco	Gray	0.1	QM
008	A	Window	Rgt	Sill	I	Wood	White	5.5	QM
010	A	Door	Rgt	Rgt casing	I	Wood	Gray	5.1	QM
009	A	Door	Rgt	U Ctr	I	Wood	Blue	0.2	QM
011	A	Downspout	Ctr		I	Metal	Gray	0.2	QM
013	B	Wall	L Rgt		I	Wood	Gray	-0.1	QM
015	B	Door	Ctr	Rgt casing	I	Wood	Blue	5.8	QM
014	B	Door	Ctr	U Ctr	I	Wood	Blue	0.2	QM
016	B	Support Pole	Ctr		I	Metal	Gray	>9.9	QM
018	C	Wall	L Ctr		I	Stucco	Gray	0.0	QM
	C	Wall	U Rgt		I	Wood	Gray	0.1	QM
020	C	Fascia			I	Wood	White	0.1	QM
019	C	Window	Ctr	Sill	I	Wood	White	2.6	QM
021	C	Canopy	Ctr		I	Stucco	White	-0.1	QM
006	D	Window	Rgt	Sill	I	Wood	Gray	2.6	QM
005	D	Support Pole	Ctr		I	Metal	Gray	6.1	QM
Exterior Room 002 B Wing									
022	A	Wall	L Lft		I	Stucco	Gray	0.1	QM
023	A	Window	Lft	Sill	I	Wood	White	4.0	QM
024	A	Fire Exting.	Lft		I	Metal	Gray	1.0	QM
025	A	Support Pole	Ctr		I	Metal	White	6.8	QM
029	B	Wall	L Rgt		I	Stucco	Gray	-0.3	QM
034	B	Fascia			I	Wood	Gray	1.6	QM
032	B	Door	Rgt	Rgt casing	I	Wood	Blue	4.0	QM
031	B	Door	Rgt	U Ctr	I	Wood	Blue	0.0	QM
030	B	Support Pole	Ctr		I	Metal	White	4.1	QM
033	B	Canopy	Ctr		I	Stucco	Gray	0.0	QM
027	C	Wall	L Ctr		I	Stucco	Gray	0.0	QM
028	C	Canopy	Ctr		I	Stucco	Gray	0.2	QM
026	D	Wall	L Lft		I	Stucco	Gray	0.0	QM
Exterior Room 003 C Wing 1									
035	A	Wall	L Rgt		I	Stucco	Gray	-0.1	QM
037	A	Window	Rgt	Rgt casing	I	Wood	White	3.0	QM
036	A	Window	Rgt	Sill	I	Wood	White	3.8	QM
039	A	Door	Rgt	Lft casing	I	Wood	Blue	2.4	QM
038	A	Door	Rgt	U Ctr	I	Metal	Blue	0.0	QM

	B	Wall	L Lft		I	Stucco	Gray	-0.1	QM
4	C	Wall	U Lft		I	Stucco	Gray	0.0	QM
46	C	Fascia			I	Wood	Gray	3.0	QM
44	C	Window	Ctr	Sill	I	Wood	White	0.0	QM
42	C	Fire Exting.	Lft		I	Metal	Gray	-0.1	QM
48	C	Canopy	Ctr		I	Stucco	Gray	-0.3	QM
43	C	Support Pole	Rgt		I	Metal	White	4.2	QM
40	D	Wall	L Ctr		I	Stucco	Gray	-0.3	QM
41	D	Wall	U Ctr		I	Wood	Stain	-0.2	QM

Exterior Room 004 C Wing 2

49	A	Wall	L Rgt		I	Block	Gray	-0.1	QM
52	A	Window	Rgt	Sill	I	Concrete	White	-0.2	QM
51	A	Door	Rgt	Rgt casing	I	Wood	Blue	-0.3	QM
50	A	Door	Rgt	U Ctr	I	Metal	Blue	0.2	QM
53	A	Downspout	Ctr		I	Metal	White	0.1	QM
55	C	Wall	L Lft		I	Block	Gray	0.0	QM
59	C	Fascia			I	Wood	Gray	0.3	QM
57	C	Window	Lft	Sill	I	Concrete	White	-0.2	QM
56	C	Support Pole	Ctr		I	Metal	White	-0.1	QM
58	C	Canopy	Ctr		I	Wood	Gray	0.1	QM
54	D	Wall	L Ctr		I	Block	Gray	-0.1	QM

Exterior Room 005 C Wing 3

65	A	Wall	U Rgt		I	Block	Gray	0.0	QM
62	B	Wall	L Lft		I	Block	Gray	-0.1	QM
	C	Wall	L Ctr		I	Block	Gray	0.0	QM
60	D	Wall	L Rgt		I	Block	Gray	0.0	QM
67	D	Door	Lft	Rgt casing	I	Metal	White	0.2	QM
66	D	Door	Lft	U Ctr	I	Metal	Blue	-0.2	QM
63	D	Canopy	Ctr		I	Wood	Gray	-0.1	QM
64	D	Support Pole	Ctr		I	Metal	Gray	>9.9	QM

Exterior Room 006 D Wing 1

68	A	Wall	L Rgt		I	Block	Gray	-0.1	QM
76	B	Wall	U Ctr		I	Block	Gray	-0.1	QM
75	C	Wall	L Ctr		I	Block	Gray	-0.1	QM
74	C	Fascia			I	Wood	Gray	0.4	QM
72	C	Door	Lft	Lft casing	I	Metal	White	0.3	QM
71	C	Door	Lft	U Ctr	I	Metal	Blue	0.1	QM
73	C	Canopy	Ctr		I	Wood	Gray	0.3	QM
77	C	Support Pole	Ctr		I	Metal	White	-0.2	QM
69	D	Wall	L Lft		I	Block	Gray	0.0	QM
70	D	Support Pole	Ctr		I	Metal	White	4.3	QM

Exterior Room 007 D Wing 2

85	A	Wall	L Ctr		I	Stucco	Gray	0.0	QM
87	A	Window	Ctr	Sill	I	Wood	White	2.4	QM
86	B	Wall	L Lft		I	Stucco	Gray	-0.1	QM
78	C	Wall	L Rgt		I	Stucco	Gray	-0.1	QM
80	C	Window	Rgt	Sill	I	Wood	White	2.7	QM
81	C	Window	Rgt	Lft casing	I	Wood	White	2.4	QM
4	C	Door	Rgt	Lft casing	I	Wood	White	2.4	QM
83	C	Door	Rgt	U Ctr	I	Wood	Blue	1.3	QM

	C	Canopy	Ctr		I	Stucco	Gray	-0.4	QM
7	C	Support Pole	Rgt		I	Metal	White	2.9	QM

Exterior Room 008 D Wing 3

89	A	Wall	L Rgt		I	Stucco	Gray	0.1	QM
88	B	Wall	L Ctr		I	Stucco	Gray	0.2	QM
93	C	Wall	L Lft		I	Stucco	Gray	-0.1	QM
90	D	Wall	L Rgt		I	Stucco	Gray	0.2	QM
92	D	Door	Ctr	Rgt casing	I	Wood	White	-0.2	QM
91	D	Door	Ctr	U Ctr	I	Metal	Blue	0.0	QM

Exterior Room 009 E Wing

94	A	Wall	L Lft		I	Stucco	Gray	0.2	QM
95	B	Wall	L Ctr		I	Stucco	Gray	0.3	QM
96	C	Wall	L Rgt		I	Stucco	Gray	0.3	QM
98	C	Wall	L Rgt		I	Metal	Blue	-0.1	QM
100	C	Fascia			I	Wood	White	0.0	QM
99	C	Door	Rgt	Lft casing	I	Metal	White	-0.2	QM
101	C	Canopy	Ctr		I	Wood	White	-0.1	QM
97	D	Wall	L Rgt		I	Stucco	Gray	0.0	QM

Exterior Room 010 G Wing 1

102	A	Wall	L Rgt		I	Block	Gray	0.1	QM
105	A	Support Pole	Ctr		I	Metal	White	7.3	QM
104	B	Wall	L Ctr		I	Concrete	Gray	0.0	QM
103	D	Wall	L Lft		I	Block	Gray	0.1	QM
	D	Fascia			I	Wood	Gray	0.2	QM
109	D	Door	Lft	Rgt casing	I	Metal	White	-0.1	QM
108	D	Door	Lft	U Ctr	I	Wood	Blue	-0.1	QM
106	D	Canopy	Rgt		I	Wood	Gray	0.0	QM

Exterior Room 011 G Wing 2

117	A	Wall	L Rgt		I	Wood	Gray	-0.2	QM
116	B	Wall	L Lft		I	Wood	Gray	-0.1	QM
110	C	Wall	L Ctr		I	Wood	Gray	0.0	QM
120	C	Wall	U Ctr		I	Wood	Gray	0.0	QM
119	C	Soffit			I	Wood	Gray	0.0	QM
111	C	Window	Ctr	Rgt casing	I	Wood	White	-0.1	QM
118	C	Window	Rgt	Rgt casing	I	Wood	White	-0.1	QM
115	C	Door	Lft	Lft casing	I	Metal	White	-0.2	QM
114	C	Door	Lft	U Ctr	I	Metal	Blue	-0.2	QM
113	C	Railing	Ctr	Railing	I	Metal	White	-0.2	QM
112	C	Expansion	Ctr		I	Metal	Gray	-0.2	QM

Calibration Readings

001								1.0	TC
002								1.0	TC
003								0.9	TC
121								1.0	TC
122								1.0	TC
123								1.1	TC

----- End of Readings -----

.STRICTION REPORT OF LEAD PAINT INSPECTION FOR: Menlo Park City School District

Action Date: 02/22/07
 Report Date: 2/26/2007
 Measurement Level: 1.0
 Report No. 02/22/07 18:34
 Total Reading Sets: 117
 Job Started: 02/22/07 18:34
 Job Finished: 02/22/07 20:22

Oak Knoll School
 Building Exteriors
 1895 Oak Knoll Lane
 Menlo Park, CA 94025

Structure	Total	Structure Distribution				Inconclusive
		Positive	Negative			
Canopy	10	0 <0%>	10 <100%>	0	<0%>	
Door Lft casing	5	2 <40%>	3 <60%>	0	<0%>	
Door Rgt casing	7	3 <43%>	4 <57%>	0	<0%>	
Door U Ctr	11	1 <9%>	10 <91%>	0	<0%>	
Downspout	2	0 <0%>	2 <100%>	0	<0%>	
Expansion	1	0 <0%>	1 <100%>	0	<0%>	
Fascia	7	2 <29%>	5 <71%>	0	<0%>	
Fire Exting.	2	1 <50%>	1 <50%>	0	<0%>	
Railing Railing	1	0 <0%>	1 <100%>	0	<0%>	
Soffit	1	0 <0%>	1 <100%>	0	<0%>	
Support Pole	11	9 <82%>	2 <18%>	0	<0%>	
Wall	45	0 <0%>	45 <100%>	0	<0%>	
Window Lft casing	1	1 <100%>	0 <0%>	0	<0%>	
Window Rgt casing	3	1 <33%>	2 <67%>	0	<0%>	
Window Sill	10	7 <70%>	3 <30%>	0	<0%>	
Inspection Totals:	117	27 < 23%>	90 < 77%>	0	< 0%>	

State of California Department of Health Services

Lead-Related
Construction
Certificate

Certificate
Type

Expiration
Date

Inspector/Assessor 07/25/2005
Project Monitor 07/25/2005



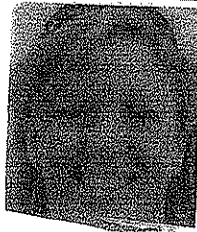
Carolyn M. Henry

ID # 2451

State of California
Division of Occupational Safety and Health
Certified Asbestos Consultant

Carolyn Marie Henry

Name



Certification No. **92-0837**

Expires on **01/08/08**

This certification was issued by the Division of
Occupational Safety and Health as authorized by
Sections 7180 et seq. of the Business and
Professions Code